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Police must join the fast track to end AIDS by 2030

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Police, Law Enforcement and HIV

Guest Editors: Nick Crofts and David Patterson

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Foreword

Changing police as barrier to police as solution

As protectors and guardians of public safety, police should be trusted to respect human dignity and uphold the human rights of all people. Yet, all around the world, police too often evoke fear of violence and repression – a far cry from their civic and social purpose. This trepidation is particularly common in communities living on the fringes of society, in the shadow of punitive laws and at the sharp end of police practices.

I spend many months of the year travelling to the world's cities where the HIV burden is high, talking and listening to communities in the streets and on the margins. When I ask what can be done to improve their lives, they often say they want a police force that defends their rights instead of violating them. Key populations especially – including gay men and other men who have sex with men, people who inject drugs, sex workers and their clients, and transgender people – want the police to support them as human beings with the same rights as all others in our shared society. Women and girls, in particular, express concern about police practices that can include harassment and abuse, extortion of money and demand for sexual services.

I warmly welcome this *JIAS* special issue as a source of inspiration and leading-edge guidance on this important public health issue. As the articles demonstrate, interventions addressing police harassment towards key populations are feasible and effective to implement. Moreover, this important issue contains many inspiring examples of how police and civil society can build mutual trust and work in partnership to ensure the implementation of safe, sensitive and inclusive HIV programmes.

Changing individual police behaviour requires transforming deeply rooted police culture, which can be done. The articles in this issue show how engaging police in dialogue – grounded in evidence of what works and freed from judgement and moralism – can help shape police attitudes to key populations. They provide the evidence leaders need to understand that public health and criminal justice partnerships are both feasible and timely.

Change will take time, and it will demand efforts that go beyond individuals to reforming law enforcement agencies and laws and policies. It also requires developing better methods to monitor police conduct and to hold law enforcement to account.

The international community has committed to the target of ending AIDS by 2030 as part of the UN Sustainable Development Goals (SDG) agenda. We will not succeed until key populations are able to live free from fear and enjoy their rights fully, including equal access to life-saving HIV services. This requires action across the SDGs – from reducing inequality and ensuring safe and inclusive cities to ensuring unfettered access to justice and effective, accountable and inclusive institutions.

Let us move forward, working in unison, to support the duty of police to serve the community and protect the rights of everyone, leaving no one behind. Let us change the paradigm from police as a barrier to police as a solution.



Michel Sidibé
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Editorial

Police must join the fast track to end AIDS by 2030

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Abstract

World leaders have committed to ending AIDS by 2030, but stigma and discrimination remain significant obstacles. In particular, police are critical, front-line determinants of risk for many people living with HIV (PLHIV) and members of other key affected populations (KAPs). The negative impact of adverse police behaviours and practices on HIV risk is well documented, and these risks undermine global efforts to end AIDS. Far less well documented, and less common, are attempts to ameliorate this impact by working to change police behaviours. This Special Issue seeks to help redress this imbalance by presenting a selection of original, provocative and important interventions from academics, police officers and other stakeholders concerned with documenting the potential for constructive, progressive and evidence-based approaches to the reduction of HIV risk. We recommend urgent boosting of efforts and funding to engage police in the HIV response. Among other strategies, this needs sustainable funding of programmes and their evaluation, and increased and continuing advocacy and education at all levels to match policy and law reform.

Keywords: police; law enforcement; partnerships; civil society; HIV; drug use; sex work; vulnerability.

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Introduction

At the Sustainable Development Summit in 2015, world leaders reaffirmed their commitment to end AIDS by 2030. We are at a critical, historical pivot point in the global response. If we do not urgently identify and scale up evidence-based solutions, the human and financial costs of the HIV epidemic will grow into a debt we can never repay [1]. Yet there is one powerful and potentially very useful ally whom we have not adequately engaged in the response—the police. Without the police becoming part of the solution, they will continue to be what they now are in many places, part of the problem, and often a major part. Police engagement in the HIV response is a critical enabler, so why are the police not a leading partner in HIV prevention?

Many people are at risk of acquiring HIV because of socially, and often legally, proscribed behaviours that attract administrative or criminal enforcement practices and sanctions. The responses to such behaviours include detention in so-called “treatment” centres, incarceration and the death penalty, in some countries. Sex work is illegal in more than 100 countries worldwide, and the possession, use and supply of illicit drugs is illegal almost everywhere. Male homosexual behaviour is illegal in 70 countries, punishable by the death penalty in ten. Even where these behaviours are legal, the populations concerned are subject to substantial and varying levels of stigma and discrimination [2].

In all cases, the primary translators of the law on the books to the law on the streets are the police. Even where these behaviours are stigmatized but not illegal, the police, reflecting their communities, are often agents of discrimination.

There is a clear connection between discrimination and illegality and the heightened risk for HIV infection among these populations. The behaviours of police are therefore critical in shaping the risk environment for these populations. In many instances, they are overwhelmingly the most important critical determinants of HIV risk [3,4].

Much evidence has been documented of adverse police behaviours towards key affected populations (KAPs), and the adverse impact of these behaviours on HIV risk. Footer *et al.* have noted the adverse impact on risk behaviours among sex workers [5]. For example, police have been documented in many countries and circumstances as using the possession of condoms as evidence to justify arrest for prostitution. The same is true for needles, syringes and associated injecting paraphernalia. In countries where this police behaviour is common, much of the time the “evidence” is used to extort money, sexual favours, drugs or other bounty. In all instances, the categorization by police of the person as a sex worker, a drug user or a member of a sexual minority provides the apparent rationale for their often inhumane treatment; beating, torture, rape and other human rights abuses are common.

These behaviours have been shown repeatedly to increase the risk of HIV infection and other adverse health consequences [6]. Lunze *et al.* have documented police violence and HIV risks for female drug users in Russia [7]; Polonsky *et al.* have noted the links between police harassment, drug addiction and HIV risks among prisoners in Azerbaijan and Kyrgyzstan [8]; and Schneiders and Weissman have reported that laws and their implementation are barriers to HIV

prevention, care and treatment in Cambodia [9]. In Ukraine, Kutsa *et al.* have documented how police practices impede programs for drug users [10]. In South India, Bhattacharjee *et al.* have reported the HIV risks from police harassment and arrest for sex workers [11]. In response to police behaviours, PLHIV and members of KAPs take their lives underground, leading to circumstances of decreased safety, such as being forced to have or sell sex without the use of a condom, or injecting in haste with used equipment. The police behaviours also preclude or impede access by PLHIV and KAPs to prevention, treatment and care services, and make outreach work difficult, especially outreach undertaken by peers.

Police practices often reflect community prejudices. PLHIV and members of KAPs are in many cultures marginalized, and through a variety of mechanisms, they become the demonized “other.” They are treated as outlaws because of their behaviours, and not as full, rights-bearing members of the community. Police may act to protect what they perceive to be *their* community, the one from which they come, the one they see as legitimate and in conformance with the dominant social and moral norms. The more militarized the police force, the more pronounced this may be, in which case the police may see their role as protecting society *from* the KAPs, who are characterized as internal enemies. Police, thereby, become a key part of the mechanism of discrimination and stigma against these populations.

These outcomes are well proven, which makes it all the more puzzling that *changing* police behaviours has not been a more prominent goal in programs to address the HIV epidemic in many countries. There has been relatively little documentation of the impact of working *with* police to change these behaviours, reflecting the relative paucity of such programs. This Special Issue seeks to help redress this imbalance by reporting both problems but also positive interventions seeking constructive, progressive and evidence-based approaches to the reduction of HIV risk.

In part, it would seem that more emphasis has been placed on top-down approaches to law reform, with an implicit belief that police are universally guided by the law and use it impartially. Yet changing the law can take years, whereas changes in policies guiding police practices, and local solutions embedded in local knowledge and relationships involving the police, can be more effective in a much shorter time frame. In the context of treatment for drug dependence, for example, Ma *et al.* propose testing workable models in local settings, developed by local agencies yet guided by national harm reduction goals and inter-agency collaboration [12].

The Report of the Global Commission on HIV and the Law in 2012 sets out clearly the need for reform of policing practice, recommending that reform of policy and law must go hand-in-hand with reform of law enforcement practices and implementation of policy and law by police [13]. The commission recognized that these are different activities requiring different focuses: achieving reform in one area, law or police does not guarantee concomitant reform in the other, and is achieved by different means.

The evidence for police engagement

The role of law enforcement, especially police, as partners in the public health mission is increasingly well recognized. There is an extensive body of literature going back decades exploring the role of police in public health issues and documenting good models [14]. There is also now an international conference on law enforcement and public health which highlights major public health partnerships in the fields of mental health, gender-based and family violence, road trauma, major events and catastrophes, alcohol-related harm and many other public health issues (www.leph2016.com). If this is the case for other public health issues, why not for HIV? Is it simply because PLHIV and KAPs are so stigmatized, more than almost any other groups in society?

One reason for the failure of AIDS programming to engage police lies in the approach often taken to advocate with police. In effect, the message the police hear is, “Help us do our job, of preventing HIV.” The common response is, “That’s your job, we’ve got ours!” often couched in more picturesque terms [15]. For effective advocacy and engagement, we need to look at the issues from the police perspective, something the AIDS research community very rarely does. Leaving aside the issue of corruption, police imperatives are all around crime control and public order and safety, and dialogues about public health or human rights imperatives often have no impact. For advocacy to work, we need to identify and align our approaches to the police interests, both personal and professional [16]. For instance, for the former, some programs have used an approach highlighting occupational health and safety issues as a way to mobilize police support for needle and syringe programs [17]. Occupational health approaches can deliver immediate benefits for both police and public health. As noted by Mittal *et al.*, ceasing syringe confiscation can reduce occupational exposure and limit the sharing of injection equipment among drug users [18]. And as an example of the latter, the introduction of methadone maintenance in Viet Nam won more support and was more successful when police became aware of the crime-control aspects of moving heroin users onto long-term substitution therapy [15,19].

There have been many calls for an end to the police harassment and brutalization of KAPs [20], and for police to protect the health and rights of PLHIV and members of KAPs as much as those of other members of society [21]. There are now increasing calls for maximizing the opportunity to recruit police as partners, facilitators and even leaders in HIV prevention strategies, as exemplified by Polonsky *et al.* [8]:

Rather than target [people who inject drugs] for arrest, police could align their practices with public health and steer them towards evidence-based treatment with methadone or buprenorphine . . . and help avoid incarceration. Alternatively, . . . they can encourage the use [needle and syringe programs] that also reduce HIV risk.

How can we best bring about this change, which is happening or already has in some police agencies worldwide?

There *are* examples of good practice in relation to police engagement in the HIV response; this is especially the case in

high-income countries with democratized police agencies. The United Kingdom's guidance to police on needle and syringe programs is an excellent example of police, prosecutions and public health collaboration in the public interest [22].

Increasingly, the effectiveness of collaborative programs in which the police address discrimination, stigma and HIV risk are being documented in low and middle income countries as well [23]. (The LEAHN website lists a number of positive examples of partnerships between law enforcement agencies, governments and NGOs to address HIV epidemics. See: www.leahn.org/police-hiv-programs.) For instance, the Gates Foundation funds the Avahan program that provides support for work with police in the six Indian states that includes training for police, instructions to police not to use condoms as evidence and support of police for prevention staff [24]. The Poro Sapot project in Papua New Guinea worked to reduce the harassment of men who have sex with men and sex workers through training and sensitization of police at multiple levels [25]. Thomson *et al.* have reported on a series of joint workshops between police and KAPs supported by the UN Office on Drugs and Crime (UNODC), contributing to the evidence that contact between police and KAPs outside the usual situations of conflict can be effective in rehumanizing each to the other [26]. This aligns with the evidence about what works in stigma reduction, with four approaches necessary and effective: information-based approaches, skills building, counselling and support and contact with affected groups [27]. Specifically, it is more difficult for a police officer to harass a sex worker who the previous day had been playing football with him [23]. Landsberg *et al.* have concluded that their findings indicate "that a major shift towards a public health approach to policing is possible among a municipal police force" [28]. But it is clearly necessary to strengthen civil society at the same time so as to promote a respectful partnership [7].

What needs to be done?

The challenge of engaging police in the response to HIV urgently needs far more consideration and much more sizeable funding than it is currently receiving. There are multiple neglected needs; there has been such an emphasis in research and programming on police as obstacles that the existence of good practice has been obscured. As a result, the lessons learnt by individual programs have not been shared widely with the AIDS sector. There *are* emerging good practices, as reported by Lichtenstein and Barber in the USA [29] and Scheibe *et al.* in South Africa [30]. But they need much greater documentation, evaluation, dissemination and understanding of the principles that have made them successful. On this basis then, they need to be adopted widely and scaled up to have what we believe will have a profound impact on the risk of PLHIV and KAPs and on the efficacy of HIV programs.

Funding urgently needs to be directed to addressing these obstacles and supporting interventions at multiple levels. Aside from spasmodic programmatic funding for this work, such as that provided by the Avahan program, there has been little systematic recognition of the importance of this area. Until 2016, the Open Society Foundations have supported

a nascent global network of police supportive of a harm reduction approach to policing KAPs, the Law Enforcement and HIV Network (LEAHN).

In 2012, UNAIDS identified the sensitization of law enforcement agents as a key component of the HIV national response [31]. The Global Fund to Fight AIDS, Tuberculosis and Malaria followed in 2014 [32]. So why have funders in the AIDS field held back from funding programs working with police? Without direct evidence, our suppositions include the lack of awareness amongst national AIDS program managers and donors about what can be done, and perhaps a philosophical, political and cultural reluctance by many stakeholders, including PLHIV and members of KAPs, to support an arm of the state seen so widely (and often correctly) as oppressors of KAPs.

Our first urgent priority is the need for pilot programmes and rigorous evaluation research. Very few formal evaluations have been published in the scientific literature addressing the question of the impact on HIV risk and interventions that entail working with police: Do they work? What works best? [3,5,28]. The range of other strategies for law reform and better access to justice needs to be systematically complemented by strategies for better police engagement. There are multiple strategies available, including:

- integration of training on the police role in HIV prevention and working with affected communities and populations, on human rights and harm reduction [10]¹;
- continued professional development throughout the police personnel careers;
- peer advocacy and education, such as that provided by the police Country Focal Points of the Law Enforcement and HIV Network²;
- strategies and initiatives to bring police together with the communities they should serve in non-conflict settings and generate community-based strategies for multi-sectoral consultation;
- addressing structural issues, such as performance measures (especially abolishing arrest quotas as a key performance indicator), criteria for promotion and the bedevilled issue of pay for police;
- issuing specific directives to guide police action in circumstances in which they have discretion (e.g., to charge or to warn) and
- Integration of these issues into broader police reform initiatives.

From its 2012 review of programs working with police, the Open Society Foundations concluded that, together with law reform, there are seven important elements for meaningful collaboration [23]:

- 1) Appeal to police interests
- 2) Secure support from police leadership

¹For which multiple training resources already exist – see www.leahn.org/resources

²See, for instance, www.youtube.com/watch?v=KzeBIVRIYw&feature=youtu.be

- 3) Develop regular and systematized police trainings that involve the sex workers and people who use drugs
- 4) Police commitment to feedback and accountability mechanisms
- 5) Police engagement with sex workers and people who use drugs outside the frame of law enforcement (informal interaction to build understanding and trust)
- 6) Organized groups of sex workers and people who use drugs (to strengthen police-community and sustainability)
- 7) Sustained funding.

They conclude that, "Of all the elements noted above, sustained funding is critical. Yet . . . efforts described [herein] have cut back or ceased operations with the withdrawal of international funding, even as other HIV prevention and treatment efforts have continued" [23].

There is a broader police reform and professionalization movement globally, improving police training at the university level, with moves from militarized to democratized police agencies, and engagement or re-engagement with communities ("community policing") [33,34]. The need for police to better engage with PLHIV and KAPs in the response to HIV fits in well with these global movements, and initiatives in this field need to be integrated into the broader police reform agenda in the longer term, while addressing immediate challenges urgently.

To address immediate challenges, there is an urgent need for better co-ordination between those multilateral, bilateral and local agencies working with different KAPs or in different settings on engaging their local police agencies. There are many training resources available, including curriculum and manuals, for agencies working with police to use. Nevertheless, rather than co-ordinating their development and use, many agencies continue to re-invent what is already available. A better use of resources would be the evaluation of the different resources, and adaptation to local (and constantly changing) circumstance.

Unless we engage police urgently and effectively in the HIV response, we will not achieve the SDG3 target of ending the AIDS epidemic by 2030. However, we need evidence for action. We need the support of people living with HIV (PLHIV) and members of KAPs. We need national AIDS programs to address the issues directly, and begin dialogues with the relevant other Ministries. And, critically, we need funding to implement, evaluate and scale up evidence-based programs with police. Without police support, our other efforts to end AIDS by 2030 will fall short.

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Competing interests

The authors declare that they have no competing interests.

Authors' contributions

NC and DP both authors provided equal input to the article.

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Review article

Policing practices as a structural determinant for HIV among sex workers: a systematic review of empirical findings

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Abstract

Introduction: Sex workers are disproportionately infected with HIV worldwide. Significant focus has been placed on understanding the structural determinants of HIV and designing related interventions. Although there is growing international evidence that policing is an important structural HIV determinant among sex workers, the evidence has not been systematically reviewed.

Methods: We conducted a systematic review of quantitative studies to examine the effects of policing on HIV and STI infection and HIV-related outcomes (condom use; syringe use; number of clients; HIV/STI testing and access) among cis and trans women sex workers. Databases included PubMed, Embase, Scopus, Sociological Abstracts, Popline, Global Health (OVID), Web of Science, IBSS, IndMed and WHOLIS. We searched for studies that included police practices as an exposure for HIV or STI infection or HIV-related outcomes.

Results: Of the 137 peer-reviewed articles identified for full text review, 14 were included, representing sex workers' experiences with police across five settings. Arrest was the most commonly explored measure with between 6 and 45% of sex workers reporting having ever been arrested. Sexual coercion was observed between 3 and 37% of the time and police extortion between 12 and 28% across studies. Half the studies used a single measure to capture police behaviours. Studies predominantly focused on "extra-legal policing practices," with insufficient attention to the role of "legal enforcement activities". All studies found an association between police behaviours and HIV or STI infection, or a related risk behaviour.

Conclusions: The review points to a small body of evidence that confirms policing practices as an important structural HIV determinant for sex workers, but studies lack generalizability with respect to identifying those police behaviours most relevant to women's HIV risk environment.

Keywords: systematic review; HIV; police; sex work; arrest; STI; measurement.

To access the supplementary material to this article please see [Supplementary Files](#) under Article Tools online.

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Introduction

Globally, sex workers, defined as those who exchange sex for money or other goods have a disproportionate burden of HIV [1–7]. For over a decade, public health and social science research has sought to more clearly link HIV to the social production of behavioural risk and transmission [8–11]. The conceptual shift from individual-focused HIV prevention (e.g. behaviour change, communication) to environmental-structural interventions emerged as far back as the 1990s among female sex workers (FSWs) [12–14]. Recent research places these intervention efforts in context, highlighting a lack of empirical work to delineate the epidemiology of structural risk factors and HIV among FSWs [15]. An assortment of theoretically informed frameworks exist to elucidate the dynamic socio-economic production of HIV infection across levels, from the macro (e.g. stigmatization of sex work, laws governing

possession of drugs) to the micro (e.g. local policing practices, access to drug treatment programs), and how such pathways relate to interpersonal, individual and biological factors [15–17]. A recent call to action to address the HIV response to sex work included a focus on structural reforms and interventions [18]. It is fundamental to the scientific credibility of prioritizing structural interventions to ensure that the measurement of structural determinants (e.g. stigma, local policing practices) is properly operationalized, and if possible, independently associated with specific HIV-related outcomes (e.g. condom use, HIV or STI infection). Law is increasingly viewed as a significant HIV determinant, but one that is a "complex phenomenon" in its own right [19], operating at different structural levels to influence HIV risk behaviours and acquisition (e.g. macro-level laws, meso-level legal policies and micro-level policing practices.)

Laws and policies that influence HIV risk

Criminal laws related to sex work have been linked to fewer public health benefits, and yet it remains the dominant global approach [20–23]. Across different settings punitive laws take a variety of forms, from criminalizing the transaction itself to prohibiting acts related to sex work, such as solicitation, being found in a brothel or communicating for the purposes of prostitution [24,25]. Other laws of more general application are also frequently employed (e.g. loitering, public indecency, disorderly behaviour offences). Modelling undertaken by Shannon *et al.* suggests the decriminalization of sex work could have one of the greatest effects on the course of the HIV epidemic across settings with concentrated or generalized HIV epidemics [26]. Potentially, sex workers who inject drugs risk exposure to both drug- and sex worker-related laws. Research on drug-related law enforcement practices and its positive association with HIV prevalence among people who inject drugs points to the limited deterrent effect of such practices, and the parallel need for reforms to drug laws and policies [27–30].

Policing practices and sex workers' HIV risk

The transformative process by which the law “on the books,” e.g. statutes, regulations and court decisions, is manifested in the “street level” practices of the police is of central importance [19]. Legal scholars have long demonstrated the gap between written law and law enforcement [19,31]. In settings in which sex work is criminalized, the police are able to exercise considerable discretion in shaping law enforcement activities regarding sex workers. Policing practices can directly and indirectly affect sex workers HIV-related behaviours. A key example of a direct effect is the confiscation or destruction of condoms, which can prompt unprotected sex, as has been documented worldwide [32–36]. In the case of sex workers who also inject drugs, the confiscation of drugs and injecting equipment by police in the absence of arrest is associated with HIV infection [37–42]. Policing practices that indirectly affect sex workers' HIV risk behaviours include periodic crackdowns or moving women off corners to address community disquiet [34,43–47]. These strategies can displace sex workers to unfamiliar areas, increase their potential exposure to violence and severely limit their negotiating power with clients [43,47–51].

Egregious abuses of police power are receiving particular attention in the literature. The normalisation of sexual violence as a tool of law enforcement has been documented worldwide [52], including forced unprotected sex [53–57] and coercive sex (e.g. sex in exchange for no arrest) [36,55,58–65]. Other rights violations that sex workers suffer at the hands of the police include verbal harassment and humiliation [64,66–69]; financial extortion to avoid arrest [4,54,57,61–63,70,71]; intimidation or physical violence [54,55,64,72,73] and arbitrary arrest or detention, frequently accompanied by illegal searches and physical violence [50,56,58,70,74].

Previous reviews

A systematic review of violence against sex workers by Deering *et al.* [75] identified policing practice (either lawful or unlawful) as a key correlate. Another systematic review by Shannon *et al.* [26] reviewed data for HIV prevalence and

incidence, condom use and structural determinants among FSWs. Most of the 149 articles included in the review addressed other structural determinants, with seven articles measuring policing practices as a structural vulnerability a priori within women's work environment. The authors concluded that police abuses and law enforcement strategies are key barriers to HIV prevention efforts among FSWs worldwide. In addition to these systematic reviews, two other non-systematic reviews of the evidence have provided important contributions to the field. Decker *et al.* placed a spotlight on police abuses as a contributing factor to sex workers' experience of human rights violations [52], while Tenni *et al.* reviewed the scope and opportunities for interventions that address policing practices towards sex workers [76].

Current review

The goal of the current systematic review is to provide a focus on how quantitative research has operationalized the measurement of law enforcement practices as a structural determinant of HIV for women (including transgender) sex workers. The review builds on previous work by critiquing the strength of the evidence to support the legal environment's role as a structural HIV determinant with respect to micro-level policing practices, situated as they are in a broader and more complex legal environment. An important distinction in this review is the inclusion of search terms for cis and trans women sex workers. The review also includes a broader range of HIV-related outcomes, and seeks to provide a more critical review of methodological issues in interpreting findings in the existing quantitative literature.

Methods

Search strategy and selection criteria

We followed PRISMA guidelines in conducting the systematic review. Subject headings and associated terms were initially developed and tested in PubMed and adapted for other database specific categories (see Supplementary file 1 for full list of search terms). The search strategy involved two extensive search components for each database, and was developed to reliably capture: (1) police enforcement strategies, both legal and illegal; and (2) terms relevant to our population of interest (i.e. sex workers). A comprehensive review of all major databases was undertaken on 18 September 2015 (BS). Databases searched for this review were PubMed, Embase, Scopus, Sociological Abstracts, Popline, Global Health (OVID), PAIS International, Criminal Justice Abstracts, Web of Science, IBSS, WHO Regional Databases, IndMed and WHOLIS. Ancestry searches were also conducted for references and the relevant citations to all studies.

We included articles that examined police practices as an exposure variable for HIV and/or STI infection or HIV-related outcomes. The studies under consideration were required to use quantitative univariate or multivariable methods and to have been published in a peer-reviewed journal. Primary outcomes of interest were HIV infection, STI infection and STI symptoms. Secondary outcomes were HIV/STI testing and access, number of clients, condom use and syringe use. Studies were included for cis and trans women who

Table 1. Study and intervention characteristics, description of HIV infection and sexually transmitted infection outcomes and police measures

Author, publication date	Country (cities)	Legal status	Study dates	Study design	Sample size, Population of interest	Police measure	% Reporting police measure	Outcome	% With outcome (overall/ population with police measure only)	Association (95% CI)
Chen <i>et al.</i> , 2012 [82]	Mexico (Nuevo Laredo, Ciudad Hidalgo)	Regulated in specific zones but soliciting in public is illegal	2009–2010	Cross-sectional	200 FSWs	Ever arrested	28.6	- Current STI symptoms	16.5/45.5	aOR: 2.3 (1.0, 5.0)
						Arrested in prior year	16.5	- Current STI symptoms	16.5/27.3	OR: 2.2 (0.9, 5.4)
Decker <i>et al.</i> , 2012 [4]	Russia (Moscow)	Selling sex is illegal in any venue	2005	Cross-sectional	147 FSWs	Sexual coercion	36.6	- Current HIV infection/ STI (any)	31.3/44.2	aOR: 2.5 (1.2, 5.4)
Decker <i>et al.</i> , 2014 [83]	Russia (Kazan, Krasnoyarsk, Tomsk)	Selling sex is illegal in any venue.	2011	Cross-sectional	754 FSWs	Sexual coercion	3.1	- Current HIV Infection	3.9/13.0	aOR: 3.5 (0.9, 12.9)
Erasquin <i>et al.</i> , 2011 [70]	India (Rajahmundry)	Organizing commercial sex in any place and soliciting in public is illegal	2009–2010	Cross-sectional	835 FSWs	Sexual coercion	28.4	- Current HIV Infection	3.9/5.1	aOR: 1.1 (0.5, 2.2)
						Sexual coercion	10.9	- Recent STI symptoms	48.5/74.7	aOR: 3.6 (2.1, 5.9)
								- Inconsistent condom use (C)	24.0/31.9	aOR: 1.5 (0.9, 2.5)
								- Accepted more money for sex with no condom (C)	18.1/28.6	aOR: 2.0 (1.2, 3.4)
						Extortion	12.0	- Recent STI symptoms	48.5/81.0	aOR: 5.1 (3.0, 8.7)
								- Inconsistent condom (C)	24.0/41.0	aOR: 2.4 (1.5, 3.7)
		- Accepted more money for sex with no condom (C)	18.1/34.0	aOR: 2.8 (1.7, 4.4)						
		Condoms confiscated	7.4	- Recent STI symptoms	48.5/74.2	aOR: 3.1 (1.7, 5.7)				
				- Inconsistent condom (C)	24.0/51.6	aOR: 3.6 (2.1, 6.1)				
				- Accepted more money for sex with no condom (C)	18.1/43.6	aOR: 4.1 (2.3, 7.2)				
		Workplace raid	26.8	- Recent STI symptoms	48.5/71.4	aOR: 3.7 (2.6, 5.3)				
				- Inconsistent condom use (C)	24.0/26.4	aOR: 1.2 (0.8, 1.7)				
				- Accepted more money for sex with no condom (C)	18.1/21.9	aOR: 1.5 (1.0, 2.3)				

Table 1 (Continued)

Author, publication date	Country (cities)	Legal status	Study dates	Study design	Sample size, Population of interest	Police measure	% Reporting police measure	Outcome	% With outcome (overall/ population with police measure only)	Association (95% CI)
Erasquin <i>et al.</i> , 2014 [84]	India (Rajahmundry)	Organizing commercial sex in any place and soliciting in public is illegal	2006–2010	Cross-sectional	1680 FSWs	Arrested during prior 6 months	12.0	- Recent STI symptoms - Inconsistent condom use (C) - Accepted more money for sex with no condom (C)	48.5/77.0 24.0/35.0 18.1/31.0	aOR: 3.8 (2.3, 6.2) aOR: 1.8 (1.1, 2.9) aOR: 2.4 (1.4, 3.9)
						Sexual coercion	11.1	- Recent STI symptoms - Inconsistent condom use (C) - Accepted more money for sex with no condom (C)	44.3/65.6 34.2/33.9 21.3/33.3	aOR: 2.2 (1.6, 3.1) aOR: 1.2 (0.8, 1.6) aOR: 2.0 (1.4, 2.9)
						Extortion	14.8	- Recent STI symptoms - Inconsistent condom use (C) - Accepted more money for sex with no condom (C)	44.3/64.9 34.2/42.3 21.3/36.3	aOR: 2.4 (1.8, 3.2) aOR: 1.6 (1.2, 2.1) aOR: 2.5 (1.8, 3.3)
						Condoms confiscated	7.6	- Recent STI symptoms - Inconsistent condom (C) - Accepted more money for sex with no condom (C)	44.3/66.4 34.2/43.8 21.3/46.9	aOR: 2.4 (1.6, 3.6) aOR: 1.7 (1.2, 2.5) aOR: 3.8 (2.6, 5.6)
						Workplace raid	36.1	- Recent STI symptoms - Inconsistent condom (C) - Accepted more money for sex with no condom (C)	44.3/58.3 34.2/34.8 21.3/26.5	aOR: 2.2 (1.8, 2.8) aOR: 1.1 (0.9, 1.4) aOR: 1.6 (1.2, 2.0)
						Arrested during prior 6 months	14.5	- Recent STI symptoms - Inconsistent condom use (C) - Accepted more money for sex with no condom (C)	44.3/60.1 34.2/35.8 21.3/28.8	aOR: 1.7 (1.3, 2.3) aOR: 1.2 (0.9, 1.6) aOR: 1.5 (1.1, 2.1)

Table 1 (Continued)

Author, publication date	Country (cities)	Legal status	Study dates	Study design	Sample size, Population of interest	Police measure	% Reporting police measure	Outcome	% With outcome (overall/ population with police measure only)	Association (95% CI)
Erickson <i>et al.</i> , 2015 [85]	Uganda (Gulu)	Selling sex is illegal in any venue	2011–2012	Cross-sectional	400 FSWs	Summary measure (1 police interaction)	19.8	- Recent STI symptoms - Inconsistent condom (C) - Accepted more money sex with no condom (C)	44.3/52.1 34.2/29.5 21.3/18.1	aOR: 2.0 (1.5, 2.6) aOR: 0.9 (0.7, 1.2) aOR: 1.0 (0.7, 1.4)
						Summary measure (2 or more police interaction)	22.7	- Recent STI symptoms - Inconsistent condom use (C) - Accepted more money for sex with no condom (C)	44.3/63.1 34.2/38.2 21.3/33.3	aOR: 3.0 (2.3, 3.9) aOR: 1.4 (1.0, 1.8) aOR: 2.4 (1.8, 3.2)
						Police presence rushed negotiations Displacement by police Street enforcement	37.3	- Dual contraceptive use (past 6 months)	45.0/31.0	aOR: 0.7 (0.4, 1.0)
Gertler and Shah, 2011 [86]	Ecuador (various)	Regulated indoors. No laws govern street-based sex work but public order offences are used	2003	Cross-sectional	2914 FSWs	Street enforcement	NA	- Dual contraceptive use (past 6 months) - Current STI (any) - Ever STI Infection - Current herpes infection	45.0/28.0 NA NA NA	OR: 0.9 (0.6, 1.4) Beta: -0.1 ^a Beta: -0.3 ^a Beta: -0.1 ^a
							Ever arrested	45.4	- Current HIV infection - Current syphilis infection - Inconsistent condom use (N-C) - Inconsistent condom (C)	2.0/3.2 22.4/29.5 82.4/84.4 11.4/14.7
Pando <i>et al.</i> , 2013 [87]	Argentina (various)	Organizing commercial sex in any place and soliciting in public is illegal	2006–2009	Cross-sectional	1255 FSWs	Ever arrested	45.4	- Safe injection	NA	aOR: 0.6 (0.4, 1.0)
Pitpitan <i>et al.</i> , 2015 [88]	Mexico (Ciudad Juarez)	Regulated in specific zones but soliciting in public is illegal	2010	Randomized control trial	213 FSWs–IDUs	Syringe confiscation	NA		NA	

Table 1 (Continued)

Author, publication date	Country (cities)	Legal status	Study dates	Study design	Sample size, Population of interest	Police measure	% Reporting police measure	Outcome	% With outcome (overall/ population with police measure only)	Association (95% CI)
Qiao <i>et al.</i> , 2014 [89]	China (Guangxi)	Selling sex is illegal in any venue	2011	Cross-sectional	794 FSWs	Ever arrested	5.7	- Consistent condom use (C) - Access HIV testing - Access HIV prevention services	< 39/NA < 50/NA 73/NA	OR: 0.8 (0.4, 1.5) aOR: 2.8 (1.2, 6.2) aOR: 4.6 (0.9, 23.3)
Shannon <i>et al.</i> , 2009 [51]	Canada (Vancouver)	Organizing commercial sex in any place and soliciting in public is illegal ^b	2006	Cross-sectional	205 FSWs–TWS	Displacement by police	44.4	- Pressured into unprotected sexual intercourse with client in last 6 months	24.9/38.4	aOR: 3.1 (1.4, 7.4)
						Zoning restriction following previous charge	8.7	- Pressured into unprotected sexual intercourse with client in last 6 months	24.9/50.0	aOR: 3.4 (1.2, 9.4)
Strathdee <i>et al.</i> , 2011 [90]	Mexico (Cuidad Juarez, Tijuana)	Regulated in specific zones but soliciting in public is illegal	2008–2009	Cross-sectional	620 FSWs–IDUs	Syringe confiscation	29.0	- Current HIV infection	5.3/8.1	aOR: 2.4 (1.2, 5.0)
Strathdee <i>et al.</i> , 2013 [5]	Mexico (Cuidad Juarez)	Regulated in specific zones but soliciting in public is illegal	2008–2010	Randomized control trial	300 FSWs–IDUs	Arrested during prior 6 months	49.0	- HIV/STI incidence ^d	67.4/NA	NA
	Mexico (Tijuana)		2008–2010	Randomized control trial	284 FSWs–IDUs	Arrested during prior 6 months	40.9	- HIV/STI incidence ^d	44.3/NA	aRR: 2.7 (1.4,5.2) ^c
Zhang <i>et al.</i> , 2013 [91]	China (Guangxi)	Selling sex is illegal in any venue	2011	Cross-sectional	720 FSWs	Ever arrested	NA	- Unprotected sex in the last sex act	NA	aOR: 2.6 (1.4, 4.7)

^aPopulation-level estimates across communities of adjusted beta-coefficient using linear regression; ^bThe law changed in 2014 to decriminalize but this research was conducted prior to the change;

^cPopulation-level estimates from Poisson regression across different risk groups; ^dHIV/STI incidence density over 12 months across four different intervention groups.

FSW = cis female sex worker; TWS = transgender woman sex worker; IDU = injection drug use; C = client; N-C = non-commercial partner; OR = odds ratio; aOR = adjusted odds ratio; aRR = adjusted relative risk; Beta = beta-coefficient from linear regression.

exchanged sex for money or other goods (i.e. sex work); we excluded studies focused exclusively on male sex workers or adolescents, and studies only including indoor work environments (e.g. brothels, massage parlours, hotels, saunas). Based on a signal to noise ratio of each year searched, we limited our search to articles published between 1 January 2006 and 18 September 2015. Articles were limited to those published in the English language, but were not limited by either quantitative study design or setting.

Screening and data abstraction

Article citations were organized and uploaded to Endnote, and subsequently reviewed using Rayyan, a web application for exploring and filtering systematic review searches [77]. The title and abstracts of all publications were originally screened by two independent reviewers (BS and KT) to retain those that clearly met the inclusion criteria, or for whom the full text of the article had to be reviewed before a final determination on inclusion could be made. Two independent reviewers (KF and BS) undertook full text reviews, and any discrepancies as to final inclusion were discussed with the senior reviewer (SS) to reach a consensus as to whether to exclude or include any specific article. Data were abstracted using a standard abstraction form for each study (see Supplementary file 1). Due to the lack of validated quality assessment checklists for cross-sectional studies, the authors undertook a critical appraisal of studies during the data abstraction process [78–81].

As shown in Table 1, we set out the police measures for each study and how frequently they occurred (if reported), along with the primary outcomes of interest (HIV infection, STI infection, STI symptoms) and secondary outcomes (access to HIV services, number of clients, condom use and syringe use). If results from both univariate and multivariate models were presented, we extracted the (adjusted) associations of the multivariate model only.

Data synthesis

Due to the diversity in policing determinants and HIV outcomes, a meta-analysis was not conducted. Instead, to guide our review, we have adapted a conceptual model that provides a legal determinants framework of HIV-related outcomes for sex workers (Figure 1), and draw on previous ecological [19] and risk environment frameworks [16,17]. The framework

highlights how macro-level laws and meso-level policies are critical influences on sex workers' HIV risk environment. However, it is at the micro-level of policing practices that laws and policies become interpreted in the everyday decision-making of police officers. The framework draws a distinction between enforcement practices within the law and those outside of it, which we define as "extra-legal policing practices" [30]. The latter represent behaviours that sit along a spectrum from misconduct to illegal behaviours, with human rights violations a prevalent feature in some settings.

Results

The search process is described in Figure 2, and results are displayed in Table 1. Overall, 14 quantitative studies [4,5,51,70,82–91] were identified that met our inclusion criteria. These papers represent the current empirical evidence that policing practices are a key micro-structural determinant for HIV risk among sex workers.

Study characteristics

The studies cover a fairly diverse range of geographic regions given the number of studies, but the diversity of countries within regions was small. Seven of the studies were conducted in the Americas. Four were in Mexico, the two from Eastern Europe were both in Russia, one was in the Central East African country of Uganda, four were in Asia with two in India and two in China. Five of the 14 papers were conducted in settings in which selling sex in any venue is illegal [4,83,85,89,91]. For the four studies set in Mexico [5,82,88,90], sex work is regulated in specific zones, but it remains illegal to solicit sex in public. Four of the 14 studies [51,70,84,87] were in settings in which it is illegal to solicit sex in any public place or organize commercial sex in any place. In one study [86], indoor sex work is regulated and while no laws govern street-based sex work, police often employ public order offences [92].

One of the studies considered women inclusive of trans [51], while cis-woman sex workers who inject drugs were considered in two of the 14 papers [5,90]. All of the studies except one included samples of sex workers from multiple sex work environments (e.g. brothels, street, motels). The exception was one study exclusively focused on truck stops as a sex work venue [82]. Only two out of the 14 studies stated

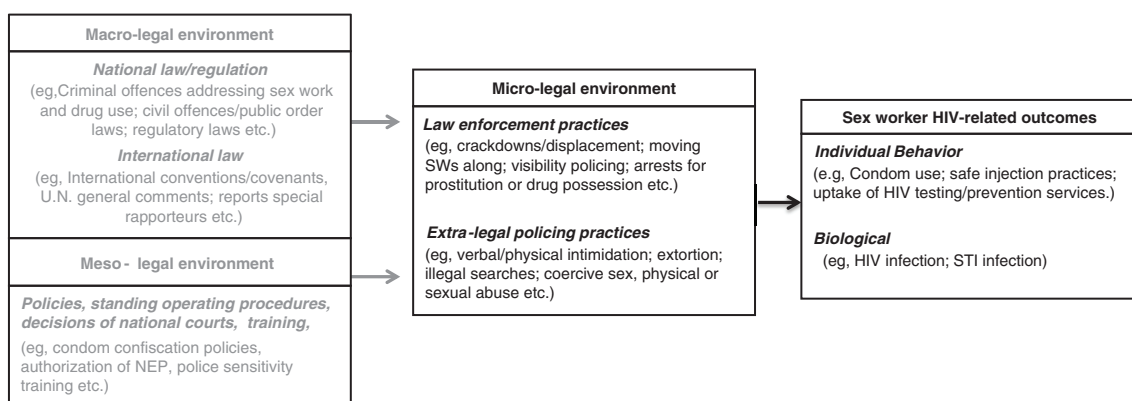


Figure 1. Framework of law as a structural determinant for health outcomes of sex workers, adapted from Burris and colleagues [19].

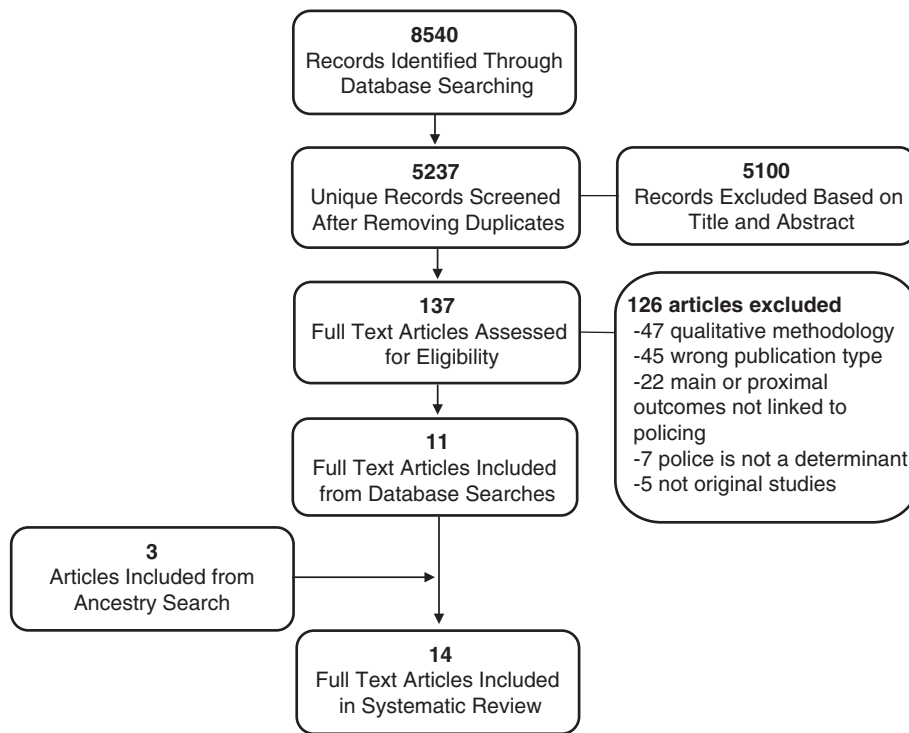


Figure 2. Flowchart of search strategy.

that both over and under 18-year-olds were included in their sample [4,85].

Study design and measures

Twelve of the papers (86%) used a cross-sectional study design, while two (14%) analyzed the results of the same randomized controlled study [5,88], conducted in the context of an intervention. In nine of the 14 studies (64%) there was a single measure for police behaviour. Considering legal enforcement practices as set out in our conceptual framework, five of the six studies measuring this concept looked at arrest in some form (i.e. any arrest ever, a history of arrest or arrest in the last six months) as the only measure of police practices [5,82,87,89,91]. Only one study defined arrest as arrest for sex worker-related activity [87]. The remaining three single measure studies look at what we term “extra-legal policing practices”. Two measured syringe confiscation in the context of FSWs who inject drugs in settings where syringes can be obtained legally by prescription [88,90], and one looked at sexual coercion by police [4]. The remaining five studies (36%) considered between two and five measures to assess police practices towards sex workers. In two of these studies, police measures were made up of five items [70,84], although both of these used the same data and measures. Those papers containing more than one measure included a mixture of extra-legal policing practices, such as sexual coercion (e.g. sex exchanged for leniency or to avoid arrest or trouble) [70,83,84]; extortion (e.g. money, gifts, bribe) [70,83,84]; and condom confiscation [70,84]. Day-to-day policing strategies aside from arrest included, displacing sex workers and zoning restrictions [51], conducting workplace raids [70,84] and general policing presence [85].

Three papers considered the impact of interventions. The only one that focused on changing police behaviours evaluated the impact of a community-led structural intervention, targeting both FSWs and the police (including providing access to STI treatment, educating officers about HIV and conducting sensitivity meetings between officers and FSWs) [84]. The paper analyzed data from cross-sectional studies conducted over three different time points during the course of the intervention to explore changes in STI symptoms, inconsistent condom use and accepting more money for sex without a condom. The other two papers analyzed the results of a study that used a 2x2 randomized factorial trial in which participants were exposed to a combination of either a 30-minute didactic or interactive intervention focused on safe injection and sex practices [5,88]. One paper evaluated the efficacy of the different interventions on HIV and STI infection incidence, adjusting for the level of “recent arrest” in each intervention group [5]. The other paper looked at the efficacy of the interventions in reducing receptive needle sharing, with police behaviours as moderators (i.e. arrest and syringe confiscation) [88].

Frequency of police measures

Overall, the studies included in our analysis found that police measures were regularly reported by sex workers (Table 1). A simple average across the most common reported police measures within each study suggests that 34% of sex workers experienced at least one police measure (range: 6–49%). This average suggests that police measures are very common, granting that it is not a meta-analysis and must be evaluated cautiously. Arrest was the most commonly explored measure with between 6 and 45% of sex workers reporting having ever been arrested, similar to the level found in studies that

were limited to measuring arrests in the last six months or a year (range: 12–49%). Sexual coercion was observed between 3 and 37% of the time and police extortion between 12 and 28% across studies.

Study outcomes

We found that police measures were consistently, positively associated with either our primary (HIV infection or STI infection/symptoms) or secondary (HIV/STI testing and access, number of clients, condom use, and syringe use) outcomes of interest. Having ever been arrested was consistently associated with an increased risk of being currently infected with HIV or an STI. The strength of the association ranged between 1.5 and 2.3 times. It was also associated with inconsistent condom use (aOR range: 1.1–2.6). One study did find that arrest was associated with an increased probability of being tested for HIV (aOR: 2.7). Studies that were limited to arrest in the prior six months or a year still found positive associations with HIV and STI incidence (aOR: 2.7), current/recent STI (aOR range: 1.7–3.8) and inconsistent condom use (aOR range: 1.2–2.4). Other police measures were also found to be important. For example, sexual coercion was associated with current or recent HIV or STI infection (aOR range: 2.2–3.6) and inconsistent condom use (aOR range: 1.2–2). Similarly, police extortion was associated with current or recent HIV or STI infection (aOR range: 1.1–5.1) and inconsistent condom use (aOR range: 1.6–2.8). Syringe confiscation was associated with a 2.4 times increased odds of current HIV infection and 0.6 times the odds of safe injection. Finally, displacement by the police was associated with both inconsistent condom use (aOR: 3.1 times) and reduced (although not significantly) dual contraceptive use (aOR: 0.9).

In the 10 studies in which HIV infection or STI infection and symptoms were an outcome, eight found a significant positive association with at least one police behaviour. One notable exception is a study in Ecuador that found street enforcement was negatively associated with STI symptoms that ever occurred or were current. This represents the only study that found that a police measure was significantly associated with a reduction in any of our outcomes of interest. However, the results from this study should be treated with caution because the analyses were conducted at a population level across different communities with the outcome and exposure data coming from different sources. All seven papers that looked at HIV risk behaviours, instead of (or in addition to) HIV infection or STI infection as an outcome, found a significant association with at least one police behaviour. The most commonly measured HIV risk behaviour was inconsistent condom use [51,70,84,87,89].

Of those studies that were interventions [5,84,88], one directly considered the effectiveness of intervening on interactions between sex workers and the police [84]. The study in question reports that both negative interactions between FSWs and police, and the measures of HIV sexual risk, declined over time from early in the intervention to full implementation. Although these findings are important, the authors also report that the strong association between negative police experiences and HIV risk (e.g. STI symptoms, inconsistent condom use) remained stable and in some

cases increased. The other intervention studies both involved data from the same injection risk intervention [5,88]. One found that the intervention “buffered” the negative impacts of police behaviours on risky injection practice [88].

Discussion

This systematic review points to an important but nascent field of quantitative evidence supporting the significance of policing practices as an important structural HIV determinant in the lives of women who sell sex. We found substantial heterogeneity in both the police measures and the health outcomes considered by the different studies. However, despite the wide array of different associations considered, a significant association between the police measure and a HIV- and STI-associated outcome was reported across a wide range of police measures in the vast majority of analyses of the studies. These findings point to the potentially pivotal role that the police have as a structural determinant for HIV in this vulnerable population.

Methodology

The majority of included studies are cross-sectional, a study design often used for ease and practicality, particularly with respect to hard-to-reach populations, such as sex workers. Consequently, however, temporality and causation are difficult to establish. Ideally, there is a need for more prospective cohort designs, in which longitudinal data will allow for a more rigorous examination of the cumulative effects of negative police interactions on sex workers’ HIV-related outcomes. Aside from the limitations of relying primarily on cross-sectional study designs, other methodological limitations exist within the 14 studies. For example, three of the 10 studies [70,82,84] (30%) analyzed HIV or STIs not on the basis of biological testing, but instead relied on self-reported STI symptoms, which is not a validated proxy for STI prevalence [82]. In addition, four of the 14 studies (29%) either did not discuss the legal status of sex work or did not make clear whether the police practices (e.g. condom confiscation or syringe confiscation) were prohibited in the location where the study was conducted [5,82,88,91]. Because policies and regulations regarding sex work and drug enforcement differ widely by location, all studies analyzing police practices should have a clear understanding and articulation of the study setting’s legal environment in the methods. Finally, because directionality can be unclear, we excluded two papers [38,93] in which policing was considered the outcome variable rather than a structural factor shaping HIV risk outcomes. Addressing directionality can be difficult, however, and employing longitudinal studies in changing policing environments could prove invaluable.

Measurement

Few studies in this review focus on the measurement of police practices; for the most part, police practices were addressed by only one survey item. We found that most studies relied on crude measures of police behaviours, such as arrest for any offence, or ever having been arrested. First, the results could be biased by overestimating the effect on HIV or STI outcomes of policing activities that were unrelated to sex work and/or occurred years before the outcome

was measured. Second, arrest alone is a poor measure of law enforcement that overlooks officers' day-to-day discretionary enforcement activities other than arrest, as well as extra-legal practices towards sex workers. More focus is needed on measuring law enforcement practices, given the suggestion in the results of these few studies that activities carried out in the name of "public safety" could be an important HIV determinant, alongside more overt abuses of police power. With respect to extra-legal police practices, and mirroring the qualitative and grey literature, the broader context of sex workers' experience of sexual violence includes a strong focus on policing abuses. This is important, but also draws attention to the lack of empirical evidence supporting important findings in the grey literature around other forms of police abuse and rights violations. For example, condom confiscation is reported in multiple settings [32–34], yet only one author, working in one setting, addressed this topic in two papers [70,84]. In line with the two studies in this review that specifically focused on police practices towards sex work [70,84], police measures to capture a range of police interactions that can be collapsed into a summary measure are needed in future studies. Precise measurement is also lacking with respect to STI infection as an outcome. Of the 10 papers measuring STI as an outcome, only half identify the type of STI infection [4,5,86,87,90], limiting the ability to explore associations between policing and individual STIs. Providing additional detail on specific STIs may also allow us to account for factors that may be correlated with particular STIs (e.g. race/ethnicity, age).

Gaps and opportunities

Despite our findings of a consistent association between police practices and STI/HIV-associated outcomes, important gaps exist. In particular, the need remains for more quantitative studies to provide a stronger evidence base from which to understand the significance of police practices as part of sex workers' broader physical HIV risk environment. Specifically, only three of the 14 studies set out to explore the association between HIV outcomes and policing [70,84,86]. Instead, policing was typically considered a secondary exposure of interest. Policing practices as the main exposure of interest would give detail to the measurement of police behaviours, and provide an opportunity to establish more robust associations with HIV outcomes. It is of note that we identified only one study that sought to modify police behaviours [84]. Interventions that target police practices are needed, but prioritizing the intervention components that address policing is limited by the lack of empirical evidence about the epidemiology of police enforcement as a structural risk factor for HIV among sex workers.

This paper's data synthesis is guided by a conceptual model that specifically focuses on a legal determinants framework. Other frameworks, such as the Rhodes risk environment framework, may be better suited to capture the broader context and overlapping dimensions of the risk environment, which represents the space in which a variety of factors exogenous to the individual interact to increase the chances of HIV or STI infection [9]. Future research should look to dynamic conceptual frameworks that support a fuller exploration of

the interactions between law enforcement and other features of the environment, including methods that account for these complexities. For example, it is notable that virtually all the papers identified in our search operationalize law enforcement towards sex workers as a single individual-level exposure, common across all individuals. Further, only one study considered police activity as a spatially explicit structural determinant of risk [51]. Related research exploring drug-related law enforcement [28,29,94,95] points to the importance of employing geographic methods to capture the complexities of law enforcement strategies, which may differ greatly across locations. Models with location-specific (or other structural) covariates would move beyond oversimplifying the operationalization of law enforcement as a structural determinant for HIV or STI infection in sex worker populations. Attention should be given to broader data sets that allow meaningful comparison of sex workers across a range of different structural determinants. This needs to be coupled with developments in analytical methods that can help disentangle the impact of such different risk factors on HIV or STI incidence. In particular, the development of hierarchical modelling approaches that take into account different aspects of the structural environment offer an important step forward [26].

Given the small group of papers, it is noteworthy that four of the 14 studies were conducted in Mexico [5,82,88,90] and two in Russia [4,83], meaning 43% of the studies are focused in only two regions. There is a need for future research to reflect a greater geographic diversity that is able to capture both consistencies and differences in policing approaches towards sex workers globally. A final gap in this group of studies is the exclusion of women transgender sex workers. Only one of the 14 studies considers "women" inclusive of both cis and transgender women, and none consider just trans women [51]. A frequent justification for not including transgender women within cis women sex worker studies is that their unique individual, interpersonal and structural vulnerabilities require independent research. However, transgender sex workers are recognized as sharing many of the same structural risks, including those concerning the police [26,96,97]. A large proportion of street-based FSWs are also drug users and face the dual risk of negative police interactions and arrest, as highlighted in three of the papers we included [5,88,90]. Police measures that account for the broader range of negative police interactions experienced by those sex workers who use drugs, and transgender women who sell sex are needed.

Limitations of study

The review's outcomes should be viewed in light of several limitations. Our inclusion criteria were set so as to produce a narrow critique of the quantitative literature around the role of micro-level policing practices as a structural cause or mitigating factor for risk, and the potential median of structural interventions to reduce risk. We acknowledge the larger body of qualitative and grey literature that supports the role of police abuse and enforcement practices in sex workers' HIV risk environment. However, this review was concerned with critiquing the strength, generalizability and quality of the

present quantitative evidence base. We also exclude studies that looked at the association between police practices and sex workers' experience of violence. Acknowledging the extensive body of literature that supports the relationship [75], our focus was targeted to the influence policing practices have on more proximal HIV risk behaviours and HIV and STI outcomes among sex workers. Violence is more complicated in its association with HIV risk and has correspondingly been treated distinctly in the literature. The authors also recognize the broader legal and socio structural environment that can mitigate or potentiate sex workers' risk, of which police practices are only one part. However, it is important to critique individual structural determinants and explore the evidence for their place as "key" determinants for sex workers' HIV risk. We did not include male sex workers, due to their considerable diversity as a population and distinctiveness compared to FSWs [98]. We chose to include transgender women sex workers, not to undermine their more complex constellation of vulnerabilities, but to present women's experience of police as a structural risk factor. However, given that only one paper included transgender sex workers, the findings lack generalizability to this population. Finally, a meta-analysis was not undertaken due to the heterogeneity in risk factors explored by different studies. Despite these limitations, this review offers the most comprehensive analysis to date of policing practices as a mechanism for HIV outcomes among sex worker populations.

Conclusions

This review supports the broader literature's finding that there is a strong relationship between police practices and sex workers' HIV risk behaviours and HIV or STI infection. However, the review exposes a relatively small pool of quantitative epidemiological evidence. Of particular significance is the finding that nearly all the papers identified in this review operationalize policing as an individual-level exposure and fail to take account of the complexities of the risk environment in which law enforcement occurs. A pressing need remains for more epidemiology to better measure and more broadly document both legal and extra-legal enforcement practices as mechanisms through which sex workers' HIV risk is mediated. The science community should work in partnership with sex work communities and key stakeholders (e.g. police, legal service providers, brothel managers) to build evidence-based evaluations that are grounded in sex workers' experiences with police. However, it is vital to the success of such interventions that researchers continue to work across varied settings to achieve a more nuanced measurement of the role of police practices as a downstream legal determinant of sex workers' HIV risk environment.

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Competing interests

The authors declare they have no competing interests.

Authors' contributions

KF conceptualized the study, led the systematic review process and full text reviews and wrote the article. BS developed and implemented the search strategy and led the title, abstract review and data abstraction processes, assisted by KT. BS also drafted sections of the article. SS assisted with development of the search protocol and provided critical review of this article. All authors have read and approved the final version.

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Research article

Sexual violence from police and HIV risk behaviours among HIV-positive women who inject drugs in St. Petersburg, Russia — a mixed methods study

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Abstract

Introduction: Police violence against people who inject drugs (PWID) is common in Russia and associated with HIV risk behaviours. Sexual violence from police against women who use drugs has been reported anecdotally in Russia. This mixed-methods study aimed to evaluate sexual violence from police against women who inject drugs via quantitative assessment of its prevalence and HIV risk correlates, and through qualitative interviews with police, substance users and their providers in St. Petersburg, Russia.

Methods: Cross-sectional analyses with HIV-positive women who inject drugs ($N=228$) assessed the associations between sexual violence from police (i.e. having been forced to have sex with a police officer) and the following behaviours: current drug use, needle sharing and injection frequency using multiple regression models. We also conducted in-depth interviews with 23 key informants, including PWID, police, civil society organization workers, and other stakeholders, to explore qualitatively the phenomenon of sexual violence from police in Russia and strategies to address it. We analyzed qualitative data using content analysis.

Results: Approximately one in four women in our quantitative study (24.1%; 95% CI, 18.6%, 29.7%) reported sexual violence perpetrated by police. Affected women reported more transactional sex for drugs or money than those who were not; however, the majority of those reporting sexual violence from police were not involved in these forms of transactional sex. Sexual violence from police was not significantly associated with current drug use or needle sharing but with more frequent drug injections (adjusted incidence rate ratio 1.43, 95% CI 1.04, 1.95). Qualitative data suggested that sexual violence and coercion by police appear to be entrenched as a norm and are perceived insurmountable because of the seemingly absolute power of police. They systematically add to the risk environment of women who use drugs in Russia.

Conclusions: Sexual violence from police was common in this cohort of Russian HIV-positive women who inject drugs. Our analyses found more frequent injection drug use among those affected, suggesting that the phenomenon represents an underappreciated human rights and public health problem. Addressing sexual violence from police against women in Russia will require addressing structural factors, raising social awareness and instituting police trainings that protect vulnerable women from violence and prevent HIV transmission.

Keywords: sexual violence; gender-based violence; human rights; police involvement; People living with HIV/AIDS (PLHA); injection drug use; key populations; Russian Federation.

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Introduction

People who inject drugs (PWID) are a key population at increased risk of HIV transmission through unsafe drug injection practices with HIV-contaminated needles. In the Russian Federation (Russia), injection drug use (IDU) is the main route of transmission of a dramatically expanding HIV epidemic at risk of bridging from high-risk groups such as PWID or sex workers to the general population. Close to one million people in Russia are HIV-positive [1]. Simultaneously, the number of people estimated to be injecting drugs has increased, in the past five years alone by more than half

a million [2]. In Russia, 2.3% of the adult population (1.8 million people) inject drugs and 14.4% of PWID are HIV-positive, making the country one of the most affected by IDU and HIV [3].

In addition to personal behaviours (e.g. drug injection or sex practices), structural factors in the environments in which PWID live determine HIV transmission risks. These factors “produce” a risk environment [4]. For example, in previous Russian work involving 582 PWID, police violence against HIV-positive PWID was common and had adverse effects on HIV transmission risks. Police arrests were associated with

needle sharing and drug overdose [5]. Police abuse is so common in Russia that Russian society has coined the term police *besprediel*, or the sense that there are no limits to police power. This represents violence embedded in a social structure that perpetuates fear and terror, internalized stigma and a sense of helplessness and fatality especially among women [6]. Police violence is a problem for all PWID, but an assessment conducted in Russia suggests that police may treat women who inject drugs more harshly than men [7,8].

Women who inject drugs are marginalized and particularly vulnerable to violence. In qualitative studies in Russia on HIV and health risk, extrajudicial policing practices such as physical violence or arrests in the absence of illegal activities were commonly cited by PWID and produced fear and terror [6,9]. Consistent reports from human rights groups in Russia about police officers perpetrating sexual violence against female PWID suggest that sexual violence from police creates trauma that endures for years and contributes to women's unwillingness to seek harm reduction services [10]. An alternative report submitted by Russian civil society organizations (CSOs) to the 46th session of the UN *Commission on the Elimination of Discrimination against Women* documented sexual and physical violence perpetrated by police against women who inject drugs and trade sex [11]. The report deplored certain police practices (e.g. using drug use and prostitution offences as justification to harass or abuse women, extorting money, demanding sexual services or exposing women to physical and psychological violence).

These problems of police sexual violence against women who inject drugs and related HIV risk behaviours have not been well examined in Russia. This study aimed to determine the prevalence of sexual violence in Russia perpetrated by police against HIV-positive women who inject drugs and to evaluate potential-associated HIV risks. We also sought to understand qualitatively the phenomenon of sexual violence from police against women who inject drugs and possible strategies to address the problem, based on interviews with PWID, police and other key stakeholders working with PWID.

Methods

We conducted a secondary data analysis of 228 women reporting drug injection using baseline survey data from the HERMITAGE study, a randomized controlled trial among 700 HIV-positive Russian drinkers testing a behavioural intervention to reduce risky behaviours [12]. We did not include men in the analysis as only one man reported sexual violence from police. The recruitment of study participants is described in detail elsewhere [11]. In brief, from October 2007 to April 2010, we recruited HIV-positive risky drinkers with reported unprotected sex in the previous six months at four HIV care and addiction treatment sites in St. Petersburg, as well as at a needle-exchange programme which referred to the treatment sites. Entry criteria included the following: age 18 years or older, HIV infection, reported unsafe sex (anal or vaginal sex without a condom) in the past six months, any risky drinking in the past six months as defined by the US National Institute on Alcohol Abuse and Alcoholism (NIAAA) [13], provision of contact information, a stable address within 150 km of the city and the ability to provide informed

consent. Exclusion criteria were anticipated incarceration or intent to conceive a child. The parent trial is registered at ClinicalTrials.gov as NCT00483483.

Separately, from March through June 2012, we collected qualitative data in the form of 23 in-depth interviews with key informants to explore the phenomenon of police sexual violence in Russia and approaches to address the problem. The objective of the qualitative study component was to complement the quantitative findings by adding a variety of perspectives to explore the phenomenon of sexual violence from police through a broad range of perspectives on sexual violence from police against women who inject drugs. We recruited a variety of respondents, including PWID, police, CSO workers, and other stakeholders. Interviews were conducted by KL and FL, and a male and female research team familiar with the Russian health and addiction treatment system who are fluent in both English and Russian, have medical and anthropological training and are experienced in qualitative methodologies.

Participant recruitment and data collection

For the quantitative study, we collected baseline data during a face-to-face survey interview with a research associate. We conducted all interviews in the Russian language. Participants were compensated 200 rubles for the baseline assessment.

For the qualitative study, we purposively recruited potentially information-rich PWID, police officers, addiction-care providers, Russian CSO workers and experts from international organizations in Russia. For that purpose, we recruited through our network of contacts of people serving PWID, asking our partners to identify and refer to us those potential study participants whom they deemed most knowledgeable about drug use and sexual violence from police. All interviews were based on a semi-structured questionnaire, conducted in the Russian language in a private location convenient for participants (who were not compensated for participation) and audio-recorded. A bilingual Russian–English speaker translated the interviews into English during verbatim transcription from audio files for analysis.

The Institutional Review Boards of Boston Medical Center and St Petersburg Pavlov State Medical University approved this study.

Survey measures

Primary dependent variables were current (i.e. past 30 days) IDU and any reported lifetime overdose events. Receptive needle sharing in the past 30 days (i.e. having used a potentially contaminated needle that someone else had used) and the number of injections in the past 30 days were analyzed as secondary dependent variables in a sub-analysis among respondents reporting current IDU ($n = 117$).

The main independent variable was sexual violence perpetrated by police, which we measured by asking the question, "Have you ever been forced to have sex with a police officer?" Although we also measured other police involvement items such as syringe confiscations (syringes are not illegal in Russia) and arrests, these were not part of the definition of the main independent variable.

Other subject characteristics of interest included age, educational status (up to primary school completion [grade 9]

vs. higher), any history of incarceration, stigma scores (abbreviated Berger HIV stigma scale), depression scores (Beck's Depression Index-II), ever antiretroviral treatment, time since HIV diagnosis (under vs. over one year), risky alcohol use in the past 30 days (i.e. any as defined by the NIAAA), lifetime transactional sex (selling sex for money or drugs), incarceration, intimate partner violence victimization, childhood sex abuse victimization, suicide attempts and the number of unprotected sex encounters in the past 30 days.

Data analysis

Quantitative survey

We computed descriptive statistics and applied chi-square and Student *t*-tests to describe differences in subject characteristics between groups (police sexual violence victims vs. non-victims). Separate logistic (dichotomous outcomes) and Poisson (number of injections) regression models were used to assess association between sexual violence from police and the primary (current IDU, lifetime overdose) and secondary (receptive needle sharing and injection frequency) outcomes. Potential confounders included as covariates in adjusted models were age, stigma (Berger HIV Stigma Scale), depression, childhood sex abuse victimization, history of incarceration and involvement in transactional sex. These covariates were selected based on prior literature and clinical knowledge, suggesting that these factors may confound the association between sexual violence perpetrated by police and risk behaviours. The Poisson regression model used a Pearson's chi-square correction to account for overdispersion in the data. Spearman's correlations were used to assess correlations between independent variables and covariates, and no pair of variables included in regression models was

strongly correlated ($r > 0.40$). We performed all analyses using SAS, applying a two-sided significance level of 0.05.

Qualitative

We used Nvivo 10 software [14] to code and analyze qualitative data using a content analysis approach based on theoretical memos [15]. Two coders (FL and KL) conducted multiple coding cycles based on consensus to formulate units of organization and analytic codes. We used constant comparative coding such as systematic and far-out comparisons and focused coding to identify recurrent themes and patterns [16].

Results

Survey

The demographics and clinical characteristics shown in Table 1 suggest that a number of risk factors and behaviours are common in this cohort of Russian HIV-positive women who inject drugs. Of note, while a higher proportion of those reporting sexual violence from police also reported involvement in transactional sex, most affected women in this cohort were not sex workers.

We documented that almost a quarter (24.1%; 95% CI, 18.6%, 29.7%) of all women reported having been forced to have sex with a police officer (Table 2). The proportions reporting punitive policing practices appeared higher among victims of sexual violence than for those who were not victims.

Regression analyses did not show significant associations between the main independent variable reported sexual violence from police and the outcomes of current IDU, needle sharing or lifetime overdose. However, women who reported having been forced to have sex with a police officer reported more frequent drug injections (Table 3).

Table 1. Demographics and clinical characteristics of all HIV-positive women who inject drugs in the Russian HERMITAGE cohort stratified by history of sexual violence from police ($n = 228$)

	Overall $n = 228$	Reported sexual violence from police $n = 55$	Did not report sexual violence from police $n = 173$	<i>p</i>
Mean age (SD)	29.0 (5.4)	29.0 (4.8)	29.0 (5.6)	0.99
Education status beyond primary	123 (53.9%)	30 (54.5%)	93 (53.8%)	0.92
Incarceration, lifetime	65 (28.5%)	15 (27.3%)	50 (28.9%)	0.82
Injected drugs over 20 times in the past 30 days	87 (38.2%)	28 (50.9%)	59 (34.1%)	0.03
Stigma score (mean) ^a	24 (4.7)	24 (4.9)	24 (4.6)	0.87
Depressive symptoms (BDI-II)	179 (78.5%)	44 (80.0%)	135 (78.0%)	0.76
Ever been on ART	68 (29.8%)	14 (25.5%)	54 (31.2%)	0.42
> 1 Year Since HIV Diagnosis	180 (78.9%)	47 (85.5%)	133 (76.9%)	0.17
Risky alcohol use in the past 30 days	175 (76.8%)	42 (76.4%)	133 (76.9%)	0.94
Selling Sex for drugs or money, lifetime	40 (17.5%)	18 (32.7%)	22 (12.7%)	<0.01
Victim of intimate partner violence, lifetime	185 (81.1%)	47 (85.5%)	138 (79.8%)	0.35
Childhood sexual abuse	33 (14.5%)	9 (16.4%)	24 (13.9%)	0.65
Overdose events, lifetime	164 (71.9%)	44 (80.0%)	120 (69.4%)	0.13
Any suicide attempts, past 3 months	13 (5.7%)	3 (5.5%)	10 (5.8%)	0.93
Mean number of unprotected sexual encounters in the past 30 days (SD)	19.0 (37.7)	18.7 (29.7)	19.1 (40.0)	0.93

^aBerger stigma scale; higher score means more stigma.

Table 2. Police involvement of HIV-positive women who inject drugs in the HERMITAGE cohort, St. Petersburg, Russia (n = 228)

Police involvement	All women n = 228	Reported sexual violence	Did not report sexual violence
	Percentage (95% CI)	from police n = 55 Percentage (95% CI)	from police, n = 173 Percentage (95% CI)
Been forced to have sex with a police officer	24.1% (18.6%, 29.7%)	n/a	n/a
Had syringes taken from you by the police	44.3% (37.9%, 50.8%)	63.6% (50.9%, 76.4%)	38.1% (30.9%, 45.4%)
Been arrested for carrying a syringe	36.8% (30.6%, 43.1%)	60.0% (47.1%, 73.0%)	29.5% (22.7%, 36.3%)
Been arrested after the police “planted” syringes or drugs on you	37.7% (31.4%, 44.0%)	50.9% (37.7%, 64.1%)	33.5% (26.5%, 40.6%)
Been forced to give money to the police to keep from being arrested	66.7% (60.6%, 72.8%)	92.7% (85.9%, 99.6%)	58.4% (51.0%, 65.7%)

Qualitative study

We conducted interviews in Russian with 23 participants, including 6 PWID and 3 police officers, 4 addiction physicians (narcologists), 4 workers of Russian CSOs serving PWID and 5 experts from international non-governmental organizations or international organizations in Russia. Interviews lasted between 36 and 102 min.

When asked about police sexual violence against PWID, several male PWID responded that they were not aware of such issue:

[Is there sexual violence from police?] No, I haven't encountered it. Male PWID #4

Several of those serving PWID, again predominantly males, said that they had no first-hand experience:

[What is the interaction between police and drug users?] Some drug addicts, essentially women who are commercial sex workers, say that they were forced to have sexual relations with the police officers. But once again, this is what I have heard

several times just from drug addicts, not from the police. There are no cases in court, never. Patients don't like to discuss. *Male addiction physician #1*

Indeed, the police officers we interviewed (all male) expressed that sexual violence was a foreign concept, almost absurd to think of. This officer also pointed out that it carried a risk:

[Is there sexual violence from police toward drug users?] I don't know. I haven't heard about it. Haven't even thought about that. [...] Before you asked this question I have never even thought about sex with a drug user. One would feel pity, disgust, even fear of AIDS. Male police officer #1

For others, particularly but not only female respondents, it was clear that sexual violence against women is an everyday phenomenon that particularly affects women who use drugs. Like this informant explains:

I witnessed this one instance; I'm discussing something with the police. Someone says "yesterday they

Table 3. Multivariable regression models to evaluate associations between reported sexual violence from police and dependent variables. Note that the associations with current injection drug use (primary), overdose (primary) and needle sharing are expressed as adjusted odds ratios (AOR), whereas the association with injection frequency is expressed as incidence rate ratio (IRR)

Dependent variable	Victims of police sexual violence n = 55		AOR/IRR ^a estimate (95% CI)	p
		Non-victims n = 173		
Among PWID reporting ever IDU (n = 228)				
Current IDU (past 30 days)	33 (60.0%)	84 (48.6%)	1.3 (0.65, 2.6)	0.46
Overdose (lifetime)	44 (80.0%)	120 (69.4%)	2.0 (0.94, 4.40)	0.07
Among PWID reporting current IDU (past 30 days)				
	n = 33	n = 84		
Receptive needle sharing (past three months)	18 (54.5%)	39 (46.4%)	1.26 (0.53, 2.98)	0.60
Mean injection frequency, past 30 days (SD)	73 (46)	51 (43)	1.43 ^b (1.04, 1.95)	0.03

^aLogistic (binary outcomes) or Poisson (number injections) regression models adjusted for the following covariates: age, depression, stigma score, childhood sexual abuse, incarceration, selling sex in the past three months. The associations with current injection drug use (primary), overdose (primary), and needle sharing are expressed as adjusted odds ratios (AOR) [or the relative odds that the event will occur among those reporting sexual violence from police vs. those who do not], whereas the association with injection frequency is expressed as incidence rate ratio (IRR) [or the ratio of incidence rates for those reporting sexual violence from police versus those who do not]; ^bRepresents adjusted IRR from overdispersed Poisson regression model adjusted for the following covariates: age, depression, stigma score, childhood sexual abuse, incarceration, selling sex in the past three months.

brought this drug user. His wife came and begged to release him. I said let's sleep together and I'll release him. And I got laid." And this type of stuff happens all the time, not even talking about drug users, this happened to a regular woman. But for female drug users, it's straightforward. They just say "we'll write this down, and now you'll come with us we'll do this and that. And that's it." [...] There's no question about police sexual violence toward drug users, that's routine. If they catch a female drug user, she will 100% service them, and then they will return to business. *Male PWID #3*

While many assumed that women involved in selling sex were at particular risk of sexual violence, others pointed out that women in general and those who use drugs in particular are vulnerable. This CSO representative refers to triple stigma when she explains:

Women drug users have no protection. People feel they need to be protected from drug users. Some women are triple stigmatized, because they are drug users, they are female drug users, and they are HIV positive female drug users. *Female international expert #3*

Another Russian CSO representative reasoned that even though sex workers are more vulnerable, women who inject drugs and are not sex workers are also at risk of sexual violence from police:

[*Who do you think becomes a victim of sexual violence?*] In our city [St. Petersburg] it is mostly sex workers, because they're exposed fully and they just stand on the streets, and police can pick them up, any time, any day. But, any drug user can become a victim. Like, for example, one woman told me how even before she became a sex worker, she had this interaction with her local police officer who wanted to rape her. So, any kind of vulnerable woman can become a victim. *Female CSO staff #4*

Women who use drugs and engage in sex work may not view these abuses as "violence," but as transactional in nature – trading sex to avoid police harassment. This CSO respondent explained that women who inject drugs and sell sex perceive sexual violence not as violence, but rather as sexual coercion being an "occupational hazard" for those who are known to sell sex:

When we were talking to a group of IDU women about this very issue of police violence, the question was basically, what sort of violence do you encounter when dealing with the police? And we talked about a few things, but it only came up LATER [*emphasis*], when we were talking about the issue of police treatment, uh . . . that the police sometimes coerce some sort of sexual favor to leave them alone. So it's not like they're BEATEN [*emphasis*], into submission? But it's coercion. And what was interesting was that, when I had asked the question about violence earlier, and I had used that

word, "violence," they didn't mention it in THAT [*emphasis*], context. [...] So they didn't necessarily see the sexual coercion as "violence," but more as, um, like almost . . . I, I don't want to say "an occupational safety hazard," but kind of like, the cost of doing business. [...] Sometimes they don't even understand that WHAT they're being subjected to can be characterized as violence. It's just so much a part of what they have had to deal with over the years they've been a sex worker or a drug user that it doesn't even register. They see violence only as being beaten. But they don't see, necessarily, the coercion of sexual services as an example of police violence. *Male international expert #5*

Another CSO representative explained how coercive arrangements of sexual violence against sex workers are apparently rooted in a former Soviet concept of volunteering labour, applying the term to a coercive, abusive "arrangement":

Sex workers are considered "subbotniki." Subbotniki is an old word, from the Soviet era, which refers to the day when you work for free. So, on Saturday [subbota in the Russian language], all the Soviet people had to work for free, for the state. And now, police see these sex workers as subbotniki. So, they serve their wishes. They are street sex workers, really poor drug users, and many of them don't have pimps, so they're really unprotected. And often, the police just comes and they say, "Okay. Now you have to work for me for free," and they take them away and rape them. They take them away and they have to provide them sex services for free. They are pressured to provide them with free sex. But apart from free sex, they also really are abusing them. They beat them or threaten to kill them. And these people feel really unprotected because they say, "We're sex workers, we are junkies and the police can do anything with us. Even if they kill us, no one will even care, because nobody will look for us and nobody will start any kind of investigation." So, police feel really unthreatened and they can do whatever they want. *Female CSO staff #3*

Due to the power imbalance between police and PWID, affected women have little chance to seek justice for what happens to them. Like this addiction-care provider, several respondents said that women are hesitant to disclose the problem because of an environment of mutual distrust between PWID and others in society.

Drug addicts don't like to discuss violence. Basically, they are not telling anybody, not even their doctor, who could not do anything about it anyway. There is no way to prove that they were beaten or forced to have sex with a police, it is just possible, no one would believe it coming from a drug addict. Even I am not always believing in what they're saying, they are drug addicts. *Male addiction physician #1*

Notwithstanding the different perceptions of what constitutes violence in the context of police forcing women who inject drugs to have sex with them, women (including sex workers) who have endured police sexual violence experience it as an unbearable trauma. The power imbalance between police and women seems so drastic that women who inject drugs and those who serve them hardly see any solution to the problem. This CSO representative's account also reflects the secondary trauma to the people witnessing the trauma when she recalls:

After hearing what those sex workers told me [about the police violence they had been exposed to], I wanted to switch off my head. For six hours I just lay in my bed, I couldn't move. It's . . . indigestible, you know? You can't imagine how it happens on an everyday basis. How these women are totally, absolutely powerless. They understand they can be killed, they can be raped, they can be abused in any possible way by the police officers, and nobody can protect them. Nobody can do it, you know? *Female CSO staff #3*

Discussion

This study documents a high prevalence (24%) of sexual violence from police in a cross-sectional analysis of a cohort of Russian HIV-positive women who inject drugs. Gender-based violence against women is a global public health problem. It is a criminal justice issue and has far reaching health impact beyond immediate trauma [17]. A recent review of sexual violence globally found that more than 7% of women have ever experienced non-partner sexual violence, with a prevalence of 6.9% in Eastern Europe [18]. The proportion of women having experienced sexual violence from police in this study (24%) represents over three times the regional rate of non-partner sexual violence against women (which is not limited to police). This indicates an epidemic of sexual violence against HIV-positive women who inject drugs perpetrated by law enforcement.

This study found that women who report sexual violence from police have higher rates of punitive police involvement such as arrests and planted evidence. Sexual violence from police against women who inject drugs is associated with the risk of more frequent injections, suggesting that oppressive policing adds to the risk environment. Sexual violence is both a criminal and human rights violation. Among PWID, it carries many HIV and health risks. Due to its cross-sectional design, our study cannot infer any causality or direction of causality between violence and risk behaviours. While sexual violence from police could increase affected women's risk behaviours, the inverse might also be the case: women who are, obvious to police, using drugs and engaging in risky behaviours might be more vulnerable to their abuse and even sexual violence than those whom they do not perceive as drug users. A study conducted in Vancouver, Canada, found that PWID who experienced sexual violence in their lives were more likely to become infected with HIV, be involved in transactional sex, share needles, attempt suicide and experience an overdose [19].

The quantitative study showed that trading sex for drugs or money is not associated with women's risk of sexual

violence from police. However, sexual violence from police is not limited to women who sell sex for drugs or money, albeit they are particularly vulnerable [20]. Notably the majority of women affected by sexual violence from police in our study did not report a history of sex trade. The qualitative data indicate that the sexual violence from police reported in the quantitative study may be underreported, as forced sex from police in exchange for freedom from harassment or prosecution is common and may not even be viewed as sexual violence or rape. Women do not always define these traumatic events as violence, but the trauma can be felt without that labelling. Our qualitative findings emphasize that victimization of sex workers is highly traumatizing. For women selling sex for drugs or money, sexual violence can include not getting paid for sex, sexual harassment, sexual exploitation and rape [21]. In a study of almost 900 female sex workers conducted in St. Petersburg and Orenburg, sexual coercion by police (reported by 38% of women) and rape during sex work (reported by 64%) were associated with IDU and binge alcohol use [22].

The relationship between police and women who inject drugs, particularly those involved in transactional sex, is complex, as sexual coercion can involve offers of protection from prosecution, detention or police harassments [22,24]. In this study, the police exploitation of the illegal nature of sex work, referred to as *subbotnik*, is a euphemism referring to police demanding sex in exchange for leniency towards pimps and sex workers [25]. A recent study conducted in Moscow emphasized that this practice exposes both sex workers and police officers to substantial HIV risks, as coerced sex with police is associated with increased risks of HIV and other sexually transmitted infections [26]. Our study findings add that the coercive character of *subbotnik* is based on a power imbalance between police and vulnerable women, which facilitates human rights abuse and the circle of coercion and victimization.

Our qualitative analyses indicate that that sexual violence from police is common, unchecked, and incites helplessness and trauma for women in ways that may exacerbate risky drug use, while those unaffected by the issue remain unaware, impeding their ability to serve as allies against this violence.

The qualitative data also suggest that sexual violence is under-recognized, including by male PWID, while our quantitative data indicate that the phenomenon of police sexual violence is pervasive. According to existing literature, sexual violence from police does not seem to be limited to St. Petersburg. A study conducted in other parts of Russia (Moscow, Barnaul and Volgograd) described variety of police-perpetrated violence, including extreme forms such as torture and rape, as acts of "moral" punishment of PWID and to extort confessions from them [6]. Women believed the law enforcement and legal systems to be corrupt and ineffective. Stigma, police abuse and fear of police deter women from seeking help when they experience violence perpetrated by clients or others [7]. Police sexual violence and coercion occur in other countries. In a study of over 300 women in a US drug court, 25% reported a lifetime history of sexual encounters with police. Of those women, 96% had sex with an officer on duty, 77% had repeated exchanges, 31% reported rape by an

officer and 54% were offered favours by officers in exchange for sex [27].

This study's quantitative data were collected until 2010 and the qualitative data in 2012. We did not find any indications for policy or other changes in Russia that might have potentially changed our findings or conclusions. A study conducted before and after the 2011 police reforms in Russia did not observe major organizational culture changes in the police system [28].

While human rights groups have reported on the issue for some time, our findings suggest that police sexual violence represents an underappreciated human rights and public health problem. As in many settings, women affected by sexual violence in Russia can be highly stigmatized. This study's qualitative findings indicate that this stigmatization is much more likely for women who use drugs and/or have HIV. Concealment of sexual violence from police by affected women because of the associated stigma limits awareness about this health and human rights problem, even among male peer PWID and domestic and international organizations. This lack of awareness perpetuates the vicious cycle of vulnerability and victimization. In this complex context, several stigma identities related to HIV infection, drug use and sex work might interact. To mitigate these adversities, raising social awareness and empowering affected women might strengthen their resilience and protect them from violence. The larger restrictive drug policy environment and structural factors such as lack of accountability, criminalization of drug use and sex work that create the ground for discrimination and sexual violence, even when not perceived as such, urgently require larger reforms [29–30].

Not only female victims are exposed to risks. Police officers who have sex with HIV-positive women expose themselves and their sexual partners to an increased risk of HIV transmission. Sexual violence from police against women, assessed in US drug courts, involved unprotected sex in for almost half of the women (49%) [26]. Police training needs to raise awareness for victims' human rights violations and traumatization, and also for HIV risks for perpetrators. Framing HIV risks in an occupational health context has been shown to increase risk awareness in the United States and Kyrgyzstan [32–33].

Limitations

The quantitative aspect of this study was observational in design and thus limited in its ability to assign causality or ascertain the directionality of the observed association between police sexual violence and injection frequency. While sexual violence from police might lead women to inject more often, reverse causality is likewise conceivable. Those who inject more frequently are more likely to be exposed to police and might be more vulnerable to victimization or less likely to resist sexual violence. More research on the causality of the observed associations and their mechanisms is needed.

For our qualitative study, we recruited a broad range of respondents, which limited our ability to explore in depth the perceptions of particular respondent groups. Our qualitative data are narratives from respondents willing to talk to us, and we were limited in our ability to directly interview perpetrators and victims.

Conclusions

Sexual violence perpetrated by police against women who inject drugs in this cohort of HIV-positive Russians is unacceptable and warrants further study and intervention. Taken together, quantitative and qualitative data suggest a potentially pervasive sexual violence by police against women who inject drugs that is largely unrecognized by male PWID and others who are not directly affected. In this study of HIV-positive women with current IDU, sexual violence from police was associated with more frequent IDU. These findings implicate sexual violence as adding to the risk environment of HIV-positive women who inject drugs.

Sexual violence from police represents an under-recognized human rights and public health problem, and policy efforts reacting to this evidence are urgently needed. These forms of sexual violence have far-reaching health and social consequences. Raising social awareness and calling and exposing episodes of sexual violence from police for the criminal and human rights offences that they are, are crucial to reengineering the culture that currently condones this. Furthermore, interventions are needed to build resilience among affected women, protect them from violence and reduce HIV transmission that follows from sexual violence from police.

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Competing interests

No authors have any competing interests.

Authors' contributions

All authors contributed to the design of the study. EK and EB oversaw data collection and management. KL, AR, DC, EQ, CB, EK, AW and JS drafted the quantitative analytical plan, and EQ conducted the analysis. KL and FL collected and analyzed the qualitative data, to which AR, JL and JS contributed with important intellectual inputs. KL drafted the article. All authors provided feedback on drafts and approved its final version. KL had full access to all the data in the study and had final responsibility for the decision to submit the study for publication.

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Research article

Pre-incarceration police harassment, drug addiction and HIV risk behaviours among prisoners in Kyrgyzstan and Azerbaijan: results from a nationally representative cross-sectional study

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Abstract

Introduction: The expanding HIV epidemic in Azerbaijan and Kyrgyzstan is concentrated among people who inject drugs (PWID), who comprise a third of prisoners there. Detention of PWID is common but its impact on health has not been previously studied in the region. We aimed to understand the relationship between official and unofficial (police harassment) detention of PWID and HIV risk behaviours.

Methods: In a nationally representative cross-sectional study, soon-to-be released prisoners in Kyrgyzstan ($N = 368$) and Azerbaijan ($N = 510$) completed standardized health assessment surveys. After identifying correlated variables through bivariate testing, we built multi-group path models with pre-incarceration official and unofficial detention as exogenous variables and pre-incarceration composite HIV risk as an endogenous variable, controlling for potential confounders and estimating indirect effects.

Results: Overall, 463 (51%) prisoners reported at least one detention in the year before incarceration with an average of 1.3 detentions in that period. Unofficial detentions (13%) were less common than official detentions (41%). Optimal model fit was achieved ($X^2 = 5.83$, $p = 0.44$; Goodness of Fit Index (GFI) $GFI = 0.99$; Comparative Fit Index (CFI) $CFI = 1.00$; Root Mean Square Error of Approximation (RMSEA) $RMSEA = 0.00$; PCLOSE = 0.98) when unofficial detention had an indirect effect on HIV risk, mediated by drug addiction severity, with more detentions associated with higher addiction severity, which in turn correlated with increased HIV risk. The final model explained 35% of the variance in the outcome. The effect was maintained for both countries, but stronger for Kyrgyzstan. The model also holds for Kyrgyzstan using unique data on within-prison drug injection as the outcome, which was frequent in prisoners there.

Conclusions: Detention by police is a strong correlate of addiction severity, which mediates its effect on HIV risk behaviour. This pattern suggests that police may target drug users and that such harassment may result in an increase in HIV risk-taking behaviours, primarily because of the continued drug use within prisons. These findings highlight the important negative role that police play in the HIV epidemic response and point to the urgent need for interventions to reduce police harassment, in parallel with interventions to reduce HIV transmission within and outside of prison.

Keywords: prisoners; police harassment; Azerbaijan; Kyrgyzstan; addiction severity; HIV risk behaviours; drug injection.

To access the supplementary material to this article please see [Supplementary Files](#) under Article Tools online.

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Introduction

Despite marked declines globally, HIV incidence and mortality continue to rise in Central Asia and the Southern Caucasuses – two neighbouring regions comprised of former Soviet Union (FSU) states [1]. People who inject drugs (PWID) are responsible for approximately 70% of new HIV infections in Central Asia [2]. The scenario in the Southern Caucasuses is more mixed, but injection accounts for over half of all HIV transmission in Azerbaijan and Georgia, two of the region's three countries [3]. Kyrgyzstan and Azerbaijan are representative of Central Asia and the Southern Caucasuses, respec-

tively, with epidemics that are highly concentrated among at-risk populations, in particular PWID [4]. At 32.4%, Kyrgyzstan has the highest upper estimate of HIV prevalence in PWID in the region. In Azerbaijan, HIV prevalence among PWID ranges between 19 and 24% [5]. Throughout Central Asia and the Southern Caucasuses, opioids are the primary drugs injected, likely due to their availability from heroin trafficking originating in nearby Afghanistan [6].

One of the major global challenges to addressing the HIV epidemic among PWID has been the legal environment facing PWID, specifically the criminalization of drug possession, use

and addiction [7–11]. Policing practices play a major role in constructing this “risk environment” [10,12] promoting risky behaviour such as rushed injection [13,14], overdose [15], use of non-sterile syringes [13,16], and undermining uptake of and adherence to increasingly available evidence-based options for the prevention of HIV transmission among PWID, such as needle-syringe programmes (NSP), opioid agonist therapies (OAT) with methadone or buprenorphine, and antiretroviral therapy (ART) [17–20]. Policing practices that affect PWID include targeted enforcement at treatment facilities [21,22], intimidation of providers [23,24] and syringe confiscation [25]. Particularly damaging may be unofficial detention of PWID (involving no formal charges and often undertaken outside the scope of the law), which can be conceptualized as a form of police harassment. A recent study in Ukraine found this practice to be common, often resulting in opioid withdrawal and prolonged interruptions of ART and OAT [17].

In Central Asia and the Southern Caucasus, arrests and detentions of PWID, both official and unofficial, are common [10,26–29]. Neither the prevalence of unofficial detention of PWID nor its impact on health, however, has been examined in these regions. This study aims to understand the prevalence of pre-incarceration police detention among nationally representative incarcerated PWID, as well as the comparative impact of official and unofficial detention on PWID HIV risk behaviour, such as unprotected sex and use of non-sterile injection equipment in Kyrgyzstan and Azerbaijan. The focal research question here is whether police target PWID and whether such targeting is associated with increased HIV risk-taking behaviours.

Methods

The sampling, inclusion criteria and survey methods with survey content have been previously described [29,30]. Briefly, a nationally representative biobehavioural health survey of prisoners within six months of release was conducted from February to November 2014. Eligible adult prisoners were randomly sampled from 8 prisons in Kyrgyzstan ($N = 368$) and from 13 prisons in Azerbaijan ($N = 510$). They completed confidential, self-administered surveys assessing HIV risk, health status and criminal justice involvement using audio-computer-assisted self-survey instruments (ACASI) on touch-screen laptop computers [31] to ensure anonymity, minimize social desirability bias, and facilitate ethical principles of conducting research with prison populations [32]. Participants were randomly selected from all sentenced prisoners within six months of release in non-specialized facilities in both countries using a stratified random sampling scheme [33] previously validated in Eastern Europe and Central Asia [29,30,34]. Inclusion criteria for participation included (1) ≥ 18 years, (2) currently serving a sentence in a non-specialized facility and (3) scheduled to be released within six months. Specialized facilities (juvenile detention and hospital prisons) and pre-trial detention centres were not included. Experienced research assistants (RAs) from local NGOs that work with prisoners underwent extensive training on study methods and confidentiality procedures. They used a random assignment chart to select participants who were informed

by prison staff that they were randomly selected for participation in a voluntary and anonymous health study. The enrolment was kept proportional to the number of prisoners within six months of release in each country (50% for Azerbaijan and 40% for Kyrgyzstan). From an estimated 1037 inmates in non-specialized facilities meeting eligibility criteria in Azerbaijan, 535 were selected, and 25 (4.7%) refused participation. The eligible sample size in Kyrgyzstan was 938 inmates, and among 381 selected participants, 13 (3.4%) did not provide informed consent.

Study measures

Surveys were originally constructed in English, translated into Russian, Azeri and Kyrgyz languages, back translated into English [35], reviewed by bilingual researchers and piloted to ensure clarity, quality and respondents’ comprehension. In addition to demographic characteristics, the 10-item Clinical Epidemiological Survey of Depression (CES-D 10) [36]; Zung anxiety scale [37]; and WHO’s Alcohol Use Disorders Inventory Test (AUDIT) [38] were included. The Addiction Severity Index – Lite Version [39] was used to measure addiction severity.

HIV risk behaviours were measured using an adapted set of items from NIDA’s Risk Behavior Assessment (RBA) addressing sexual and drug risk-taking behaviours in the 30-day period prior to the arrest that resulted in the current incarceration. Sexual risk was measured by frequency of unprotected sex events, and drug risk was measured by the number of injection days multiplied by the average number of injections per day using non-sterile injection equipment. The sum of these items formed a composite measure, *HIV Risk* [40]. Noteworthy, in Kyrgyzstan, due to more lenient regulations, relative to the ones that exist in Azerbaijan, which did not require reporting drug use to the prison department, questions about within-prison injection-related risk behaviours were assessed during the survey. This provided a unique opportunity to measure current within-prison drug injection (WPDI) [30]. WPDI was measured as a binary response to whether or not injection occurred during the current incarceration. Social support was measured using the Multidimensional Scale of Perceived Social Support [41].

Detention measures

Detention was defined as an event of being detained in police lock-up the year before incarceration when that event did not lead to the current incarceration. Using previously defined measures [17], detention history consisted of two measures asking respondents to report the number of *official* and *unofficial* detentions in the year before the current incarceration. An official detention was defined as detention accompanied by formal charges, whereas an unofficial detention was defined as detention not accompanied by a charge (e.g. drug possession, theft). Based on previous research in the region, unofficial detentions are considered a form of police harassment [17]. The sum of these two items served as the composite measure of *detention*. Further, respondents were asked about each of the following adverse effects during their unofficial and/or official detention: symptoms of abstinence syndrome (withdrawal from opioids), interruption of HIV and

OAT medications for more than 24 hours, and inability to see a medical provider if needed. Respondents were also asked whether their drug use, access to OAT, HIV or TB treatment was used to extract a confession, and whether they were stopped, searched, held or arrested while traveling to or from a NSP site.

Data analysis

To guide our analysis, we hypothesized that police may selectively target PWID and that such harassment practices may translate into increased HIV risk behaviours. Hence, the focal interest in the analyses was the relative association of official and unofficial detention with drug addiction severity and with the outcomes: HIV risk behaviours and WPDI. For the cross-cultural analysis between the two countries, the primary outcome measure was HIV risk, while for the Kyrgyzstan sub-analysis, the primary outcome was current WPDI, which measures present time injection and therefore provides a unique opportunity to establish temporal ordering in our cross-sectional data.

SPSS, version 22, was used to compute correlation and multiple regressions to assess multivariate relationships among the variables. Non-parametric χ^2 tests and independent sample *t*-tests were utilized to measure differences between detained and not detained participants on each of the described measures. The structural equation modelling programme AMOS.22 was utilized to perform a multi-group path analysis. To calculate indirect effects and investigate potential mediating relationships among the variables in the model, we used the AMOS bootstrapping procedure [42], a recommended analytic strategy for avoiding measurement error and underestimation of the mediation significance [43].

Ethics statement

Institutional Review Boards at Yale University, the Ukrainian Institute on Public Health Policy and the Kyrgyzstan Ministry of Health approved the study. Further ethical and safety assurances were provided by the Office for Human Research Protections (OHRP) in accordance with 45 CFR 46.305(c)

“Prisoner Research Certification” requirements. Participants provided written informed consent prior to study participation.

Results

Tables 1 and 2 provide descriptive statistics for detained and not detained prisoners in the year before their current incarceration in Kyrgyzstan and Azerbaijan, respectively. The prevalence of recent detention was 51.5% in Kyrgyzstan and 34% in Azerbaijan. In both countries, detained participants reported higher average prison sentences, more years in prison, lower age of first incarceration and higher frequency of unprotected sex relative to prisoners who had not been detained. In Kyrgyzstan, injection within the current incarceration was higher among detained than not detained prisoners. In Azerbaijan, detained prisoners reported higher instances of injection and polysubstance use, as well as higher levels of social support. Table 3 provides details on experiences associated with official and unofficial detention among detained prisoners in both countries.

Importantly, there was no difference between PWID and people who did not inject drugs in their experiences with official detention ($t > 1.32$, $p > 0.18$ for both countries), but there was a difference in reports of unofficial detention. Specifically, PWID experienced significantly higher unofficial detention by police relative to people who did not inject drugs in Azerbaijan ($M = 0.22$, $SD = 0.72$ vs. 0.05 , $SD = 0.26$, $t = 2.76$, $p = 0.01$) but not in Kyrgyzstan ($t = 1.83$, $p = 0.07$).

Effects of detention in Azerbaijan and Kyrgyzstan

The inter-correlation between official and unofficial detention was weak, but significant ($r = 0.19$), and both detention variables differed in significance and magnitude in their association with drug addiction severity and HIV risk (Table 4). To explore the relative effects of detention on HIV risk-taking and investigate potential mediating relationships among the variables identified as significant correlates through bivariate testing while also accounting for moderating impact of each country, we performed a multi-group path analysis with official and unofficial detention as exogenous variables, addiction

Table 1. Comparison of detained and not detained participant characteristics in Kyrgyzstan (N = 355)

Characteristics	Valid N	Total n (%)	Not detained n (%)	Detained n (%)	<i>p</i> *
Mean age (SD)	352	37.6 (11.3)	37.3 (11.2)	38.0 (11.4)	0.561
Male gender	353	273 (77.3)	107 (68.6)	166 (84.3)	0.001
Mean prison sentences before this incarceration (SD)	220	3.5 (2.2)	1.69 (2.2)	2.53 (2.6)	0.001
Mean lifetime years in prison (SD)	353	8.2 (6.9)	6.5 (5.5)	9.6 (7.5)	< 0.001
Mean age of first incarceration (SD)	353	26.2 (11.2)	29.0 (9.9)	24.0 (12.1)	< 0.001
Alcohol dependence in the year before this incarceration	352	150 (42.6)	58 (37.2)	92 (46.9)	0.082
ASI drug use composite score (SD)	350	0.08 (0.09)	0.07 (0.01)	0.08 (0.09)	0.177
Injected during current incarceration	353	69 (19.3)	21 (13.5)	47 (23.9)	0.015
Sexual intercourse without condom in 30 days before incarceration	352	175 (49.7)	72 (46.2)	103 (52.6)	0.139
Mean episodes (unprotected sex)	175	4.2 (7.7)	3.0 (6.5)	5.1 (8.4)	0.013
Moderate to severe symptoms of depression	353	118 (33.4)	58 (37.2)	60 (30.5)	0.212
Social support	355	2.8 (1.0)	2.8 (0.9)	2.8 (1.0)	0.654
Anxiety disorder	353	22 (6.2)	9 (5.8)	13 (6.6)	0.827

*Compares detained vs. not detained. Significance defined as $p < 0.05$, and marked in bold.

Table 2. Comparison of detained and not detained participant characteristics in Azerbaijan (N = 496)

Characteristics	Valid N	Total. n (%)	Not detained n (%)	Detained n (%)	p*
Mean age (SD)	496	38.2 (8.9)	38.3 (8.7)	37.6 (9.1)	0.404
Male gender	496	447 (90.1)	319 (97.6)	128 (75.7)	< 0.001
Mean prison sentences before this incarceration (SD)	152	1.6 (0.7)	1.5 (0.7)	1.8 (0.7)	0.005
Mean lifetime years in prison (SD)	496	4.6 (3.8)	3.7 (0.2)	3.8 (0.3)	0.002
Mean age of first incarceration (SD)	487	30.1 (8.8)	30.7 (8.8)	28.8 (8.6)	0.023
Alcohol dependence in the year before this incarceration	496	50 (10.2)	29 (8.9)	21 (12.7)	0.209
ASI drug use composite score (SD)	482	0.06 (0.04)	0.06 (0.04)	0.07 (0.05)	0.116
Ever injected drugs	496	157 (31.7)	100 (30.6)	57 (33.7)	0.478
Substance use in 30 days before this incarceration	466	166 (35.6)	105 (32.8)	61 (41.8)	0.076
30 or more injections	131	24 (18.3)	11 (12.6)	13 (29.5)	0.030
Used more than one substance	496	38 (7.7)	16 (4.9)	22 (13.0)	0.002
Sexual intercourse without condom in 30 days before incarceration	495	176 (35.5)	102 (31.3)	74 (43.8)	0.007
Mean episodes (unprotected sex)	176	16.7 (13.2)	0.06 (0.04)	0.07 (0.05)	0.623
Moderate to severe symptoms of depression	491	126 (25.4)	90 (27.7)	36 (21.7)	0.157
Social support (SD)	496	3.1 (1.2)	2.9 (1.2)	3.6 (0.9)	< 0.001
Anxiety disorder	490	23 (4.7)	17 (5.2)	6 (3.6)	0.504

*Compares detained vs. not detained. Significance defined as $p < 0.05$, and marked in bold.

severity as a mediator, and composite HIV risk as an endogenous variable. We controlled for depression, anxiety, social support and the presence of alcohol use disorders and estimated indirect effects via bootstrapping procedures, while step-wise eliminating insignificant paths and “hanging” variables.

Optimal model fit was achieved ($\chi^2 = 5.83$, $p = 0.44$; GFI = 0.99; CFI = 1.00; RMSEA = 0.00; PCLOSE = 0.98) when unofficial detention had an indirect effect on HIV risk, fully mediated by drug addiction severity, with more detentions associated with higher drug addiction severity – in turn correlating with increased HIV risk-taking behaviours. There were two significant covariates in the model (Table 5). The

multi-group model with an identical path structure was a good fit to the data as well ($\chi^2 = 1.98$, $p = 0.37$; GFI = 0.99; CFI = 1.00; RMSEA = 0.00; PCLOSE = 0.84). Our final aggregate model is presented in Figure 1, and the multi-group moderated mediation results with indirect, direct and total effects for both countries presented in Table 6. For both countries, addiction severity fully mediated the effect of unofficial detention on HIV risk, whereby unofficial detention was positively associated with addiction severity that in turn was positively associated with HIV risk-taking behaviours. Both the association between addiction severity and HIV risk, and the indirect effect from unofficial detention to HIV risk, were higher in Kyrgyzstan. The final model explained

Table 3. Experiences associated with police detention among prisoners in Kyrgyzstan and Azerbaijan, accounting for official and unofficial detention

Detentions and related events (year before current incarceration)	Valid N		Total n (%)		Official detention ^a n (%)		Unofficial detention ^a n (%)	
	KYR	AZ	KYR	AZ	KYR	AZ	KYR	AZ
Country								
Detained	355	496	183 (51.5)	169 (33.9)	182 (51.5)	169 (33.9)	76 (21.4)	35 (7.0)
Mean number (SD)	352	496	3.1 (4.7)	2.4 (2.3)	1.4 (1.3)	1.8 (1.3)	4.8 (6.2)	1.5 (1.0)
Experienced withdrawal during a detention (among those using drugs at time of detention)	155	91	27 (17.4)	25 (27.5)	24 (17.0)	22 (25.6)	15 (21.7)	9 (39.1)
ART interrupted during detention (among those detained while on ART)	6	0	2 (33.3)	0	2 (33.3)	0	2 (50.0)	0
OAT interrupted during detention (among those detained while on OAT)	14	0	6 (42.9)	0	6 (46.2)	0	4 (44.4)	0
Had restricted access to ART, TB medication and/or OAT used as a means to extract a confession during a detention (among those on ART, TB, OAT)	78	55	20 (25.6)	1 (0.2)	16 (25.8)	0	13 (28.9)	1 (7.1)

^aPercent of those reporting for whom it is applicable. KYR, Kyrgyzstan; AZ, Azerbaijan; ART, antiretroviral therapy; TB, tuberculosis; OAT, opioid agonist therapy; SD, standard deviation.

Table 4. Correlations among the variables used in the path analysis

Measure	1	2	3	4	5	6	7
1. Official detention	–						
2. Unofficial detention	0.19*	–					
3. Addiction severity	0.08*	0.19*	–				
4. HIV risk	0.01	0.12*	0.55*	–			
5. Anxiety	–0.10*	0.03	0.11*	0.06	–		
6. Depression	–0.03	0.12*	0.12*	–0.02	0.58*	–	
7. Alcohol use disorder	0.04	0.20*	0.20*	0.09*	0.05	0.24*	–
8. Social Support	0.12*	–0.04	0.02	0.21*	–0.05	–0.17*	–0.03

* $p < 0.01$.

43% of the variance in the outcome in Kyrgyzstan and 17% in Azerbaijan. Our results confirm and further clarify the hypothesized relationship between detention and HIV risk-taking behaviours.

Effects of detention on within prison drug injection in Kyrgyzstan

Current WPDI was measured only among our participants in Kyrgyzstan, but it is a crucial outcome variable to consider in order to further confirm and clarify the relationship between police detention and HIV risk-taking behaviours within prison, which is an especially high risk behaviour. WPDI is a behavioural outcome that measures current injection within the high-risk prison environment and therefore introduces temporal order to our self-reported cross-sectional data. Arguably, if our results from the multi-group analysis reported above are replicated with a conceptually stronger outcome measure, the generalizability of the mediated relationship between police detention and HIV risk behaviours would gain in credibility.

Thus, we ran a similar path model to the one we reported for both countries: with detention variables as predictors, addiction severity as a mediator, and WPDI as the outcome measure of HIV risk behavior. The final model presented in Figure 2 for the Kyrgyzstan sub-analysis is a full mediation model ($\chi^2 = 0.44$, $p = 0.81$; GFI = 1.00; CFI = 1.00; RMSEA = 0.00; PCLOSE = 0.91) that shows addiction severity mediating the effect of detention on WPDI. Official and unofficial detention were both significant correlates of addiction severity with a similar magnitude, and had equal indirect effects on WPDI (see Table 7). Because WPDI is a dichotomous outcome measure, we followed a statistical solution for mediation analysis with dichotomous variables, recommended by MacKinnon and Dwyer [44,45].

Table 5. Significant covariates in the final path model^a

Control variable	Criterion variable	B (SE)	C.R.	Beta
Anxiety	Addiction severity	0.01 (0.00)	3.25	0.11
Social support	HIV risk	3.5 (0.48)	7.23	0.20

^aAll coefficients are significant at $p < 0.01$.

Discussion

The data presented here draw attention to the role of policing practices and police harassment in driving the spread of HIV, addressing a major structural challenge to HIV prevention in countries of the FSU in the Eastern European and Central Asian region, where HIV incidence and mortality continue to increase. Kyrgyzstan's and Azerbaijan's HIV epidemic, like those in neighbouring Eastern European and Central Asian countries, is closely intertwined with substance use and criminal sanctions against PWID [4]. PWID comprise one-third of the prison population in these two countries [29,30] and police harassment is common, but this study is the first to examine the impact of policing behaviours on negative health consequences in this region. Our results are consistent with an emerging body of literature that attests to law enforcement as a major roadblock to scaling-up HIV prevention interventions both in the region [4,27], and globally [18,46–48]. Insights drawn here, from the only scientifically rigorous biobehavioural surveys among prisoners in two FSU countries, provide the first evidence of the effect of policing on concentrating and promulgating HIV risk-taking within prisons. These findings highlight the important role that police might play in HIV prevention and point to the urgent need for changing the role of the police, including

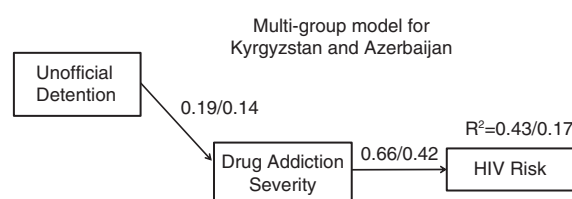


Figure 1. Multi-group results for mediation analysis. Country moderated the relationship between unofficial detention and HIV risk: Direct effect from unofficial detention to HIV risk was significant (0.17) for KYR and not significant for AZ (0.02). Overall model fit: $\chi^2 = .435$; $df = 2$; $p = 0.805$; Root Mean Square Error of Approximation (RMSEA) RMSEA = 0.000 (PCLOSE = 0.911); Comparative Fit Index (CFI) CFI = 1.00; Goodness of Fit Index (GFI) GFI = 0.999. Multi-group results in figure correspond to Table 2. The results (of multiple regression) showed that country moderated the relationship between unofficial detention and HIV risk: Direct effect from unofficial detention to HIV risk was significant (0.17) for KYR and not significant for AZ (0.02). KYR, Kyrgyzstan; AZ, Azerbaijan.

Table 6. Direct, indirect and total effects among the variables in the multi-group model

Variables Predictor	Criterion Country	Direct effects Beta (SE)		Indirect effects Beta (SE)		Total effects Beta (SE)	
		KYR	AZ	KYR	AZ	KYR	AZ
		Unofficial detention	Addiction severity	0.19 ^a (0.08)	0.14 (0.06)	–	–
	HIV risk	–	–	0.12 (0.05)*	0.06 (0.03)*	0.12 (0.05)	0.06 (0.03)*
Addiction severity	HIV risk	0.65 (0.06)*	0.42 (0.07)*	–	–	0.65 (0.06)	0.42 (0.07)*

^aAll coefficients in the model are significant at $p < 0.01$. *Significant difference between two countries at $p < 0.01$. KYR, Kyrgyzstan; AZ, Azerbaijan.

structural changes in policing practices, to reduce police harassment of PWID who spend considerable time in prison and remain the primary drivers of HIV in the region.

Our analyses disentangle the mediating and moderating relationships between police detention, addiction severity and HIV risk and demonstrate the importance of performing moderated mediation analyses to account for data complexity, as well as for revealing often surprising relationships in the data. Detention had an indirect effect on HIV risk, mediated by addiction severity, with more detentions associated with higher addiction severity – in turn correlating with increased HIV risk. This pattern suggests that police selectively target PWID with higher addiction severity. Rather than target them for arrest, police should align their practices with public health and steer them toward evidence-based treatment with methadone or buprenorphine, both of which reduce addiction severity and HIV risk-taking behaviours [49], and help avoid incarceration. Alternatively, if OAT is not available or PWID are not injecting opioids, they can encourage use of NSP, which also reduces HIV risk [50].

Moreover, these patterns hold for both Azerbaijan and Kyrgyzstan, pointing to a wider and consistent trend throughout the region. Rates of detention in our sample were high, with

over half and a third of participants in Kyrgyzstan and Azerbaijan, respectively, reporting detention in the year before incarceration. Country acts as a moderator in the model and the effect of police detention on HIV risk is stronger for Kyrgyzstan, where over one-third of those accessing services reported disruption in ART, OAT or NSP access as a result of detention. This is consistent with data showing that police detention and the fear of police harassment impedes PWID’s capacity for HIV risk reduction [12,51], leading to sharing of injection equipment and decreased engagement in harm reduction services.

These data are the first to draw a health distinction between unofficial (extrajudicial and therefore deemed harassment) and official (judicial and potentially with just cause) detention. While both unofficial and official detention contribute to increased HIV risk-taking behaviours, mediated by addiction severity, unofficial detention is more strongly associated with the outcome. Police harassment here is a correlate of addiction severity, which mediates its effect on HIV risk behaviour. It is well established that community policing is often inconsistent with established guidelines, interfering with harm reduction programmes and undermining health and human rights [10]. The negative health effects of unofficial detention are consistently stronger than those for official detention in Kyrgyzstan (see Table 3). The heavy-handed role of policing in the region is embedded in a historical context [27], where interventions for PWID in the Soviet Union were limited to non-evidence based and unethical forced detox, treatment with neuroleptics, labour camps, and social isolation [2]. This legacy is now evident in the harassment of PWID for possessing small amounts of drugs for personal use, and arrest of methadone patients outside of addiction treatment clinics [52]. It is no surprise, then, that police harassment of PWID, who are at heightened risk for blood-borne infections, is a structural factor contributing to HIV transmission in the community.

Our data from Kyrgyzstan are the first to provide a glimpse into the role of police harassment in promoting onward HIV transmission not only in the community, but also within the extraordinarily high-risk prison environment where injection equipment is scarce and associated with heightened transmission risk. In Kyrgyzstan, detention is fully mediated by addiction severity on current WPDI. This is especially pertinent given that WPDI is extremely common in PWID [30]. Our results suggest that police target PWID and that such

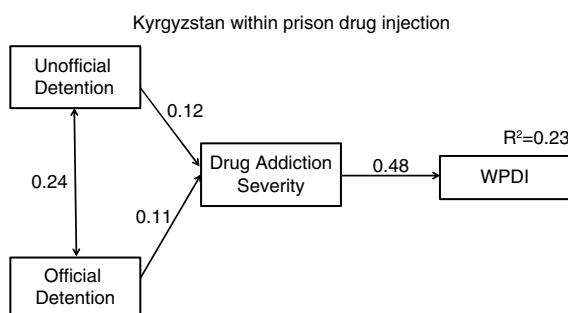


Figure 2. Path model for unofficial and official detention effects on within-prison drug injection (WPDI) mediated by addiction severity. All paths are significant at $p < 0.01$. Indirect effects were tested via AMOS bootstrapping procedure with 4000 bootstrap samples and bias-corrected confidence intervals. Overall model fit: $\chi^2 = 0.435$; $df = 2$; $p = 0.805$; Root Mean Square Error of Approximation (RMSEA) RMSEA = 0.000 (PCLOSE = 0.911); Comparative Fit Index (CFI) CFI = 1.00; Goodness of Fit Index (GFI) GFI = 0.999. Both official and unofficial detention for KYR subset only, due to current WPDI. Standardized bootstrap indirect effects. Unofficial to WPDI = 0.06, $p = 0.05$. Official to WPDI = 0.06, $p = 0.05$.

Table 7. Direct, indirect and total effects among the variables in the WPDI^a model

Variables		Direct effects	Indirect effects	Total effects
Predictor	Criterion	Beta (SE)	Beta (SE)	Beta (SE)
Unofficial detention	Addiction severity	0.12 ^b (0.07)	–	0.12 (0.072)
	WPDI	–	0.06 (0.04)	0.06 (0.04)
Official detention	Addiction severity	0.11 (0.06)	–	0.11 (0.06)
	WPDI	–	0.06 (0.03)	0.06 (0.03)
Addiction severity	WPDI	0.48 (0.05)	–	0.48 (0.05)

^aWithin prison drug injection (WPDI). Kyrgyzstan sample only; ^ball coefficients in the model are significant at $p < 0.01$.

harassment may result in the increase in HIV risk-taking behaviours, primarily because of the continued drug use within prisons. It is well established that treating addiction within criminal justice settings is key, including implementing OAT and effectively transitioning them to the community [4], which will not only reduce HIV transmission, but improve HIV- and non-HIV-related health outcomes [53–58]. Even though our decision to measure and compare official and unofficial detention allowed us to more closely examine the relationship between detention, addiction severity and HIV risk-taking behaviours, it is important to note that both types of detention may constitute police harassment, including those instances of official detention that resulted in the current incarceration.

Though meaningful findings were gleaned from our research, several limitations remain. First, the cross-sectional design restricts our ability to infer a causal nature of the observed relationships and limits the findings to correlations. The study's focus on distinct time periods of detention experiences and health risk behaviours, however, lessen some of these concerns by outlining a hypothesized causal mechanism that can be subsequently elucidated with longitudinal design. It is important to note that the current WPDI measure for the Kyrgyzstan sample has allowed us to address and clarify temporal ordering in our cross-sectional data. Conversely, our inability to include a similar measure in Azerbaijan due to obligations to report drug use to prison department is a limitation. Clearly, further research employing longitudinal designs that would allow establishing causality and likely result in more meaningful mediating and moderating relationships is warranted. Also, we relied on self-reported measures for several parameters, including for opioid injection, but these were validated measures and the sheer magnitude suggest that they represent conservative amounts of drug use. This could have resulted in under-reporting of health risk behaviours due to social desirability bias. Self-reporting may also result in underreporting of detention experiences, although the observed high rates of detention in our study reduce this concern. Another potential limitation that may restrict interpretation and accuracy is recall bias, since participants had to report on remote pre-incarceration behaviours and experiences. Notwithstanding these limitations, our findings point to a conceivable mechanism of the effects of policing practices on the health of PWID who interface with criminal justice system and lay the foundation for future research to replicate and expand

these findings, as well as for future strategies to engage police enforcement in advancing individual and public health.

Conclusions

Given the police's role in shaping HIV transmission, it is now necessary to shift focus to best-practice implementation strategies to influence HIV prevention. While most HIV prevention has been focused on individual changes in behaviour, our data provide empirical support for the environmental influence of policing on HIV risk. PWID exist in complex risk environments where factors interact to produce drug-related harm [60]. Accordingly, successful biobehavioural interventions delivered to PWID, including OAT expansion, must address environmental factors, which can include intimidation, violent victimization, marked social stratification, and stigmatization of people with or at risk for HIV, and people who receive drug treatment and OAT in particular [60,61]. Therefore, police interaction with PWID should be harnessed and aligned with HIV prevention to implement evidence-based harm reduction practices including referral to NSPs, supervised injection sites, and OAT [10]. There is new evidence that targeted police training in Kyrgyzstan that focuses on HIV prevention is associated with improved public health knowledge [18]. Furthermore, making positive health outcomes an incentive for assessing police performance is key to increasing law enforcement's concern for health. Fostering partnerships between law enforcement and the public health sector is paramount to ensuring improved health outcomes among marginalized populations [62].

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Competing interests

All authors declare that they have no conflicts of interest.

Authors' contributions

FLA, SD, LA, JMI, CB and JAW conceived and designed the study; LA and SD performed the experiments; MP, LA, MPW and FLA conceptualized the manuscript; MP, MPW and LA analyzed the data; MP, LA, MPW, JMI, CB and

FLA wrote the manuscript; MP, LA, MPW, JMI, CB and FLA revised the manuscript. All authors have read and approved the final version.

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Research article

Determining barriers to creating an enabling environment in Cambodia: results from a baseline study with key populations and police

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Abstract

Introduction: Cambodian law enforcement's limited acceptance of harm reduction has hindered HIV program effectiveness. With funding from the Australian Department of Foreign Affairs and Trade, FHI 360 supported the Ministry of Interior to implement the Police Community Partnership Initiative (PCPI) in Cambodia's capital Phnom Penh. To guide this, FHI 360 conducted a baseline study examining police and key populations' attitudes and practices towards one another, including fear and occurrence of arrest.

Methods: Between December 2012 and January 2013, a cross-sectional survey of 199 police post officers, 199 people who use drugs (PWUD) including people who inject drugs (PWID), 199 men who have sex with men (MSM), 200 transgender women (TGW) and 200 female entertainment workers (FEW) was conducted in five Phnom Penh districts. Eligible participants were ≥ 18 years, members of a key population from selected hotspots or police officers, deputy chiefs or chiefs.

Results: Key populations' median age was 25 years (IQR: 22–30); 40% had completed only primary school. Police were male (99.5%), with median age 43 years (IQR: 30 to 47), and 45 and 25% high school and university completion rates, respectively. Key populations feared arrest for carrying needles and syringes (67%), condoms (23%) and 19% felt afraid to access health services. Close to 75% of police reported body searching and 58% arresting key populations in the past six months for using drugs (64%), selling or distributing drugs (36%) or being violent (13%). Self-reported arrests (23% PWUD, 6% MSM, 6% TGW, 12% FEW; $p < 0.05$), being verbally threatened (45% PWUD, 21% MSM, 25% TGW, 27% FEW; $p < 0.001$) and body searched (44% PWUD, 28% MSM, 23% TGW, 8% FEW; $p < 0.001$) was significantly higher among PWUD than other key populations. The majority (94%) of police believed arrest was an appropriate solution to reduce HIV and drug use and reported selling sex (88%) and carrying needles and syringes (55%) as valid reasons for arrest.

Conclusions: Key populations' fear of accessing harm reduction and health services and police's negative attitudes and practices towards key populations present major barriers to HIV prevention efforts in Cambodia. To create an enabling environment and ensure police are allies in the Cambodian HIV response, interventions should tackle underlying negative attitudes among police towards key populations and vice versa.

Keywords: key populations; enabling environment; police; law enforcement; harm reduction; drugs; sex work; HIV.

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Introduction

Certain laws and policies and the manner in which they are implemented and enforced are known to hinder the delivery of HIV services and programmes and increase key populations' susceptibility to HIV and other health related harms [1]. Negative impacts of punitive drug policies and related human rights abuses are particularly experienced by people who use drugs (PWUD) and sex worker populations [2–4]. A study among people who inject drugs (PWID) in Thailand found police beatings independently associated with drug-related harms [5].

In Cambodia, current laws and policies hamper the HIV response, reflected in the highest HIV prevalence being found among key populations – female entertainment workers

(FEW): 23.1% [6], men who have sex with men (MSM): 2.2% [7], transgender women (TGW): 4.15% [8] and PWID: 24.4% [9]. Following the introduction of the 2008 Law on the Suppression of Human Trafficking and Sexual Exploitation, female entertainment and sex workers reported reduced mobility and reduced access to outreach and facility services and condoms [10]. By 2009, the establishment of 14 compulsory drug treatment/detention centres operated by the Military Police of the Royal Cambodian Armed Forces, the Ministry of Interior or the Ministry of Social Affairs, Veterans and Youth Rehabilitation led to the forcible detention of PWUD, without the provision of health care or drug-related services [11]. According to one study, 30% of methamphetamine users were forcibly sent to a centre by local authorities,

with the median stay 90 days [11]. The 2010 Village/Commune Safety Policy, focused on “cleaning” Cambodia’s streets, resulted in increased harassment, detention or arrest [12]. Following its introduction in 2011, drug-related arrests quadrupled and prison populations grew approximately 14% annually, with national prisons reaching 179% over capacity [13]. Prisons are among the highest-risk environments for HIV transmission [14], and the high rates of drug-related imprisonment seen in Cambodia further exacerbate HIV risks.

The World Health Organization (WHO) *Guidelines for the psychosocially assisted pharmacological treatment of opioid dependence* recommend wide accessibility of opioid dependence treatment as a minimum requirement for health systems at national level, including delivery in primary care settings [15]. In July 2010, Cambodia’s only methadone maintenance treatment (MMT) programme was established in Phnom Penh by governmental and non-governmental (NGO) partners, with 61 heroin users enrolled by October 2010 [16]. From 2010 to 2014, according to service records, 432 patients were enrolled in the programme, with an average of 130 clients receiving a daily dose [17]. According to unpublished reviews of the programme, the lack of take-home doses or satellite clinics may have contributed to what routine data show as frequent drop-out and re-enrolment of clients.

Widespread consensus exists among government, UN agencies, NGOs and health and social service providers that in order to halt national HIV epidemics an enabling environment must be created to support HIV prevention and treatment while also ensuring law enforcement and public safety [12,18]. Therefore, to prevent further spread of HIV in Cambodia, as is the aim of the National Centre for HIV/AIDS, Dermatology and STD Control [7], it is critical to create an enabling environment in which key populations are able to access HIV and drug-related prevention, care and treatment.

Towards this effort, AusAID (now called the Department of Foreign Affairs and Trade)/the HIV/AIDS Asia Regional Program (HAARP) funded FHI 360 to implement the Police Community Partnership Initiative (PCPI), in the capital city Phnom Penh, which is home to the majority of the country’s key populations. PCPI was previously implemented in Banteay Meanchay, Cambodia and aims to strengthen collaborative partnerships among Ministry of Interior (MoI) Provincial AIDS Committee and Secretariat, local authorities, police, health care providers, development partners, NGOs and members of key populations. Facilitating a harm reduction approach, in which police link key populations to needed services rather than detain or arrest them, PCPI entails regular coordination meetings and sensitization workshops at community level, capacity building, facilitated dialogue and problem solving among participating stakeholders.

Given that PCPI had not been previously evaluated, and given the dearth of monitoring or evaluation of harm reduction in Cambodia [19], a baseline study was conducted prior to implementing PCPI in Phnom Penh [20]. The objective of this baseline was to gather data to serve as a measure for assessing the effectiveness of the PCPI approach. The study measured police officers’ attitudes and practices towards key populations and their service providers (including frequency

and occurrence of arrests, detention and referrals) and key populations’ HIV-related practices and attitudes towards police (including fear of and occurrence of arrests). Because of the early closure of HAARP, an end line study was not conducted. Nonetheless, this study provides important insights into law enforcement practices in Cambodia by identifying critical barriers that must be overcome for an effective harm reduction approach to be implemented and can thus inform future work in this area.

Methods

Following approval by the National Ethics Committee for Health Research (NECHR) of Cambodia and FHI 360’s Protection of Human Subjects Committee in 2012, data were collected in five Khans (districts) of Phnom Penh where PCPI would be implemented. Structured interviews were conducted one-on-one using paper-based questionnaires with questions related to attitudes as well as experience of arrest and harassment adapted to each study population: police post officers, PWUD (including PWID), MSM, TGW and FEW. To assure data accuracy, questionnaire data were double entered into Epidata, and statistical analysis was conducted using STATA Version 12.0.

Sampling procedures

Participants from the four key population groups were selected using multistage sampling. Hotspots, places where key populations are known to work or gather (such as parks, riverbanks, bars and night clubs, massage parlours, beer gardens, karaoke clubs, rented rooms or abandoned buildings) in the five districts were chosen using cluster random sampling for each group by random number allocation via Randomize software. A list of hotspots for each group was created during a consultation meeting with organizations working in the districts. Because the number of identified hotspots for PWUD was limited, the sample was drawn from all hotspots and thus was not random. At each hotspot, convenience sampling was used to select participants.

Police were also selected using a multistage sampling procedure. Cluster random sampling was used to select 20 out of 46 existing police posts in the five study districts. At each post, convenience sampling was then used to select a maximum of 10 police officers, one who had to be a chief and one a vice-chief of police.

Sample size calculations were based on the assumption that the key indicator for key populations’ attitudes towards police (fear of arrest), would decrease from an estimated 50% at baseline, to 30% after one year of PCPI implementation. Using Epi-Info’s STATCAL, the sample size, including a 10% assumed refusal rate, was calculated as 200.

Eligibility

All participants had to be 18 years or older, Khmer-speakers and able and willing to provide oral informed consent. The election date during the UN Transitional Authority in Cambodia (UNTAC) was used to verify participants were 18 years or older. Participants reporting having being born after the UNTAC election date would be less than 18 years old and were excluded. Police officers had to be working at the respective post at the time of the study. Additionally, PWUD had to

report use of any illicit drug as defined by Cambodian law by any route (injection or non-injection) at least two times in the past six months. FEW had to be biologically female and have been an entertainment worker working in any venue or non-venue type in the past six months. MSM had to be biologically male and reported having sex with a biological male in the past six months. TGW had to be biologically male at birth and self-identify and/or express themselves as a different gender from their biological sex at birth.

Study procedures

All participants provided oral informed consent before the interview. One-on-one interviews were conducted at the recruitment sites, including police posts, if confidentiality and safety could be ensured. Otherwise, transportation to a nearby NGO-run drop-in-centre was provided. Participants were assigned a personal identification number used on questionnaires with no personal identifying information linked to responses. Trained interviewers worked in teams of two, with female interviewers interviewing FEW, and male interviewers interviewing remaining participants. Each interview lasted approximately 15 minutes and participants received a gift worth 1.5 USD for their time.

For key populations, prior to conducting surveys, venue owners were asked permission to interview their workers. This did not apply to public places, such as parks and streets. At each hotspot, interviewers approached individuals presenting at the site to explain the study. Those willing to participate were then screened for eligibility, consented and interviewed.

For police, a formal letter from the Mol informed the Commissariat Police of Phnom Penh about the study. The commissioner subsequently informed the chiefs of selected police post offices and the research study coordinator, presenting the Mol letter and NECHR approval. On the interview day, police chiefs informed officers and read them a statement about the study, highlighting that participation was voluntary and would not affect job responsibility, promotion or benefits. Police officers consenting to participate were interviewed by one researcher.

Results

Socio-demographic characteristics

Key populations

In total, 798 individuals (200 FEW, 199 MSM, 200 TGW and 199 PWUD) participated in this study, the majority of whom were male ($n = 542$, 67.9%), younger (the median age 25 years, IQR: 22 to 30), educated and employed (Table 1). Primary school was completed by 39.4% of key population participants. MSM were the most educated group with 36.2% (data not shown) and 18.1% completing grade 12 or university and above, respectively. PWUD had the highest rates of never attending school (17.1%).

The majority of key population participants were employed in service jobs (27.8%) (Table 1). Three-fourths of FEW earned income by working at entertainment venues, with close to one-fourth being street based, brothel based, home based or freelance. Among TGW and MSM, service jobs were the most common source of income (58.5 and 37.78%, respectively). Low wage jobs predominated among PWUD (manual labourer:

18.6%; garbage collector/beggar: 31.2%) with unemployment among PWUD higher (15.6%) than among other groups.

Rates of drug use within the past three months varied significantly among non-PWUD participants, with MSM having significantly higher rates of drug use (18.6%) than FEW (10.5%) and TGW (2.5%), $p < 0.05$ (Table 1). Among PWUD, 17.1% ($n = 34$) injected drugs. Drug use before or during sex was most common among MSM (73.0%) and FEW (71.4%).

Police

In total, 199 police participated in the study, the majority of who were male (99.5%). Police participants had a median age of 43 years (IQR: 30 to 47) and were educated (Table 2). Approximately 45% completed at least high school (data not shown), with one-fourth having attended university and above. The majority of police participants worked as police post officers (77.4%), whereas 19.1% were deputy chiefs and 3.5% were chief of police. On average, police participants worked at their respective post for 10.2 years.

Harassment and arrest

Key populations

More than 11% of key population participants reported being arrested in the past six months, with arrest rates and reasons for arrest differing among groups. PWUD reported arrest at a significantly higher rate than FEW and MSM (Fisher's exact test: $p < 0.05$) (Table 3). The most common reason for last arrest among all groups was using drugs (32.9%), selling sex (27.1%) and being violent (16.4%) (Table 4). Significantly more PWUD than MSM and TGW were arrested for using drugs (54.3% vs. 7.7% and 54.3% vs. 6.7%, respectively) ($p < 0.001$), whereas 100% of arrested FEW were arrested for selling sex, significantly higher than among all other groups ($p < 0.001$). Arrests among MSM (46.2%) and TGW (46.7%) primarily related to engaging in violent behaviour.

Among key population participants who reported arrest in the past year, more than half (57.1%) were detained at the police station and released within 48 hours (Table 4). A smaller proportion were referred to a social affairs (12.2%) or rehabilitation centre (10.7%) (the former is a voluntary centre for all populations; the latter is designed for PWUD and may be voluntary or involuntary with no formal criteria to determine length of stay and only abstinence-based treatment [21]) without being sent to court, which was significantly more common among PWUD than FEW (17.3% vs. 3.2%, respectively, $p < 0.05$). Overall, the majority of arrests did not result in being sent to court. Only 5.0% of arrested key population participants reported being sent to prison following a court conviction.

Financial incentives were sometimes used to negotiate with police. Close to 10% of key population participants reported having exchanged money in return for immediate release at last arrest (Table 4), whereas 7.6% were forced to pay money to avoid arrest or harassment (Table 5). Exchange of sex to negotiate immediate release following arrest (Table 4) or to avoid arrest or harassment (Table 5) was rare to none (0.7 and 2.3%, respectively). More FEW were forced to pay money or

Table 1. Socio-demographic characteristics of key populations

	FEW (<i>n</i> = 200)	MSM (<i>n</i> = 199)	PWUD (<i>n</i> = 199)	TGW (<i>n</i> = 200)	Total (<i>n</i> = 798)
Gender: male (%)	0 (0.0)	199 (100.0)	143 (71.9)	200 (100.0) ^a	542 (67.9) ^a
Mean age*	26.9	25.8	28.0	26.1	26.7
Median age (IQR)	25 (21 to 31)	24 (21 to 27)	27 (23 to 31)	24 (21 to 29)	25 (22 to 30)
Level of education completed (%)**					
Never attended school	25 (12.5)	1 (0.5)	34 (17.1)	2 (1.0)	62 (7.8)
Primary school (year 1–6)	133 (66.5)	30 (15.1)	121 (60.8)	30 (15.0)	314 (39.4)
Lower and upper secondary school (year 7–12)	67 (33.5)	133 (66.8)	76 (38.2)	138 (69.0)	414 (51.9)
University and above	0 (0.0)	36 (18.1)	2 (1.0)	32 (16.0)	70 (8.8)
Main source of income (%)					
Student	0 (0.0)	33 (16.6)	0 (0.0)	14 (7.0)	47 (5.9)
Service job ^b	3 (1.5)	75 (37.7)	27 (13.6)	117 (58.5)	222 (27.8)
Manual labour ^c	0 (0.0)	15 (7.5)	37 (18.6)	13 (6.5)	65 (8.2)
Office job/business owner	1 (0.5)	22 (11.1)	14 (7.0)	20 (10.0)	57 (7.1)
Seller	0 (0.0)	21 (10.6)	12 (6.0)	20 (10.0)	53 (6.6)
Garbage collector/beggar	0 (0.0)	1 (0.5)	62 (31.2)	0 (0.0)	63 (7.9)
Entertainment venue based EW ^d	151 (75.5)	1 (0.5)	10 (5.0)	1 (0.5)	163 (20.4)
Street based, brothel based, home based and freelance EW	45 (22.5)	0 (0.0)	6 (3.0)	0 (0.0)	51 (6.4)
Male/MSM/TGW sex worker	0 (0.0)	14 (7.0)	0 (0.0)	4 (2.0)	18 (2.3)
Unemployed	0 (0.0)	16 (8.0)	31 (15.6)	11 (5.5)	58 (7.3)
Other	0 (0.0)	1 (0.5)	0 (0.0)	0 (0.0)	1 (0.1)
Used any drug in past three months (%)	21 (10.5)	37 (18.6)	198 (100.0)	5 (2.5)	261 (32.8)
Crystal, ice (methamphetamine)**	20 (95.2)	36 (97.3)	192 (97.0)	4 (80.0)	252 (96.6)
Yama (amphetamine)**	6 (28.6)	8 (21.6)	52 (26.3)	0 (0.0)	66 (25.3)
Heroin/opium**	1 (4.8)	2 (5.4)	44 (22.2)	0 (0.0)	47 (18.0)
Inhalants (e.g. glue, paint, and petrol)**	0 (0.0)	2 (5.4)	18 (9.1)	0 (0.0)	20 (7.7)
Marijuana**	1 (4.8)	0 (0.0)	10 (5.1)	0 (0.0)	11 (4.2)
Ketamine	1 (4.8)	1 (2.7)	5 (2.5)	2 (40.0)	9 (3.4)
Had sex, among those who used any drug in past three months (%)	21 (100.0)	37 (100.0)	162 (81.4)	5 (100.0)	225 (86.2)
Used drugs before or during sex	15 (71.4)	27 (73.0)	108 (66.7)	3 (60.0)	153 (68.0)
Exchanged sex for drugs**	1 (4.8)	13 (35.1)	13 (8.0)	1 (20.0)	28 (12.4)

*Statistically significant to $p < 0.05$; **statistically significant to $p < 0.001$; ^arefers to gender at birth; ^bsuch as hair dresser, waiter, cleaner, driver and security guard; ^csuch as construction worker, factory worker and mechanic; ^dsuch as beer garden EW, beer promoter, massage parlour/spa FEW and café FEW.

exchange sex to avoid arrest than other groups (12.5 and 5.0%, respectively, $p < 0.05$).

Nearly one-third (29.2%) of key population participants reported being verbally threatened by police or local authorities in the past six months, with significantly more threats reported by PWUD than other groups (44.7%, $p < 0.001$) (Table 5). Being body searched by police in the past six months was reported by one-fourth of all key population participants, significantly higher among PWUD (44.2%, $p < 0.05$; among these 19.3% PWUD, $n = 17$), whereas the proportion of body searched FEW was the lowest (8.0%, $p < 0.001$).

All key population participants reported experiencing fear of arrest in the past six months (Table 6). Overall, 7.0% of key population participants reported having relocated out of fear of interacting with police, whereas 4.6% hid from outreach workers fearing identification by police.

The majority of key population participants (60.5%), particularly PWUD (75.4%), felt police were unkind (Table 7). One-fourth of key population participants felt afraid of carrying condoms, with half of FEW expressing such fears. Approximately 20 and 27% of all key population participants were afraid of accessing health and legal services, respectively.

Police

The majority of police (58.2%) reported arresting a member of a key population in the past six months (Table 8). Primary reasons related to using (63.8%) or selling or distributing (36.2%) drugs. PWUD (83%) were most commonly arrested, followed by FEW (25.5%), TGW (12.8%) and > 1% of arrests MSM (data not shown). Body searching a key population in the past six months for condoms, needles, syringes and/or illicit drugs was reported by close to three-fourths of police.

Table 2. Socio-demographic characteristics of police

	Police post officers (n = 199)
Gender: male (%)	198 (99.5)
Mean age	39.6
Median age (IQR)	43 (30 to 47)
Level of education completed	
Primary school (year 1 to 6) (%)	2 (1.0)
Lower and upper secondary school (year 7 to 12) (%)	147 (73.9)
University and above (%)	50 (25.1)
Current position	
Police post officer (%)	154 (77.4)
Deputy chief of police post office (%)	38 (19.1)
Chief of police post office (%)	7 (3.5)
Mean duration working in current office (years)	10.2
Median years (IQR)	5 (1.3 to 20)

Although following outreach workers to find and arrest key populations was rare (3%), 21.1% of police reported disrupting outreach in their patrol area in the past six months (data not shown).

Nearly half of police participants (46%, $n = 65$) reported referring the arrestee to the Khan police after their last arrest. Fifteen percent ($n = 15$) reported that they sent the individual to court or directly referred him or her to a rehabilitation centre after detainment at the police station. Thirteen percent ($n = 18$) reported releasing the arrestee within 48 hours after detainment at the police station, and 10% ($n = 14$) directly referred the individual to the centre for social affairs. No police participants reported making a referral to the MMT clinic [16]. Immediately releasing the arrested individual at the site of arrest was reported by only 1% ($n = 2$) of police.

All police (100%) reported supporting the provision of HIV prevention and harm reduction, yet, the majority (94.0%) thought arrest and detention an appropriate solution for reducing HIV transmission and drug use (Table 9). Furthermore, the majority of police reported that drug use in private spaces (96.5%), selling sex (88.4%) and carrying needles and syringes (55.2%) were valid reasons for arrest.

Discussion

This study established a baseline of harm reduction related attitudes and practices among key population groups and police in five Phnom Penh districts. Similar to experience in other settings [2,3], our results indicate that current punitive

laws and policies and their implementation have created an environment in which key populations in Cambodia are burdened by fear of and actual harassment and arrest.

Reasons for fearing police differed among key populations, suggesting that efforts to change attitudes need to be tailored to each group. PWUD not only feared arrest for carrying needles or syringes (66%), but also most commonly reported relocating because of fear of police, making this group hard to reach and impeding HIV outreach activities. Research in other settings, including Myanmar [22], demonstrate that drug control efforts targeting drug paraphernalia lead to transience of PWUD populations and increased needle sharing, thus accelerating HIV transmission [23]. These findings have important implications for Cambodia's approach to drug control.

Our study also found fear of arrest for carrying condoms, which was reported most often by FEW. Yet, when governments support condom use, for instance, as in the Dominican Republic, where the government sanctioned condom availability in establishments, and monitored establishments to ensure supplies, there is a positive influence on consistent condom use among FEW [24]. The fear identified in Cambodia likely reflects the negative influence of the 2008 legislation prohibiting sex work on prevention efforts, access to outreach, peer support and condom use among this population [10]. Furthermore, our findings indicate that the 2008 legislation impeded prevention efforts by undermining the 100% condom use programming, which was attributed with supporting a decline in HIV transmission in Cambodia (and other neighbouring countries) [25].

A recent review identified structural barriers, systematic discrimination and violence because of gender identity, as a contributing factor to HIV risk for TGW [26]. In our study, close to one-third and one-fourth of MSM and TGW, respectively, reported fear of arrest for their sexual or gender identity. This fear likely drives MSM and TGW individuals underground, inhibiting safer sex and drug use. It also reflects widespread stigma, discrimination and social exclusion, including from health services, as reported by lesbian, gay, bisexual and transgender persons in Cambodia, with TGW being most affected [27]. However, it is not only MSM and TGW who face consequences because of stigma and discrimination. Such consequences are common among all key populations who face stigma related to their identity, practices and/or occupation, and the criminalization or lack of legal protections for these identities, practices or occupations increases the risk of HIV acquisition [28].

Nearly all police (97%) believed arresting and detaining key populations was a solution for reducing HIV transmission and

Table 3. Experience of arrest among key populations in past six months

	FEW (n = 200)	MSM (n = 199)	PWUD (n = 199)	TGW (n = 200)	Total (n = 798)
Arrests (%)*	24 (12.0)	12 (6.0)	46 (23.1)	12 (6.0)	94 (11.8)
Mean number of arrests	1.2	1.3	1.8	1.2	1.5
Median number of arrests (IQR)	1 (1 to 1)	1 (1 to 1.5)	1 (1 to 2)	1 (1 to 1)	1 (1 to 2)

*Statistically significant to $p < 0.05$.

Table 4. Reasons for last arrest and experience of being arrested at last arrest

	FEW (n = 31)	MSM (n = 13)	PWUD (n = 81)	TGW (n = 15)	Total (n = 140)
Reason for last arrest (%)					
Drug use**	0 (0.0)	1 (7.7)	44 (54.3)	1 (6.7)	46 (32.9)
Selling sex**	31 (100.0)	1 (7.7)	2 (2.5)	4 (26.7)	38 (27.1)
Conducting violence**	0 (0.0)	6 (46.2)	10 (12.4)	7 (46.7)	23 (16.4)
Theft/robbery*	0 (0.0)	0 (0.0)	16 (19.8)	1 (6.7)	17 (12.1)
Sleep in public space	0 (0.0)	0 (0.0)	4 (4.9)	0 (0.0)	4 (2.9)
Selling, distributing, buying or carrying drugs	0 (0.0)	2 (15.4)	5 (6.2)	0 (0.0)	7 (5.0)
Other**	0 (0.0)	4 (30.8)	3 (3.7)	7 (46.7)	14 (10.0)
Experience at last arrest (%)					
Detained at police station; then released by police within 48 hours	21 (67.7)	10 (76.9)	40 (49.4)	9 (60.0)	80 (57.1)
Referred to centre for social affairs (without sending to court)	4 (12.9)	2 (15.4)	10 (12.4)	1 (6.7)	17 (12.2)
Detained at police station; then referred to rehab centre (without sending to court)*	1 (3.2)	0 (0.0)	14 (17.3)	0 (0.0)	15 (10.7)
Arrested and released immediately at site in exchange for money	1(3.2)	0 (0.0)	9 (11.1)	2 (13.3)	12 (8.6)
Arrested and released immediately at site in exchange for sex	0 (0.0)	0 (0.0)	0 (0.0)	1 (6.7)	1 (0.7)
Detained at police station; then convicted by court and sent to prison	0 (0.0)	0 (0.0)	6 (7.4)	1 (6.7)	7 (5.0)
Referred directly to MMT clinic (without sending to court)	1 (3.2)	1 (7.7)	0 (0.0)	0 (0.0)	2 (1.4)
Dropped outside of Phnom Penh	0 (0.0)	0 (0.0)	2 (2.5)	0 (0.0)	2 (1.4)
Other*	3 (9.7)	0 (0.0)	0 (0.0)	1 (6.7)	4 (2.9)

*Statistically significant to $p < 0.05$; **statistically significant to $p < 0.001$.

drug use and that arrests for selling sex (88%) and carrying needles/syringes (55%) were appropriate, confirming fears expressed by FEW and PWUD. Yet, all police voiced support of HIV prevention and harm reduction services in their community. This contradiction between attitudes and practice suggests a need to clarify how to operationalize and harmonize existing laws and policies and to foster understanding of the mutual benefits of harm reduction to HIV and law enforcement efforts. Interventions in the USA showed that even short training sessions can help police more effectively align occupational safety with public health goals [29].

Although 17% of key population participants reported having been arrested and 70% of police reported having arrested a key population member in the past year, there was a notable mismatch between the key populations' reported rates of arrests for selling sex (27%) and corresponding rates reported by police (1%). Furthermore, this study provides

no evidence of arrests being made for carrying condoms or needles or syringes. Nonetheless, levels of fear were high, making evident that internalized fear and negative attitudes towards police persist and must be mitigated. It is possible that such fear prevails because of key populations' experience of harassment and discrimination, primarily among PWUD and FEW and body searching experienced by PWUD. This, combined with FEW being most commonly forced to pay money or exchange sex to avoid arrest or harassment, suggests that certain key populations are more vulnerable, likely due to laws and policies targeting specific behaviours they are engaged in.

Few key populations reported having been sent to prison following arrest. It is worth noting that this number is likely to underrepresent the true number of arrests, as sampling did not capture individuals detained in prison at the time of the study. However, among those ever imprisoned, only 5% were sent to court to be convicted. Furthermore, referrals to social

Table 5. Experience of threat, body search or coercion by police in past six months

	FEW (n = 200)	MSM (n = 199)	PWUD (n = 199)	TGW (n = 200)	Total (n = 798)
Verbally threatened (%)**	53 (26.5)	41 (20.6)	89 (44.7)	50 (25.0)	233 (29.2)
Body searched for condoms, needles/syringes and/or illicit drugs (%)**	16 (8.0)	56 (28.1)	88 (44.2)	46 (23.0)	206 (25.8)
Forced to pay money to avoid arrest or harassment (%)*	25 (12.5)	12 (6.0)	18 (9.0)	6 (3.0)	61 (7.6)
Forced to exchange sex to avoid arrest or harassment (%)*	10 (5.0)	5 (2.5)	1 (0.5)	2 (1.0)	18 (2.3)

*Statistically significant to $p < 0.05$; **statistically significant to $p < 0.001$.

Table 6. Risk behaviours and related experience of fear of arrest in the past six months

	FEW (n = 200)	MSM (n = 199)	PWUD (n = 199)	TGW (n = 200)	Total (n = 798)
Carried needles and syringes (%)	1 (0.5)	8 (4.0)	38 (19.1)	7 (3.5)	54 (6.8)
Fear of arrest for carrying N&S (%)	1 (100.0)	6 (75.0)	25 (65.8)	4 (57.1)	36 (66.7)
Carried condoms (%)	55 (27.5)	154 (79.9)	103 (51.8)	154 (77.0)	471 (59.0)
Fear of arrest for carrying condoms (%)*	12 (21.8)	11 (6.9)	16 (15.5)	16 (10.4)	55 (11.7)
Sold sex (%)	108 (54.0)	112 (56.3)	35 (17.6)	105 (52.5)	360 (45.1)
Fear of arrest for selling sex (%)*	47 (43.5)	30 (26.8)	15 (42.9)	28 (26.7)	120 (33.3)
Used drugs (%)	23 (11.5)	41 (20.6)	199 (100.0)	11 (5.5)	274 (31.0)
Fear of arrest for being a drug user (%)*	13 (56.5)	32 (78.1)	163 (81.9)	6 (54.6)	214 (78.1)
Being a MSM (%)	–	199 (100.0)	5 (2.5)	–	204 (25.6)
Fear of arrest for being a MSM (%)	–	60 (30.2)	1 (20.0)	–	61 (29.9)
Being a TGW (%)	–	–	0 (0.0)	200 (100.0)	200 (100.0)
Fear of arrest for being a TGW (%)	–	–	0.0	52 (26.0)	52 (26.0)
Relocated due to fear of interaction with police** (%)	16 (8.0)	8 (4.0)	30 (15.1)	2 (1.0)	56 (7.0)
Hidden from outreach workers due to fear of identification by police in past six months (%)	6 (3.0)	12 (6.0)	7 (3.5)	12 (6.0)	37 (4.6)

*Statistically significant to $p < 0.05$; –Not applicable (this group was not surveyed for respective questions).

services or MMT by police were rare to none and findings showed that police had poor understanding of the essential components of harm reduction. These findings suggest a need to improve awareness and knowledge of MMT and social referral mechanisms among police who are frequently in contact with high-risk individuals, and hence play an important role in bridging between key populations and harm reduction services.

Despite the lack of reliable evaluations of the MMT program, anecdotal evidence and service records indicate low overall uptake and high drop-out, re-enrolment and co-use of methadone treatment and drugs by injection among

its recipients [30]. In line with WHO recommendations [15], these findings suggest an urgent need to improve accessibility of methadone treatment in Cambodia, such as by diversifying availability beyond the single MMT clinic (e.g. using satellite clinics). Assessments of Cambodia's rehabilitation centres show that these lack formal criteria determining length of stay, solely offer abstinence-based treatment and that HIV prevention is limited to information brochures [21]. Given the lack of alternative evidence-based treatment options for drug dependence in Cambodia, improving referral mechanisms and the quality of the single available MMT clinic in Cambodia is paramount.

Table 7. Key populations' attitudes towards police, harm reduction and other services

	FEW (n = 200)	MSM (n = 199)	PWUD (n = 199)	TGW (n = 200)	Total (n = 798)
Police are kind to people like me (%)					
Strongly agree/agree	96 (48.0)	77 (38.7)	49 (24.6)	67 (33.5)	289 (36.2)
Strongly disagree/disagree	94 (47.0)	114 (57.3)	150 (75.4)	125 (62.5)	483 (60.5)
Do not know	10 (5.0)	8 (4.0)	0 (0.0)	8 (4.0)	26 (3.3)
I am afraid of carrying condoms (%)					
Strongly agree/agree	98 (49.0)	25 (12.6)	39 (19.6)	23 (11.5)	185 (23.2)
Strongly disagree/disagree	102 (51.0)	172 (86.4)	160 (80.4)	172 (86.0)	606 (75.9)
Do not know	0 (0.0)	2 (1.0)	0 (0.0)	5 (2.5)	7 (0.9)
I am afraid to access health services (HIV and STI testing, family planning/reproductive health) (%)					
Strongly agree/agree	34 (17.0)	54 (27.1)	22 (11.1)	44 (22.0)	154 (19.3)
Strongly disagree/disagree	166 (83.0)	143 (71.9)	177 (88.9)	154 (77.0)	640 (80.2)
Do not know	0 (0.0)	2 (1.0)	0 (0.0)	2 (1.0)	4 (0.5)
I fear accessing legal services (%)					
Strongly agree/agree	41 (20.5)	60 (30.2)	49 (24.6)	66 (33.0)	216 (27.1)
Strongly disagree/disagree	159 (79.5)	137 (68.8)	150 (75.4)	132 (66.0)	578 (72.4)
Do not know	0 (0.0)	2 (1.0)	0 (0.0)	2 (1.0)	4 (0.5)

Table 8. Arrest of an individual belonging to a key population group in past six months and reasons for last arrest

	Police (n = 141)
Key populations arrests in past six months (%)	116 (58.2)
Mean number of arrests	4.6
Median number of arrests (IQR)	2 (1–4)
Reason for last arrest (%)	
Drug use	90 (63.8)
Selling sex	1 (0.7)
Conducting violence	19 (13.5)
Theft/robbery	12 (8.5)
Sleep in public space	7 (5.0)
Selling/distributing drugs	51 (36.2)
Carrying condoms	1 (0.7)
Other	6 (4.2)

Although this study contributes greatly to understanding the implications of law enforcement and policies on key populations, a number of limitations must be recognized. Study participants were only drawn from the capital, sampled MSM and TGW represent those who openly self-identify and not necessarily individuals who hide their sexual or gender identity, and PWUD represent only those from the coverage area of one organization. As such, sampled key populations may vary in meaningful ways from others in other parts of the country. Additionally, participants willing and able to participate may have differed from those who did not, for instance, by being more comfortable with and/or having more frequent contact with organizations and outreach workers. Finally,

Table 9. Police attitudes towards key populations and harm reduction

	Police (n = 199)
Arresting and detaining key populations are appropriate solutions for reducing HIV/AIDS and drug use (%)	
Strongly agree/agree	187 (94.0)
Strongly disagree/disagree	11 (5.5)
Do not know	1 (0.5)
There is good collaboration between the community and police for HIV and harm reduction programming (%)	
Strongly agree/agree	198 (99.5)
Strongly disagree/disagree	1 (0.5)
I support the provision of HIV prevention and harm reduction in my community	
Strongly agree/Agree	199 (100.0)
Police should arrest key populations because of the following reasons (%)	
Using drugs in private places	192 (96.5)
Selling sex	176 (88.4)
Carrying N&S	110 (55.2)
Carrying condoms	4 (2.0)

because of the relatively small number of subpopulations within the FEW (such as street based FEW) and PWUD samples (injecting and non-injecting drug users) this study could not determine possible differences within these groups.

Conclusions

This study illustrates that key populations' fear of accessing harm reduction and health services and police's negative attitudes and practices are key barriers to HIV prevention and treatment efforts in Cambodia. It further suggests that future efforts aiming to align law enforcement with HIV services and wider public health goals, such as PCPI, must address the underlying negative attitudes held by key populations and police. Such efforts should be tailored to each key population group and evaluated for effectiveness.

Findings from this study also bolster global recognition of the importance of an enabling environment for effective HIV programs and services. A paradigm shift from punitive laws and policies towards harm reduction and rights-based principles, as well as effective multi-sectoral collaboration are all imperative for reducing HIV in Cambodia and other countries with key population driven HIV epidemics.

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Competing interests

The authors have no conflict of interest.

Authors' contributions

AW contributed to the study concept and design. MS managed data and statistical analyses. MS and AW led the writing and editing of the paper.

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Research article

Factors associated with physical and sexual violence by police among people who inject drugs in Ukraine: implications for retention on opioid agonist therapy

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Abstract

Introduction: Ukraine's volatile HIV epidemic, one of the largest in Eastern Europe and Central Asia, remains concentrated in people who inject drugs (PWID). HIV prevalence is high (21.3% to 41.8%) among the estimated 310,000 PWID. Opioid agonist therapy (OAT) is the most cost-effective HIV prevention strategy there, yet OAT services are hampered by negative attitudes and frequent harassment of OAT clients and site personnel by law enforcement. This paper examines the various types of police violence that Ukrainian PWID experience and factors associated with the different types of violence, as well as the possible implications of police harassment on OAT retention.

Methods: In 2014 to 2015, we conducted a cross-sectional survey in five Ukrainian cities with 1613 PWID currently, previously and never on OAT, using a combination of respondent-driven sampling, as well as random sampling. We analysed correlates of police violence by multiple factors, including by gender, and their effects on duration of OAT retention. Self-reported physical and sexual violence by police were the two primary outcomes, while retention on OAT was used as a secondary outcome.

Results: Overall, 1033 (64.0%) PWID reported being physically assaulted by police, which was positively correlated with currently or previously being on OAT (69.1% vs. 60.2%; $p < 0.01$). HIV prevalence rates were higher in those receiving OAT than those not on OAT (47.6% vs. 36.1%; $p < 0.01$). Police violence experiences differed by sex, with men experiencing significantly more physical violence, while women experienced more sexual violence (65.9% vs. 42.6%; $p < 0.01$). For PWID who had successfully accessed OAT, longer OAT retention was significantly correlated both with sexual assault by police and fewer non-fatal overdoses.

Conclusions: Police violence is a frequent experience among PWID in Ukraine, particularly for those accessing OAT, an evidence-based primary and secondary HIV prevention strategy. Police violence experiences, however, were different for men and women, and interventions with police that address these sexual differences and focus on non-violent interactions with PWID to improve access and retention on OAT are crucial for improving HIV prevention and treatment goals for Ukraine.

Keywords: police violence; opioid agonist therapy; methadone; buprenorphine; HIV; substance use disorders; Ukraine.

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Introduction

Ukraine, with an HIV prevalence of 1.2% among adults aged 15 to 49, faces one of the largest and most volatile HIV epidemics in Eastern Europe and Central Asia [1]. With a population of 45.5 million people, Ukraine's HIV epidemic is still predominantly concentrated in people who inject drugs (PWID), with an exceedingly high HIV prevalence (21.3% and 41.8%) among the country's estimated 310,000 PWID [2,3]. Opioid agonist therapy (OAT) with buprenorphine was first introduced in Ukraine in 2004 [4,5], followed by methadone maintenance treatment in 2008 [6]. OAT is one of the most effective and cost-effective strategies for treatment of opioid addiction and prevention of primary and secondary HIV infections for PWID in Ukraine [7–9]. OAT has a number of direct treatment benefits, including reduction in drug injection

risk-taking [10] and improvements in quality of life for PWID through improved social functioning, employment, underlying psychiatric disorders and reducing criminal behaviour [11–14].

Despite the documented effectiveness of OAT, scale-up in Ukraine has been hindered by numerous barriers, including police harassment, human rights infringements, ineffective policies, myths about OAT and hostile attitudes toward those who attempt to enter OAT programmes [15–19]. For example, to initiate OAT, PWID are required to officially “register” as an “addict” at government-sponsored narcology (a Soviet term used for the treatment of addiction) clinics. This requirement often deters patients from seeking treatment due to fear of losing certain societal privileges such as employment and driver's license; it potentially allows police to know patients'

identity [15,16,20]. Police have been known to monitor and visit narcology clinics in Ukraine in attempts to obtain information about drug users, demand money from them or extract information about other drug users [21].

The prevailing view by Ukrainian law enforcement, who often interpret and impose harsh regulations toward drug users and utilize harassment to obstruct OAT access, is that drug dependence is more a criminal act rather than a chronic and relapsing medical condition that can be effectively treated [19]. Consequently, police rely on punitive rather than rehabilitative measures to address opioid dependence [20], which undermines HIV prevention and treatment efforts. We therefore hypothesized that police hostility and harassment may negatively influence OAT entry and retention through several mechanisms. First, PWID may not enter or remain on OAT if they have been physically abused by police or know of others who have experienced physical or sexual abuse. Second, police may harass PWID through unofficial detentions for up to three days, long enough to disrupt OAT or antiretroviral medications and precipitate opioid withdrawal symptoms or promote development of antiretroviral medication resistance, respectively [18]. Third, police harass patients at OAT and needle-exchange sites by conducting searches and confiscating HIV medications due to allegedly mistaking them for illegal drugs [16]. Fourth, physical abuse by police officers has also been reported by PWID [22].

This study examines the various types of police violence and factors associated with police violence experienced by Ukrainian PWID, as well as the possible implications of police harassment on retention in OAT.

Methods

From January 2014 to March 2015, a self-administered survey was conducted in five Ukrainian cities among three groups of PWID: 1) those currently on OAT; 2) those previously on OAT; and 3) those never on OAT. All survey respondents were PWID over 18 years old, who met DSM-V criteria for opioid dependence using a validated, self-report screening instrument [23].

Participant recruitment

Study participants who were currently or previously on OAT were randomly selected from client lists obtained from OAT sites in each city, while those who were never on OAT were recruited using respondent-driven sampling (RDS). Using standardized methods [24,25], RDS seeds were selected based on residential location, age (± 25 years), injection duration (± 2 years) and gender. Each RDS participant received three coupons to recruit others. All participants underwent HIV counselling and two-step rapid HIV testing, followed by a standardized survey using a computer-assisted survey instrument (CASI). Participants were paid 100 UAH (approximately \$4 to \$10 US during the data collection period) for completing the interviews, as well as 20 UAH (approximately \$1 to \$2 US) for up to three participants they recruited into the study [26]. Research assistants described the research study and obtained written consent. Participation was voluntary and participants could discontinue the survey for any reason and at any time without affecting the

benefits or services they were receiving. Consenting participants were assigned an anonymous unique identifier. The study received approval from institutional review boards at Yale University, the Ukrainian Institute for Public Health Policy and the Gromashevskiy Institute at the National Academy of Medical Sciences.

Study definitions

In addition to socio-demographic characteristics, relationship status was defined as stable if legally married or unmarried but cohabitating. Drug use characteristics included number of years injecting and frequency of injection in the past 30 days, length of time on OAT, frequency of incarceration and reason for last incarceration (related to substance use or a violent crime), and drug dealing as a source of income.

The primary study outcomes consisted of two standardized indicators measuring lifetime 1) physical and 2) sexual violence enacted by police. Physical violence consisted of self-reported experience of physical assault by police officers, including slapping, kicking, punching, slashing, strangling or choking, whereas sexual violence consisted of self-reported non-consensual, forced sexual contact, including oral, vaginal and anal, as well as sex with multiple partners. In addition to physical and sexual violence, we assessed other types of police harassment toward PWID including verbal and physical threats, monetary exhortations, unprovoked detention, particularly on the way to or from an OAT site, and blackmail (including forced cooperation in exchange for avoiding an arrest).

The secondary outcome, retention in OAT, was defined only in current and previous OAT groups as a continuous variable of the number of months that the respondents participated in the methadone or buprenorphine programme.

Statistical analysis

First, we compared the various characteristics of participants who had received OAT (either currently or previously) and those who had never been on OAT. Chi-square tests were used to compare the frequencies in categorical variables, including gender, relationship status, HIV status and all police violence variables, as well as the methadone and buprenorphine entry and retention variables. A *t*-test was used for all continuous variables. Second, we compared the prevalence of different types of police harassment between two gender groups using chi-square tests with application of sampling weights based on population estimates in each OAT strata by city. The population estimates for the OAT groups were taken directly from the administrative records of OAT programmes, as well as being based on medical records, while the population size of those never on OAT was taken from the previously available estimates and adjusted based on a sample selection of opioid injectors [2]. Third, weighted multivariate logistic regressions were used to analyse the primary outcomes: police physical and sexual violence. Explanatory variables were included in the final estimation based on bivariate associations with $p < 0.10$ and whether they had a plausible association with outcomes of interest or whether the variables served as important controls to counter omitted variable bias. Fourth, using retention on OAT as a secondary outcome, we estimated Cox proportional hazard models. The outcome was censored

for individuals who were on OAT at the time of the survey. As in the case of logistic regression, the final model incorporated variables that were deemed plausible controls to counter omitted variable bias and produced relative goodness-of-fit based on an Akaike information criterion. The entire set of variables from which a smaller subset of covariates was chosen included demographic characteristics, self-reported non-fatal overdose in the past 30 days, frequency and duration of injection, incarceration history, types of offense for which the person was most recently incarcerated, income from illegal activities, lifetime sexual and physical violence, police harassment and city of residence. Statistical analyses were performed using STATA v 14 [27].

Results

Socio-demographic characteristics

Table 1 describes the descriptive characteristics of the 1613 PWID, stratified by those who were currently and previously on OAT ($n = 702$), and those never on OAT ($n = 911$). Most participants were male ($n = 1233$) and in their mid-30s (mean = 35.2 years; SD = 0.26). OAT participants were significantly older than those never on OAT (38.1 years vs. 35.0 years; $p < 0.01$), had injected longer (19.6 vs. 15.3 years; $p < 0.01$), reported fewer days of injection in the past month (5.2 vs. 21.4; $p < 0.01$) and were more often in stable

relationships (39% vs. 32%; $p < 0.01$). OAT participants also experienced more physical assault by police (69.1% vs. 60.2%; $p < 0.01$) and higher rates of HIV infection (47.6% vs. 36.1%; $p < 0.01$). Participants who had never been in OAT reported drug dealing as an additional source of income (5.9% vs. 3.2%; $p = 0.02$). The mean duration of OAT treatment for current or previous OAT participants was 9.6 months (SD = 1.8). Most participants reported that their most recent incarceration was related to a violent crime (66.9%) rather than a substance use-related one (25.4%).

Police harassment and violence

The prevalence of police harassment is shown in Table 2. It differed by gender, with men being more frequently threatened with police violence, physically assaulted by police and physically assaulted with a weapon. Conversely, women reported they were forced by police officers to have sex more often than men (13.1% vs. 1.4%; $p < 0.01$). Overall, 22% of OAT participants were stopped by police on the way to or from OAT, with men reporting being stopped more often than women (26.0% vs. 8.9%; $p < 0.01$). Men were also significantly more likely than women to be victims of police harassment during required daily OAT attendance, including police officers demanding money as bribes (10.6% vs. 3.2%; $p < 0.01$), police officers demanding cooperation with reporting illegal

Table 1. Comparison of demographic and risk behaviours among PWID in five cities in Ukraine

Variables	Total sample ^a	Currently or previously on OAT		p
	n (%)	n (%)	Never on OAT n (%)	
	N = 1613	n = 702	n = 911	
Mean age, years (SE)	35.2 (0.26)	38.1 (0.36)	35.0 (0.27)	<0.01
Gender				
Male	1233 (76.4)	533 (75.9)	700 (76.8)	Referent
Female	380 (23.6)	169 (24.1)	211 (23.2)	0.668
Relationship status				
In a stable relationship	566 (35.1)	274 (39.0)	292 (32.1)	<0.01
Not in a stable relationship	1047 (64.9)	428 (61.0)	615 (67.5)	Referent
Injection characteristics				
Years of injection – mean (SE)	15.6 (0.29)	19.6 (0.38)	15.3 (0.31)	<0.01
Number of days injected any substance (past 30 days) – mean (SE)	20.8 (0.31)	5.2 (4.40)	21.4 (0.32)	<0.01
Months in OAT programme – mean (SE)	1.70 (0.52)	9.6 (1.8)	–	na
Number of incarcerations – mean (SE)	1.09 (0.06)	1.04 (0.08)	1.09 (0.07)	0.91
Last incarceration related to substance abuse	393 (25.4)	183 (26.1)	210 (23.1)	0.16
Last incarceration related to a violent crime	1079 (66.9)	519 (73.9)	615 (67.5)	0.55
Lifetime physical assault by police	1033 (64.0)	485 (69.1)	548 (60.2)	<0.01
Lifetime sexual assault by police	70 (4.3)	32 (4.6)	38 (4.2)	0.71
Drug dealing as an additional income source	77 (4.8)	23 (3.2)	54 (5.9)	0.02
HIV test results				
Positive	663 (41.1)	334 (47.6)	329 (36.1)	<0.01
Negative	950 (58.9)	368 (52.4)	582 (63.9)	Referent

^aAverages weighted by population fractions in each OAT strata and city. OAT, opioid agonist therapy; PWID, people who inject drugs; SE: standard error; NA: not applicable.

Table 2. Prevalence of police harassment by gender in five Ukrainian cities

Variable	Total	Men	Women	p
	N = 1613	n = 1233	n = 380	
	n (%)	n (%)	n (%)	
Threatened by police with physical violence (lifetime)	753 (46.8)	626 (50.8)	127 (33.4)	<0.01
Threatened by police with a weapon (lifetime)	534 (33.2)	452 (36.7)	82 (22.0)	<0.01
Physically assaulted by police (lifetime)	971 (60.2)	813 (65.9)	158 (42.6)	<0.01
Physically assaulted by police (last six months)	196 (12.2)	170 (13.8)	26 (6.8)	<0.01
Forced by police to have sex (lifetime)	62 (3.8)	12 (1.4)	50 (13.1)	<0.01
Forced by police to have sex (past six months)	12 (0.7)	4 (0.3)	8 (2.1)	<0.01
Not interested in OAT treatment due to police harassment	396 (24.6)	303 (24.6)	93 (24.5)	0.98
Stopped by police while going to/from OAT (OAT participants only)	355 (22.0)	321 (26.0)	34 (8.9)	<0.01
Police demanded money when stopping to/from OAT	143 (8.9)	131 (10.6)	12 (3.2)	<0.01
Police asked to cooperate when stopping to/from OAT	137 (8.5)	123 (10.0)	14 (3.7)	<0.01
Police detained or arrested when stopped to/from OAT	132 (8.2)	124 (10.1)	8 (2.1)	<0.01

Note that statistics were weighted by the population fractions in each OAT strata and city.
OAT, opioid agonist therapy.

activities by other PWID to avoid arrest (10.0% vs. 3.7%; $p < 0.01$) and unofficial police detention that did not result in official charges (10.1% vs. 2.1%; $p < 0.01$). Table 3 also demonstrates the prevalence of police harassment in five Ukrainian cities. Dnepropetrovsk had the highest prevalence of both lifetime physical and sexual violence.

Table 4 presents the multivariate analyses of the correlates of physical and sexual violence by police experienced by PWID participants. Lifetime physical violence was positively correlated with being male, longer drug injection duration and the number of incarcerations. Compared to other reasons for incarceration, incarceration related to substance use was negatively correlated with physical violence and not significantly correlated with lifetime sexual assault. Lifetime sexual assault was associated with being female; women were over 10-fold more likely to have experienced sexual violence by police than men (OR = 10.73; $p < 0.01$). Other

correlates of sexual violence by police included years of injection and number of incarcerations; however, reason for incarcerations was not significantly associated with police-related sexual violence.

Impact of police violence on retention on OAT

Table 5 highlights the factors correlated with retention on OAT for the 702 participants currently or previously on OAT. PWID who had experienced physical violence by the police had higher, but not statistically significant, relative hazard rates (HR: 1.29, $p = 0.08$) for discontinuing OAT and therefore had lower retention on OAT relative to PWID who had never experienced police physical violence. Additionally, experience of police-related sexual violence and overdose was associated with lower relative hazard rates and therefore correlated with longer retention on OAT.

Table 3. Prevalence of police harassment by city in Ukraine

Variable	Kiev	Odessa	Mykolayiv	Dnepropetrovsk	Lviv
	N = 413	N = 315	N = 344	N = 380	N = 273
	n (%)	n (%)	n (%)	n (%)	n (%)
Threatened by police with physical violence (lifetime)	198 (47.9)	115 (36.5)	151 (43.8)	177 (48.0)	112 (41.0)
Threatened by police with a weapon (lifetime)	146 (35.3)	90 (28.5)	114 (33.1)	114 (30.9)	70 (25.6)
Physically assaulted by police (lifetime)	255 (61.7)	133 (42.2)	203 (59.0)	238 (64.6)	142 (52.0)
Physically assaulted by police (last six months)	47 (11.3)	20 (6.34)	34 (9.9)	62 (16.8)	33 (12.0)
Forced by police to have sex (lifetime)	14 (3.38)	8 (2.53)	9 (2.61)	23 (6.25)	8 (2.93)
Forced by police to have sex (past six months)	1 (0.24)	1 (0.32)	3 (0.87)	6 (1.63)	1 (0.366)
Not interested in OAT treatment due to police harassment	87 (21.0)	62 (19.6)	89 (25.8)	85 (23.0)	73 (26.7)

Note that statistics were weighted by the population fractions in each OAT strata and city.
OAT, opioid agonist therapy.

Table 4. Factors associated with physical and sexual assault of PWID by police in Ukraine (N = 1613)

Covariates	Lifetime physical assault by police ^a			Lifetime sexual assault by police ^a		
	OR	95% CI	p	OR	95% CI	p
Gender	0.37	[0.26, 0.51]	<0.01	10.73	[4.9, 23.1]	<0.01
Years of injection	1.03	[1.01, 1.04]	<0.01	0.99	[0.95, 1.02]	0.498
Number of incarcerations	1.14	[1.01, 1.34]	0.05	1.09	[0.92, 1.28]	0.289
Last incarceration – violent crime	1.19	[0.65, 2.11]	0.57	Referent		
Last incarceration – substance abuse	0.43	[0.25, 0.74]	<0.01	1.13	[0.45, 2.73]	0.791
Last incarceration – other	Referent		–	Referent		–
Income from drug dealing	1.65	[0.86, 3.14]	0.13	2.08	[0.81, 5.27]	0.123
HIV status	–	–	–	1.48	[0.77, 2.82]	0.23
Constant	1.95	[1.1, 3.43]	0.02	0.01	[0.004, 0.03]	<0.01

^aStatistics weighted by the population fractions in each OAT strata and city.
OAT, opioid agonist therapy; PWID, people who inject drugs.

Discussion

In the largest survey of PWID in Ukraine, experiences with police physical and sexual violence were high for PWID who had accessed OAT as well as those who had never been on OAT. The high prevalence of police harassment on the way to or from OAT sites is especially concerning because scale-up of OAT is the most cost-effective strategy to prevent HIV in Ukraine [9]. Moreover, experiences with police victimization, especially when accessing OAT clinics, are likely to negatively impact on OAT entry and retention and undermine HIV prevention efforts. OAT has been available in Ukraine for over a decade; however, expansion efforts have stagnated for the past five years despite ample funding to expand treatment slots. A number of personal and structural factors such as negative perceptions about OAT medications, especially methadone, strict policies on dosage, inability to take home medications, inconvenient clinic locations and subpar treatment settings have hampered treatment expansion [15,16,28], but data here and elsewhere support that police also negatively influence OAT expansion [18,20,22,29–32].

Although experience of police-related violence is common among PWID, women experience it differently than men, with higher levels of sexual violence. Previous studies from Russia and other countries where PWID are common have reported that females are often sexually abused and raped by police officers [33]. A study of female sex workers (FSWs) in

two Russian cities, half of whom reported some history of drug injection, showed that more than one-third of the study participants reported sexual coercion by police [34]. Other studies have found high levels of police sexual misconduct with female drug court attendees, who report trading sex for favours with police officers [35]. Police often search women drug users and confiscate medications, sterile injection equipment and condoms, which places women at greater risk for HIV infection after release by police through needle-sharing and unprotected sex [36]. Women who have been sexually assaulted by police are also at increased risk for psychiatric conditions, such as post-traumatic stress disorder, which may increase HIV risk-taking and influence women to avoid interactions with healthcare delivery programmes or to seek care for conditions not related to victimization [36]. When they do access OAT, however, they have the option to seek additional help from social workers, psychologists or reproductive healthcare workers. Although our study compared males with females, studies of FSWs elsewhere indicate that they experience a substantial burden of police brutality [37]. Sexual violence against FSWs is associated with increased risk of HIV and other sexually transmitted infections (STIs) [37,38]. Although evidence from the general population who do not engage in sex work suggests that violence experienced by women, whether physical or sexual, is not directly correlated with HIV, it increases the risk of

Table 5. Factors associated with duration of OAT participation (N = 702)

Covariates	Hazard ratio for discontinuing OAT	95% CI	p
Years of injection	1.00	[0.97, 1.01]	0.68
Experienced nonfatal overdose	0.93	[0.87, 0.99]	0.03
Gender	1.07	[0.80, 1.42]	0.63
Lifetime physical assault by police	1.29	[0.97, 1.72]	0.08
Lifetime sexual assault by police	0.51	[0.28, 0.90]	0.02
Stopped by police going to/from OAT site	1.18	[0.86, 1.62]	0.30

Note that statistics were weighted by the population fractions in each OAT strata and city.
OAT: opioid agonist therapy.

exposure to such practices as unprotected sex and unsafe injections, which does increase female vulnerability to HIV and STIs [37–39]. It also contributes to acute and longstanding psychological distress [40,41]. FSWs who report experiences with violence, whether sexual or physical, often report inconsistent condom use, condom failure and coercion into unprotected sex [36,37]. FSWs who also inject drugs may experience needle confiscation by police and therefore practice needle sharing, which leads to increased HIV risk and STIs [36,37]. A specific focus by police to encourage OAT entry is therefore in the best interest of female PWID not only for primary and secondary HIV prevention, but to facilitate treatment for other medical and psychiatric co-morbidities [8].

Although it is not surprising that longer duration of drug injection was associated with more frequent experiences with physical police violence, presumably due to longer periods of being “at risk,” the finding that OAT participants experienced higher levels of police violence after controlling for other factors is concerning. Longer drug injection duration might also explain the higher HIV prevalence among OAT participants. With longer durations of drug injection, OAT participants were exposed to greater HIV risk through participation in high-risk behaviours such as needle-sharing. Therefore, higher HIV prevalence among OAT participants, along with increased physical violence associated with longer duration of drug injection, makes people living with HIV especially vulnerable to physical police brutality. Although we cannot disentangle whether the increased interaction with police occurred specifically as a result of OAT enrolment, our finding of high levels of police harassment while patients travel to and from OAT sites is suggestive of this relationship of police disrupting OAT services. Because OAT in Ukraine requires daily observation of medication-taking, PWID on OAT are especially easy targets for the police. Previous findings from Ukraine also suggest that police target PWID at OAT sites, resulting in confiscation of medications and subjecting them to beatings [18,20,22]. The far-reaching presence of police at OAT sites destabilizes the treatment process and instils anxiety over possible police harassment [32]. The fear of police violence at OAT sites coerces patients into putting their treatment needs aside and prioritizing avoiding police and potential beatings over seeking treatment, consequently decreasing access to and retention in OAT [32]. Because men face frequent physical abuse at the hands of police, male PWID might be more reluctant to enter or remain enrolled in OAT due to the fear of constant police surveillance and harassment [20]. Therefore, when facing the possibility of police encounters, men are at risk of being beaten, coerced, verbally assaulted and arrested [42].

The stigma that surrounds drug use in Eastern European and Central Asian countries encourages law enforcement practices that routinely target PWID [33,42,43]. However, change is crucial for HIV prevention and treatment efforts in a region where one of the most volatile HIV epidemics persists, concentrated among PWID. One option for the police that has been effective elsewhere, rather than targeting PWID for arrest, would be to align their practices with public health, guiding PWID toward treatment with methadone or

buprenorphine and helping them avoid incarceration and HIV risk. Alternatively, police could encourage PWID to more effectively access harm reduction services such as needle/syringe programmes [44–46]. In order to promote the expansion of OAT, the Ukrainian government should provide opportunities for law enforcement officers to learn about the many benefits of OAT, including reduced criminal activity. Such programmes should be geared toward educating law enforcement about drug dependence, dismantling myths that surround OAT and supporting police officers to encourage use of harm reduction services. A successful educational programme was recently initiated in Kyrgyzstan focusing on HIV prevention science, policy and occupational safety. Studies indicate that law enforcement officers who received this training were more likely to support PWID by referring them to harm reduction organizations and refraining from confiscation of needles and syringes [47]. By creating a safer environment that promotes public health rather than interdiction, advocating for OAT and needle/syringe programmes is likely to have an influence on reducing police violence. This is accomplished through establishing dialogue between law enforcement, PWID and providers that promote empowerment of PWID to utilize all available resources for harm reduction and addiction treatment. Support for law enforcement would also help to dismantle the myths and stigma that surround drug use and OAT in Ukraine and other Eastern European countries. In the absence of direct intervention with police, alternative strategies to expand OAT delivery to pharmacies and primary care sites would reduce targeting by police by allowing PWID to receive treatment in non-traditional OAT delivery programmes that do not focus on PWID [48].

Findings that show that police violence is associated with lower OAT retention are intuitive. Not surprisingly, among OAT clients, longer retention in treatment was associated with lower likelihood of non-fatal overdose, which has been described elsewhere [49]. Importantly, however, longer OAT retention was associated with nearly half as much sexual violence. One explanation is that markedly reducing drug use while receiving OAT put PWID at increased risk from police harassment (e.g., bribes), but decreased risk from more violent forms of police interactions when PWID attempted to avoid the police because they had indeed been engaging in criminal activity.

Last, brutal law enforcement practices may indirectly discourage PWID from engaging in OAT. Concerns about law enforcement raids on OAT treatment sites have been reported with attempts to confiscate patient records and other private information to potentially target PWID [32]. Consequently, many hospitals refuse to establish OAT treatment programmes due to the frequent reports of police investigations and harassment of clinicians [15,20]. Beyond targeting patients, police officers have threatened doctors in attempts to dissuade them from providing OAT or to coerce doctors to provide care only to certain patients [32]. As a result, lack of trust between patients and doctors may develop if patients perceive that their clinicians are in collusion with the police [6,32].

Limitations

Although this is the largest cross-sectional survey of PWID in Ukraine, the findings presented here are not without limitations. The cross-sectional nature of this study may only demonstrate associations and not causality [50]. In addition, self-reported information is prone to bias because reports of victimization were not verified. However, CASI was used because this survey technique reduces under-reporting of sensitive information. Moreover, while our random selection from OAT records and RDS recruitment methods seek to recruit representative samples, both strategies may introduce selection bias. Although we did use standardized measures of physical and sexual violence, the measure related to police was self-reported and possibly imprecise. Therefore, it is difficult to establish external validity of the police violence variable by referencing other studies. Notwithstanding these limitations, this study's comprehensive nature allowed the detection of significant findings on the role of police violence on OAT retention.

Conclusions

Law enforcement violence remains a major barrier to OAT expansion efforts in Ukraine. Physical violence by police is associated with decreased OAT retention overall, especially in male PWID. Ukraine has an urgent need to realign its justice and public health mandates in order to reduce unnecessary and hazardous detentions, searches and confiscations. Minimally, Ukraine should introduce interventions geared towards educating the nation's law enforcement agencies about drug addiction as a medical disease, HIV and the societal benefits of encouraging addiction treatment with OAT and harm reduction engagement. Whereas integration of services at OAT sites has greatly improved health indicators for HIV-infected PWID in Ukraine [51], further programmes that focus on the needs of female PWID are urgently needed to address the prior psychological consequences of sexual violence by police and to reduce future negative consequences. Links should be established between police, OAT clinics, healthcare providers and PWID in order to facilitate the entry of PWID into and retention on OAT. Most importantly, Ukraine's societal perception about the treatment of underlying substance use disorders needs to be realigned and addressed through promoting evidence-based treatment rather than through criminal sanctions.

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Competing interests

There are no conflicts of interest to report.

Authors' contributions

OK was responsible for conceptualizing and conducting the analysis, as well as writing and reviewing the manuscript. RM, MJB and FLA were involved with the study design, survey construction and data analysis, as well as writing and reviewing the manuscript. AZ and FLA were involved in the data interpretation and analysis, as well as writing and reviewing the manuscript. AM was involved with the study design, survey construction, data collection and data analysis, as

well as writing and reviewing the manuscript. SD was involved in the study design and manuscript review. SF was a site co-investigator from the ICF Alliance for Public Health in Ukraine and was involved in the study design and manuscript review. FLA was the principal investigator and was involved in the study design, survey construction and data interpretation, as well as writing and reviewing the manuscript.

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Research article

Strategies for reducing police arrest in the context of an HIV prevention programme for female sex workers: evidence from structural interventions in Karnataka, South India

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Abstract

Introduction: Female sex workers (FSWs) frequently experience violence in their work environments, violating their basic rights and increasing their vulnerability to HIV infection. Structural interventions addressing such violence are critical components of comprehensive HIV prevention programmes. We describe structural interventions developed to address violence against FSWs in the form of police arrest, in the context of the Bill and Melinda Gates Foundation's India AIDS Initiative (*Avahan*) in Karnataka, South India. We examine changes in FSW arrest between two consecutive time points during the intervention and identify characteristics that may increase FSW vulnerability to arrest in Karnataka.

Methods: Structural interventions with police involved advocacy work with senior police officials, sensitization workshops, and integration of HIV and human rights topics in pre-service curricula. Programmes for FSWs aimed to enhance collectivization, empowerment and awareness about human rights and to introduce crisis response mechanisms. Three rounds of integrated behavioural and biological assessment surveys were conducted among FSWs from 2004 to 2011. We conducted bivariate and multivariate analyses using data from the second (R2) and third (R3) survey rounds to examine changes in arrests among FSWs over time and to assess associations between police arrest, and the sociodemographic and sex work-related characteristics of FSWs.

Results: Among 4110 FSWs surveyed, rates of ever being arrested by the police significantly decreased over time, from 9.9% in R2 to 6.1% in R3 (adjusted odds ratio (AOR) [95% CI] = 0.63 [0.48 to 0.83]). Arrests in the preceding year significantly decreased, from 5.5% in R2 to 2.8% in R3 (AOR [95% CI] = 0.59 [0.41 to 0.86]). FSWs arrested as part of arbitrary police raids also decreased from 49.6 to 19.5% (AOR [95% CI] = 0.21 [0.11 to 0.42]). Certain characteristics, including financial dependency on sex work, street- or brothel-based solicitation and high client volumes, were found to significantly increase the odds of arrest for participants.

Conclusion: Structural interventions addressing police arrest of FSWs are feasible to implement. Based on our findings, the design of violence prevention and response interventions in Karnataka can be tailored to focus on FSWs, who are disproportionately vulnerable to arrest by police. Context-specific structural interventions can reduce police arrests, create a safer work environment for FSWs and protect fundamental human rights.

Keywords: female sex worker; FSW; police; arrest; HIV prevention; India; HIV/AIDS; violence; structural intervention.

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Introduction

Effective HIV prevention programmes for female sex workers (FSWs) must address violence that is commonly experienced in their work environments [1]. Modelling exercises recently conducted in India, Canada and Kenya – countries in which relatively large proportions of FSWs report experiences of sexual violence – show that a reduction in or elimination of sexual and physical violence and its consequences would substantially avert HIV infection among FSWs and their clients over the next 10 years [2]. Globally, the rights of FSWs are violated due to experiences of violence and harassment by police and clients [3–10], stigma and discrimination when

seeking health services [9–11] and other forms of structural violence [12,13] that threaten their well-being and livelihood. These violations directly and indirectly increase vulnerability to HIV and undermine HIV prevention efforts [14,15].

Although violence against FSWs at the hands of clients, partners, pimps and madams is widely cited in literature from India [3,6,7,12,16–20], state actors (e.g., police or other law enforcement officers) are also common perpetrators of violence and harassment [1,10,17,21,22]. Police can exert tremendous power over FSWs through the use of physical violence, harassment, unlawful arrests, forced detainment and forced or free sex, particularly in countries where sex

work is criminalized [1,7,9,23]. Notably, Beattie *et al.* [17] recently reported a significant association between police arrest and increased HIV prevalence among FSWs in Karnataka. For some FSWs, debts that accumulate from bail payments, court fees and legal costs following arrest tend to result in heightened financial insecurity and hardship [18]. In Karnataka, these debts have been shown to increase HIV vulnerability, as FSWs will often settle for “riskier” agreements with clients that yield higher per-act earnings [10]. Police seizure of condoms as evidence of sex work has also been shown to increase HIV risk among FSWs through higher rates of unprotected sex [8,23–25]. These seizures interfere with the operation of peer-led HIV prevention programmes, as peer educators and sex work venue (e.g., bar, lodge) managers fear carrying or stocking condoms for distribution [26,27]. Furthermore, fear of arrest and extortion by police can force FSWs to move to different geographic locations [1], thus disrupting important social support networks, creating barriers for programme outreach and limiting access to HIV prevention tools and services [1,27,28]. Geographic displacement may also compel FSWs to work in unsafe environments, forego condom negotiation and engage in unprotected sex [29,30]. These negative experiences ultimately undermine FSWs’ willingness and ability to seek out and obtain protection from police, while creating environments of impunity for violent clients, offending police officers and other perpetrators [23,31]. Importantly, the environment of fear and anxiety created by these policing practices has also been associated with increased vulnerability to HIV infection [5].

Context

The southern state of Karnataka, India, has a population of approximately 60 million, and findings from epidemiological mapping estimate that approximately 130,000 FSWs live and work in the state [32]. Although HIV prevalence among Karnataka’s general population is low, at 0.5%, FSWs are disproportionately burdened by the HIV epidemic, with an estimated overall prevalence of 5.1% in 2014 [33]. Furthermore, substantial regional heterogeneity exists across the state [34], with an estimated HIV prevalence among FSWs in some districts greater than 25% [35]. Although the buying and selling of sex is not illegal in India *per se*, the Immoral Traffic (Prevention) Act of 1956 (ITPA) [36] and its 2006 amendment [37] criminalize most aspects of sex work [38,39]. The primary goal of the ITPA in its current form is to address issues related to trafficking; the law prohibits any person from directly or indirectly benefitting from prostitution (Sections 3 and 4), buying sex (Sections 5 and 6) or selling sex in the vicinity of a public place (Section 7) [36,38]. The ITPA also stipulates that any space in close proximity to any public place that is being used for the buying or selling of sex shall be closed and all occupants evicted (Section 18) [36]. The majority of FSWs in Karnataka are street- and home-based, with the former largely concentrated in the southern regions of the state and the latter more common in northern districts [40]. As such, police in Karnataka most often arrest FSWs under Sections 7 and 18 of the ITPA.

The University of Manitoba and the Karnataka Health Promotion Trust (KHPT) were lead implementing partners in

Karnataka for *Avahan* – the India AIDS Initiative of the Bill and Melinda Gates Foundation – from 2003 to 2013 [17,41,42]. HIV prevention programmes were initiated in 18 of Karnataka’s 30 districts, reaching approximately 60,000 FSWs, and by 2013 the interventions were successfully handed over to the government of Karnataka and local FSW community-based organizations (CBOs) [4]. The initial design of the HIV prevention programmes mainly focused on reaching FSWs in Karnataka with HIV prevention information through a peer educator scheme; increasing condom distribution; improving accessibility of HIV testing, STI testing and STI treatment; and facilitating linkage to HIV care for anyone testing positive. However, consultations with FSWs at the beginning of programme implementation highlighted violence as a common and significant challenge in the daily lives of FSWs in Karnataka [3]. In particular, FSWs in Karnataka identified intimate partners, clients, madams/pimps, rowdies and police as the primary perpetrators of violence [17]. Importantly, previous work indicates that FSWs who report experiencing violence within the past year are significantly less likely to access HIV prevention services and report condom use with clients, in part due to the negative impact violence has on FSWs’ mental health [3]. In response, KHPT, alongside partnering organizations, including sex worker collectives, developed two structural interventions within the larger HIV prevention programme. The interventions were designed to create an environment in which FSWs would be able to more readily address violence experienced at the hands of various perpetrators, including police.

In this paper, we describe, for the first time, the structural interventions that were developed with FSW communities to reduce rates of police arrest among FSWs in Karnataka. We use data from integrated behavioural and biological assessment (IBBA) surveys conducted at programme sites to examine trends in arrests over time, as well as associations between FSW characteristics and arrest, highlighting the need to focus on FSWs who are disproportionately vulnerable to police arrest.

Methodology

Survey design and sampling

A series of district-level, cross-sectional IBBA surveys were conducted among random samples of FSWs in four districts of Karnataka (Belgaum, Bellary, Shimoga and Bangalore). Districts were chosen purposively based on geographic heterogeneity, variation in regional HIV prevalence [34] and predetermined estimates of the FSW population in each district. The sample size for each IBBA survey comprised approximately 60% of the total estimated FSW population in each district. Initial estimates of FSW population size per district were obtained through epidemiological mapping in 2004 [43] and were subsequently validated through annual monitoring and evaluation exercises for *Avahan*. Programmes were initiated in each district between April 2004 and October 2005, with Round 1 (R1) surveys conducted from August 2005 through July 2006, Round 2 (R2) from July 2008 through January 2009 and Round 3 (R3) from September 2010 through August 2011.

Sample size calculations and sampling methodology have been previously described in detail [44]. The target sample

size per district was fixed at 400 completed surveys, except for Bangalore, where the sample size was increased to 800 to better represent the diversity of FSW typologies and the large FSW population in this urban metropolis. Two different probability-based sampling approaches were adopted. Conventional cluster sampling [45] was used to sample FSWs practising out of homes or brothels, where the population sizes were relatively stable. Sampling street-based FSWs involved time-location cluster (TLC) sampling methods [45], in which intervention districts were divided into several TLCs and then a predetermined number of clusters were randomly selected for inclusion in the study sample. FSWs who were sampled from their home, the street or another public place, or a brothel were asked where they “most often” picked up clients. Participants indicating that they most often solicited via phone were classified as phone-based sex workers in these analyses. However, FSWs who exclusively used mobile phones to pick up clients were excluded from our sample, as recruitment was not done over the phone, and there are currently no epidemiological data available from Karnataka to estimate the size of the phone-based FSW population in study districts.

The IBBA surveys were designed to be culturally sensitive and context-specific, as previously described [35,46]. Only the tools used in R2 and R3 contained questions on police arrest experienced by FSWs, yielding the data presented in this paper. All surveys were administered in person by trained interviewers in the local language, Kannada. To ensure confidentiality, no identifying information was collected, which precluded data linkage between the R2 and R3 surveys.

Statistical analyses

Statistical analyses were performed with SPSS v22.0. Appropriate weights were used to account for the differential recruitment of FSWs by typology within districts, non-response rates, and probabilities of selection across districts. The general weighting procedure for IBBA required two steps. First, a cluster weight was calculated and a cluster-level non-response adjustment was applied to the cluster weight; it was calculated independently for each design domain (type of sex work site). Second, an FSW weight was calculated and an FSW-level non-response adjustment was applied to the FSW weight. The FSW weight was calculated independently for each cluster. The overall sampling weight attached to each FSW record is the product of the cluster weight and the FSW weight. These final weights were normalized so that the total number of weighted cases equalled the total number of unweighted cases.

Both bivariate and multivariate analyses were performed to assess the association between police arrest and participant characteristics (sociodemographic and sex work-specific). Multivariate analyses were used to adjust for potential confounding factors by district, survey round, and sociodemographic and sex work characteristics. The dichotomous outcome variables of interest, “ever been arrested” and “arrested in the past year,” were analyzed using logistic regression models, adjusted for participants’ districts of interview and origin, age, self-reported literacy, involvement in work besides sex work, sex work typology, sex work duration, average number of clients per week, marital

status, age at first sex, age at start of sex work, duration of relationship with main partner and years since first contact with an HIV prevention programme.

Ethical considerations

The Institutional Ethical Review Board of St. John’s National Academy of Health Sciences, Bangalore, India, and the Health Research Ethics Board at the University of Manitoba, Winnipeg, Canada, approved the study. Verbal informed consent was obtained, in the presence of a witness, from all survey participants. Statutory approval for the conduct of the IBBA surveys and their protocols was obtained from the government of India’s Health Ministry Screening Committee.

Description of the intervention programmes

One key objective of the structural interventions designed and implemented for the programme was to reduce police violence and harassment experienced by FSWs. A two-pronged strategy was employed (Figure 1). The first prong involved advocacy and sensitization work with police, on behalf of FSWs, starting from the highest level of bureaucracy within the Karnataka State Police. The second prong focused on capacity building and collectivization strategies among FSWs, which aimed to better equip communities to challenge police violence through collective empowerment [42].

Interventions with police

In 2004, the programme initiated its advocacy work with police by engaging with top-level civil servants in Karnataka’s Ministry of Home Affairs [47]. This resulted in the Director-General of Police issuing instructions to all police personnel to interpret the ITPA in a way that reduces harm towards FSWs and penalizes traffickers and abusive pimps/madams rather than FSWs [48]. The Director-General also made a commitment that any allegation of police harassment or connivance would undergo prompt enquiry and strict action [48].

Next, one-day sensitization workshops [49] were held with all cadres of police personnel at all police stations within the programme districts. These workshops were conducted by local implementing agencies, government officials in charge of managing HIV-related health programmes in the districts, senior police officials, human rights experts and members of local FSW communities [48]. Multiple sensitization workshops were held to build rapport with the local police and accommodate frequent turnover in police personnel. During the workshops, officers were guided through the interpretation of existing laws that were being used to persecute FSWs; educated about fundamental human rights and consequences of violating those rights, with specific reference to local sex work communities; and informed about the lives of FSWs and their daily challenges. Police officers were also provided with evidence that explicitly links violence and harassment directed towards FSWs with poor health outcomes. Between 2005 and 2011, 85 senior police officials and 13,594 police officers were trained as facilitators, covering 60% of all members of the state police force.

Post-sensitization, the implementing partners regularly followed up with the police stations to maintain rapport with the officers and invited police officials to attend a variety of programme activities as special guests, including inaugural

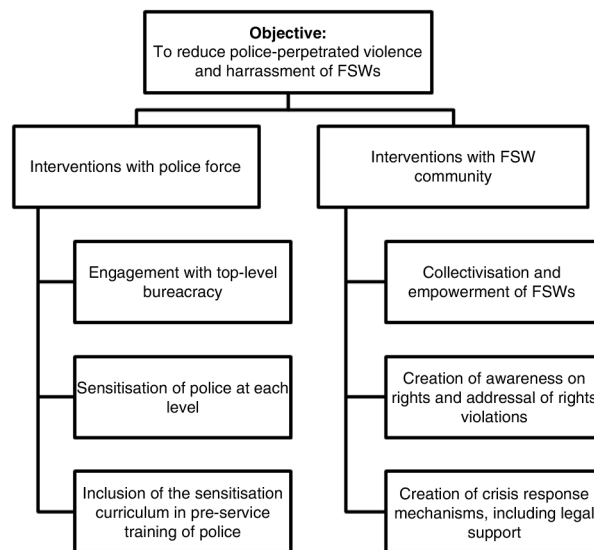


Figure 1. Two-pronged strategy to address police violence against female sex workers in Karnataka, South India.

events for programme drop-in centres and clinics. This helped foster mutually beneficial working relationships between the police, implementing agencies and the FSWs themselves. In addition, facilitators worked with police training academies to incorporate sessions on sex work and the ITPA into pre-service and in-service curricula, to sustain programme efforts.

Interventions with FSWs

In 2006, the violence reduction programme expanded to include interventions with FSWs. A central component of the interventions with FSWs was community collectivization [50]. This step led to the establishment of support groups within each programme site and collectives at the district and sub-district levels, while fostering solidarity for collective action. This resultant “collective empowerment” [42] leads to greater autonomy and reduces experiences of violence and coercion among FSWs. Previous findings from *Avahan* programmes have shown that FSWs who are members of any peer group experience significantly less violence than non-peer group members [51].

As such, a series of capacity-building sessions [49] were organized with FSWs to clarify their rights, as protected by the Indian constitution and national laws, to familiarize FSWs with existing laws under which they can be arrested and to facilitate their interpretation. As part of these capacity-building exercises, FSWs were taken to police stations to review the procedures for registering complaints against perpetrators of violence, and face-to-face interactions between FSWs and officers were organized to initiate an open dialogue.

Finally, crisis response and management systems were set up in all intervention districts to respond to any violence reported by FSWs. Dedicated 24-hour phone lines were established, with telephone numbers distributed widely within the community to encourage FSWs to call and seek support in case of crisis or violence. Each crisis management system also included a 24-hour crisis management team [3], including a human rights lawyer, who provided legal counsel when the crisis management team dealt with issues such as

providing bail to fellow FSWs and participating in court cases involving community members.

Results

In total, 4110 FSWs were interviewed over two rounds of IBBA surveys, which were conducted 20 months apart – 48% in R2 and 52% in R3 (Table 1). Sixteen percent of survey participants were young (<25 years), about two-thirds reported illiteracy, and another two-thirds reported working in jobs besides sex work (e.g., domestic labour, hawking, petty shopkeeping and fruit/vegetable vending). All participants were citizens of India and identified as ethnically Indian (data not shown). Twenty-one percent of participants reported practicing sex work somewhere besides their home district, of whom only 6% were not natives of Karnataka (data not shown). FSWs most commonly (44%) solicited clients in the street or other public places. Seventeen percent of participants were relatively new to sex work (practising for <2 years), whereas 51% reported involvement in sex work for more than five years. One-quarter of participants entered into sex work between the ages of 20 and 24 years, while 21% started sex work before they were 20 years old. Nearly one-half of FSWs reported at least 10 clients in an average week. In R2 and R3, most participants reported at least one year of exposure to HIV prevention services through a CBO or non-governmental organization.

Police arrest of FSWs in intervention districts

Table 2 presents the changes in FSW arrest over time. Overall, 9.9% of FSWs reported ever being arrested in R2, and this proportion significantly decreased to 6.1% in R3. Although 5.5% percent of R2 participants reported experiencing arrest in the preceding year, this number decreased significantly to 2.8% in R3. Among the FSWs surveyed in R2, nearly half reported that they had been arrested as part of an arbitrary, routine police raid and this proportion significantly decreased to 19.5% in the subsequent survey.

Table 1. Sociodemographic and sex work-related characteristics of FSW participants in Karnataka, by survey round

	Total (N = 4110)	IBBA survey round		p
		R2 (n = 1953)	R3 (n = 2157)	
	%	%	%	
District				
Belgaum	28.0	25.6	30.2	
Bellary	23.1	24.2	22.1	
Shimoga	23.5	23.6	23.5	
Bangalore Urban	25.4	26.7	24.3	0.002
Age (years)				
< 25	15.7	17.8	13.8	
≥ 25	84.3	82.2	86.2	< 0.001
Literacy				
Literate	35.3	34.8	35.8	
Illiterate	64.7	65.2	64.2	0.670
Work other than sex work				
Yes	64.7	62.4	66.7	
No	34.8	36.8	33.0	< 0.001
Location of sex work practice				
Practised sex work within home district	79.5	78.4	80.6	
Practised sex work outside of home district	20.5	21.6	19.4	0.002
Usual place of solicitation				
Home	27.3	37.3	18.5	
Street/public place	44.5	44.1	44.9	
Brothel	7.0	11.0	3.5	
Phone	21.1	7.6	33.2	< 0.001
Years practising sex work				
≤ 2	16.9	19.6	14.4	
3 to 4	32.1	30.3	33.7	
≥ 5	51.0	50.1	51.9	< 0.001
Number of clients in an average week				
< 10	52.2	42.4	60.9	
≥ 10	47.8	57.6	39.1	< 0.001
Age at start of sex work (years)				
≤ 19	21.5	23.8	19.5	
20 to 24	24.9	25.0	24.8	
25 to 29	24.2	23.7	24.6	
30 to 34	17.4	16.9	17.7	
≥ 35	12.1	10.6	13.3	< 0.001
First contact with/by CBO or NGO				
Not aware of CBO/NGO	3.4	4.5	2.5	
< 1 year ago	12.5	15.5	9.9	
1 to 2 years ago	34.3	37.7	31.3	
3 to 4 years ago	31.7	33.5	30.1	
≥ 5 years ago	18.0	8.8	26.2	< 0.001

CBO, community-based organization; FSW, female sex worker; IBBA, integrated behavioural and biological assessment; NGO, non-governmental organization

Peer support received by FSWs following arrest

Exposure to the structural interventions over time is shown in Table 3. A significantly higher proportion of women received support from fellow FSWs following arrest at R3 (69.6%), when compared to R2 (40.7%).

Sociodemographic and sex work-related characteristics associated with police arrest

To better understand whether certain FSWs are disproportionately vulnerable to police arrest and harassment, we examined the relationships between history of arrest and

Table 2. Changes in police arrest among FSWs in intervention districts over time^a

IBBA survey round	Ever arrested			Arrested in the last year			Arrested during a routine raid		
	%	AOR (95% CI)	<i>p</i>	%	AOR (95% CI)	<i>p</i>	%	AOR (95% CI)	<i>p</i>
R2 (<i>n</i> = 1953)	9.9	Ref.	–	5.5	Ref.	–	49.6	Ref.	–
R3 (<i>n</i> = 2157)	6.1	0.63 (0.48 to 0.83)	<0.001	2.8	0.59 (0.41 to 0.86)	0.006	19.5	0.21 (0.11 to 0.42)	<0.001

^aModels adjusted for participant characteristics, as previously described; AOR, adjusted odds ratio; FSW, female sex worker; IBBA, integrated behavioural and biological assessment

sociodemographic and sex work-related characteristics (Table 4). FSWs who were illiterate or practising sex work outside of their home district had significantly greater odds of being arrested than literate or local FSWs, ever and in the last year (*p* < 0.05). The odds of ever being arrested and of being arrested in the last year were significantly higher for participants who relied solely on sex work for income. When compared to home-based FSWs, women who solicited clients in brothels or the street were significantly more likely to have ever been arrested, but only street-based FSWs were more likely to have been arrested in the past year. Additionally, women entertaining ≥ 10 clients/week had over two times the odds of being arrested, ever and in the last year, when compared to participants reporting < 10 clients/week. Women who started sex work when they were ≥ 25 years old had lower odds of ever being arrested, when compared to women who entered sex work at ≤ 19 years old, but age at entry was not a significant predictor of arrest in the last year.

Discussion

This paper is the first to focus specifically on the factors associated with police arrest among FSWs in Karnataka. We demonstrate that the implementation of structural interventions involving police may contribute to reducing rates of arrest over time and highlight the disproportionate vulnerability of specific FSWs in Karnataka to police violence and arrest.

Importantly, we provide an in-depth description of the design and implementation of structural interventions that may play a role in reducing police arrest among FSWs in Karnataka. The primary intent of this paper is to provide guidance and direction to others wishing to develop similar programmes aimed at reducing police violence and arrest targeted at FSWs in other geographic and epidemiological

contexts. There are many emerging examples of structural interventions directed at police in the context of HIV prevention programmes for FSWs, even in countries where sex work is criminalized [20]. Such programmes create a better understanding of the sex trade among police officers, improve access to health and social services for FSWs and have shown a clear reduction in police violence toward FSWs [20]. Our findings bolster growing evidence that even in an environment such as in India, where sex work is criminalized, structural approaches to address violence can be effectively delivered to scale, to reduce arrest of and violence against FSWs [3,6,10,17].

Police reform is a key element for enhancing partnerships between police and communities of FSWs, especially in an environment that supports violence, arbitrary arrest and harassment of FSWs [20]. Various police-focused strategies have been employed by programmes in an attempt to enhance the enabling environment for FSWs. Police training and education is one of the most common approaches, as exemplified by Save the Children's *Poru Sapot* programme in Papua New Guinea, which focuses on creating safe environments within which commercial interactions can take place [52]. Another strategy employed by Keeping Alive Societies Hope (KASH) in Kenya since 2007 is based upon conducting joint workshops with police officers and FSWs. Due to its success, KASH is now being supported by police training centres across Nyanza Province [53]. As described, our strategy was to attempt to reduce police violence through sensitization workshops and programmes that built capacity and collective empowerment [42] among FSW communities. Based on our findings and previous work [22], there is now convincing evidence that this kind of structural intervention can lead to significant reductions in police harassment and violence and better equip FSWs to address such violence.

This study also highlights the variation in vulnerability among FSWs with regard to police arrest. FSWs who reported being dependent solely on sex work-derived income, having higher average per-week client volume and practising sex work in public places or brothels were found to be most vulnerable to police arrest. Street-based FSWs, and particularly those with high client volumes, are generally more visible to police, which can lead to more frequent interactions with officers on the beat, leading to increased violence and harassment [54,55]. This visibility can also add to FSWs' vulnerability to violence perpetrated by clients [56]. Similarly, given that brothels are criminalized under Section 3 of the ITPA [36], brothel-based FSWs are also particularly vulnerable to arrest and harassment by law enforcers during routine raids [57]. Previous research

Table 3. Changes in post-arrest peer support received by FSWs in intervention districts over time^a

IBBA survey round	Received peer support following arrest		
	%	AOR (95% CI)	<i>p</i>
R2 (<i>n</i> = 1953)	40.7	Ref.	–
R3 (<i>n</i> = 2157)	69.6	5.21 (2.83 to 9.60)	<0.001

^aModels adjusted for participant characteristics, as previously described; AOR, adjusted odds ratio; FSW, female sex worker; IBBA, integrated behavioural and biological assessment

Table 4. Influence of select sociodemographic and sex work-related characteristics on FSWs' histories of arrest^a

	n	Ever arrested			Arrested in the last year		
		%	AOR (95% CI)	p	%	AOR (95% CI)	p
Age (years)							
< 25	1045	11.8	Ref.	–	5.1	Ref.	–
≥ 25	809	7.0	1.47 (0.95 to 2.27)	0.081	4.4	0.79 (0.46 to 1.36)	0.403
Literacy							
Literate	1546	6.0	Ref.	–	3.3	Ref.	–
Illiterate	2564	9.0	1.44 (1.09 to 1.90)	0.011	4.5	1.49 (1.03 to 2.16)	0.034
Work other than sex work							
Yes	2607	5.3	Ref.	–	2.7	Ref.	–
No	1488	12.7	2.00 (1.56 to 2.56)	<0.001	6.6	1.74 (1.24 to 2.44)	<0.001
Location of sex work practice							
Practised sex work within home district	3157	7.3	Ref.	–	3.4	Ref.	–
Practised sex work outside of home district	953	10.4	1.61 (1.19 to 2.19)	0.002	6.7	1.78 (1.20 to 2.62)	0.004
Usual place of solicitation							
Home	1702	9.8	Ref.	–	5.3	Ref.	–
Street/public place	1150	4.4	2.27 (1.61 to 3.20)	<0.001	2.3	2.22 (1.40 to 3.53)	<0.001
Brothel	316	18.6	3.01 (1.90 to 4.77)	<0.001	8.8	1.759 (0.94 to 3.30)	0.079
Phone	941	4.8	1.56 (0.97 to 2.50)	0.064	2.3	1.41 (0.73 to 2.70)	0.306
Years practising sex work							
≤ 2	755	6.0	Ref.	–	5.3	Ref.	–
3 to 4	1391	6.0	1.15 (0.73 to 1.80)	0.561	3.8	0.931 (0.56 to 1.56)	0.787
≥ 5	1964	9.7	1.16 (0.70 to 1.92)	0.563	3.9	0.78 (0.43 to 1.43)	0.425
Number of clients in an average week							
< 10	2189	4.1	Ref.	–	2.0	Ref.	–
≥ 10	1921	12.1	2.27 (1.72 to 3.00)	<0.001	6.3	2.27 (1.55 to 3.32)	<0.001
Age at start of sex work (years)							
≤ 19	833	12.1	Ref.	–	6.0	Ref.	–
20 to 24	1031	8.7	0.78 (0.54 to 1.13)	0.192	4.4	0.80 (0.49 to 1.31)	0.375
25 to 29	1024	6.7	0.59 (0.38 to 0.91)	0.018	3.5	0.77 (0.42 to 1.41)	0.392
30 to 34	727	5.8	0.58 (0.36 to 0.91)	0.027	3.7	0.95 (0.50 to 1.79)	0.870
≥ 35	495	4.2	0.43 (0.24 to 0.77)	0.005	1.8	0.46 (0.20 to 1.08)	0.076

^aModels adjusted for participant characteristics, as previously described; AOR, adjusted odds ratio; FSW, female sex worker; IBBA, integrated behavioural and biological assessment

from Karnataka suggests that FSWs' vulnerability to HIV varies according to typology, mainly due to disparities in programme accessibility for different types of FSWs [58]. Our findings also suggest that FSWs working away from their home district might be more isolated from social support networks and/or have limited access to services provided by FSW peer groups. As such, this group should be prioritized by interventions aiming to reduce arrest and violence.

Collectivization and empowerment of FSWs are key elements in the violence reduction strategies of *Avahan's* HIV prevention programmes. Although sex workers collectives did previously exist in the study districts, the intervention was able to gradually create spaces where FSWs could regularly meet and share their experiences, which helped create a sense of solidarity and foster collective action [44,48]. Notably, membership in local FSW collectives increased from 11,000 in 2007 to 36,000 in 2009 [59]. In this study, we found that FSWs were

more likely to report peer support following arrest in the follow-up round of IBBA surveys, suggesting that interventions with FSWs were successful in bringing them together and promoting solidarity. This finding is supported by previous work showing that FSWs who are part of peer groups have associated increases in three domains of empowerment, as conceptualized by Blanchard *et al.* [42], and experience less violence overall [51]. In particular, these peer groups provide opportunities for FSWs to meet and build a collective identity, which has been associated with reduced vulnerability to HIV [42,60].

Finally, recent modelling studies provide convincing data that support the decriminalization of sex work in order to protect the rights and well-being of FSWs and to stem HIV epidemics across diverse global contexts [2]. While advocacy and activism for decriminalization continues, creating sustainable partnerships between law enforcement bodies and

FSW communities is a pragmatic and effective approach for HIV prevention programmes to ensure that FSWs have a safe working environment and adequate access to health and social services. These structural interventions need to be multilayered and multifaceted, should involve collaboration between police and FSWs and should be implemented and scaled up in parallel with effective behavioural and biomedical HIV preventive interventions [61,62].

This study has a few limitations. First, the presented data were collected and analyzed between 2010 and 2012, and the *Avahan* project was transitioned to the government of India in 2013. Despite the time that has passed since data collection, we strongly believe that our in-depth description of the processes involved in developing and implementing structural interventions with police and FSWs remains beneficial to researchers and programme implementers who are interested in rolling out HIV prevention programmes that incorporate violence reduction strategies in different contexts. Second, because the data from R2 and R3 could not be linked, our methodology is limited to comparing data over time between two cross-sectional, randomly selected samples of FSWs, rather than performing truly longitudinal analyses. However, IBBA participants were asked whether they had taken part in a previous iteration of the survey and only 5% of FSWs responding in R3 had also participated in R2 – an unsurprising finding, given the extensive mobility and migration observed among FSWs in Karnataka [63,64]. As such, the assumption of independence between R2 and R3 samples required for the multivariate logistic model used is likely appropriate. Third, because R1 (which was conducted at the same time as the structural interventions were being implemented) did not include questions about police arrest, we lack a true baseline rate of arrest with which to compare our findings in R2 and R3. Rather than assessing the interventions' impacts on police arrest over a seven-year period, we are only able to use a 24-month study horizon. This shorter period of time may not be adequate to observe effects of slow-moving processes, such as police reform or policy change, which might further influence rates of arrest among FSWs. Finally, as noted in Table 1, the predominant method of solicitation changed significantly between R2 and R3. While similar proportions of FSWs solicited from their homes between rounds, in R3, a significantly greater proportion reported soliciting clients using mobile phones and fewer met clients in the street or other public places. The proportion of FSWs reporting ≥ 10 clients per week also decreased between R2 and R3. The adjusted odds ratios obtained from our multivariate analyses, presented in Table 4, have been controlled for these profile changes, thus minimizing the likelihood that they are contributing to the observed reductions in police arrest over time. As such, our findings clearly emphasize the need for structural interventions focused on reducing violence to prioritize services that reach FSWs who are disproportionately vulnerable to police arrest.

Conclusions

The findings from our study provide additional evidence that structural interventions are useful components of broader strategies to reduce the rates of police arrest among FSWs.

Specifically, targeting structural interventions to police is a novel approach that should be considered in contexts outside of South India, in which state actors are common perpetrators of violence against FSWs. Importantly, programmes aimed at reducing violence, including arrest, among communities of FSWs have been shown to reduce the incidence of HIV among those disproportionately vulnerable to infection, including FSWs [1,3,6,17]. In addition to effective behavioural and biomedical interventions, structural interventions that incorporate police training and sensitization, as well as capacity building and collective empowerment strategies for FSWs, must be included in comprehensive HIV prevention programming for FSWs.

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Competing interests

The authors have no competing interests to declare.

Authors' contributions

PB, SI and LMM were involved equally in the development of this manuscript. PB, SI, HLM, SM and VG designed the intervention, while SJ and BKV were integral in its implementation. SI and JFB were involved in the survey design and analysis. All authors have reviewed and approved the final manuscript.

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Research article

Barriers to community-based drug dependence treatment: implications for police roles, collaborations and performance indicators

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Abstract

Introduction: Worldwide, people who use drugs (PWUD) are among the populations at highest risk for HIV infection. In China, PWUD are primarily sentenced to compulsory detention centres, in which access to healthcare, including HIV treatment and prevention services, is limited or non-existent. In 2008, China's 2008 Anti-Drug Law encouraged the development and use of community-based drug dependence rehabilitation, yet there is limited evidence evaluating the efficacy and challenges of this model in China. In this study, we explore these challenges and describe how cooperation between law enforcement and health departments can meet the needs of PWUD.

Methods: In 2015, we conducted semi-structured, in-depth interviews with all four staff members and 16 clients of the Ping An Centre No. 1 for community-based drug treatment, three local police officers and three officials from the local Centre for Disease Control. Interviews explored obstacles in implementing community-based drug dependence treatment and efforts to resolve these difficulties. Transcripts were coded and analyzed with qualitative data analysis software (MAXQDA 11).

Results: We identified three challenges to community-based drug treatment at the Ping An Centre No. 1: (1) suboptimal coordination among parties involved, (2) a divergence in attitudes towards PWUD and harm reduction between law enforcement and health officials and (3) conflicting performance targets for police and health officials that undermine the shared goal of treatment. We also identified the take-home methadone maintenance treatment model at the Ping An Centre No. 1 as an example of an early successful collaboration between the police, the health department and PWUD.

Conclusions: To overcome barriers to effective community-based drug treatment, we recommend aligning the goals of law enforcement and public health agencies towards health-based performance indicators. Furthermore, tensions between PWUD and police need to be addressed and trust between them fostered, using community-based treatment centres as mediators. The preliminary success of the take-home methadone maintenance treatment pilot can serve as an example of how collaboration with the police and other government agencies can meet the needs of PWUD and contribute to the success of community-based treatment.

Keywords: community-based treatment; drug use; policy; harm reduction; police; China.

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Introduction

In the 1980s and 1990s, China experienced a surge in drug use, predominantly involving heroin, in which the number of registered drug users increased more than 15-fold between 1990 and 2004 [1]. Coincidentally, China's HIV epidemic began in earnest when an outbreak among people who use drugs (PWUD) was documented in Yunnan Province in 1989, a key region for drug trafficking as well as subsequent HIV spread [2]. By 2012, the prevalence of HIV among PWUD was estimated at 10.1% [3], and the number of new cases of HIV transmission due to injection drug use was estimated at 28.4% [4]. Compared to the national rate of HIV infection (<0.1% in adults) [4], HIV infection rates among PWUD are

extremely high and PWUD continue to be among those at highest risk for HIV infection in China [5,6].

In response to the re-emergence of drug use in the 1980s, the Chinese government launched a policy under which PWUD are sentenced to compulsory detention and labour centres, where detainees are subjected to punitive measures [7]. Studies have shown that in these centres, PWUD generally receive little or no access to HIV prevention, education or medical treatment (including antiretroviral therapy for HIV-positive detainees) [7]. There is significant evidence showing that compulsory detention is ineffective at reducing drug use, production and trafficking in Asia [8]. In addition, "treatment" in some, but not all, compulsory detention centres in China

has been associated with increased prevalence of HIV risk factors among detained PWUD [9,10].

Subsequently, in June 2008, the Chinese government introduced a new drug control law that emphasized a “human-centred” approach and stressed treatment through community-based drug dependence treatment (CDDT). One of the key interventions of the CDDT programme is to provide methadone maintenance treatment (MMT), which uses daily administered methadone over a prolonged period of time (possibly indefinite) as treatment for someone who is dependent on opioids. MMT was established as a response to the HIV/AIDS epidemic, fuelled by needle-sharing among PWUD [3,11]. The goal of MMT is to reduce drug-related harm as well as HIV risk through needle-exchange programmes, outreach and access to HIV testing [12]. However, there are fundamental challenges that still remain, some involving interactions between local police and PWUD. By law, CDDT facilities are to be implemented by sub-district administrative agencies with the help of local police (the Public Security Bureau, PSB) and health departments, but in practice the PSB plays a dominant role in enforcing drug control laws. Police have the sole authority to refer PWUD to compulsory detoxification or CDDT. Successful MMT is a challenge due to the required daily clinic visits, and this challenge is further complicated by frequent arrests made in and around MMT clinics by local police [13], which prevent access and adherence to MMT and interrupt HIV prevention among MMT participants. Furthermore, PWUD must register with the police to access take-home methadone, after which the police monitor PWUD through regular, obligatory meetings that may entail urine testing for drug use.

Another challenge for China’s CDDT remains to be addressed: the infrastructure of “community” is largely absent in Chinese people’s social and political lives [14], and thus cooperation with higher-level government agencies, including the police force, to support community-based treatment has lagged [13]. As a result, CDDT centres have limited focus on patient-centred approaches such as psychoeducation, treatment literacy, motivational counselling, community outreach, and peer-based case management, all of which are known to reduce relapse rates [15–17]. To address the concerns of the government and other stakeholders regarding the development, organizational structure, staffing and efficacy of CDDT [18], in 2015 the government launched the CDDT work plan for 2016 to 2020, to further develop the CDDT model through pilot programmes. With this new work plan, there is an emerging need to analyze existing pilot programmes to understand the challenges to effective CDDT and to identify strengths that can be implemented on a larger scale or at multiple locations.

To this end, we investigated the Ping An Centre No. 1 project, a pilot CDDT programme established in late 2013 and implemented through collaborative efforts between the Hongta District PSB, the Hongta District Centre for Disease Control (CDC) and AIDS Care China (ACC), a local Chinese non-governmental organization. The Ping An Centre No. 1 provides support for drug dependence treatment (health examinations, treatment referrals, urine testing, naloxone for overdose prevention, MMT), social and educational activities, vocational training, psychological counselling and related HIV and

Hepatitis C virus prevention and treatment, in addition to providing facilities for cooking, laundry and showering. As a result of collaboration between ACC, the CDC and PSB, take-home MMT was piloted. ACC initiated and organized meetings to facilitate discussion and agreement between the PSB and CDC on the standard procedures of the pilot, and each entity plays a role in this service. ACC designed the programme, while CDC and PSB implement and manage it. The PSB deals with the legal issues around taking home methadone and is responsible for checking the criminal records of the clients who apply to take methadone home and approving these who qualify according to the standards agreed upon with the CDC.

In this study, we used semi-structured interviews to understand the police’s views on PWUD and drug use, as well as how PWUD and CDC staff feel about the police. We identify challenges of CDDT associated with the role of the police and examine how the role of police in collaboration, approach and performance indicators could contribute to these challenges and how changes in these might improve CDDT.

Methods

Study setting

This study was conducted in Yuxi City, in Yunnan Province. Yunnan Province has one of the highest rates of drug use and HIV infection in China [1]. In 2013, 5027 registered PWUD lived in Yuxi City and 1905 lived in the broader Hongta District. Over 80% of the city’s registered PWUD have been arrested for heroin use. The Ping An Centre No. 1 was established in late 2013 by the Hongta District CDC in collaboration with ACC. This programme was officially approved by the Yuxi City-level health bureau and CDC and was supported by the Hongta District PSB, Department of Justice, and District Drug Control Office.

Study design

After eight months of ethnographic study (February to October 2015) in Ping An Centre No. 1 to develop a relationship of trust with potential informants, we conducted semi-structured interviews to examine the attitudes, perspectives and interactions of the staff of Ping An Centre No. 1, the PSB (the local police), the CDC, and PWUD served by the centre (October 2015 and December 2015).

Participant recruitment

Participants were selected purposely to represent perspectives from the different stakeholders [19] who were involved in local drug control and harm reduction efforts. We interviewed four study groups: treatment centre clients ($n = 16$; 12 males and 4 females), all treatment centre staff ($n = 4$), local police officers ($n = 3$), and officials from the local CDC ($n = 3$). For the PWUD, participation was based on age (> 18 years) and the duration of enrolment. To capture the perspectives of PWUD who had varied experiences at the centre, all participants ($n = 254$, of whom 229 were male and 25 were female) were stratified into four groups according to the duration of time in which they had accessed services at the centre: 0 to 3 months, 4 to 6 months, 6 to 12 months and 13+ months. Participants were then recruited based on a gender-proportional method, and selected based on willingness to participate. For the PSB, only three of a total of seven police officers agreed to be interviewed; for the CDC,

the interviewed respondents represented all staff in the local CDC centre. All participants were required to consent to participation, after being informed that they had the right to withdraw at any stage of the interview.

Data collection

Interviews were conducted in Chinese in private settings to protect participants' privacy. Each interview took 45 to 60 minutes. We collected information on participants' views and understanding of drug use, anti-drug policies and the community-based structure of the Ping An Centre No. 1, as well as participant views on the different groups involved in this study, the goals and agendas of the different groups involved and cooperation among these groups.

Data analysis

Interview data were transcribed and translated to English. Transcribed interviews were then coded using a scheme developed according to the signification of concepts, beliefs, topics, and terms that emerged from the interviews. Codes and concepts were then constantly compared [20] using MAXQDA 11 for occurrence and co-occurrence patterns and emergent themes [20,21].

Ethical considerations

This study was conducted in keeping with ethical guidelines related to human participants [22]. Participation was entirely voluntary and informed oral consent was obtained from all participants. Apart from light refreshments during the interviews, no other incentives were provided. The Institutional Review Board of Washington University in St. Louis approved this study in December 2014.

Results

Three major themes emerged in our interviews with Ping An Centre No. 1 staff, centre clients, the PSB and CDC: (1) suboptimal coordination among the parties involved in CDDT, (2) a divergence in attitudes held by the PSB and CDC towards harm reduction and PWUD and (3) conflicting performance targets of the police and the health officials that undermined the shared goal of treatment. In addition to these themes, we identified preliminary evidence from the Ping An Centre No. 1 project regarding the elements key to successful implementation of CDDT.

Suboptimal coordination and collaboration between the police and other stakeholders

Officials from the CDC, local police and PWUD identified an urgent need for improved coordination and collaboration both among governmental agencies and between governmental agencies and the community. Although a certain level of collaboration exists, a CDC interviewee expressed a specific need for collaboration with police:

As a health department, we can take responsibility for the health problems of PWUD, such as HIV and hepatitis C, as well as methadone treatment. But if they break the law . . . for example, last year one person brought a knife to the clinic and asked for methadone, can we deal with that? No! That's why we need cooperation with the police.

Although the national policy explicitly recommends multi-agency cooperation to successfully implement community-based treatment, local police officers implied that existing collaboration is suboptimal. They expressed the need for increased coordination and unified direction to balance the aspiration of the police to maintain peace, reduce crime and reduce drug use on the one hand, with the need to rehabilitate PWUD on the other:

I'm only a police officer. We do not have the right to ask other agencies for cooperation or tell them what they need to do. If there were an independent NNCC [National Narcotics Control Commission] work team, the situation would be much better, and multi-agency cooperation could become workable.

This point was particularly important because interviewed police officers implicitly welcomed a shift from detention and punitive approaches to voluntary community-based approaches, yet they felt that this was contradictory to existing goals within the force. Police questioned the effectiveness of the compulsory approach, but it was apparent that the vision and goals of voluntary community-based treatment were not widely understood within the police force:

We are so tired of repetitively arresting and releasing the same drug users. Compulsory rehabilitation is useless and very expensive. The government has to pay a lot of money for it. This job is very dangerous; many colleagues have gotten injured [by PWUD]. We are also seeking more effective approaches. But no one knows how to do that.

This sentiment of lack of direction, coordination and common understanding among the police and other government agencies in general was echoed by a CDC official, who stated, "if the leaders had the correct understanding [and gave the right orders], other things would be easy."

Although we identified recurring themes of fear of police by PWUD (see below), PWUD also recognized the role of police and the necessity for cooperation, as well as their own role in collaboration for effective community-based treatment:

It is impossible for me to trust them [police] suddenly. Trust needs a long time [to build]. But they are necessary; we need their approval [for piloting this treatment model]. Cooperation is [therefore] the most ideal [solution]. I really hope I can accomplish it [CDDT] here [at the Ping An Centre No. 1].

In all, many informants identified a distrust of local police but recognized the necessity of collaboration. All informants expressed that they felt they could trust the Ping An No. 1 treatment centre in their interviews.

Divergence in attitudes towards PWUD and harm reduction held by the PSB and CDC

One major challenge was a divergence in understanding of drug use and PWUD among different stakeholders. Many police viewed PWUD as people who constantly threatened social order. Given the general police mandate of maintaining the peace, it was not surprising that they felt that PWUD

should be isolated through compulsory detention. Justifying the need for such an approach, a police official stated the following:

In general, the police make judgements based on people's behaviour. They [PWUD] are often involved in unlawful activities or even commit crimes, you know, like stealing, robbing and selling drugs.

Although PSB often adopted this view, criminalizing PWUD, most CDC officials considered PWUD as "patients with drug dependence problems" or belonging to a "high-risk population who needed public health intervention" and therefore they adopted harm reduction approaches:

We see this group of people as a high-risk population with a disease. To crack down on PWUD sometimes even forces them to take riskier behaviours. The concept of harm reduction stresses [their] humanity. [We need] to view them not as criminals, but human beings with weaknesses and needs.

Conflicting performance targets of the PSB and CDC

The divergent understandings were reinforced by the conflicting agendas of the PSB and CDC. Performance targets are numerical requirements that government agencies need to achieve on an ongoing basis. The key performance indicator of the PSB is usually based on the number of PWUD arrested and referred to compulsory treatment centres. This policy penalizes police officers who refer PWUD to CDDT instead of arresting them, resulting in a fundamentally tense relationship between police and PWUD. To achieve their targets, police officers make arrests in the vicinity of, or right outside of, MMT clinics. As one PWUD informant disclosed:

Sometimes police go to the clinic to catch people for a urine test. It is scary. I would not go to drink methadone during that time. I have to go back to heroin under that situation. There is no other solution.

As a result of the tension and suspicion between police and PWUD, many PWUD respondents expressed negative attitudes towards police, using phrases such as "distrust," "scary" and "as terrifying as a mouse confronting a cat" to describe their relationship with the police. A PWUD informant explained that the police "see us as social trash. We are labelled, and we are bad people forever, without dignity, not even treated as human beings."

At a much more fundamental level, it was clear that the performance targets of the police were all grounded in punitive indicators, with no reference to any health-enabling indicators. This was in direct contrast to evaluation measures for the CDC, which were essentially based on health outcomes. Fears of and negative attitudes towards police by PWUD influenced treatment outcomes: 11 of the 16 clients interviewed expressed that they were unwilling to participate in CDDT because they did not want to go to police stations for urine tests (a positive result can lead to arrest): "I don't want to see any of them [police]." This unwillingness to participate in CDDT not only affects the health outcomes of the PWUD but also the performance targets of the CDC, which include

adherence to MMT, as well as HIV prevention. One CDC official described the situation as follows:

We have our own performance indicators to achieve. We need to keep certain numbers of PWUD in the MMT clinic; administer HIV, hepatitis C and tuberculosis tests among them; and keep the HIV-positive rate as low as possible. Police arrests in the clinic make people afraid to come. Once they drop out of MMT, it is easy for them to get infected with HIV, as they have to use heroin. We in the CDC have to take responsibility because HIV prevalence is our performance indicator. This is pretty unfair.

In theory and based on existing policy, these agencies are meant to work cooperatively but in practice, the National Narcotics Control Commission (NNCC) is largely absent and PSBs are primarily responsible for implementing the drug control laws at local levels. This results in the dominance of the PSB in determining the fate of arrested PWUD. The performance evaluations of the PSB and the CDC being opposed undermines the goal of community-based treatment.

Preliminary evidence for successful aspects of collaboration: take-home MMT

The Ping An Centre No. 1 selected and proposed MMT as the starting point to initiate institutional cooperation between CDC and PSB for two reasons. According to MMT participants, take-home methadone is one of their primary needs. Methadone is currently under strict management and clients are not allowed to take it outside of the clinic. However, a Ping An Centre No. 1 staff member indicated the following problem with daily clinic visits:

Daily visits prevent clients from living normal and productive lives, because they have to be late for their job or leave earlier. This may also disclose their drug use history to their employers and result in [PWUD] losing their jobs. This can even cause relapse to heroin.

Ping An Centre No. 1 petitioned permission from the Yunnan Institute for Drug Abuse and negotiated with the CDC and PSB to launch a take-home MMT programme. Although the PSB was concerned about the supply of methadone in the black market, drug safety was the primary concern for the CDC and officials worried especially about methadone being reached by children. To address this concern, Ping An Centre No. 1 clinic staff designed a pin-locked take-home box and MMT participants receive passwords through daily text messages. This design was the product of two months of ongoing discussion among all stakeholders about the equipment, the concerns, the risks, the needs of PWUD and consensus that even black market methadone can help to reduce heroin injection and contribute to HIV prevention. The boxes also have the option for GPS tracking, which provides reassurance to the police that the methadone boxes will stay within the homes of PWUD. A Ping An Centre No. 1 staff member noted initial positive cooperation outcomes from the take-home MMT programme:

Though very initial, MMT is already a platform for cooperation [between the CDC and PSB]. It is a state-sponsored programme and a crucial part of the national movement of HIV/AIDS prevention. Therefore, [it is] easier to start from here [MMT] to draw everyone into the conversation [of collaboration on CDDT].

At the time of writing, 72 PWUD were using this take-home methadone service. They were taking two to six days' dosage of methadone at home, depending on their adherence records and ongoing urine test results. Preliminary results indicated that this service resulted in higher adherence rates and lower relapse rates, which enhanced the police's confidence in non-compulsory approaches to deal with PWUD [23]. Both Ping An Centre No. 1 staff and local police now agree that take-home methadone approach relieves the burden on police officers. A Ping An Centre No. 1 staff member shared the following: "Now, the police even take the initiative to lower the threshold for clients to be eligible to take methadone home." A police officer commented that this change in threshold was required "to meet their needs, [which] also makes our work easier." For their part, PWUD participants are motivated to adhere to in-clinic MMT to qualify for the take-home methadone service. A full analysis of the take-home service is currently underway.

Discussion

Through semi-structured interviews of the PSB, CDC and Ping An Centre No. 1 staff and clients, we identified a need for general collaboration and shared goals with regard to the establishment, organization and execution of CDDT. Two related barriers to community-based treatment success emerged from the interview data: divergence in attitudes towards drug use, harm reduction and PWUD between local police and health officials (CDC officials and Ping An Centre No. 1 staff) and conflicting performance targets of the police and the CDC. Both of these barriers undermine the shared goal of treatment. There is a need to promote effective collaboration that serves the needs and treatment of PWUD; we identified the take-home MMT service (a product of collaboration among all stakeholders) as a promising model for future collaborations among governmental agencies at Ping An Centre No. 1 and other CDDT programmes in China.

These themes are common to other studies of the barriers to implementing community-based treatment in China that cite the lack of the necessary community infrastructure and the inadequacy of multi-agency cooperation. Harm reduction programming has long been confronted by opposing philosophical ideals and responses: one based on abstinence from and authoritarian criminalization of drug use, and the other based on empowering approaches that enable PWUD to take ownership of their health and eventually overcome drug dependence [9,12]. Yet, in China, the movement towards the latter is additionally hindered by a fragmented bureaucratic apparatus [24], which limits practical cooperation. It is also hampered by competing agendas and asymmetrical power dynamics of the different state agencies whose mandates intersect with drug use and PWUD, as our findings suggest.

As noted here and elsewhere [13], the local police maintain punitive approaches, which are ineffective and laden with abuses of the rights of PWUD [7]. Yet evidence suggests that a voluntary, community-based treatment approach is increasingly preferable, as it enhances people-centred care [25–27]. Annual targets related to crime and drug use are one of the most important indicators adopted by the higher-level government to evaluate the performance of local police officers. Failing to meet the annual target requirements could severely affect the salary and political career of both PSB and CDC staff. Competition for the same "targets" (PWUD) not only raises conflict between state agencies, but also prevents PWUD from seeking and adhering to treatment, which may not only affect their drug dependence, but can also negatively affect health and HIV-related outcomes.

As a result, a fundamental shift of the performance indicators in the police force is required. These indicators need to focus on the contribution of the PSB towards voluntary community-based treatment. Ideally, the PSB and CDC could agree to refer people arrested for drug use to community-based treatment centres. In this way, referral to treatment and MMT adherence could act as performance indicators for both the police and CDC, further strengthening collaboration and shared goals and potentially reducing criminal behaviour in China [28].

However, this approach would require a lengthy approval process before local police officers can start practising it. In 2014 and 2015, initial sensitization workshops on harm reduction were made available to top officials of the PSB and CDC, in combination with site visits to Ping An Centre No. 1 to facilitate observation of the take-home methadone programme and interaction with PWUD. This step achieved some convergence towards the shared goal of harm reduction, and representatives from both parties agreed that any PWUD who had completed compulsory treatment could be referred to Ping An Centre No. 1. Both the PSB and CDC officials saw ways in which they could work together to control drug use locally. The PSB agreed to make harm reduction training a standard practice for all the district's police stations. These workshops on harm reduction are designed to facilitate a shift from punitive practices to a community-based approach that is evidence-based, humanistic and less restrictive, which has been demonstrated to be successful in other countries [27,29].

We argue that instead of perfecting the details of articles in the law, as some studies suggest [30,31], a more cost-efficient way to practise CDDT in China is to first illuminate workable models in particular local settings, which would provide both evidence and impetus to amend the law, and to indicate the resources required. Hence it would be valuable to adopt a bottom-up approach to identifying and piloting solutions that are specific in local situations. These solutions ought to be developed by local agencies, but still operate under the overall goals of harm reduction nationally [4,32] and the general guidelines of the inter-agency collaboration. To illustrate this point, we note that although the 2008 drug control law recommended non-compulsory measures, it vaguely placed responsibility for providing community-based treatment on the powerless and resource-deficient

sub-district administrative agencies. These agencies have not yet implemented community-based treatment, thereby perpetuating the default detention approaches. The collaborative development of the take-home MMT programme described in this article demonstrates that different governmental agencies can successfully and collaboratively serve PWUD in spite of power imbalances that exist among PWUD, local police, CDC officials and treatment centre staff. This is a workable model demonstrating collaboration with a common harm reduction goal, with an emphasis on improving the relationship between police and PWUD, that can potentially be scaled up based on evidence of its effectiveness.

Given the importance of drug use in driving the HIV epidemic in China [33], collaboration and the shift in policing indicators and approaches becomes even more important considering the policy goals of halting China's HIV epidemic among PWUD [4,32]. MMT is an effective entry point for increasing early testing of HIV and linking to antiretroviral therapy [34,35], both of which are poorly available to PWUD in China and globally [11]. However, given our findings showing that PWUD avoid accessing MMT for fear of arrests, the potential for pairing HIV-related services with MMT is unrealized. Other studies have demonstrated the negative impact of potential detention on healthcare-seeking behaviours among PWUD [36].

Finally, community-based treatment facilities need to both medically serve PWUD and simultaneously act as a mediator between PWUD and government agencies, especially the police. Trust from PWUD is the most valuable social capital CDDT programmes can achieve. To reach a consensus on supporting a community-based treatment model while accounting for the needs of all parties, persistent negotiations on both the individual level and on the institutional level need to be carried out. The former happens through interpersonal interaction among local leaders (both PSB and CDC) and PWUD, mainly through informal meetings individually, and occasional formal meetings when necessary. The latter includes holding multi-agency meetings, providing training to police and arranging study visits for top officials. To promote these goals, the Ping An Centre No. 1 arranged study visits to Seattle, WA, USA (for both PSB and CDC top officials) and India (for CDC officials) to experience people-centred and voluntary harm reduction approaches. These visits also provided senior officials with opportunities to witness the result of cooperation among multiple stakeholders and to investigate the possibility of non-compulsory measures in the Chinese context. Commenting on this experience, a PSB participant noted, "it is surprising that police and PWUD can become friends in Seattle. It [a community-based, non-compulsory treatment model] is worth trying."

Limitations

Before firm conclusions can be made from this paper, we highlight that limitations related to participant sampling limits the extent to which our claims can be generalized [21]. Nevertheless, our intention was to provide the perspectives of a few participants in a specific context through qualitative interviews [37], focussing on representativeness rather than ability to generalize [21,38]. Additional data from

the take-home methadone centre are currently being analyzed and will provide a more in-depth analysis of the broad outcomes of such an approach for collaboration across different stakeholders in harm reduction.

Conclusions

The early success of the take-home MMT programme demonstrates that effective collaboration is possible among all stakeholders concerned with drug use, HIV and harm reduction in this setting. This is consistent with the United Nations Office of Drug Control, which specifies that treatment needs to "respond to the needs and resources of communities" and to "mobilise all available resources in the community to meet their clients' needs" and to "work with law enforcers" [8]. In the Ping An Centre No. 1 project, clients' primary need of taking methadone home has been addressed, and initial cooperation between health department and law enforcement has been achieved to provide harm reduction services for PWUD. However, we identified persistent challenges associated with differences in attitudes towards PWUD held by police and health officials. These differences are compounded by the conflicting performance targets of the PSB and CDC. Our findings suggest a great need for cooperation among all stakeholders. It is especially important to provide police with workable models that could help develop political support for the community-based treatment model. Considering that PWUD remain one of the highest-risk populations for HIV infection in China and current practices of compulsory detainment of PWUD are not effective, it is crucial to address the tensions and conflicts among the stakeholders for effective implementation of CDDT.

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Competing interests

The authors have no competing interests to declare. Some of the authors (YM, CD) work for the Yuxi Hongta District CDC and others (TC, QH, HY, TL, GR) for AIDS Care China.

Authors' contributions

YM, CD, TC, QH, HY, TL and CZ contributed significantly to the study design. YM, CD, TC, QH and TL conceived the study. CZ conducted the observation and interviews. YM, HY, GR and CZ analyzed the data. CZ, GM and BW drafted the manuscript with contributions from the remaining co-authors. All authors reviewed and approved the final manuscript.

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Research article

Prevalence and correlates of needle-stick injuries among active duty police officers in Tijuana, Mexico

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Abstract

Introduction: Police officers are at an elevated risk for needle-stick injuries (NSI), which pose a serious and costly occupational health risk for HIV and viral hepatitis. However, research on NSIs among police officers is limited, especially in low- and middle-income countries. Despite the legality of syringe possession in Mexico, half of people who inject drugs (PWID) in Tijuana report extrajudicial syringe-related arrests and confiscation by police, which has been associated with needle-sharing and HIV infection. We assessed the prevalence and correlates of NSIs among Tijuana police officers to inform efforts to improve occupational safety and simultaneously reduce HIV risks among police and PWID.

Methods: Tijuana's Department of Municipal Public Safety (SSPM) is among Mexico's largest. Our binational, multi-sectoral team analyzed de-identified data from SSPM's 2014 anonymous self-administered occupational health survey. The prevalence of NSI and syringe disposal practices was determined. Logistic regression with robust variance estimation via generalized estimating equations identified factors associated with ever having an occupational NSI.

Results: Approximately one-quarter of the Tijuana police force was given the occupational health survey ($N = 503$). Respondents were predominantly male (86.5%) and ≤ 35 years old (42.6%). Nearly one in six officers reported ever having a NSI while working at SSPM (15.3%), of whom 14.3% reported a NSI within the past year. Most participants reported encountering needles/syringes while on duty ($n = 473$, 94%); factors independently associated with elevated odds of NSIs included frequently finding syringes that contain drugs (adjusted odds ratio (AOR): 2.98; 95% confidence interval (CI): 1.56–5.67) and breaking used needles (AOR: 2.25; 95% CI: 1.29–3.91), while protective factors included being willing to contact emergency services in case of NSIs (AOR: 0.39; 95% CI: 0.22–0.69), and wearing needle-stick resistant gloves (AOR: 0.43; 95% CI: 0.19–0.91).

Conclusions: Tijuana police face an elevated and unaddressed occupational NSI burden associated with unsafe syringe-handling practices, exposing them to substantial risk of HIV and other blood-borne infections. These findings spurred the development and tailoring of training to reduce NSI by modifying officer knowledge, attitudes and enforcement practices (e.g. syringe confiscation) – factors that also impact HIV transmission among PWID and other members of the community.

Keywords: occupational accidents; HIV; viral hepatitis; syringe disposal; syringe confiscation; policing; law enforcement; harm reduction.

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Introduction

Syringe confiscation and syringe-related arrests by police are widespread in settings where injection drug use is prevalent [1–11]. Handling used syringes in high-risk areas can expose law enforcement personnel to a serious occupational health risk [12–29]. Occupational needle-stick injuries (NSIs) carry a 0.2 to 0.5% risk of HIV acquisition, while the odds of acquiring viral hepatitis are substantially higher (3–10% for hepatitis C virus (HCV) and 2–40% for hepatitis B virus (HBV)) [30]. Documented virus survival lasting more than four weeks for HIV and more than two months for HCV in contaminated syringes contribute to the hazards of occupational exposure [15,19,31]. Additionally, police officers also report substantial anxiety about NSI risk, fear of HIV disease transmission and a burden on family relationships, contributing to the alarmingly

elevated levels of job-related stress and turnover among police [2,20,32]. Physical and mental health harms aside, financial and human resource costs of NSIs can be very high [33].

Police officers have some of the greatest occupational exposures to sharps (objects that may lacerate or puncture skin) as well as blood and bodily fluids [2,17,18,21–28,34]. The New York City Police Department has reported a transcutaneous exposure rate of 38.7 per 10,000 officers per year [24]. In Denver, 9.5% of occupational exposures to blood were from NSIs [18]. In the 1990s, 0.9% of police officers in Atlanta, Fulton and Oakland, reported NSIs via used syringes in the past six months [22]. In Amsterdam, 11% of police officers reported an occupational NSI during a four-year period [25]. The lifetime prevalence of reported occupational NSIs among

police officers varies widely (e.g. 3.8% in North Carolina, 6.4% in Rhode Island, 29.7% in San Diego, California, in the United States), and is thought to be greatly under-reported [2,26,27]. Yet, there is little research focusing on this occupational hazard and its prevention.

Situated along a major drug trafficking route, Tijuana, Mexico, exhibits elevated levels of injection drug use, along with concentrated epidemics of HIV and viral hepatitis: 3.0% HIV, 85% HBV and 96 to 98.7% HCV [35,36]. Police occupational risk from NSI in this locale may be compounded by risk of infection from the number of high dead-space syringes, popular in Mexico, due to blood retained in the syringe hubs [37–39]. Despite the legality of syringe possession and the decriminalization of small-scale drug possession in August 2009, 48 to 57% of Tijuana's people who inject drugs (PWID) report syringe-related arrests and confiscation by police [3–5,40]. As elsewhere globally, such encounters have been associated with HIV risk behaviours and HIV acquisition among PWID [3–5].

In previous literature, a number of NSI risk factors have been identified among law enforcement, including working for less than 10 years, evening shifts, pat-down searches, little or no time to put on protective gloves, lack of needle-stick resistant gloves and serving on street-level patrol [18,24,26]. Adverse interactions with PWID, including harassment and syringe confiscation in HIV incidence hotspots, can also increase NSI risk for police, especially since PWID may not be willing to volunteer syringe possession during searches [23,41]. As part of a larger effort to align policing and public health efforts to prevent the spread of blood-borne pathogens in Tijuana, Mexico, we assessed the prevalence and correlates of NSIs among police officers, hypothesizing that officers who engage in syringe confiscation and syringe-related arrests may be at an elevated risk of NSI.

Methods

Study population

The *Secretaría de Seguridad Pública Municipal* (SSPM, Department of Municipal Public Safety) in Tijuana is among Mexico's largest municipal police force with approximately 2100 active duty officers. Approximately 80% of the force is male, the mean age is 38 years old, about 60% have completed high school and/or higher education, 56.6% report a monthly of income of less than 15,000 pesos (around \$1000 USD) and 95.3% report access to universal healthcare services [42]. Officers must be at least 18 years old and, since 2009, are required to have a high school diploma when entering the force [43].

Survey development

An anonymous self-administered survey of a convenience sample of active duty police officers was conducted during June and July 2014. The instrument covered socio-demographics, work environment and occupational health domains. Occupational health survey items focused on safety practices in the line of duty (e.g. syringe encounters and handling), occupational accidents (e.g. "Have you ever had any NSIs while you were working?") and post-exposure follow-up (e.g. seeking medical attention).

Data collection

Data was collected by SSPM throughout 11 police districts and three special departments (i.e. tourist, special ops and forensic/expert police). The police officers who participated in the study completed self-administered surveys while on duty. Surveys were completed in a closed room within the precinct, lasting approximately 15 minutes. Existing data without person-identifiable information was approved by SSPM for a secondary analysis by the UCSD research team through a Memorandum of Understanding. We obtained IRB exemption for analysis of de-identified data from the UC San Diego Human Research Protections Program.

Statistical analysis

Chi-Square tests were used to compare police officers who reported ever having sustained a NSI versus those who did not. To identify individual factors associated with having at least one NSI, univariate and multivariate logistic regression models used generalized estimating equations with robust variance estimation [44]; variables that yielded in the univariate regressions *p*-values equal or less than 0.10 were considered for inclusion in the multivariable model. The model was checked for integrity by examining and ruling out interactions and multi-collinearity. Analyses were performed using SPSS Statistics Version 21 (IBM, Armonk, New York).

Results

Socio-demographics and occupational characteristics

A total of 531 active duty police officers participated, representing approximately one-quarter of the entire Tijuana police force. Most (*N* = 503; 95%) answered the occupational health portion of the survey. The surveyed officers were predominantly male 86.5%, 13.1% female; more than half were older than 35 years (see Table 1). Surveyed officers have lived almost 30 years in Tijuana on average and have worked in the police force for an average almost 10 years. The most frequent rank was officer (92.4%), with 84.5% reported patrolling in sedans or vans as their main duty.

The overwhelming majority (94%) of officers reported ever encountering syringes while on duty. Almost 40% of all surveyed officers said it was rare to find new syringes when searching a person. When searching a person, 86.3% of officers reported ever encountering syringes that contain drugs. When asked what they did when encountering syringes that contain drugs, more than half said they put them in the trash. Alarming, one-third reported breaking syringes and more than one-fifth said they retained them to present to the authorities. Overall, a troublingly low number of officers (5.9%) reported proper syringe disposal (see Table 1).

Prevalence of NSIs

Of the 503 police officers that answered the occupational accidents portion of the questionnaire, 77 (15.3%) reported ever having a NSI during their work at SSPM, of whom 11 (14.3%) reported a NSI in the last year. Only two-thirds of officers (66.2%) sought medical attention after having a NSI. About one-fifth of officers who had a NSI said they did not think it was important to report NSIs (22.6%) (see Table 1).

Table 1. Socio-demographic and work environment characteristics of Tijuana police officers (N = 503)

Variable	Ever experienced NSI, n = 77	Did not experience NSI, n = 426	p	Total, N = 503
Socio-demographic characteristics				
Male	65 (84.4%)	370 (86.9%)	0.45	435 (86.5%)
Female	12 (15.6%)	54 (12.7%)	0.45	66 (13.1%)
Age ≤35 years old	34 (44.2%)	180 (42.3%)	0.78	214 (42.5%)
Age >35 years old	43 (55.8%)	246 (57.7%)	0.77	289 (57.5%)
Mean years lived in Tijuana	27.75	27.33	0.79	27.39
Work environment				
Mean years worked at SSPM	11.16	9.59	0.02	9.38
Job position: police officer	70 (90.9%)	368 (86.4%)	0.44	438 (87.0%)
Main duty patrol (sedan/van)	61 (79.2%)	338 (79.3%)	0.98	399 (79.3%)
Occupational safety in the line of duty				
Ever encounters syringes when searching a person	76 (98.7%)	397 (93.2%)	0.06	473 (94.0%)
Ever encounters syringes that contain drugs when searching a person	70 (90.9%)	364 (85.4%)	0.20	434 (86.3%)
Rarely encounters new/unused syringes when searching a person	33 (42.9%)	157 (36.9%)	0.32	190 (37.8%)
Used syringe disposal, n = 423				
Biohazard sharps container	2 (2.6%)	23 (5.4%)	0.25	25 (5.9%)
Other resistant receptacle	6 (7.8%)	36 (8.5%)	0.71	42 (9.9%)
Throw in sewer or ditch	3 (3.9%)	18 (4.2%)	0.78	21 (5.0%)
Break them	35 (45.5%)	109 (25.6%)	0.00	144 (34.0%)
Throws in trash	24 (31.2%)	128 (30.0%)	0.84	152 (36.0%)
Asks person to throw in trash	12 (15.6%)	56 (13.1%)	0.57	68 (16.1%)
Retain to present to authorities	12 (15.6%)	79 (18.5%)	0.36	91 (21.5%)
Occupational accidents				
NSI was in past year, n = 77	11 (14.3%)	–	–	11 (14.3%)
Would report NSI to supervisor	13 (16.9%)	58 (13.6%)	0.46	71 (14.1%)
Aware of standard NSI response protocol	21 (27.3%)	98 (23.0%)	0.45	119 (23.7%)
Post-exposure experience				
Ever sought medical attention post NSI, n = 77	51 (66.2%)	–	–	51 (66.2%)
Reasons for not reporting NSI, n = 62				
Did not have time to report it	7 (11.3%)	–	–	7 (11.3%)
Did not know what was the procedure to report it	13 (21.0%)	–	–	13 (21.0%)
I didn't think it was important to report	14 (22.6%)	–	–	14 (22.6%)

NSI: needle-stick injury; SSPM: Secretaría de Seguridad Pública Municipal (Tijuana Police Department).

Correlates of NSIs

Univariate analysis identified the number of years working for SSPM, frequently encountering syringes, using no measures to prevent NSIs, and breaking syringes that contain drugs as factors associated with having at least one NSI (see Table 2).

Among the officers who reported ever encountering needles or syringes that contain drugs while on duty (n = 434), factors independently associated with having NSIs included frequently finding syringes that contain drugs while on duty (adjusted odds ratio (AOR): 2.98; 95% confidence interval (CI): 1.56–5.67), breaking used needles when encountering them (AOR: 2.25; 95% CI: 1.29–3.91), in case of NSI contacting emergency services (AOR: 0.39; 95% CI: 0.22–0.69), wearing needle-stick resistant gloves as a measure to prevent NSIs (AOR: 0.43; 95% CI: 0.19–0.91) (see Table 3).

Discussion

This study of active duty police officers in Tijuana found that nearly one in six officers reported ever having an occupational NSI, of whom a similar proportion reported having had a NSI in the last year. These findings are especially salient in view of alarming levels of very risky syringe-handling practices – all in an environment in which PWID have a higher prevalence of blood-borne viral infections than the rest of the population. Lifetime prevalence of NSI among our respondents was four times greater than in a recent North Carolina study and more than twice the prevalence in Rhode Island; however, it was half the reported prevalence in the adjacent border city of San Diego, California [2,26,27]. Overall, the prevalence of NSI in our and other samples may be under-reported, as only two out of three officers (66.2%) reported seeking medical attention post-exposure. Nevertheless, the proportion seeking medical attention was higher as compared

Table 2. Correlates of lifetime needle-stick injuries among Tijuana police officers

	<i>n</i> ^a	Unadjusted odds ratio (95% CI)
Socio-demographic characteristics		
35 years old or younger	503	1.08 (0.66–1.76)
Number of years lived in Tijuana	498	1.00 (0.98–1.03)
Work environment		
Number of years working at SSPM	503	1.03 (1.00–1.06)*
Worked for at least 1 year at SSPM	503	2.77 (0.84–9.16)
Worked for at least 5 years at SSPM	424	3.03 (0.91–10.07)
Foot patrol as main duty	473	1.81 (0.78–4.19)
Occupational safety in the line of duty		
Encounters syringes frequently or all the time	499	2.16 (1.29–3.62)*
Encounters syringes that contain drugs frequently or all the time	479	2.34 (1.29–4.26)*
Encounters injection related drug paraphernalia frequently or all the time	476	1.95 (1.121–3.39)
Syringe disposal when encountering syringes that contain drugs		
Put them in biohazard receptacle for sharp objects	423	0.43 (0.10–1.87)
Put them in other resistant receptacle (i.e. detergent bottle)	423	0.84 (0.34–2.08)
Package them to present to authorities	423	0.73 (0.38–1.43)
Occupational accidents		
Measures to prevent NSIs		
Wear latex gloves	486	1.08 (0.62–1.87)
Wears needle-resistant gloves	486	0.48 (0.25–0.95)*
Ask suspect to-be-registered if they have sharp objects	486	0.83 (0.50–1.39)
Only handle capped syringes	486	0.60 (0.08–4.84)
Deposit confiscated syringes into receptacle	486	0.53 (0.16–1.78)
None	486	2.06 (1.04–4.08)*
In case of experiencing a NSI		
Would contact immediate supervisor	487	1.28 (0.66–2.47)
Would not contact anybody	487	2.52 (0.76–8.41)
Would contact emergency services	487	0.49 (0.30–0.82)*
Would not know who to contact	487	2.52 (0.76–8.41)
Aware of standard NSI response protocol	485	1.24 (0.71–2.15)
When encountering syringes that contain drugs		
Asks suspect to put syringe in trash	423	1.12 (0.57–2.22)
Throws syringe into the trash	423	0.94 (0.55–1.62)
Breaks syringes that contain drugs	423	2.31 (1.37–3.90)*
Throws them in sewer or ditch	423	0.85 (0.24–2.96)

^aChange in sample size due to different number of observations available for each variable. 95% CI: 95% confidence intervals; *significant at $p < 0.05$; SSPM: Secretaría de Seguridad Pública Municipal (Tijuana Police Department); NSI: needle-stick injury.

to other settings. This study did not present an opportunity to ascertain whether experiencing a NSI resulted in actual disease transmission or HIV post-exposure prophylaxis (HIV-PEP) [24–26]. In other settings, 8 to 19% of officers who report a NSI start HIV-PEP [17,21,25], but the SSPM did not have an occupational NSI response or PEP programme when this study was conducted. Lack of uniform measures of NSI time periods across different research studies (i.e. in the past six months, past year, four-year period or lifetime) and inconsistency in the type of transcutaneous exposure (i.e. NSI, human bite or other sharp object) do not allow for more precise cross-sample comparisons [2,24–28].

The confluence of poor implementation of drug policy provisions and poor occupational safety knowledge and

practices creates an overall risk environment that endangers both police and PWID. The overwhelming majority of our respondents encountered syringes that contain drugs in their daily duties, which was independently associated with three times higher odds of NSI. Recent changes in drug laws (i.e. the decriminalization of small-scale drug possession) should precipitate the discontinuation of syringe confiscation, but our other research suggests that this law – as well as the long-standing legal status of syringes – may be often ignored in day-to-day drug law enforcement practices [4]. As a result, police continue to put themselves at risk of NSI by handling syringes during encounters and undertake transporting them to legal authorities for weighing [4]. Our data supplements previous research on street-level policing behaviours (e.g. syringe

Table 3. Factors independently associated with experiencing any lifetime needle-stick injuries among Tijuana police officers who encountered syringes that contain drugs while on duty (n = 434^a)

	Adjusted odds ratio	95% confidence interval*
Number of years in the department	1.04	1.01–1.08
Encounters syringes that contain drugs frequently or all the time	2.98	1.56–5.67
Breaks syringes that contain drugs	2.24	1.29–3.90
Wears needle-resistant gloves	0.43	0.19–0.91
Would contact emergency services in case of NSI	0.39	0.22–0.69

^aDue to missing data (as noted in Table 2), only 407 observations were used in the model. *All significant at $p < 0.05$. NSI: needle-stick injury.

confiscation and disposal) that, in addition to elevating police occupational risk, also led PWID to share syringes and experience elevated HIV risk or overdose mortality [3–6,45]. These policing practices contribute to the global HIV pandemic by increasing drug-related behaviours among PWID and placing police officers at higher risk for NSI [6–9,46].

Our findings also provide a baseline prevalence of protective behaviours that offer a promising platform for intervention. Our analysis suggests that police officers wearing needle-stick resistant gloves had lower odds of NSI. Needle-stick resistant gloves offer a protective barrier for officers exposed to syringes but are not provided by Mexican police departments. With more than half of police officers earning \$15,000 Mexican pesos per month (~\$938 USD) [42], purchasing these gloves in Mexico can amount to 10% of their monthly household income. Anecdotally, some officers disliked using these gloves because they reduced sensitivity during pat-down searches.

Our analysis found that officers who break syringes had two times higher odds of experiencing a NSI. Although this finding is not unexpected, to our knowledge, this is the first time this alarming behaviour has been systematically documented among police officers in association with NSI risk. Fortunately, this behaviour could be reversed: studies have shown that police officers are receptive to occupational safety techniques, including safe syringe disposal [2,34]. Interestingly, for officers frequently encountering syringes in their daily activities, considering contacting emergency services in case of NSI was a protective factor for NSI. Decreased NSI-related anxiety, based on improved knowledge of proper NSI protocols, could reduce unjustified syringe confiscation, leading to both occupational and public health benefits [2,10].

When our binational, multi-sectoral team presented these data to law enforcement and municipal authorities in Tijuana in 2014, the mayor requested that our team work with the SSPM to implement a Police Education Program (PEP) focused on occupational safety and HIV prevention that was mandated to all active duty police officers [29]. The resulting

programme, which is being implemented and evaluated through *Proyecto ESCUDO Tijuana* (Project SHIELD), is taught by police academy instructors and addresses occupational safety transmission, prevention and treatment of HIV and related infections (sexually transmitted infections and viral hepatitis), safe syringe disposal and HIV-PEP [29]. Syringe and drug possession laws are also addressed in order to reduce occupational risk [2,29,34]. In parallel, we also introduced a NSI response and surveillance system for the entire force. This project strengthened the relationship between public health and public safety and the creation of a system-wide NSI surveillance programme that can be used for further studies necessary to determine the quality and time-sensitive access and implementation of programmes to help increase preventative measures such as hepatitis B immunization [19–22,24,29]. Increasing PWID access to low dead-space syringes and aligning harm reduction efforts with law enforcement practices may further diminish the HIV and viral hepatitis risks of both police officers and the broader community [9,11,38].

Our study limitations included limited generalizability due to convenience sampling and a likely underestimate of reported frequencies of NSI due to self-reporting [18,26]. Under-reporting of NSIs has been found in other settings due to lack of awareness of requirements and policies, lack of time, perception that injuries were low risk, fear of outcome and dissatisfaction with follow-up procedures [16]. Survey administration by SSPM peers while on duty may have also contributed to under-reporting.

Despite these limitations, this is the first study of its kind among police officers in Latin America, and to our knowledge, among the first to examine NSIs among police in low- and middle-income countries. Our findings led to a unique binational and multi-sectoral collaboration addressing public health and public safety concerns. For police officers, handling used syringes is a serious occupational and healthcare risk. Knowledge of this occupational health risk can provide sufficient motivations for officers to change policing behaviours while protecting their health [2,47].

Conclusions

Police officers face a substantial, but poorly addressed risk of occupational risk from NSI. This study highlights the need for evidence-driven prevention, including training to help police officers reduce their risk of NSIs while modifying policing behaviours to improve the HIV risk environment for PWID [29]. These data also helped support the need for a standardized system to track exposures and injuries that may facilitate urgent access to integral healthcare services including HIV-PEP. Because syringe and small-scale drug possession is legal in Mexico, law enforcement authorities should discontinue syringe confiscation practices in order to decrease unnecessary occupational exposures while preventing PWID from sharing syringes.

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Competing interests

The authors have no competing interests to declare.

Authors' contributions

All authors read and assisted in editing the manuscript. All authors have read and approved the final manuscript.

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Commentary

From conflict to partnership: growing collaboration between police and NGOs in countries with concentrated epidemics among key populations

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Abstract

Introduction: Between September 2012 and December 2015, a series of national and regional consultations, aimed at resolving a persistent dynamic of conflict between law enforcement agencies (LEAs) and civil society organizations (CSOs) working on issues of access to HIV services in high-priority countries for people who use drugs have been organized by the HIV/AIDS Section of the United Nations Office on Drugs and Crime, the Joint United Nations Programme on HIV/AIDS, the Law Enforcement and HIV Network (LEAHN) and other international organizations. The aim of these consultations has been to understand, at a national and regional level, the key points of tension between police and CSOs and how to overcome these tensions to enhance access to and uptake of services by key populations, including people who inject drugs, sex workers, men who have sex with men and transgenders. This commentary briefly describes the methods, process, content and key outcomes of these consultations held across diverse number of countries and regions, including Africa, South East Asia, South Asia, Central Asia, Eastern Europe and Latin America.

Discussion: While the context varies, this paper highlights that there are commonalities that drive a persistent dynamic of conflict and therefore also common methods for resolution of conflict and forging partnerships. Both policing and CSOs have key sectoral responsibilities and reform agendas to implement to ensure that as an individual agency they are able to meet their obligations as partners in the HIV response. Using the key outcomes of discussions and recommendations from these consultations and drawing on existing literature, the objective of this paper is to present a preliminary model that roadmaps the critical path from resolution of conflict to partnership between LEAs and CSOs.

Conclusions: This paper seeks to highlight that critical resources are required to support ongoing development and harnessing of partnerships between LEAs and CSOs and argues that these resources should not just come from global HIV funding mechanisms but should be part of a more mainstreamed security sector reform agenda that understands the mutual benefits that programming for human rights-based policing reform would have on HIV, development and security.

Keywords: HIV; key populations; police; NGOs; partnerships; reform; collaboration; donors; resourcing; roadmap

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Introduction

In the global fast track pursuit towards ending HIV by 2030, universal access to combination HIV prevention and treatment services, and an end to discrimination, are considered critical components [1]. Pharmacokinetic advances and evidence of the efficacy of pre-exposure prophylaxis on HIV prevention with key populations [2,3] make it possible to envision a world where HIV is no longer a global public health threat. However, concentrated epidemics of HIV persist in many countries, specifically among key populations including people who inject drugs [4], men who have sex with men [5], sex workers [6] and transgenders [7]. The inability to foster a truly enabling environment where key populations have universal access to combination HIV services at scale remains a significant reason why we have not been able to reverse many concentrated epidemics.

Legal and policy environments that either criminalize the behaviour, or the person engaging in the behaviour, are widely

documented to be significant barriers to efforts aimed at reducing HIV incidence in concentrated epidemics [8]. In addition, there is a vast body of literature describing the negative impact that some police practices can have on both risk behaviour and access to and uptake of services for key populations. Studies among key populations continue to document that the fear of arrest [9], physical intimidation and violence at the hands of the police [10], frequency and threat of police raids [11] and police bribery [12] are variously associated with the sharing of needles [13], decreased access to methadone maintenance treatment [14], decreased condom use [15] and decreased access to (or the cessation of) anti-retroviral therapy [16].

Research has also sought to understand the perspectives of police at the interface between policing and HIV programmes working with key populations and have variously described contributors to negative policing behaviour including the poor understanding of HIV and HIV programmes, the lack of

appropriate police training, poor communication from HIV programmes to police [17] and structural drivers of poor police performance such as low salaries and the setting of arrest quotas that specifically require police to target people who use drugs [18]. In response to the ongoing tensions between police, HIV programmes and the people that need access to these programs, various multilateral agencies [19], researchers [20] and civil society organizations (CSOs) [21] have recommended the need for enhanced partnerships between police and HIV programmes.

The benefits of police and HIV programme partnerships have also been variously described and while the literature is in its infancy, these efforts have highlighted that partnership can lead not only to reductions in HIV-risk behaviour and increased access to services [22] but can also be associated with improvements in indicators of interest to police, including crime [23], perceptions of safety and community trust in policing.

Between September 2012 and December 2015, a series of national- and regional-level consultations, aimed at resolving a persistent dynamic of conflict between police and civil society-led HIV programmes working on issues of access to HIV services for key populations, were organized by the HIV/AIDS Section of the United Nations Office on Drugs and Crime (UNODC), the Joint United Nations Programme on HIV/AIDS (UNAIDS), the Law Enforcement and HIV Network (LEAHN) and other international organizations in high-priority countries. This effort resulted in two regional dialogues across Central Asia and Eastern Europe (2011, 2013), and national-level dialogues in Vietnam (2013), Myanmar (2013), Thailand (2013), the Philippines (2014), India (2013, 2014 and 2015), Pakistan (2013 and 2015), Kyrgyzstan, Tajikistan, Kazakhstan (2013) and Tanzania (2013). These workshops were facilitated by a combination of international trainers as well as national law enforcement experts. The aim of these consultations was to understand, at a sub-national, national and regional level, the key points of tension between police and programmes and how these tensions can be overcome to enhance both service delivery for key populations and the community safety objectives of policing. The consultations were built around four facilitated sessions tailored specifically to the country or regional context and were designed to create a space for law enforcement agencies (LEAs) and CSOs and/or non-government organizations (NGOs) to share respective positions, concerns and ideas for enhancing future collaboration.

The opening session introduced the consultation and its objectives, the second session drew on the literature and global efforts that have explored the formation of partnerships between LEAs and specific attention given to topics such as the importance of leadership, police reform, CSO capacity building, mechanisms of formal and informal communication between sectors and the evaluation of partnership strength and success. The third session asked participants to consider what a two-year programme to build partnership may look like, including critical key components, a potential agenda of issues to work on, a timeline of milestone events, the key actors that would need to be involved and a potential monitoring and evaluation framework for assessing the efficacy of the

partnership building exercise. The fourth session envisioned partnership and proposed potential steps, including a discussion on the development of an overarching national programme to enhance partnership between LEAs and CSOs.

Each workshop was evaluated using a standard pre- and post-evaluation questionnaire which captured information on knowledge, attitudes and beliefs of participants from both LEAs and CSOs. Consultation reports were also produced. The consultations employed simultaneous language translation where more than one language was being used. The objective of this commentary is to draw on an analysis of the consultations and the existing literature and propose a potential model that outlines a two-year roadmap for the resolution of conflict and the building of sustained partnership between LEAs and CSOs working on HIV programmes. This paper then proposes that efforts and resources aimed at creating an enabling environment should be mobilized with middle- to long-term timeframes so that partnerships between police and HIV programmes can be fostered and sustained and indeed evaluated for efficacy through both a public health perspective and a criminogenic lens.

Discussion

The conceptual model describes the need for regular facilitated dialogue and the practical steps that each sector would need to take to ensure they are upholding their commitment to building partnerships (Figure 1). Given the fact that different stakeholders that exist across different contexts may have a significant role in shaping the partnership and ensuring applicability in different settings, this model expands the number of agencies considered to be principally LEAs and in addition expands the agencies working on HIV programming for key populations. The justification for certain component is outlined through presentation of some of the findings of the consultation and is supported by existing literature below.

Related to policy, protocols and training

Participants from across LEAs in many of the national and regional consultations described a confusing policy environment for the provision of harm reduction and other HIV-related services for PWIDs. Whilst in some countries there was a stated supportive national government harm reduction policy, this did not necessarily translate into an specific stated or implemented policy, protocol or instruction for national police. Furthermore, many LEAs described a very limited understanding of harm reduction policy and practice among grassroots policing at the local community level. Further analysis reveals that in many countries, specific HIV and harm reduction training is entirely absent from police training curriculum or has only been piloted. The role of police training academies in cascading knowledge and skills to the lower levels of the police force was considered as critical by most participants. Reaching police who have already been through police academies with updated training was also mentioned as a distinct challenge in many countries. Finally, participants from LEAs recommended that development of a work place policy on HIV for LE officers should be considered where such is not available.

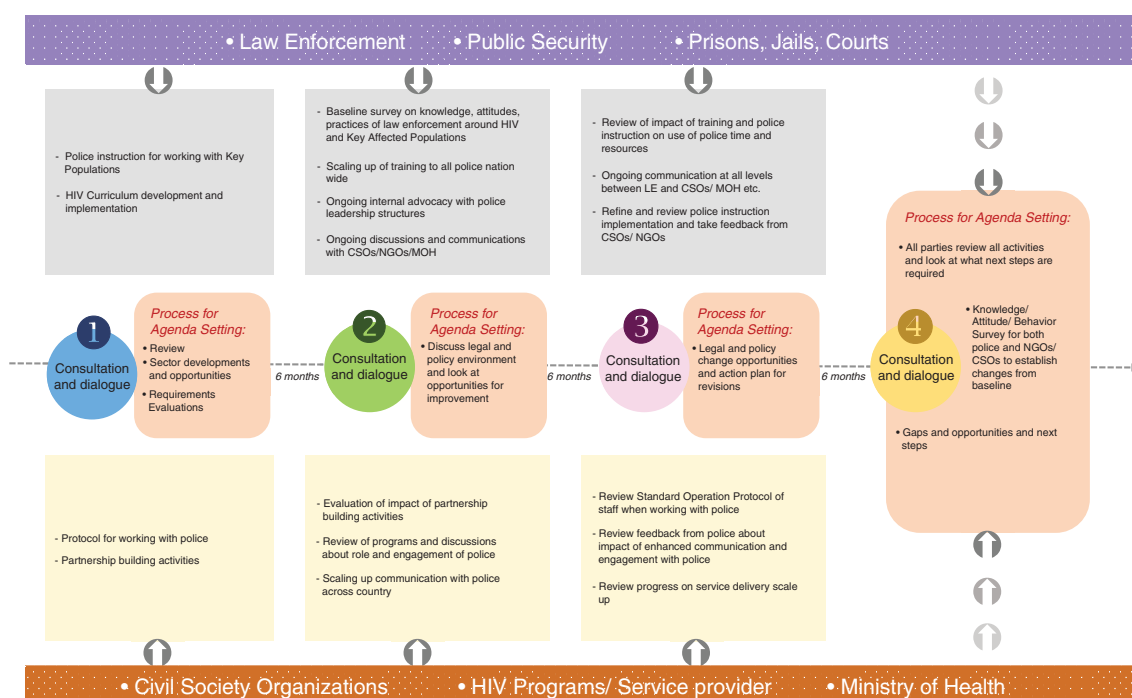


Figure 1. Model depicting two-year roadmap designed to enhance and sustain partnerships between key law enforcement and health stakeholders in response to concentrated epidemics among key populations.

The conceptual model outlines the need for the development of standard operating protocols, specifically outlining how police can work and interact with key populations as a pre-requisite for police to be able to play a more positive role in supporting service access for key populations. While police protocols for working with key populations were almost completely absent from the majority of police institutes involved in the consultations, examples of the development of such protocols exist including in Cambodia [24] and Kyrgyzstan [25]. Protocol development is a low-cost intervention that should be considered in national programme design and supported by HIV donors.

Participants from CSOs in some countries described specific protocols that had been developed to guide how HIV programme workers, such as peer educators and outreach staff, should work with police, including outlining advocacy strategies, being formally credentialed and the need for regular communication between the programmes and local police. Protocols for HIV programmes to work with police were not uniformly developed or implemented across all countries which many participants from CSOs saw as a practical opportunity to increase their engagement and collaborative working with police. CSOs described many ongoing barriers to working relationships with police such as the use of urine testing as evidence of drug use, arbitrary arrest of members of key populations or HIV programme staff and the inability of programmes to identify the right level of authority to engage with in advocacy efforts.

Related to programmes and community engagement

Participants from LEAs described some of the challenges related to the formation of partnership as the expectations

of community on the role of police in relation to drug use. There was a widely held perception that the community at large was not completely aware of or on board with HIV-related programmes working with people who use drugs (PWUDs). In response to this, participants from CSOs challenged LEAs to work with them more directly in advocating and educating the community on the role of HIV programmes and indeed the role of police in supporting those programmes. There was recognition that the practical implementation of this strategy would require significant preparation and dialogue between LEAs and programme workers including senior-level police advocacy for the strategy. The notion that police should advocate and support harm reduction programmes has been described as being in line with the core principles of policing for public health [26].

LEAs in some countries described the need for evaluations of current programmes to be made more readily available and the need for programmes to adhere to some of the foundational principles of needle syringe programmes, including the need to ensure that needles were not discarded in public spaces, as that undermined the community sentiments towards the programmes and indeed put pressure on the police to crack down on the programmes. Participants from CSOs countered that there was indeed a need to also evaluate the role of police in engaging with programmes in response to any police training of advocacy efforts undertaken to assess the compliance with any implemented protocols.

Related to partnership and sustainability

Participants from both LEAs and CSOs thought that a partnership between LEAs and CSOs is much needed and recommended additional consultations and dialogues to take place

as a partnership between police and CSOs was considered a “win–win” situation with benefits to both sectors. Participants described a series of next steps that related to a range of individual sectoral responsibilities to lay the ground for sustained partnership. Participants from LEAs described the need for the development of training and curriculum materials and the need to incorporate these into the curricula of the police training academies. Where this was already implemented, participants recommended that police already working in communities should also receive training. Police training has been shown to have an impact on improved police knowledge and attitudes towards harm reduction programmes [27]. Investing in police training and education has also been shown to be scalable and effective at reducing HIV risk among key populations in limited settings [28].

Participants from CSOs discussed the need for HIV programmes to have a consistent approach to working in the field with police. The development of this consistent approach would require internal protocols, engagement strategies with police embedded in programme design and the early participation of LEAs when programmes are starting on the ground. Several participants also recommended that a national- or sub-national-level coordination committee or working group, consisting of representatives of LEAs, prison and health officials and CSOs be established to facilitate coordination and problem solving. A related recommendation was for a “nodal officer” to be identified at the sub-national level, as relevant, to facilitate coordination between LEAs and CSOs. The use of “nodal officers” has been employed as a strategy to increase support for HIV programmes in India [29].

Participants also described several collaborative opportunities that could be jointly organized including regular engagement focusing on mutual teaching, learning and situational analysis. The conceptual model is based on the notion that an ongoing facilitated dialogue between police and programs is a critical platform providing both sectors opportunities to work towards a proverbial “win-win” At the crux of communication and engagement between LEAs and CSOs is the need for the dialogue to be based on a set of principles that include transparency, fairness and respect which are guiding principles also outlined by the European Platform for Policing and Human Rights [30]. The potential for internships or secondments across sectors was discussed as was the need for joint agenda setting towards a sustained partnership effort. Critical to all of these suggestions was the need for the development of a monitoring and evaluation framework that would examine the progress of partnership from both LEAs and CSO perspectives.

Conclusions

Advocacy efforts to enhance the role of police in support of HIV programming among key populations have increased over the past 15 years and have focused on police sensitization and training. These efforts have resulted in numerous police training workshops held at national and regional levels. Whilst some of these efforts have resulted in increased police understanding of HIV and harm reduction, some support for HIV and harm reduction programmes at a policy level and the implementation of training curricula [31],

rarely have these efforts actually brought local-level police and HIV programmes to resolve long-standing tensions that impact service provision and uptake of services for key populations in high-priority countries.

The proposed model roadmaps a process towards sustained partnership and depending on the context would require the input of some external resources and technical assistance, especially towards reforming national policies and developing police protocols. The resources required would be minor in comparison to the overall budgets of LEAs and health agencies at a national level, highlighting the cost effectiveness of partnership development. The model can be scaled to a local or national level. The series of consultations from which this model is proposed are very much preliminary efforts at each of the national levels and clearly a sustained and supported engagement mechanism is needed. The main focus of the consultations was on enhancing partnerships in the context of creating an enabling environment for scaling up access to the comprehensive package of HIV interventions for people who use drugs [32]; however, many of the workshops discussed the need for partnerships between LEAs and CSOs in the context of HIV among other key populations.

The workshops were designed for 30–40 participants, drawn equally from the LEAs and CSOs active at the country, or sub-national, level. Participants from LEAs were nominated by relevant LEAs, whether at national or sub-national level. Advocacy conducted with high-level police leadership is required to not only conduct consultations of this kind but also to ensure that the right levels of police attend the consultations; this paper recognizes that in many countries this process can be difficult. Representatives of CSOs were identified through nominations received by national networks of CSOs.

While some countries are more advanced in the pursuit of either HIV-related police policy and practice reform or the engagement of CSOs with police, there is a significant amount of work to be done to be able to truly verify sustained partnerships and measure a consequential impact on HIV-risk behaviour and service access and uptake. The analysis emanating from these consultations have enabled the development of the proposed roadmap model which is both scalable and fundable. The roadmap provides a platform for donor partners and host governments to actually cost and evaluate the partnership effort.

The model outlines the need for sustained and ongoing dialogue between LEAs and CSO-led HIV programmes working with key populations, the provision of contextualized yet standardized technical assistance and the development of an increasingly sophisticated partnership agenda. Since these consultations were held, UNODC has developed and begun implementing the “Training Manual for Law Enforcement Officials on HIV Service Provision for People Who Inject Drugs” [33] which acknowledges the need for high-level police to support advocacy efforts in a process articulated in Annex I of the manual. In addition, UNODC has also developed, in partnership with the International Network of People who Use Drugs (INPUD) and LEAHN, the “Practical Guide for Civil Society HIV Service Providers among People who Use Drugs: Improving Cooperation and Interaction with Law Enforcement

Officials' [34]. In combination, these documents provide standardized materials for contextualizing and implementing the relevant activities at the country level.

The model builds in a significant component of evaluation which includes the need to first understand at a country context level the current interaction between LEAs and CSOs working on HIV programmes. Second, this model recognizes the need for baseline evaluations that build an understanding of the pre-intervention situation on the ground by conducting knowledge, attitude, behaviour and practice surveys covering a sample size that would give enough power depending on the proposed geographical scope of the roadmap intervention. In addition, the authors recommend the need to measure pre/post measures of police behaviour towards key populations including incidence of arbitrary arrest, violence, the use of bribery and to see if these indicators have decreased at different time points in the proposed two year evaluation. In addition, HIV-risk behaviour should also be surveyed over time to assess the impact of the partnership intervention. Process evaluation of the roadmap, its facilitation and its agenda setting should also be considered. The implementation of such a roadmap would be best accompanied by an implementation science research design.

The need to build collaborative partnerships between LEAs and CSOs in countries where concentrated epidemics of HIV persist among key populations is critical towards ending HIV and would have positive flow on effects to a range of other health and community safety indicators. Despite the opportunities presented through the availability of combination HIV prevention services, it is the access to and uptake of these services which are of equal importance. The pursuit of partnerships between LEAs and CSOs is a goal that should be equally resourced by donor partners and multilaterals from across both the security and health sectors. Resourcing police reform to support HIV-related services has traditionally not been the modus operandi of donors such as The Global Fund for AIDS, Tuberculosis and Malaria. Similarly, police reform in the context of development assistance has rarely been supported with an HIV agenda in mind. A coordinated donor response to police reform is warranted. This paper has highlighted some initial efforts to overcome conflict with collaboration and provides a roadmap to pursue this goal and to sustain this work. It provides policy makers and donor partners with a fundable and scalable model that places the responsibility for creation of an enabling environment firmly within a partnership model on the ground and across the donor environment.

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Competing interests

AB works for UNODC but was not involved in the design of the conceptual model. The other authors declare that they have no competing interests and received no financial support in writing this paper.

Authors' contributions

NT, DR and AZ conducted the consultations on behalf of UNODC. NT drafted the manuscript. AB, DR and AZ provided feedback on the draft. JC incorporated feedback and editing into the manuscript. All authors have read and approved the final version.

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Research article

Declining trends in exposures to harmful policing among people who inject drugs in Vancouver, Canada

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Abstract

Introduction: In 2006, the Vancouver Police Department (VPD) developed an organization-wide drug policy approach, which included endorsing harm reduction strategies for people who inject drugs (PWID). We sought to examine rates of potentially harmful policing exposures and associated HIV risk behaviour among PWID in Vancouver, Canada before and after the VPD policy change.

Methods: Data were derived from two prospective cohort studies of PWID. Multivariable generalized estimating equation models were used to examine changes in the risk of confiscation of drug use paraphernalia and physical violence by the police, as well as changes in the relationship between exposures to the two policing practices and sharing of drug use paraphernalia, before and after the policy change.

Results: Among 2193 participants, including 757 (34.5%) women, the rates of experiencing police confiscation of drug use paraphernalia declined from 22.3% in 2002 to 2.8% in 2014, and the rates of reporting experiencing physical violence by the police also declined from 14.1% in 2004 to 2.9% in 2014. In multivariable analyses, the post-policy change period remained independently and negatively associated with reports of confiscation of drug use paraphernalia (adjusted odds ratio (AOR): 0.25; 95% confidence interval (CI): 0.21 to 0.31) and reported physical violence by the police (AOR: 0.76; 95% CI: 0.63 to 0.91). However, experiencing both confiscation of drug use paraphernalia and physical violence by the police (AOR: 1.92; 95% CI: 1.10 to 3.33) and experiencing only confiscation of drug use paraphernalia (AOR: 1.71; 95% CI: 1.34 to 2.19) remained independently and positively associated with sharing of drug use paraphernalia during the post-policy change period.

Conclusions: In our study, two policing practices known to increase HIV risk among PWID have declined significantly since the local police launched an evidence-based drug policy approach. However, these practices remained independently associated with elevated HIV risk after the post-policy change. Although there remains a continued need to ensure that policing activities do not undermine public health efforts, these findings demonstrate that a major shift towards a public health approach to policing is possible for a municipal police force.

Keywords: harm reduction; HIV/AIDS; injection drug use; drug law enforcement; Canada; epidemiology.

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Introduction

In many settings, intensive policing is used as a common strategy aimed at eradicating the trafficking and use of illicit drugs [1,2]. However, a large body of evidence demonstrates that exposure to various policing practices increases HIV risk behaviours and other harms among people who inject drugs (PWID) [1–7]. Intensive policing practices, such as drug crackdowns, have been shown to elicit fear among PWID, promote risk behaviours [1–3,5,7–9] (such as sharing of used syringes [1,2,10]) and limit access to healthcare and essential HIV prevention services [1,7,11–13]. The downstream health consequences of these behaviours include increased risk of infection, both bacterial and viral, vascular damage and disease transmission [1,7]. Other specific policing practices, including confiscation of syringes [6,11] and arrest for syringe possession [14], have also been identified as perpetuating HIV

risk among PWID. As well, previous studies have reported high rates of police-perpetrated violence among PWID [4,9,15], and such experiences have also been shown to increase fear of police and high-risk injection behaviour [4,15].

In response to growing concerns regarding the negative impacts of high-intensity policing targeting PWID, in recent years, police departments in some jurisdictions have sought to develop more progressive drug policies, including those with a focus on or acceptance of harm reduction approaches. Although evaluation of such novel policing policies and programmes is of great importance, there is a limited body of research on police-endorsed harm reduction strategies and their effect on the behaviours and health of PWID. For example, a study conducted in Tehran, Iran, sought to examine PWID's access to harm reduction programmes after the local government implemented harm reduction strategies in 2002

[16]; however, it did not examine their HIV serostatus or their exposure to policing. In Kyrgyzstan in 2009, a new policy was adopted to advise the police to not interfere with syringe exchange programmes and outreach to PWID and sex workers [17]. Although the study examined police awareness of the policy and related activities, it did not evaluate the effect the policy had on PWID.

In Vancouver, Canada, a large-scale police crackdown in 2003 targeting people who use drugs led to increase high-risk injection behaviours and displacement of local PWID and invited widespread criticism from public health and human rights experts [18,19]. Soon after, the Vancouver Police Department (VPD) launched a new drug policy approach in 2006, which consists of four pillars: prevention, enforcement, harm reduction and treatment [20]. With regard to harm reduction, the VPD stated that their public safety mission aims to “ensure open and ready access to public health harm reduction initiatives, such as needle exchange and the Supervised Injection Site” [20]. Although the policy document did not specify which policing practices should be avoided or encouraged, one would expect a reduction of harmful policing practices that are known to increase the risk of blood-borne disease transmission among PWID, such as confiscation of drug use paraphernalia and physical violence by the police [4,6,11,15]. Therefore, taking advantage of two long-running prospective cohort studies of PWID, we sought to examine changes in the risk of exposure to confiscation of drug use paraphernalia and physical violence by the police and the associated HIV risk behaviours among PWID in Vancouver, Canada, before and after the policy change in 2006.

Methods

Study procedures and participants

We pooled participants in two open prospective cohorts of people who use drugs in Vancouver: the Vancouver Injection Drug Users Study (VIDUS) and the AIDS Care Cohort to Evaluate Exposure to Survival Services (ACCESS). The cohorts have been described in detail elsewhere [21,22]. Briefly, VIDUS is a cohort of HIV-seronegative adult PWID who injected illicit drugs in the month prior to enrolment. ACCESS is a cohort of HIV-seropositive adult drug users who used an illicit drug other than cannabis in the previous month at enrolment. Other common eligibility criteria included being aged 18 years or older, residing in the greater Vancouver area and providing written informed consent. The two studies employ harmonized data collection and follow-up procedures to allow for combined analyses. Specifically, at baseline and semi-annually thereafter, participants answer an interviewer-administered questionnaire, which elicits data on demographic characteristics, drug-using behaviours and related exposures, and undergo HIV serologic testing or disease monitoring as appropriate. Participants received \$30 CAD at study visits. Both studies have been approved by the University of British Columbia/Providence Healthcare Research Ethics Board.

For the present analyses, participants were eligible if they completed at least one study visit between 1 June 2002 and 30 November 2014, reported a history of injection drug use at baseline, and reported having injected drugs or smoked crack cocaine during the previous six months for each interview.

Study variables

For the examination of the trends in the risk of policing exposures, there were two primary outcomes: experiencing confiscation of drug use paraphernalia (i.e. new syringes and pipes) by the police in the previous six months (yes vs. no) and experiencing physical violence by the police in the previous six months (yes vs. no). For the examination of the associated HIV risk, the primary outcome was sharing drug use paraphernalia (i.e. syringes and pipes) in the previous six months (yes vs. no). In addition to syringes, we included pipes in the variable definition, as previous studies have shown increasing trends in crack smoking and the associated elevated risk of HIV seroconversion among PWID in this setting [23,24].

For the examination of the trends in the risk of policing exposures, the primary explanatory variable was the estimated calendar year of the outcome, dichotomized into before and after the VPD policy change in 2006. The study questionnaire assessed the outcomes of interest occurring in the past six months, so the calendar year was estimated as the year of the date occurring three months prior to the interview date. Because the reports of police confiscation of drug use paraphernalia were assessed only between June 2002 and May 2006 and again between June 2009 and November 2014 (i.e. the question was removed for administrative purposes between June 2006 and May 2009), the variable was dichotomized as 2009 to 2014 *versus* 2002 to 2006 for the analysis of police confiscation of drug use paraphernalia. Similarly, the reports of physical violence by the police were assessed only between June 2004 and November 2014, and therefore the variable was dichotomized as 2007 to 2014 *versus* 2004 to 2006 for the analysis of physical violence by the police. For the examination of the relationship between exposure to the two policing practices and sharing of drug use paraphernalia, the primary explanatory variable was exposures to the two policing practices in the previous six months. This variable had four categories: (1) experiencing both confiscation of drug use paraphernalia and physical violence by the police; (2) experiencing only confiscation of drug use paraphernalia by the police; (3) experiencing only physical violence by the police; and (4) experiencing neither of them.

Based on existing literature [4,6,15,25], we considered secondary explanatory variables that might confound the relationships between the primary explanatory variables and the outcomes. These included: age (in years); gender (male vs. female); ancestry (Caucasian vs. other); homelessness (yes vs. no); Downtown Eastside residence (yes vs. no); heroin injection (\geq daily vs. $<$ daily); cocaine injection (\geq daily vs. $<$ daily); crack smoking (\geq daily vs. $<$ daily); injection of drugs in public (yes vs. no); drug dealing (yes vs. no); sex work involvement (yes vs. no); incarceration (yes vs. no); and HIV serostatus (positive vs. negative). Behavioural variables referred to the previous six months unless otherwise indicated and were treated as time-varying variables.

Statistical analyses

First, we examined the baseline sample characteristics stratified by reports of policing exposures in the previous six months, using the Pearson's chi-square test (for categorical

variables) and Wilcoxon rank-sum test (for continuous variables). We also plotted the proportions of participants reporting confiscation of drug use paraphernalia and physical violence by the police in the previous six months over the calendar year. Because our questionnaire asked about police confiscation of drug use paraphernalia during the past month between 2006 and 2014, we added the past month data to the plot.

Because the present analyses included serial measures for each participant, we used generalized estimating equations (GEE) with logit link, which provided standard errors adjusted by multiple observations per person using an exchangeable correlation structure. As a first step, we fitted univariable GEE models to examine the unadjusted associations between the explanatory variables and the outcomes. To determine whether the calendar year after the VPD policy change was associated with decreased risk of exposures to the two policing practices after adjustment for potential confounders, we used an *a priori*-defined statistical protocol [26] to construct multivariable GEE models. Briefly, we first built the full multivariable GEE models for each of the two outcomes, which included all explanatory variables associated with the outcome at $p < 0.05$ in the univariable models. Then, we fit a series of reduced models comparing the coefficient value associated with the primary explanatory variable in the full model to its corresponding value in each of the reduced models and dropped the secondary explanatory variables associated with the smallest relative change. We continued this iterative process until the minimum change exceeded 5%.

Next, to identify changes in the relationship between exposures to the two policing practices and sharing of drug use paraphernalia before and after the VPD policy change, we first used data from throughout the study period to build a multivariable GEE model, employing the same statistical protocol described above. Then, we divided the study period into two sub-periods (June 2004 to May 2006 and June 2009 to November 2014) based on the timing of the VPD policy change, as well as the availability of the required data, and fit a multivariable model for each of the two periods. The two models included the same set of primary and secondary explanatory variables, allowing us to compare the effect estimates for the primary explanatory variable between the two periods.

We also used descriptive statistics to examine the following: the proportion of participants who reported that drug use paraphernalia were returned to them after having been confiscated by the police; types of physical violence by the police that participants reported experiencing; and what participants reported doing immediately before experiencing physical violence by the police. The analysis was restricted to a period of June 2009 and November 2014 because these sub-questions were added to the questionnaire in June 2009. All p -values were two-sided. All statistical analyses were performed using the SAS software version 9.4 (SAS Institute, Cary, NC).

Results

Sample characteristics

In total, 2193 participants were eligible for the present analyses, including 757 (34.5%) women. Of these, median

age at baseline was 40 years (interquartile range (IQR): 32 to 46), and 60.0% self-reported having Caucasian ancestry. A total of 19,027 interviews were conducted, with a median of 7 (IQR: 3 to 13) interviews per person. A total of 179 participants were not asked about police confiscation of drug use paraphernalia, whereas 109 participants were not asked about police physical violence. As shown in Table 1, 242 (12.0%) of 2014 participants reported experiencing police confiscation of drug use paraphernalia, 186 (8.9%) of 2084 participants reported experiencing physical violence by the police, and 1279 (58.3%) of 2193 participants reported having shared drug use paraphernalia during the previous six months at their respective baseline periods. For the analyses of police confiscation of drug use paraphernalia, 1698 (84.3%) of 2014 participants were followed during both periods (2002 to 2006 and 2009 to 2014), and the baseline rate of reporting police confiscation (12.2%) was not statistically different from that (11.1%) among those followed in either period only ($p = 0.576$). Similarly, for the analyses of police violence, 1780 (85.4%) of 2084 participants were followed during both periods (2004 to 2006 and 2007 to 2014), and the baseline rate of reporting police violence (8.9%) was essentially the same as that (8.9%) among those followed in either period only ($p = 0.977$).

Trends in police confiscation of drug use paraphernalia and physical violence

In total, 528 (26.2%) of 2014 participants reported experiencing police confiscation of drug use paraphernalia at least once, and 472 (22.6%) of 2084 participants reported experiencing physical violence by the police at least once during their respective study periods. After June 2009, there were 277 reports of police confiscation of drug use paraphernalia, and the paraphernalia were reportedly returned to participants only on three (1.1%) occasions. There were 283 reports of physical violence by the police after June 2009. Of these, the most commonly reported types of physical violence experienced included the following: bruises (41.0%), scratches (20.5%) and broken bones (6.7%). Prior to experiencing physical violence by the police, participants most commonly reported engaging in the following activities: nothing (30.7%), selling drugs (8.1%) and criminal activity (7.1%).

As shown in Figure 1, the rates of experiencing police confiscation of drug use paraphernalia declined from 22.3% in 2002 to 2.8% in 2014, and the rates of experiencing physical violence by the police also declined from 14.1% in 2004 to 2.9% in 2014.

Table 2 presents the results of univariable and multivariable GEE analyses of changes in the risk of experiencing the two policing practices before and after the VPD policy change. As shown, in the final multivariable models, the post-policy change period remained independently and negatively associated with reports of confiscation of drug use paraphernalia (adjusted odds ratio (AOR): 0.25; 95% confidence interval (CI): 0.21 to 0.31) and physical violence by the police (AOR: 0.76; 95% CI: 0.63 to 0.91).

Changes in the association with HIV risk behaviour

Table 3 shows the results of multivariable GEE analyses of the relationship between exposures to policing and sharing of

Table 1. Baseline sample characteristics stratified by reports of confiscation of drug use paraphernalia and physical violence by the police in the previous six months among PWID in Vancouver, Canada (n = 2193)

Characteristic	Total, n (%)	Police confiscation of drug use paraphernalia ^{a,b}		p	Police physical violence ^{a,c}		p
		Yes n (%)	No n (%)		Yes n (%)	No n (%)	
Demographic							
Age (median, IQR)	40 (32 to 46)	36 (28 to 43)	42 (34 to 47)	<0.001	37 (31 to 43)	41 (34 to 47)	<0.001
Male gender	1436 (65.5)	154 (63.6)	1158 (65.4)	0.600	134 (72.0)	1234 (65.0)	0.054
Caucasian ancestry	1316 (60.0)	129 (53.3)	1076 (60.7)	0.027	123 (66.1)	1126 (59.3)	0.071
Homeless ^a	682 (31.1)	93 (38.4)	436 (24.6)	<0.001	102 (54.8)	554 (29.2)	<0.001
DTES residence ^a	1391 (63.4)	163 (67.4)	1065 (60.1)	0.030	124 (66.7)	1229 (64.8)	0.602
≥ Daily injection heroin use ^a	640 (29.2)	121 (50.0)	402 (22.7)	<0.001	78 (41.9)	524 (27.6)	<0.001
≥ Daily injection cocaine use ^a	337 (15.4)	64 (26.5)	241 (13.6)	<0.001	39 (21.0)	250 (13.2)	0.003
≥ Daily crack smoking ^a	892 (40.7)	159 (65.7)	605 (34.1)	<0.001	98 (52.7)	742 (39.1)	<0.001
Injected drugs in public ^a	882 (40.2)	153 (63.2)	559 (31.5)	<0.001	104 (55.9)	655 (34.5)	<0.001
Drug dealing ^a	649 (29.6)	119 (49.2)	395 (22.3)	<0.001	97 (52.2)	498 (26.2)	<0.001
Sex work ^a	371 (16.9)	55 (22.7)	263 (14.8)	0.002	27 (14.5)	295 (15.5)	0.700
Incarceration ^a	370 (16.9)	85 (35.1)	201 (11.3)	<0.001	71 (38.2)	260 (13.7)	<0.001
HIV positive ^a	831 (37.9)	62 (25.6)	720 (40.6)	<0.001	68 (36.6)	731 (38.5)	0.593
Sharing of drug use paraphernalia ^a	1279 (58.3)	181 (74.8)	864 (48.8)	<0.001	125 (67.2)	1031 (54.3)	0.001

PWID: people who inject drugs; IQR: interquartile range; DTES: Downtown Eastside; HIV: human immunodeficiency virus; ^adenotes activities in the previous six months; ^bfor this analysis, n = 2014; ^cfor this analysis, n = 2084.

drug use paraphernalia, stratified by two sub-periods. As shown, in 2004 to 2006, experiencing confiscation of drug use paraphernalia but not physical violence by the police remained independently and positively associated with sharing of drug use paraphernalia (AOR: 1.37; 95% CI: 1.02 to 1.85). In 2009 to 2014, experiencing both confiscation of

drug use paraphernalia and physical violence by the police (AOR: 1.92; 95% CI: 1.10 to 3.33) and experiencing confiscation of drug use paraphernalia but not physical violence by the police (AOR: 1.71; 95% CI: 1.34 to 2.19) remained independently and positively associated with sharing of drug use paraphernalia.



Figure 1. Rates of reporting confiscation of drug user paraphernalia and physical violence by the police among PWID in Vancouver, Canada (n = 2193).

Table 2. Univariable and multivariable GEE analyses of factors associated with confiscation of drug use paraphernalia and physical violence by the police before and after the VPD policy change among PWID in Vancouver, Canada (n = 2193)

Characteristic	Police confiscation of drug use paraphernalia ^{a,b}		Physical violence by the police ^{a,c}	
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Calendar year				
(2009 to 2014 vs. 2002 to 2006)	0.18 (0.15 to 0.21)	0.25 (0.21 to 0.31)		
(2007 to 2014 vs. 2004 to 2006)			0.56 (0.48 to 0.65)	0.76 (0.63 to 0.91)
Gender				
(Male vs. female)	0.93 (0.76 to 1.14)		2.01 (1.59 to 2.54)	2.15 (1.68 to 2.75)
Age				
(Per 10-year increase)	0.43 (0.39 to 0.47)	0.72 (0.65 to 0.80)	0.56 (0.51 to 0.62)	0.68 (0.60 to 0.76)
Ancestry				
(Caucasian vs. other)	0.81 (0.67 to 0.99)		1.26 (1.02 to 1.56)	
Homelessness ^a				
(Yes vs. no)	2.46 (2.08 to 2.89)	2.22 (1.88 to 2.63)	2.43 (2.05 to 2.88)	1.64 (1.37 to 1.96)
DTES residence ^a				
(Yes vs. no)	1.13 (0.95 to 1.34)		1.37 (1.14 to 1.64)	
Heroin injection ^a				
(≥ Daily vs. < daily)	3.02 (2.56 to 3.56)		1.89 (1.58 to 2.25)	
Cocaine injection ^a				
(≥ Daily vs. < daily)	2.16 (1.79 to 2.61)		1.70 (1.37 to 2.12)	1.42 (1.13 to 1.79)
Crack smoking ^a				
(≥ Daily vs. < daily)	4.08 (3.48 to 4.80)	2.78 (2.36 to 3.27)	1.53 (1.31 to 1.80)	
Injected drugs in public ^a				
(Yes vs. no)	3.82 (3.27 to 4.46)		2.49 (2.11 to 2.94)	
Drug dealing ^a				
(Yes vs. no)	2.67 (2.29 to 3.12)		2.71 (2.33 to 3.16)	
Sex work ^a				
(Yes vs. no)	2.20 (1.79 to 2.71)		1.16 (0.91 to 1.48)	
Incarceration ^a				
(Yes vs. no)	4.81 (4.05 to 5.71)		4.74 (3.94 to 5.71)	3.31 (2.70 to 4.05)
HIV serostatus ^a				
(Positive vs. negative)	0.61 (0.49 to 0.77)		0.67 (0.54 to 0.82)	0.82 (0.67 to 1.02)

GEE: generalized estimating equations; VPD: Vancouver Police Department; PWID: people who inject drugs; OR: odds ratio; CI: confidence interval; DTES: Downtown Eastside. ^aDenotes activities in the previous six months; ^bfor this analysis, n = 2014; ^cfor this analysis, n = 2084.

Discussion

We found that approximately one-quarter of participants experienced confiscation of drug use paraphernalia or physical violence by the police, respectively, at least once during the 12-year study period. Post-VPD policy change, there was a significant decline in the prevalence of experiencing police confiscation of drug use paraphernalia, as well as physical violence by the police, after extensive confounder adjustment. However, experiencing both confiscation of drug use paraphernalia and physical violence by the police, and experiencing confiscation of drug use paraphernalia but not physical violence by the police, remained independently and positively associated with sharing of drug use paraphernalia during the post-policy change period. Additionally, the effect size of the association between exposure to harmful policing and

sharing of drug use paraphernalia appears to have increased after the VPD policy change.

Although the overall declining trends in exposure to harmful policing observed among our sample of PWID are encouraging, the persistent and seemingly stronger association between exposure to harmful policing and HIV risk behaviour during the post-VPD policy change period is concerning. In Vancouver, there has been a general decline in the rates of sharing of syringes and crack pipes during the last decade [27,28]. This decrease in HIV risk behaviour has coincided with greater and easier access to sterile drug use paraphernalia, as a result of decentralization of needle exchange programmes (NEPs) that led to widespread syringe distribution [27,29], and the launch and scale-up of crack pipe distribution programmes beginning in 2004 [30]. Now that there is greater coverage

Table 3. Multivariable GEE analyses of the relationship between exposures to policing and sharing of drug use paraphernalia among PWID in Vancouver, Canada (n = 2193)

Characteristic	2004 to 2006 ^b	2009 to 2014 ^c
	AOR (95% CI)	AOR (95% CI)
Exposures to policing ^a		
(Both confiscation of drug use paraphernalia and physical violence by the police vs. neither)	0.96 (0.57 to 1.60)	1.92 (1.10 to 3.33)
(Confiscation of drug use paraphernalia but not physical violence by the police vs. neither)	1.37 (1.02 to 1.85)	1.71 (1.34 to 2.19)
(Physical violence but not confiscation of drug use paraphernalia by the police vs. neither)	1.03 (0.66 to 1.62)	1.13 (0.85 to 1.50)
Age		
(Per 10-year increase)	1.10 (0.99 to 1.22)	0.81 (0.74 to 0.88)
Homelessness ^a		
(Yes vs. no)	1.29 (1.00 to 1.67)	1.34 (1.18 to 1.52)
Heroin injection ^a		
(≥Daily vs. <daily)	0.74 (0.60 to 0.92)	0.94 (0.81 to 1.08)
Crack smoking ^a		
(≥Daily vs. <daily)	2.14 (1.76 to 2.60)	1.98 (1.76 to 2.22)
Injected drugs in public ^a		
(Yes vs. no)	1.70 (1.33 to 2.16)	1.70 (1.51 to 1.91)
Drug dealing ^a		
(Yes vs. no)	1.47 (1.18 to 1.83)	1.33 (1.17 to 1.50)
Sex work ^a		
(Yes vs. no)	1.35 (1.04 to 1.75)	1.43 (1.20 to 1.70)
Incarceration ^a		
(Yes vs. no)	1.75 (1.32 to 2.32)	1.10 (0.93 to 1.31)

GEE: generalized estimating equations; PWID: people who inject drugs; AOR: adjusted odds ratio; CI: confidence interval.

^aDenotes activities in the previous six months; ^bfor this analysis, n = 1012; ^cfor this analysis, n = 1494.

of NEPs and crack pipe distribution programmes in this setting, it may be that competing risks of sharing drug use paraphernalia (e.g. requiring many sterile syringes due to high-intensity drug use) have decreased in recent years and, consequently, exposure to harmful police activities may have had a greater effect on this behaviour among PWID.

Our findings suggest that between the two policing practices examined in this study, exposure to confiscation of drug use paraphernalia by the police appears to be the major factor associated with elevated HIV risk behaviour throughout the study period. The result that experiencing both types of policing practices was not independently associated with HIV risk behaviour during the 2004 to 2006 period may be due to the statistical power or may suggest that that may be the case. Of the individuals who experienced confiscation of drug use paraphernalia after June 2009 in our study, only about 1% reported having their paraphernalia returned to them by the police. Thus, sharing of drug use paraphernalia may be a direct consequence of confiscation. On the contrary, physical violence by the police has been shown to provoke fear in PWID [4,15] and increase apprehension of being stopped by the police [10], thus making PWID more reluctant to carry sterile drug paraphernalia and therefore indirectly impacting their HIV risk behaviours.

We also found that one-third of the participants who reported experiencing physical violence by the police after

2009 reported engaging in nothing prior to experiencing the violence. This finding is concerning, as it has been suggested that many PWID were exposed to unjustified, discriminatory abuse by the police during the police crackdown of 2003 in Vancouver [19]. Such human rights concerns have also been raised in many countries, including Thailand, Kazakhstan and China [15,31,32]. In Thailand, police have used visible track marks on the arms of PWID as an ostensible excuse to physically abuse or arrest them [33]. In our study, however, further in-depth investigation is needed to determine the context of police violence before any major inferences are made.

In addition to the VPD policy change in 2006, there has been a gradual scale-up of harm reduction services in this setting during the study period, which may have further promoted changes in policing practices [27,34]. Although we cannot make a causal conjecture from this observational study, we found that both of the harmful policing activities of interest have markedly decreased since 2006, suggesting that the VPD policy change may have served to positively change policing practices in this setting. These findings demonstrate that a significant shift of police attitudes towards harm reduction policies is possible. However, it remains important to explore potential reasons why these harmful behaviours still persist. Previous studies have demonstrated that police in some settings are misinformed of the law [17,35,36],

whereas others are aware of the specific laws but continue to oppose them because progressive harm reduction policies may not align with their personal beliefs [35]. As we can only speculate about the reasons for the scarce yet persistent occurrence of these policing actions, in order to refine harm reduction training and implementation, the police should be further consulted [36]. In addition, the present harm reduction programmes in Vancouver must continue to be sustained, as police partnership with public health services, such as supervised injection facilities, has been shown to benefit PWID, increase public order and increase public support of these important facilities [37].

This study has several limitations. First, because the VIDUS and ACCESS are not random samples, the generalizability may be limited. Second, the self-reported data may be affected by response bias and socially desirable responding. However, previous research has shown that reported behaviours by PWID are generally truthful and reliable [38,39]. Third, the observational research study design may have excluded unmeasured confounding variables from consideration, although we did extensively adjust for potential confounding variables. Fourth, our questionnaire did not differentiate between the confiscation of syringes and pipes, and therefore the analyses could not be stratified to consider syringes and pipes separately as well as in combination. Last, future research should focus on the internal process within the police department and examine how the VPD policy change has been translated into street-level policing practices.

Conclusions

We found a significant decrease in the proportion of PWID exposed to confiscation of drug use paraphernalia and physical violence by the police during the time period after the VPD drug policy change, compared to the time period before the drug policy change. Although it is encouraging that there is a significantly lower prevalence of exposure to these harmful policing methods, it is noteworthy that those who were exposed to these policing practices after the policy change were even more likely to engage in HIV risk behaviours. These findings suggest that overall the VPD may have been successful at adhering to the spirit of their drug policy; however, more could be done to protect PWID from harmful policing and associated HIV risk behaviours. Therefore, there is a need for further police engagement with harm reduction services to ensure that public health efforts have the greatest favourable impact on PWID and the public at large.

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Competing interests

The authors declare no competing interests.

Authors' contributions

EW, TK, KH and MJM designed and managed the cohort studies that the present study was drawn from. AL and KH designed the present study. PN and HD conducted the statistical analyses. AL drafted the first manuscript and incorporated suggestions from all co-authors. All authors made significant contributions to the conception of the analyses, interpretation of the data and

drafting of the manuscript. All authors have read and approved the final version of the article.

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Research article

A partnership approach to providing on-site HIV services for probationers and parolees: a pilot study from Alabama, USA

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Abstract

Introduction: HIV in the United States is concentrated in the South, an impoverished region with marked health disparities and high rates of incarceration, particularly among African Americans. In the Deep South state of Alabama, a policy directive to reduce prison overcrowding has diverted large numbers of convicted felons to community supervision. Probation and parole offices have yet to provide the HIV education and testing services that are offered in state prisons. This study sought to implement on-site HIV services for probationers and parolees through an intersectoral programme involving law enforcement, university and HIV agency employees. The three main objectives were to (1) involve probation/parole officers in planning, execution and assessment of the programme, (2) provide HIV education to the officers and (3) offer voluntary pretest HIV counselling and testing to probationers and parolees.

Methods: The partnered programme was conducted between October and December 2015. Offenders who were recently sentenced to probation (“new offenders”), received HIV education during orientation. Offenders already under supervision prior to the programme (“current offenders”) learned about the on-site services during scheduled office visits. Outcomes were measured through officer assessments, informal feedback and uptake of HIV services among offenders.

Results: A total of 86 new and 249 current offenders reported during the programme ($N = 335$). Almost one-third (31.4%) of new offenders sought HIV testing, while only 3.2% of current offenders were screened for HIV. Refusals among current offenders invoked monogamy, time pressures, being tested in prison, fear of positive test results and concerns about being labelled as gay or unfaithful to women partners. Officers rated the programme as worthwhile and feasible to implement at other offices.

Conclusions: The partnership approach ensured support from law enforcement and intersectoral cooperation throughout the programme. HIV training for officers reduced discomfort over HIV and fostered their willingness to be active agents for referral to HIV services. Voluntary testing was enhanced by the HIV employee’s educational role, particularly during orientation sessions for new offenders. The almost one-third success rate in HIV testing among new offenders suggests that future efforts should concentrate on this group in order to maximize participation at the probation and parole office.

Keywords: community-based HIV partnership; probation and parole; HIV education and testing.

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Introduction

The United States has the highest rate of incarceration in the world, a distinction that disproportionately affects men of colour who are at elevated risk of HIV/AIDS [1]. In Alabama, the site of this pilot study, state prisons are populated at 197% of capacity and are reputed to be the most crowded and unsafe facilities in the nation [2]. In the wake of reforms to reduce prison overcrowding, non-violent offenders are being diverted to community supervision in order to serve suspended sentences [3]. Compared to state prisons, which offer HIV prevention education and testing for inmates, community correctional offices lack such programmes and are ill-equipped to provide HIV services in the face of increasing demand. An underserved population therefore lacks access to HIV services even though public health authorities have urged “people who work in communities to play an active role in implementing the [national prevention strategy] to

reduce HIV rates in high-risk groups” [4]. The two trends – prison diversion programmes for convicted offenders and federal goals to reduce HIV rates in the South – have created high demand for on-site HIV services at probation and parole offices in Alabama as an underserved state.

This article describes an intersectoral partnership between the first author (a medical sociologist), West Alabama AIDS Outreach (WAAO) (an agency that provides social support services to clients and HIV prevention to the community), and the second author, who is a probation officer at the Tuscaloosa County Probation and Parole Office. The goal of the study was to provide HIV education for officers and HIV services for offenders under community supervision. The partnership built on emerging evidence from three studies that support probation and parole offices as key sites for HIV intervention. In the most pertinent study [5], probationers were significantly more receptive to receiving on-site HIV

services than being referred to a community health centre for testing. In two behavioural interventions, probationers engaged in less drug use and risky sex after participating in an on-site programme and, among women probationers, evidenced higher rates of protected sex [6,7]. El Bassel *et al.* [7] concluded that probation and parole offices are “ideal venues for engaging low-income women in order to achieve a high public health impact.” On-site HIV services are valuable for another reason: convicted offenders are at greater risk of HIV in the free world than if they are behind bars [8]. However, probation and parole offices are rarely used for HIV programmes [6,9], a deficit that the authors hoped to correct for probationers and parolees at the county scale. The partnership therefore sought to identify whether or not on-site HIV services could be implemented successfully as measured by officer support and uptake among offenders for pretest counselling and HIV testing.

Methods

Setting and demographics

The programme was conducted from October to December 2015 at the Tuscaloosa County Probation and Parole Office, one of 61 state offices in Alabama. The plan involved enlisting officers to facilitate the programme, an HIV educator/tester to provide on-site services and offenders to volunteer for pretest counselling and testing over a three-month period. Of eight probation officers at the office during the study (a full complement), all were aged between 26 and 61 years and 62% were both White and male. These officers participated in the programme in equal measure. Only half of this group (50%) had more than five years' experience, and none had received HIV-related training during their careers. With an average caseload of 184 offenders, the officers had a higher workload than counterparts in other states [10] but were willing to be educated about HIV and to facilitate access to the programme for probationers and parolees at the office.

The offenders who participated in the programme were drawn from a full cohort of 1,674 probationers and parolees under supervision at the office in 2015. This cohort was mostly male (85%), aged between 25 and 35 years old (66%) and predominantly African American (58%). With a 2:1 ratio of Whites and African Americans in the county [11], these demographics reflect the over-representation of young men of colour in US corrections [12]. Most convictions involved drug possession (44%), property crimes (26.8%), violent crimes (19.2%) and sex offenses (6.2%). The preponderance of drug-related crime indicates the level of HIV risk that the programme sought to address. As required by law, all offenders were required to undergo random searches, home visits and drug testing on a regular basis. Alabama law does not require HIV disclosure to officers and this information was neither available nor sought by the authors.

Design and methods

Programme development

The second author's diverse roles as a doctoral candidate in social work, senior probation officer and former police officer and correctional officer played a key part in gaining support from law enforcement and state administrators, and in

conceptualizing and managing the logistics of the pilot study. Prior to the study, this author became aware of the surge in non-violent offenders being diverted to community supervision without ready access to HIV services. He jointly embarked on the present venture with the first author, who drew upon her contacts with WAAO for the project. In the formative stages, the second author collected informal feedback from co-workers and offenders in order to develop suitable methods for the programme and to ensure the study did not interfere with daily operations at the probation office. He was on duty and supervised the project while the HIV services were on site.

Design

The Alabama Board of Pardons and Paroles and The University of Alabama approved all aspects of the programme. The officers signed a consent form that included a written explanation of the purpose of the study and instructions for two pen-and-paper surveys titled *Officers' knowledge and attitudes toward HIV* and *Assessment of full programme*. The offenders were neither interviewed nor surveyed because of the potential risks of divulging arrest-worthy information in a supervised setting. The programme consisted of two educational HIV sessions for officers, four half-days of voluntary access to on-site HIV services for current offenders during scheduled reporting periods, and four educational HIV sessions and access to on-site HIV services for new offenders who attended orientation days in order to complete forms for supervision. WAAO provided on-site education, pretest counselling and testing services for up to three hours per time, for a total of 22 hours. Outcomes were determined by the feasibility of the programme, the level of officer support and the utilization of HIV services.

The analytical plan consisted of comparing levels of uptake for pretest counselling and HIV testing for each group of offenders. WAAO provided demographic details for both new and current offenders who used the service but was not authorized to supply the results of HIV tests to non-WAAO personnel. For the survey analysis, the authors calculated the number and percent of correct responses on the officers' knowledge and attitudes survey and scored the ratings for scaled items in the programme assessment. These scores were matched with narrative comments from each survey for illustrative purposes.

Officers

In segue to the full programme, the first author provided officers with updated information on HIV transmission, rapid testing, viral loads, antiretroviral treatment (ART), pre- (PrEP) and post-exposure prophylaxis (PEP), and occupational safety. These sessions included brainstorming to fine-tune the programme and a 15-item scaled/textbox survey to gauge what officers had learned about HIV transmission, prevention and treatment modalities. At the end of the full programme, the officers provided feedback in a 23-item scaled/textbox survey on HIV knowledge, safety concerns, programme effectiveness, time demands and future directions. The officers also provided informal feedback on offenders' interest in the programme.

Offenders

Probationers and parolees were organized into two groups according to normal reporting procedures for the office (new offenders attended fortnightly orientation sessions; current offenders reported for mandated monthly visits). Within this framework, new offenders met with the HIV educator in groups of 16 to 22 people, where HIV risks, prevention, testing and treatment were discussed in roundtable fashion. Although these discussions were an integral part of orientation, the officers were not present, and volunteers were taken to a private office at the rear of the building for testing. In contrast, current offenders received a flyer with sign-in forms and an invitation to speak to their assigned officer about the HIV services. The flyer included a coupon for a bag of free condoms. If not initiated by the offender, their officer raised the topic during the interview and accompanied volunteers to the WAAO office for pretest counselling and/or testing. The educator kept a record of all visits by group assignment and provided aggregate information on offenders' demographics and points of contact. All eight officers knew at least one offender on their caseload who had self-disclosed as HIV-positive. However, privacy protections for the study meant that actual test results could not be made available for analysis.

Results

Officer knowledge

Prior to the updates, most officers (75%) were aware that HIV could not be transmitted through casual contact with people or objects (e.g. shaking hands or hugging someone with HIV, drinking fountains, toilet seats, or surfaces). Only half (50%) of the group knew that spitting and vomit, sometimes encountered in the field, did not pose a threat, and that unprotected sex accounted for 97% of HIV infections in Alabama. Few officers (25%) were aware that ART, if taken as prescribed, greatly reduces the likelihood of infecting sexual partners. Officers did not realize that a daily dose of ART could prevent HIV infection or that a 28-day course of ART prevented transmission after occupational exposure. In short, much of the information about ART, PrEP and PEP was completely new to the officers, who reported that they would feel more comfortable around offenders in light of this information (Table 1).

Offender uptake

New offenders

A total of 86 offenders participated in group sessions during orientation. The educator opened each session by asking why probationers and parolees are at greater risk of HIV than the general public [5,13]. Modes of HIV transmission and prevention strategies were then discussed with the group. Not only were these sessions highly interactive, but several offenders felt comfortable enough to discuss personal risk factors such as drug use and being diagnosed with sexually transmitted infections. After learning that ART is life-saving and testing does not involve blood draws, 32 offenders volunteered for pretest counselling. A total of 27 of these offenders (52% African American, 70% male) were tested and offered a bag of free condoms and a certificate of

Table 1. Officers' knowledge and attitudes towards HIV (N = 8)

Item	Correct	
	No.	%
1. Before today, I was aware that:		
<i>i. HIV cannot be acquired from:</i>		
Surfaces such as tables, door knobs and bench tops	7	(88)
Air, water or swimming pools	7	(88)
Touching, hugging or shaking hands	6	(75)
Toilet seats, drinking fountains, surfaces or food sources	6	(75)
Coughing or sneezing	4	(50)
Spitting or vomiting	4	(50)
<i>ii. Antiretroviral therapy (ART) prevents HIV by:</i>		
Reducing viral loads (infectiousness) in patients	2	(25)
Offering protection prior to exposure, if taken daily (PrEP)	0	(0)
Offering protection after exposure, if taken daily for 28 days (PEP)	0	(0)
2. After today, I feel more confident about:		
Protecting myself in the event of occupational exposure	8	(100)
The benefits of ART for HIV treatment and prevention	8	(100)
Interacting with HIV-infected offenders	7	(88) ^a

a. HIV status was known if offenders self-disclosed during interviews.

recognition. This total represented 31.4% of the 86 new offenders in the study. Informal feedback was positive: "You should do this all the time," and "It's an eye-opener that you can get free testing and it's not a blood draw."

Current offenders

A total of 249 offenders reported to their officers while the HIV educator was on site. While few offenders produced the flyer as invited, 29 opted to visit the educator once the topic was raised by their officer. All 29 volunteers received pretest counselling during this visit. A total of eight offenders (100% male, 75% African American) were then tested, after which they were offered a certificate and bag of condoms. This total represented 3.2% of 249 current offenders. Some offenders refused testing and/or the condoms for fear that wives and girlfriends would discover that they had been unfaithful or were having sex with men. As reported by officers, commonly-stated reasons for refusal also related to monogamy, time pressures, "being too embarrassed," "being killed by my girlfriend," "afraid of bad results," "already been tested" [in prison or during pregnancy] and "wanting to get out of the probation office." The claims of being tested in prison could not be verified because offenders' HIV status was neither sought nor disclosed within the context of the study.

Figure 1 presents a flow chart of the overall programme design and points of contact between officers, HIV educator and the offenders who received education, pretest HIV

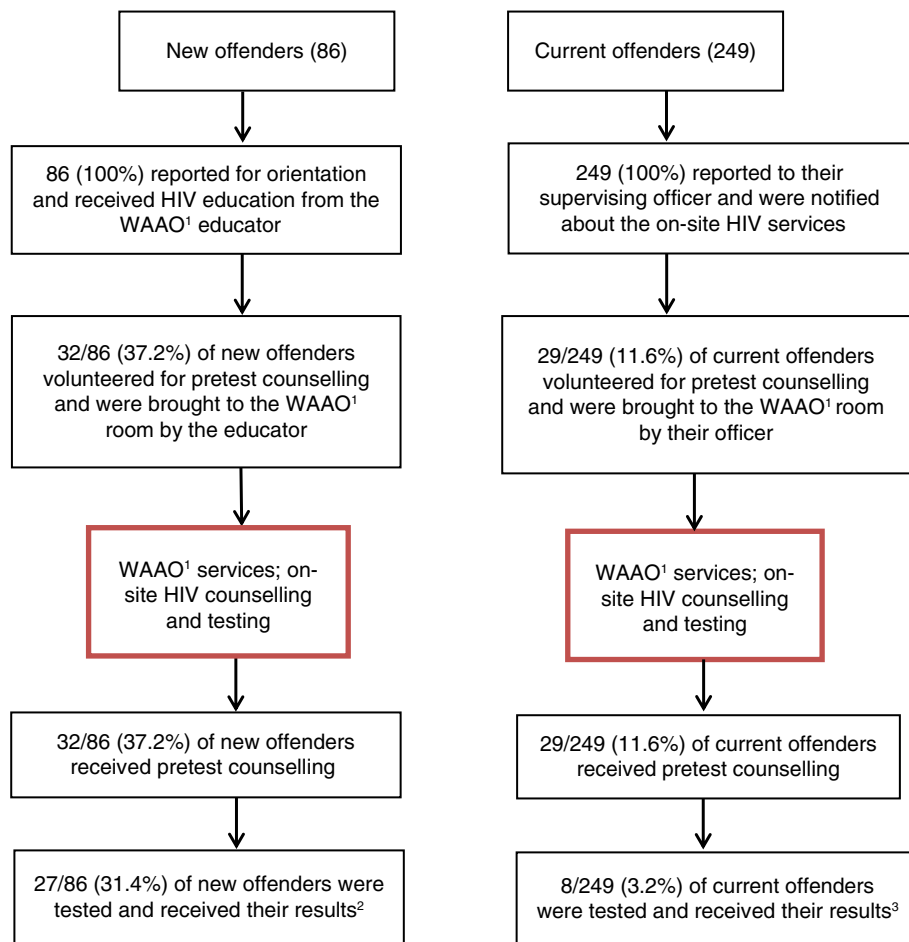


Figure 1. Flow chart for new and current offenders offered HIV education, pretest counselling and testing at the Tuscaloosa County Probation and Parole Office (N = 335).

¹West Alabama AIDS Outreach.

²New offenders tested: 14 African Americans (12 men; 2 women); 13 Whites (7 men; 6 women).

³Current offenders tested: 6 African American men; 2 White men. No women were tested.

counselling and testing. The chart also provides a side-by-side comparison of the results for each group and stage of the programme. Most testers were male and African American, a result that is consistent with the gender and racial demographics for all offenders under supervision at the Tuscaloosa County Probation and Parole Office.

Post-programme assessments

Officers rated the programme as successful, wanted it to continue and sought expansion to other sites (Table 2). Narrative comments showed strong support for including both officers and offenders in the programme: “It benefits everyone”; “Keep coming to our office every month during reporting”; and “All law enforcement should be involved.” The level of effort was deemed reasonable, although one officer referred to “one more thing” in terms of work overload. With regard to knowledge, the officers felt more informed about HIV transmission, prevention strategies and treatment options, and related the benefits of such knowledge to having fewer concerns over occupational safety (e.g. “new information about available treatment lessened my

fear of transmission”; “knowing that there is a pill available is reassuring”; and, “having back-up medicine means HIV won’t get into my system after cleaning up spilled blood”). Such concerns were still evident in response to items about physical confrontations that involved biting, spitting and pat-down searches.

Discussion

Community supervision in the United States has expanded through early release and diversion programmes that are designed to reduce mass incarceration on a nationwide basis [3,14]. In response to this transition at the state level, Tuscaloosa’s intersectoral partnership provided on-site HIV education, pretest counselling and rapid testing for probationers and parolees in the county. The programme was executed with existing personnel, infrastructure and resources with a view to implementation at other locations. With officers as recipients of HIV education, but also as agents of change, the plan is a beginning point for reducing HIV stigma, raising awareness and alleviating fears of

Table 2. Officers' assessments of the full programme (N = 8)

Item	Agree	
	No.	%
1. <i>As a result of the programme, I have become more:</i>		
Knowledgeable about HIV risks, prevention and treatment	8	(100)
Confident about sharing this knowledge with offenders	8	(100)
Satisfied with the quality of HIV services	8	(100)
Likely to refer offenders for HIV education and testing	8	(100)
Likely to share HIV knowledge with colleagues	2	(25)
2. <i>In terms of personal safety, I am:</i>		
Less fearful about becoming HIV-infected during searches and arrests	7	(88)
Less concerned about supervising HIV-infected offenders	5	(63)
3. <i>Type of contact that still concerns me:</i>		
Biting	4	(50)
Pat-down searches	4	(50)
Spitting	3	(38)
Shaking hands	1	(9)
Handcuffing	1	(9)
4. <i>Future directions:</i>		
The programme should become permanent	8	(100)
The programme should be offered statewide	8	(100)
Officers should be educated about HIV on a regular basis	6	(75) ^a
HIV education should be mandatory for drug users and new offenders	5	(63) ^a
The programme should be publicized widely	4	(50) ^a

a. Not all officers completed these items; percentages reflect the level of response for each item.

occupational exposure that are associated with harsher treatment of HIV-infected arrestees [15,16].

Tuscaloosa's intervention can help guide similar efforts for HIV services among community-supervised offenders in the United States and could also be adopted in other countries that have mounted efforts to reduce prison crowding through community-based alternatives [17]. Raynor's [18] review of the probation system in the United Kingdom has endorsed officers' importance in providing community-supervised offenders with access to social services, drug treatment and other programmes. In the United States, the trend towards partnerships between law enforcement and public health is seen in a growing number of police departments that allow officers to carry Naloxone to prevent or reverse drug overdose [19]. A point of relevance for populations being served by such programmes is that offenders are disproportionately poor, minority-ethnic and socially disadvantaged in many regions of the world, including the Global South [20]. The take-home message is that law-enforcement/public health collaborations can be immensely

helpful for bringing local services to these underserved populations and for fostering intersectoral goodwill.

Capacity-building is a core principle of partnership work that seeks to respond to local needs, build trust between agencies and be sustainable over time [21]. The Tuscaloosa programme was developed through trial and error in the absence of formal models to guide such efforts on behalf of probationers and parolees in Alabama. It is noteworthy that Gordon *et al.*'s [5] randomized controlled trial of HIV testing at on-site/off-site locations was also prompted by the absence of US-based models for community-supervised offenders [6]. This trial established the value of on-site services for HIV testing for these offenders, but did not provide a smaller, community-based model to guide a local effort. Even with cash incentives, the rate of refusal during the trial was quite high (45%), with offenders citing familiar reasons such as monogamy, prior testing, incarceration and antipathy towards testing.

In Tuscaloosa's case, feedback loops, inter-agency liaison and institutional support ensured that the programme was feasible and did not fail when offenders' interest was low and adjustments to the original design, such as group sessions for new offenders, were called for. These efforts produced a results-based "best practices" model to guide future efforts and new procedures at the office, such as regular HIV updates for existing employees and informational packets and HIV training for new employees. The programme did not offer financial incentives to offenders, which might have improved the level of uptake for testing. A modest level of financial support will be required if the programme is to be truly sustainable (e.g. for incentives and supplies) and for broader adoption by probation and parole offices at other locations.

The programme indicated the importance of pilot studies in guiding novel efforts, and for reflecting on environmental and other barriers to HIV testing. On this point, 82% of current offenders declined to receive pretest HIV counselling and testing on site. This rate of refusal is higher than for Gordon *et al.*'s trial [5] in which probationers and parolees received \$20 for baseline HIV assessments. In the absence of monetary incentives, the presence of uniformed officers with side-arms and powers of arrest might have deterred anxious or wary offenders who were invited to participate in the programme. Criminal justice settings are inherently coercive [22], notwithstanding assurances by study personnel that participation is entirely voluntary. Other factors, such as fear of a positive result, mistrust of health workers, HIV stigma and general lack of awareness about risk factors, could play a role as well. Despite support for HIV screening in prior research with probationers and parolees [5,13], these local concerns suggest that stigma-related avoidance will prevail without strategies to improve uptake among convicted offenders. On a related point, WAAO's health fairs at local churches and workplaces, and for residents of public housing, rarely lead to voluntary uptake, indicating the difficulty in providing testing services through community outreach.

The results of the new offender component of the programme were more encouraging, with almost one-third of this group being tested (31.4%). As noted in Figure 1, the participants were predominantly male and African American.

Such characteristics are consistent with the demographic profile of all supervised offenders at the office and more broadly for the at-risk population for HIV in the southern United States [1,4]. WAAO's expertise was instrumental in educating new offenders about the benefits of oral testing and ART during orientation. This expertise also made a positive difference among 29 current offenders who received pretest counselling, with eight men from this group being tested for HIV. As education was the key to participation, WAAO-led sessions about risk factors, safer sex and ART will be provided for all probationers and parolees who attend orientation. This step will ensure that every offender has access to on-site HIV services when they first report for supervision. Familiarization with the on-site services could also improve uptake during regular reporting periods, especially if officers issue a reminder that the services are available.

It seems obvious that cash incentives could enhance uptake for HIV testing as a major goal of the programme. In prior research, two cash-incentivized interventions for women participants in an HIV risk reduction programme [7] and for probationers and parolees in two US states [5] yielded participation rates of 62 and 55%, respectively. Closer to home, the value of cash incentives was evident during a Tuberculosis outbreak in a neighbouring Alabama county, where testing was unsuccessful until health officials offered \$40 per person for screening and a follow-up visit to collect results [23]. Probation/parole officers in the Tuscaloosa programme were certain that gift cards or cash would improve HIV testing rates because: "Offenders are poor – why get tested for nothing when you can get \$40 to 60 for donating plasma down the road?" Nevertheless, while the challenge remains in terms of maximizing uptake on a sustained basis (interventions that offer monetary incentives tend to be short-lived), the pilot programme has raised awareness about HIV risk, the availability of on-site services and the benefits of outreach to vulnerable offenders who could otherwise slip through the cracks without these services at their disposal.

Limitations

The shortcomings of this pilot study include the focus on a probation and parole office at a single location. Adding a second group to the programme, and conducting statistical analyses for comparison, would improve the scientific value of the study. In terms of efficacy, the authors underestimated the level of resistance to HIV testing among convicted offenders who were often misinformed about HIV (e.g. "you get AIDS from cats"), and opposed to the idea of blood draws. For this reason, the educational and pretest counselling component was often an endpoint to raising awareness about risk factors, methods of prevention, the benefits of rapid testing (to replace blood draws) and being tested in the future. Blood draws are especially unpopular among African Americans whose aversion to needles is attributed to the Tuskegee Syphilis Study and its antecedents [24]. Direct input from offenders (e.g. in surveys) was also lacking because of bureaucratic concerns over legal liability. Community-supervised adults are a protected population under the

Federal Office of Human Research Protection and ethics approvals covered only officer surveys, basic demographics and points of contact for offenders who received education, pretest counselling and testing. A final limitation relates to the presence of a single WAAO employee who was responsible for pretest counselling, rapid testing and returning test results before volunteers left the office. Some volunteers could not be accommodated because of time constraints (each visit took at least 20 minutes per person); having a second WAAO employee thus could increase the rate of testing for the programme. Further resources are clearly needed in order to increase the capacity of the programme and for scale-up in the future.

Conclusions

The national trend of reducing prison overcrowding by sentencing convicted felons to community supervision calls for intersectoral HIV outreach to probationers and parolees. The practical challenge of bringing voluntary HIV services to this population helps to explain the dearth of on-site US-based programmes to date. Even with motivated teamwork, conducting evidence-based HIV programmes in high HIV stigma contexts within the budgetary constraints of state government and public health spending calls for considerable ingenuity for the criminal justice system's most under-resourced agency [25]. The current programme provides evidence that public-health-criminal justice partnerships are both feasible and timely for implementing HIV prevention programmes at accessible locations and could help to transform the HIV landscape of at-risk communities with high rates of criminal justice involvement.

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Competing interests

The authors have no competing interests to declare.

Authors' contributions

BL, in conjunction with BWB, conceptualized and implemented the programme, and obtained the ethics approvals. BWB organized the on-site schedules and was the liaison for the probation and parole office. BL conducted the officer sessions and designed and administered the officer assessments. BL and BWB analyzed the survey results and contributed equally to programme design and manuscript construction. The West Alabama AIDS Outreach Partnership Group provided the on-site services and personnel, and contributed to programme design, data collection and analysis. All authors read and approved the final manuscript.

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Dr. Bronwen Lichtenstein is a Professor of Sociology at The University of Alabama. She has studied HIV/AIDS for the past 23 years in New Zealand and the United States, and collaborated with Mr. Barber in HIV-related research involving probationers and parolees that informed the current programme. Mr. Brad Barber is a doctoral candidate in the School of Social Work at The University of Alabama, with a specialty in HIV/AIDS and law enforcement. He was a police officer in Tuscaloosa County from 2007 to 2009, a correctional officer for the Alabama Department of Corrections from 2010 to 2011 and is currently employed at the Tuscaloosa County Probation and Parole Office. The West Alabama AIDS Outreach Partnership Group provides comprehensive support services and HIV outreach throughout West Alabama, USA.

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Debate

Finding solid ground: law enforcement, key populations and their health and rights in South Africa

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Abstract

Introduction: Sex workers, people who use drugs, men who have sex with men, women who have sex with women and transgender people in South Africa frequently experience high levels of stigma, abuse and discrimination. Evidence suggests that such abuse is sometimes committed by police officers, meaning that those charged with protection are perpetrators. This reinforces cycles of violence, increases the risk of HIV infection, undermines HIV prevention and treatment interventions and violates the constitutional prescriptions that the police are mandated to protect. This paper explores how relationship building can create positive outcomes while taking into account the challenges associated with reforming police strategies in relation to key populations, and vice versa.

Discussion: We argue that relationships between law enforcement agencies and key populations need to be re-examined and reconstituted to enable appropriate responses and services. The antagonistic positioning, “othering” and blame assignment frequently seen in interactions between law enforcement officials and key populations can negatively influence both, albeit for different reasons. In addressing these concerns, we argue that mediation based on consensual dialogue is required, and can be harnessed through a process that highlights points of familiarity that are often shared, but not understood, by both parties. Rather than laying blame, we argue that substantive changes need to be owned and executed by all role-players, informed by a common language that is cognisant of differing perspectives.

Conclusions: Relational approaches can be used to identify programmes that align goals that are part of law enforcement, human rights and public health despite not always being seen as such. Law enforcement champions and representatives of key populations need to be identified and supported to promote interventions that are mutually reinforcing, and address perceived differences by highlighting commonality. Creating opportunities to share experiences in mediation can be beneficial to all role-players. While training is important, it is not a primary mechanism to change behaviour and attitudes.

Keywords: law enforcement; HIV; key populations; relationships; policing; South Africa.

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Introduction

The nature of relationships and hierarchies between institutions and social groupings in society affects health and wellbeing in complex ways. For those who are already marginalized, such social dynamics can serve to undermine or strengthen their resilience. The effects of such dynamics may be redesigned to mitigate negativity [1]. Here we speak specifically to law enforcement agencies and key populations (KPs), defined by the United Nations Joint Programme on HIV and AIDS (UNAIDS) as social groupings that are among the most likely to be exposed to HIV and who are negatively affected by punitive laws and stigmatizing policies [2,3]. Although the South African Constitution procedurally mandates the freedoms and services needed to support such KPs, both sex work and drug use remain illegal [4–6]. Sex workers (SWs); people who use drugs (PWUDs); gay, bisexual and other men who have sex with men (MSM); lesbian, bisexual and other women who have sex with women (WSW), and transgender people (TG) are at higher risk of HIV infection than

the general population [7–12]. However, emerging evidence reveals that they are particularly affected by discursive and physical abuse, stigma, discrimination and exclusion [7,11,13–17]. Moreover, public opinion in general tends to reinforce heteronormative, politically driven and morally based frameworks that have negative health and socio-economic consequences for these groups of people [18–20].

Engagement between KPs and law enforcement

KPs in South Africa have reported multiple forms of abuse perpetrated by police officers. SWs’ experiences of harassment, assault, rape, extortion and condom confiscation by police officers and the denial of access to medication while in custody are well-documented [21–25]. Similarly, research confirms that stigma and discrimination on the basis of sexual orientation and gender identity by police officers occurs both within communities and in police facilities [16,26–28]. At a national consultation in Cape Town in 2014, PWUDs identified negative engagement with law enforcement as their primary

concern [29]. This was confirmed during a 2015 programmatic mapping study [30], and in a report highlighting PWUDs' experiences including harassment, violence, the confiscation and breakage of injecting equipment, and extortion by law enforcement officers in three cities where a needle and syringe programme is operating [31].

Law enforcement efforts are nonetheless a vital service; thus, working with law enforcement agencies to improve public health in South Africa is crucial [32,33]. Despite limited data on the comparative effectiveness of different law enforcement interventions to reduce HIV-related risks and improve the health outcomes of KPs [32], there are examples of law enforcement champions, training and meaningful engagement that have brought about change [34,35]. Notably, these include the "Pink in Blue Amsterdam Police lesbian, gay, bisexual and transgender (LGBT) Network" ("Roze in Blauw"), which has improved the safety of LGBT people for over 15 years by providing contact points to access police services [36]. Closer to home, in Kenya, the institutionalization of training around sex work, health and rights at the Nyanza Provincial Police Training Centre, which had trained over 600 officers by 2015, has improved relationships, reduced violence and increased access to law enforcement services [35]. In Dar es Salaam, support from the National Police Commissioner and the training of law enforcement officers on harm reduction has led to a recognized reduction in drug-related harm and crime [37].

Law enforcement reform

Changes in policing practice in South Africa have been slow, despite increasing global emphasis on encouraging environments to eliminate stigma and discrimination and enable access to health services [11,38–40]. Many recorded instances of police practices have humiliated and degraded individuals and purposefully compromised their access to health services, especially KPs [20,25,41,42]. However, these concerns have not received significant national attention; nor have the drivers or determinants, such as the relationships between officers and KPs, come under sufficient scrutiny [42]. Indeed, many past interventions aimed at implementing alternative approaches to deal with KPs have been rejected and ignored, or have not facilitated the redirection of the day-to-day acts and relationships that define policing at the community level. In 2012, for example, significant pressure from civil society was required to obtain authorization from the Deputy Minister of Police to enable 80 police officers to receive sensitivity training around sex work. However, the training has not been scaled up or included in police training curricula [43]. As a result, the antagonistic relationships that heighten the risk of violence and abuse against KPs continue and/or increase [2,24], despite public litigation efforts to reinforce the constitutional rights of citizens and the creation of enabling environments, particularly for SWs and TG people [44–46].

In reviewing the records of problematic events, it is clear that police officers are often the primary responders and representatives of governance, and therefore cannot simply be ignored. Indeed, we argue that not only should law enforcement be included in such measures, but that they could become enablers of more appropriate responses and

services, ironically because they frequently engage with and have a unique "understanding" of KPs. This dynamic is clearly reflected in a Durban-based project, discussed below. This understanding could become the basis for supportive interactions that could contribute to an effective HIV response. That said, police officers and agencies do not operate in a vacuum; their structures and organizational cultures may incorporate more widely shared understandings of KPs, gender, violence and other social factors [47,48].

Though a detailed discussion of South African policing "culture" is beyond the scope of this paper, it is critical to note that neither the institutions nor the relationships to which it speaks are stagnant. They are, therefore, sites of potential change [49]. To address these complexities, this paper draws on our experience and knowledge. Authors include South African researchers in the fields of criminology, gender and health, and KP HIV programme implementation, as well as a Dutch organization that has worked with sexual minority groups for over 60 years. We set out to review the literature and reflect on our programmatic and research experiences. We used these activities to explore alternative ways of understanding, communication and collaboration between police and KPs to improve KPs' health and rights and the operational effectiveness of law enforcement. The paper aims to contribute to an emerging scholarship on the relationships between law enforcement agencies, violence and public health [32].

Discussion

Effective social and institutional interventions require a combination of processes that include reflective and experiential education programmes, and the mutual commitment of stakeholders [50,51]. Moreover, sustainable change requires that interventions "fit" with relevant constitutional and legal principles [52]. In line with this, the development of supportive relationships between law enforcement agencies and KPs cannot be forced or entered into solely from one perspective or another. Rather, it is to *each other* that such concerns need to be directed and promoted, through the crafting of a common language (and understanding) that is meaningful to those affected. This could engender shared responsibilities, which prevent the cyclical forms of antagonism and violence that undermine or prevent interventions. Moreover, hostile, unsupportive and/or distrusting relationships retard development with deleterious consequences for the health of KPs as well as their behaviours in seeking law enforcement services [38]. It is thus in the interests of both "parties" to find a common language. Such commonality can only be created in spaces in which conversations are bidirectional. Without such shared conversations, power disparate relationships are likely to continue and be reinforced [53]. Such spaces of engagement should therefore encourage honest and non-offensive communication that recognizes uniqueness, divergence in opinions and the capacity for change [54].

The prioritization of similarity rather than difference is a useful focal point [55]. This is evident in the shifts that have already taken place in South African policing agencies in the past two decades around rights, HIV and diversity. For example, the South African Police Service's Code of Conduct

reflects the South African Constitution, with members undertaking to “uphold and protect the fundamental rights of every person” [56]. A comprehensive Employee HIV Programme is in place [57], and the South African Police Service has become more responsive to the need for a sensitive approach to HIV [57].

Lessons learnt from the organizational shifts that have occurred could inform police reform in other areas, including KPs. The examples above, acknowledgement of the high levels of alcohol and drug use among police officers [58] and the stated need to prioritize employee wellness, including HIV prevention and treatment [59], provide an opportunity to speak about other concerns. Moreover, in replicating the pre-existing structures that have shown success—and that draw on relational understandings—such interventions can be positioned as efficient, familiar and effective, which may further increase the likelihood of adoption and uptake.

Such engagement and related training is evidently needed, as power differentials between individuals and groups can affect the outcome of engagements, usually in favour of the more powerful party [20]. Despite similar backgrounds, engagements between law enforcement and KPs have, for the most part, been antagonistic with the police often asserting their legal and situational power [43]. It is therefore not surprising that, in June 2015, SWs participating in a workshop in Cape Town, attended by representatives of 26 organizations, reported more instances of harassment, bribery and violence at the hands of law enforcement agents than positive, supportive and respectful engagements [60], a clear reflection of the evidence cited earlier. Equally, KPs’ behaviours towards law enforcement are often hostile and may escalate police aggression [60]. This fuels antagonism and distance between KPs and law enforcement officers, which, in the context of unequal power, can lead to police violence, discrimination and abuse [61].

What can we learn from this? In the first instance, interventions aimed at more sensitive relational outcomes would allow the parties to acknowledge their personal, social and structural challenges [62]. Reflective and candid engagement has a better chance of enhancing “understanding” than laying complaints and demands squarely at the feet of police officers or blaming KPs for a range of social “ills”. The starting premise of the police as the root cause of deteriorating community relations, who trigger or exacerbate the vulnerability of hard-to-reach groups, alienates the police from interventions, disempowers KPs and blocks constructive relational possibilities [63].

Neither the police nor KPs are immune to change, but equally, neither wish to be the target of blame. There is no single police understanding; police officers’ responses to KPs differ and may be incongruous, as is generally the case in the policing of marginalized groups [64]. The practices of the police are shaped by their everyday interactions on the streets and through reflective engagements with KPs, rather than through formal training [65].

Establishing relationships and creating a change agenda

Below we outline several on-going initiatives that are being led by universities and civil society organizations in

South Africa. We believe that these projects offer constructive opportunities to shift relational paradigms between police and KPs.

Since 2014, researchers based at the Urban Futures Centre at the Durban University of Technology have forged close links with police agency units engaged in the policing of drug use and sex work in the city [66]. Over the past year, ethnographic journeys in police vans, discursive workshops and the secondment of law enforcement officers to university spaces have taken place. Civil society organizations experienced in providing HIV-related health services to SWs and PWUDs have co-facilitated workshops where police “thinking,” questions and dilemmas have framed the flow of conversation [43]. Immediacy has been used as a tool to enable open conversations about personal dilemmas, including personal experiences of substance use and living on the street. These efforts have improved trust and led to mutual respect for one another’s expert knowledge and have identified alternatives to the “traditional” policing of KPs. Police support for needle and syringe programmes and training opportunities have been discussed. During these discussions police officers highlighted the need for changes in performance management (especially the use of arrest “quotas”) [43,60]. They also highlighted the need for appropriate authorization to prevent “dereliction of duty” [43,60]. A police officer shared the effects of these engagements with an academic researcher: “Since I met you, you have made me softer. I have let go more than 50 drug users that I would otherwise have arrested.” We expect that our efforts to shift policing practice will in turn lead to KPs relating to the police in new ways.

In general, working from the “top-down” with police agencies is critical for organizational change [52]. Law enforcement agencies function and are governed through substantive law, accompanying regulations, National Instructions, Standing Orders and other related policies. Application of and compliance with these “orders” is monitored by police oversight mechanisms and Parliamentary Portfolio Committees, which are hierarchically structured [47]. Although the processes are complex and often slow, paradoxically perhaps, the same top-down, rule-focused nature of these organizations makes police organizational change fairly simple [42]. Memoranda of understanding between law enforcement and civil society organizations and “high-level” police commitment are critical for institutional change and could break the back of “tried and tested traditions,” as has been experienced by researchers in both Cape Town and Durban.

Speaking to this, a pilot training module for law enforcement agencies is planned aimed at improving relationships and engagement with KPs. Attempts to obtain high-level approval from the South African Police Service for this project is still pending, eight months after the submission of the proposal. Efforts are now being channelled through the African Policing Civilian Oversight Forum to access high-level groups of police officers who are committed to police accountability and human rights to catalyze this initiative. Rather than approaching the police directly with a set of tools for additional sensitization training, we argue that it is more strategic to create change that aligns with police concerns and commitments to policing accountability that is itself oriented

towards the affirmation of human rights [52]. By engaging the police from a police oversight perspective, we hope to promote understanding and realign relations between law enforcement and KPs with broader strategies aimed at more accountable, effective and just policing practices. The training aims to address an identified need [67] even though the effect of formal training is limited and training lessons often shift dramatically when police are in their work environment [68]. As such, training will complement on-going interventions to improve the health and rights of KPs in South Africa. These include the documentation of violations experienced by KPs and efforts to increase access to justice [31,69,70]; peer-based KPs' rights literacy activities; capacity building of KP organizations and strategic litigation [30,39,60,71], measures that are being implemented by other civil society organizations. These strategies are recommended by UNAIDS to address stigma, discrimination and increase access to justice in national HIV responses [72].

KPs and law enforcement officers confront demands from their peers and organizational "homes." In the case of police officials, performance indices may impose "arrest quotas" that drive behaviours that target KPs [40]. Any change in the processes within law enforcement agencies must, therefore, be foregrounded and framed by parallel efforts to address these structural mandates and concerns, in order to open the space in which mutually advantageous relationships can exist. Similarly, some KPs may be antagonistic to any form of positive engagement with the police [42]. This, too, needs to be acknowledged and addressed with reason. Although the decriminalization of drug use and sex work, as recommended by the World Health Organization [73], is ultimately required to maximize the health, rights and wellbeing of KPs in South Africa, interim measures and the development of more effective intervention strategies remain important.

Conclusions

UNAIDS recommends training, increased access to legal services, improved rights literacy and policy change to address stigma, discrimination and barriers to justice in national HIV responses [72]. We argue that structural constraints – particularly legislation, performance management, accountability mechanisms, training and the physical conditions under which police work – need to be communicated to those who have the capacity and power to bring about change within law enforcement structures, while also working with street level law enforcement officers.

The effectiveness of planned interventions that improve the relationships between law enforcement and KPs, and ultimately the health outcomes of KPs, need to be evaluated to inform future police and health policy reform. In the interim, we suggest a few processes towards improving the health and rights of KPs in South Africa.

In developing a framework for implementation, first, negating "othering" is most likely to result from deliberative forums in which the constraints and possibilities of all groupings are brought to the fore and openly discussed. Solutions that benefit all parties should be identified as well as the constraints in implementing these solutions. Bringing law enforcement officers who work on the streets together with

KPs to find innovative solutions is a powerful starting point. Human rights, public health and risk reduction for all should be at the centre of such engagements. Universities and non-governmental organizations are well placed to facilitate such engagements.

Second, it is important to identify law enforcement officers who are champions of human rights-oriented policing, public health access and harm reduction. These champions should come from the apex of the organization as well as from the ranks of police officers who work on the street. Support should be mobilized from significant individuals and organizations for these officers to openly discuss their alternative positions and concerns. The champions would ideally work collaboratively with KPs and public health professionals to find shared agendas and workable interventions. This could be further bolstered by creating a shared language that allows for effective communication; safety outcomes, which include reducing public health risks, are terminologies that are fundamental to police and KPs.

Third, contrary to conventional thinking, it is important to recognize that changes in policy and training, although critical to long-term and sustainable police organizational change will not on their own lead to the required or desired shifts in daily behaviour. Rather, training is a tool in the structural field of policing that is necessary to enable and support daily behavioural change [74]. However, the real impetus for change in the habitus (or everyday responses and behaviour) is far more dependent on the basic assumptions that police hold about particular social groupings, forged while on the street doing police work and through facilitated deliberations and engagements that often take place outside of formal training programmes.

Finally, law enforcement agencies and individuals should be exposed to those who have been at the forefront of promoting human rights, public health and harm reduction based approaches. Exposure to peer organizations – through discussions, international site visits, and digital and social media – would go a long way in assisting them to find legitimacy and resonance.

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Competing interests

The authors declare that they do not have any competing interests.

Authors' contributions

AS, SH and MM developed the initial outline of the paper. AS, AM, BL, MM, SH, MK and LA provided additional detail and examples from their work. All authors edited draft versions of the paper and approved the final manuscript.

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