International Journal of Drug Policy 53 (2018) 96–105

Contents lists available at ScienceDirect

International Journal of Drug Policy

journal homepage: www.elsevier.com/locate/drugpo

Research Paper

Differences in risk behaviours and HIV status between primary amphetamines and opioid injectors in Estonia and Russia

Isabel Tavitian-Exley[a,*], Mathieu Maheu-Giroux[b], Lucy Platt[c], Robert Heimer[d], Anneli Uusküla[e], Olga Levina[f], Peter Vickerman[g], Marie-Claude Boily[a,*]

[a] Department of Infectious Disease Epidemiology, Imperial College London, United Kingdom
[b] Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, Montréal, Canada
[c] Department of Social and Environmental Health Research, London School of Hygiene and Tropical Medicine, United Kingdom
[d] Epidemiology of Microbial Diseases, School of Public Health, Yale University, United States
[e] Department of Family Medicine and Public Health, University of Tartu, Tartu, Estonia
[f] NGO Stellit, St Petersburg, Russian Federation
[g] School of Social and Community Medicine, University of Bristol, Bristol, United Kingdom

ARTICLE INFO

Article history:
Received 13 January 2017
Received in revised form 14 November 2017
Accepted 20 November 2017
Available online xxx

Keywords:
HIV
Risk behaviours
PWID
Amphetamine injection
Opioid injection
Polydrug use
Respondent-driven sampling
Hepatitis C
Herpes simplex virus

ABSTRACT

Background and objective: People who inject drugs (PWID) account for over half of new HIV infections in Eastern Europe and central Asia, where opioids continue to be the dominant illicit drugs injected. Stimulants including amphetamines (ATS) have been associated with HIV infection risk in several settings. We sought to examine whether primary ATS injection was associated with greater HIV risk, compared to opioid injection in two European locales with significant HIV epidemics.

Methods: PWID in Kohtla-Järve and St. Petersburg were recruited using respondent-driven sampling in 2012–2013. Survey data on demographic characteristics, service use, injecting and sexual risk behaviours and HIV-status (and HCV in Kohtla-Järve) were compared between primary opioid and ATS injectors using logistic regression models.

Results: Of 591 injectors recruited in Kohtla-Järve and 811 in St. Petersburg, 195 (33%) and 27 (4%) primarily injected ATS in each city. In both cities, ATS injectors were younger than opioid injectors, initiated injection later, injected less frequently and were more likely to have been paid for sex. In both cities, PWID had high levels of multiple sex partners. In Kohtla-Järve, ATS-injectors had lower odds of back-loading and greater odds of polydrug use than opioid-injectors. In St. Petersburg, where over half of PWID reported unsafe sharing practices, ATS-injectors were less likely to report these practices. ATS-injection was negatively associated with being HIV positive in Kohtla-Järve (aOR = 0.6; 95%CI: 0.5–0.8) and St. Petersburg (aOR = 0.3; 95%CI: 0.1–0.7). ATS-injection was negatively associated with HCV-reactivity in Kohtla-Järve (aOR = 0.5; 95%CI: 0.3–0.6).

Conclusions: In both locations, primary ATS injection was associated with lower injecting risk behaviours, lower odds of HIV and being paid for sex compared to opioid injection. Interventions targeting the characteristics and needs of ATS injectors are needed to increase contact with services and reduce sexual and injecting risk. Harm reduction services, including sexual risk reduction, need to be expanded for all PWID in St. Petersburg.

Introduction

People who inject drugs (PWID) were estimated to account for 51% of new human immunodeficiency virus (HIV-1) infections in Eastern Europe and central Asia in 2014, a region with the fastest growing HIV epidemic associated with injection drug use globally (UNAIDS, 2016; UNODC, 2016).

Opioid injection has been the main driver of HIV epidemics in Estonia and the Russian Federation, where over half of PWID in Kohtla-Järve (Estonia) and St. Petersburg (Russian Federation) were seropositive in 2012 (El-Bassel, Strathdee, & Sadr, 2013; Jolley et al., 2012; Uusküla, Raag et al., 2015; Walsh & Maher, 2013). Both cities are situated on the Baltic Sea, on the northern part of two major heroin trafficking corridors linking Afghanistan to the heroin markets of Western Europe; both have experienced HIV epidemics

* Corresponding authors.
E-mail addresses: TavitianExley@gmail.com (I. Tavitian-Exley), mc.boily@imperial.ac.uk (M.-C. Boily).

https://doi.org/10.1016/j.drugpo.2017.11.010
0955-3959/

driven bytransmission among PWID since the late 1990s (UNODC, 2012, 2015b). Despite similar HIV prevalence, estimated incidence was higher in Kohtla-Järve (22/100 person-years, 2012) than in St. Petersburg (7.2/100 person-years, 2010), partly due to the higher proportion of young PWID in the Estonian city and to differences in the context and epidemic response, presented in Table 1. Evidence-based harm reduction interventions, including needle and syringe programmes (NSP) and opiate substitution treatment (OST), were introduced in Kohtla-Järve in 2004 (Estonia Ministry of Health, 2014; Mathers et al., 2010) whereas in St Petersburg, OST remains illegal and clean needles and syringes are not endorsed by government and provided by a few non-governmental organisations (Degenhardt et al., 2014; EMCDDA, 2015).

Most PWID injected heroin and illicitly-produced synthetic opioids, namely fentanyls in Kohtla-Järve (introduced into Estonia following a heroin shortage in 2000) and methadone in St Petersburg (Eritsyan et al., 2013; Heimer, Lyubimova, Barbour, & Levina, 2016). Estonia has reported one of the highest prevalences of amphetamine type stimulant (ATS) use in Europe (EMCDDA & Europol, 2012; UNODC, 2014) and ATS have emerged as a major secondary drug among PWID in Kohtla-Järve and St. Petersburg (EMCDDA, 2010; Grund, Zabransky, Irwin, & Heimer, 2009; UNODC, 2015a).

ATS are psycho-stimulants that are relatively easy to synthesize and increasingly injected in settings previously dominated by opiates (Bao et al., 2012; Booth et al., 2008; Grund et al., 2009). ATS have been associated with greater sexual risk, including multiple sex partners and unprotected sex, which may compound the risks of HIV acquisition among PWID (Baker, Kochan, Dixon, Wodak, & Heather, 1994; Booth et al., 2008; Darke, Kaye, McKetin, & Duflou, 2008; Gleghorn, Marx, Vittinghoff, & Katz, 1998; Ruiz, Flynn, Mikanda, Sun, & Anderson, 1999; Truax, Ruiz, & Sun, 1998). ATS injection has also been associated with more frequent injecting, needle/syringe sharing and HIV infection in settings where PWID also injected other drugs (Braine, Des Jarlais, Goldblatt, Zadoretzky, & Turner, 2005; Hayashi et al., 2011; Kozlov et al., 2006; Tavitian-Exley et al., 2017) but not when stimulants were reported as main injection drug (Booth et al., 2008; Kral, Bluthenthal, Booth, & Watters, 1998; Swe & Rashid, 2012; Talu et al., 2010). Few studies have examined drug use patterns by main drug injected and potential associations with risk behaviours and HIV and HCV infection in Eastern European settings (Booth et al., 2008; Harrell, Mancha, Petras, Trenz, & Latimer, 2012; Talu et al., 2010; Tavitian-Exley, Vickerman, Bastos, & Boily, 2015) and the relevance of ATS injection in shaping these epidemics remains unclear (EMCDDA & Europol, 2011; EMCDDA & Škařupová, 2014).

Our aim is to assess whether primarily injecting ATS as compared to opioids (heroin, synthetic heroin or methadone) is associated with increased injecting and sexual risk behaviours and HIV status among PWID in Kohtla-Järve (Estonia) and St. Petersburg (Russian Federation), two East European locales with significant and epidemiologically similar HIV epidemics.

Methods

Study population

Integrated biological and behavioural surveys of HIV prevalence were conducted among PWID in Kohtla-Järve between May and July 2012, and in St. Petersburg from November 2012 to June 2013. These surveys used comparable recruitment criteria and respondent-driven sampling (RDS) survey methodology and have been reported on and described previously (Cepeda et al., 2015; Dukhovlinova et al., 2015; Heimer et al., 2016; Tavitian-Exley et al., 2017; Uusküla, Raag et al., 2015). Briefly, RDS starts with a diverse sample of seeds (6 seeds in Kohtla-Järve and 12 seeds in different districts of St. Petersburg, subsequently increased to 16 to cover key districts and compensate for unproductive seeds). Seeds were selected through needle/syringe programmes (NSP) to represent a range of demographic and drug profiles; interviews and testing were conducted in fixed (Kohtla-Järve) and mobile clinics (St Petersburg). Each seed and subsequent participants were given an opportunity to recruit up to three PWID until a predetermined sample size was reached. Men and women aged 18 years or over, who had injected drugs in the past 30 days, lived in Kohtla-Järve or St. Petersburg and provided informed consent for the study were eligible. Eligibility was verified by the presence of injection marks and questions on injection practices before the start of the interview.

Table 1
HIV epidemic, context and response among people who inject drugs in Kohtla-Järve (Estonia) and St. Petersburg (Russia).

Indicator	Kohtla-Järve	St. Petersburg
HIV incidence	22 per 100 person-year *(2012)* (NIfHD, 2016; Uusküla, Des Jarlais et al., 2015) All Estonia: 7.5 per 100 person-year *(2011)* (NIfHD, 2016; Uusküla, Des Jarlais et al., 2015)	14.5 (95%CI: 10.7-17.6) per 100 person-year *(2008)* (Niccolai et al., 2011) 7.2 per 100 person-year *(2010)* (Kozlov et al., 2016)
HIV Prevalence	63% (95%CI: 56%–67%) (Uusküla, Raag et al., 2015)	59% (95%CI: 52%–59%) (Uusküla, Raag et al., 2015)
PWID population size estimate	2,000 (range: 700–2500) All Estonia: 5,362 (range: 3,906–9,837) (Wu, Crawford, Raag, Heimer, & A, 2017; Uusküla, et al., 2013)	83,120 (95%CI:77,320 −88,920) (Heimer et al., 2010)
% of population who inject drugs	4.5% *(2012)* (Wu, Crawford, Raag, Heimer, & A, 2017)	5.5% *(2008)* (Heimer et al., 2015)
Needle/syringe services (start year)	2004	1996
Needle/syringe services (n, type)	5 outreach, 3 fixed NSP (NIfHD, 2016)	2 mobile, 2 fixed site services *(2015)*
Clean syringes per PWID per year	All Estonia: 125 syringes/PWID per year *(2011)*	n/a
Needle/syringes services provided by	NGOs	City AIDS center (as of 2015), NGOs
Drug substitution (start year)	2004	OST illegal
Type of drug treatment	Opiate substitution	Detoxification only (21 days)
Coverage (%, n and year)	All Estonia: 15% of PWID (n = 919, *2014*) (NIfHD, 2016)	11% PWID registered, % in treatment n/a
Drug treatment services provided by	NGOs, clinics	Centralized, in-patient

Reference population for Estonia aged 15–44 years old; for St Petersburg aged 20–45 years old. Data collection years are italicised. HIV = Human Immune deficiency virus. PWID people who inject drugs. CI = Confidence Interval. NSP = Needle and Syringe Programme. OST = Opiate Substitution treatment. NGO = Non-governmental organisation. n/a = not available.