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Evaluation of HIV risk and outcomes in a nationally representative sample of incarcerated women in Azerbaijan, Kyrgyzstan, and Ukraine.

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Abstract

In the Eastern European and Central Asian (EECA) region, the only one globally where HIV incidence and mortality are increasing, HIV is concentrated among high risk groups like prisoners. HIV prevalence is higher among women than men in both prison and community settings. Data are lacking on the HIV care continuum among female prisoners in the EECA to inform effective HIV prevention and treatment interventions. This study examined HIV risk, prevalence of infectious diseases, access to care, and other medical and psychiatric comorbidities among a representative sample of 220 female prisoners in three EECA countries: Azerbaijan, Kyrgyzstan, and Ukraine. Participants were recruited using stratified random sampling. Prevalence of comorbid substance use and psychiatric disorders was high with nearly one-third of the women reporting pre-incarceration drug injection and alcohol use disorder (AUD). Half of the sample reported anxiety and depression. Among the subset of 26 (11.8%) women testing HIV+, 44% had CD4 counts <350 cells/ μ L but less than 2% were on antiretroviral therapy (ART). Most (88.5%) women with HIV were in Ukraine, where women also experienced higher rates of hepatitis C than in Azerbaijan or Kyrgyzstan. Similarly, women in Kyrgyzstan prisons experienced higher rates of syphilis compared to the other two countries. Findings suggest that, to achieve global HIV prevention and treatment targets, HIV testing and linkage to care must be scaled up among incarcerated women in the EECA. Women also require testing and treatment for comorbid psychiatric and substance use disorders to effectively reduce their post-incarceration HIV risk.

Keywords

Women; prison; Eastern Europe and Central Asia; HIV care continuum; epidemiological outcomes

Introduction

Nearly 700,000 women are incarcerated worldwide, accounting for 9% of the global prison population; 16% of these are in Eastern Europe and Central Asia (EECA) (Lakobishvili, 2012). Incarcerated women, relative to incarcerated men, have a higher burden of medical and psychiatric diseases and experience poorer health outcomes (UNAIDS, 2016b), including HIV and sexually transmitted infections (STIs) (Azbel, Grishaev, et al., 2016; El-Bassel et al., 2017). Substance use and sex work contribute to women's incarceration and simultaneously exacerbate risk of HIV and other infectious diseases (De Groot, 2000; Rich et al., 1999).

Prisoners bear a substantially higher burden of HIV and other blood-borne infections than community-based populations (F. L. Altice et al., 2016). In all three countries, prisoners most commonly acquire HIV via injection drug use (IDU) (Dolan et al., 2016). The estimated HIV prevalence among prisoners in Ukraine is 19.4% (Azbel, Wickersham, Grishaev, Dvoryak, & Altice, 2013), 5.8% in Azerbaijan, and 7.6% in Kyrgyzstan (Azbel, Polonsky, et al., 2016).

The HIV care continuum provides a framework to understand and evaluate the effectiveness of HIV programs from diagnosis to viral suppression (Gardner, McLees, Steiner, del Rio, & Burman, 2011). Despite UNAIDS 90–90–90 targets to end AIDS, overall coverage of antiretroviral therapy (ART) in the EECA region is <10% (WHO, 2013). Although incarcerated women bear a substantial burden of HIV, there is limited information about their access to and utilization of evidence-based HIV prevention and treatment services in prisons. This information is crucial to identify gaps in service delivery and develop effective strategies to prevent and treat HIV among incarcerated women.

Methods

Three bio-behavioral surveys were conducted in Azerbaijan, Kyrgyzstan, and Ukraine between 2011 and 2014 (Azbel, Polonsky, et al., 2016; Azbel et al., 2013; Azbel et al., 2015). In all three countries, a nationally representative, cross-sectional comprehensive health survey and sero-surveillance assessment of infectious diseases were conducted among men and women awaiting release from prison. Participants were selected using a random stratified sampling strategy (Azbel et al., 2013). Inclusion criteria for women were: a) >18 years of age; b) within six (Ukraine), 12 (Kyrgyzstan), or 18 months (Azerbaijan) of scheduled release date; and c) serving a sentence in a non-specialized facility (that excluded juvenile facilities, pre-trial detention, and hospitals).

Measures

Participants were assessed for detention history, alcohol use disorders (AUDs) using the Alcohol Use Disorders Inventory Test (AUDIT) (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993), depression using the CES-D with scores ≥ 11 suggesting major depressive disorder (Irwin, Artin, & Oxman, 1999), and anxiety (Kyrgyzstan and Azerbaijan only) using the 20-item Zung anxiety scale (Zung, 1971) with scores ≥ 45 indicating clinical anxiety (Dunstan, Scott, & Todd, 2017). HIV risk behaviors 30 days before incarceration

were assessed, including condomless sex with multiple partners or an HIV+ partner and sharing injection paraphernalia. The assessment included HIV testing experiences, chronic illnesses (high blood pressure, liver problems, heart disease, and tuberculosis) and serological testing for HIV, HCV, HBV, and syphilis.

Results

Sample characteristics stratified by country (Table 1) shows differences among women in the three countries including education and marital status. Prior incarceration (mean times=2.9; *SD*=1.7) differed significantly between the three countries and nearly one-third of women met criteria for an AUD, with significantly higher prevalence in Ukraine (Table 2). Nearly half met screening criteria for major depression, significantly more in Ukraine (23.0%) than in Azerbaijan (5.3%) or in Kyrgyzstan (19.1%). Anxiety disorders were similarly prevalent in Azerbaijan and Kyrgyzstan but were not assessed in Ukraine.

In the 30 days before incarceration, 40.8% of women reported any condomless sex, including 10% with multiple partners and 4.3% with an HIV+ partner. One-third of women reported prior drug injection, among whom 15.8% reported sharing equipment in the 30 days before incarceration, mostly in Ukraine. Serological screening (Table 3) confirmed high levels of HIV (*N*=26; 11.8%), HCV (*N*=72; 33.5%) and syphilis (*N*=38; 17.7%), with significantly higher prevalence of HIV and HCV in Ukraine and significantly higher prevalence of syphilis in Kyrgyzstan. High levels of co-morbid health conditions were also self-reported, including hypertension (39.4%), liver problems (24.4%), heart disease (26.4%), and prior tuberculosis (8.2%).

In the HIV care continuum (Figure 1), 8 (30.8%) of the 26 women with HIV were unaware of their status and 11 (44%) had a CD4 count <350 cells/ μ L, meeting immunologic criteria for ART at the time of the study (i.e. prior to universal treatment recommendations); nearly all were Ukrainian. Only three (11.5%) women were ever prescribed or currently taking ART.

Discussion

We assessed the health conditions of incarcerated women in three EECA countries where the HIV epidemic is rapidly escalating, though prisoners, and particularly women, are often excluded from the national and regional dialogue about HIV prevention and treatment. In a randomly-selected, representative sample of female prisoners awaiting release in three EECA countries, we found high prevalence of HIV, viral hepatitis, STIs and pre-incarceration HIV-related risk behaviors. We similarly, found high levels of co-morbid medical, psychiatric, and substance use disorders that may complicate delivery of care post-release and portend poor health outcomes, if not identified and treated.

Optimization of the HIV care continuum is crucial for achieving better health outcomes for people with HIV (PWH) and for limiting onward HIV transmission (McNairy & El-Sadr, 2012). Despite seemingly high testing levels, testing was still likely suboptimal given that nearly one-third of women were unaware of their HIV status. This finding suggests that “opt-in” HIV testing strategies, like the ones throughout EECA prisons, is inadequate and

falls markedly short of the 90% UNAIDS target. Undiagnosed or unaware PWH accounts for a large proportion of all transmissions of HIV to others (Hall, Holtgrave, & Maulsby, 2012; Skarbinski, Rosenberg, Paz-Bailey, & et al., 2015). In these women, however, the most concerning component of the HIV continuum occurred after diagnosis. Though linkage to care data were not available, only 11.5% of women with HIV had ever been prescribed ART. Even if immunological criteria for ART (CD4 <350 cells/ μ L) were applied, only 27.2% of potentially eligible women had ever received ART. These findings raise major concerns about effectively implementing 2015 WHO recommendations to provide universal treatment to all PWH (WHO, 2015).

Nearly all (90%) of the incarcerated women with HIV were in Ukraine, despite comparable rates of prior testing. The prevalence of HIV among women in Ukrainian prisons approached 30%, which is significantly higher than in both Azerbaijan and Kyrgyzstan, and similar to HIV prevalence in prisons in Sub-Saharan Africa where there is a generalized HIV epidemic (Telisinghe et al., 2016). This finding is consistent with other epidemiological studies that show Ukraine has the highest HIV prevalence in Europe (UNAIDS, 2016a). Findings here suggest an urgent need for marked improvements in the HIV continuum of care among women in prison settings, particularly in Ukraine, to achieve UNAIDS 90–90–90 goals for 2020. ART within prison, must be yoked to effective interventions that retain women in HIV care after release (Loeliger, Altice, Ciarleglio, et al., 2018; Loeliger, Altice, Desai, et al., 2018).

Extraordinarily high pre-incarceration risk behaviors point to the need for targeted HIV prevention after release. Settings like Azerbaijan and Kyrgyzstan may serve as cautionary tales for an impending HIV epidemic given the high reported HIV risk behaviors in communities by women prisoners. In the absence of sufficiently-scaled HIV prevention services for transitioning prisoners, HIV incidence will likely increase (Altice et al., 2016). Prisons can facilitate improved clinical outcomes for individuals by providing sufficient resources to expand evidence-based HIV prevention, including: universal opt-out HIV testing, screening and treatment of STIs, condom distribution, opioid agonist therapies (OAT) with methadone, syringe service programs, and delivery of adequate medical care, including ART, for PWH (Springer et al., 2004). Among non-incarcerated women who inject drugs in Ukraine, OAT improved addiction treatment outcomes and was broadly stabilizing (Hoff et al., 2017). Unfortunately, OAT is woefully low throughout EECA and is unavailable in prisons except for a few countries such as Kyrgyzstan and Moldova (Azbel et al., 2018).

Despite important findings from a nationally representative samples of incarcerated women in the EECA, some limitations remain. Pre-incarceration risk behaviors may have been under-reported due to recall bias and questions specific to women, like reproductive and maternal health, were not included.

Conclusion

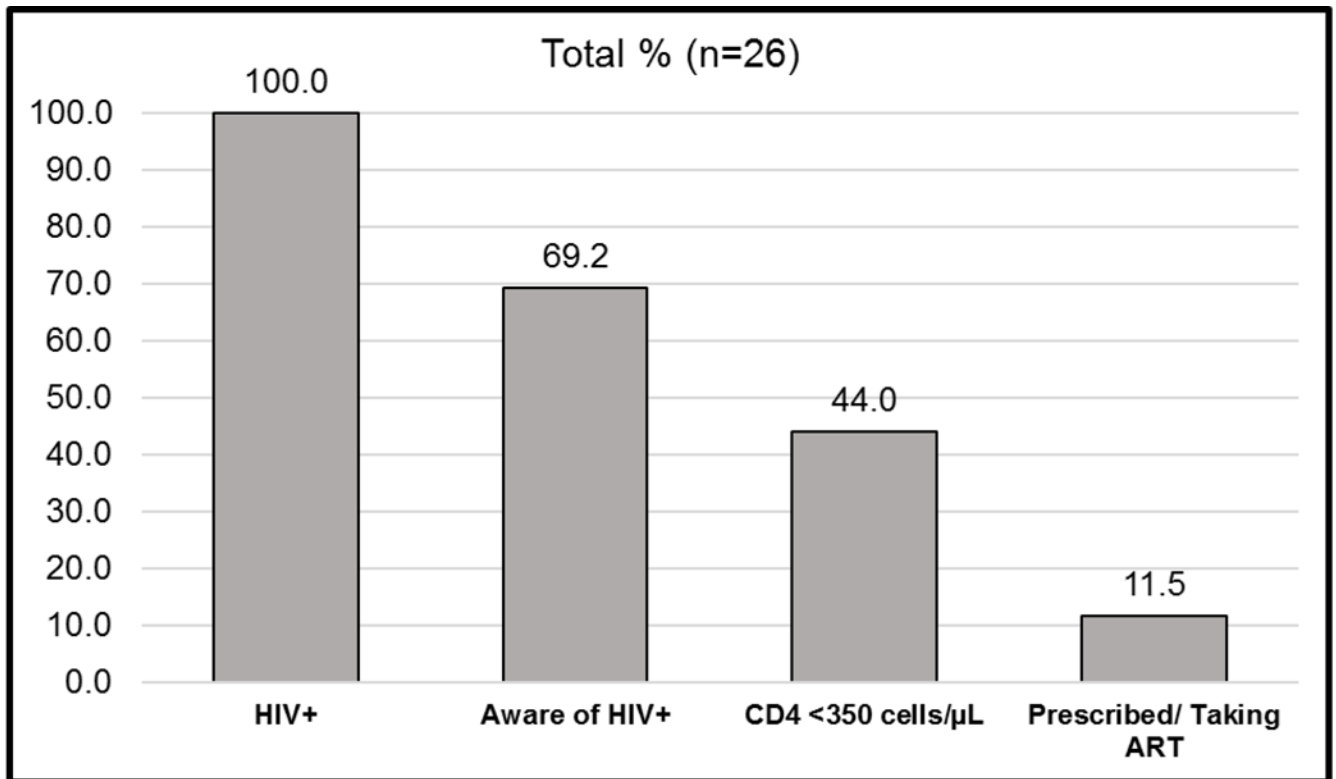
The HIV care continuum in women prisoners in the EECA reflects suboptimal HIV testing and treatment in the context of high HIV risk behaviors, especially in Ukraine. Effective treatment of HIV requires management of co-morbid substance use and psychiatric

disorders, which were highly prevalent. These findings point to the urgent need to scale up evidence-based HIV prevention and treatment strategies for women in prisons in this region.

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	n (%)			
Azerbaijan	1 (3.8)	no data	no data	no data
Kyrgyzstan	2 (7.7)	2 (7.7)	1 (4.0)	1 (3.8)
Ukraine	23 (88.5)	16 (61.5)	10 (40.0)	2 (7.7)
Total	26 (100)	18 (69.2)	11 (44.0)	3 (11.5)

Figure 1. HIV Care Continuum among incarcerated women with HIV+ in Azerbaijan, Kyrgyzstan and Ukraine, n = 26.

Table 1.

Demographic characteristics and criminal history of women prisoners in Azerbaijan (AZE), Kyrgyzstan (KYR) and Ukraine (UKR) (N=220)

		N (%) ^f				F or χ^2	p
		Total (N = 220)	AZE (n = 58)	KYR (n = 81)	UKR (n = 81)		
Mean age (SD), years		38.7 (10.5)	42.4 (10.8)	40.62 (10.9)	33.97 (7.8)	14.7	<.01
Ethnicity	Azerbaijani	48 (21.8)	48 (82.7)*			331.95	<.01
	Kyrgyz	30 (13.6)		30 (37.0)*			
	Ukrainian	50 (22.7)			50 (61.7)*		
	Russian	57 (25.9)		30 (37.0)*	27 (33.3)		
	Uzbek	8 (3.6)		8 (9.9)*			
	Roma	1 (0.5)		1 (1.2)			
Religion	Orthodox	59 (26.8)			59 (72.8)*	275.76	<.01
	Protestant	3 (1.4)			3 (3.37)*		
	Greek Orthodox	5 (2.3)			5 (6.2)*		
	Muslim	91 (41.4)	46 (79.3)*	45 (55.6)*			
	Christian	35 (15.9)		35 (43.2)*			
Marital status	Single	73 (34.6)	14 (24.1)	20 (24.7)	39 (17.7)*	29.4	<.01
	Have a partner	12 (5.7)	6 (10.3)*	2 (2.5)	4 (1.8)		
	Married/unregistered marriage	46 (21.8)	11 (19)	17 (21)*	18 (8.2)		
	Divorced	45 (21.3)	14 (24.1)	21 (25.9)	10 (4.5)		
	Widowed	34 (16.1)	3 (5.2)	21 (25.9)	10 (4.5)		
In a sexual relationship	Yes	58 (27.5)	17 (8.1)	19 (9.0)	22 (10.4)	1.9	0.37
Education	No Education	12 (5.7)	8 (3.8)*	0	4 (1.9)	18.3	<.01
	High school and below	134 (63.5)	24 (11.4)	53 (25.1)	57 (27.0)		
	Above high school	65 (30.8)	17 (8.1)	28 (13.3)	20 (9.5)		
Recidivist	Yes	94 (42.7)	19 (32.8)	36 (44.4)	39 (48.1)	3.4	0.18
Mean number of previous incarcerations for recidivists (SD)		2.9 (1.7)	1.1 (0.3)	2.67 (1.8)	3.41 (1.5)	8.2	<.01
Mean incarceration, years (SD)		2.9 (2.1)	3.9 (2.4)	2.9 (1.7)	2.3 (1.8)	10.5	<.01

Note.

* = $p < .05$.

Adjusted standardized residual greater than 1.96

¹May not sum to 100% because of missing values

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Table 2.

Substance use, mental health and sexual behavior of women prisoners in Azerbaijan (AZE), Kyrgyzstan (KYR) and Ukraine (UKR)

	Country N (%)				χ^2	<i>p</i>
	Total (n = 220)	AZE (n = 58)	KYR (n = 81)	UKR (n = 81)		
Alcohol use disorder (AUD)	68 (31.9)	3 (5.2)	21 (25.9)	44 (54.3) *	37.3	<.01
Depression	99 (47.4)	11 (18.9)	40 (49.4)	48 (59.3) *	16.7	<.01
Anxiety Disorder	9 (6.9)	2 (3.4)	7(8.6)			
Condomless sex 30 days prior to arrest	87 (40.8)	15 (15.5)	27 (33.3)	45 (55.6) *	13.8	<.01
Had unprotected sex with >1 person in 30 days prior to arrest	21 (9.9)	9 (15.5) *	3 (3.7)	9 (11.1)	6.6	<.05
Had sex with HIV+ partner without a condom	9 (4.3)	0 (0.0)	0 (0.0)	9 (4.3) *	15.7	<.01
Engaged in transactional sex 30 days prior to arrest	16 (7.6)	10 (17.2) *	1 (1.2)	5 (6.2)	15.8	<.01
Injected drug even once	65 (30.7)	8 (13.8)	13 (16.0)	44 (54.3) *	37.1	<.01
Reused injection equipment 30 days prior to arrest	33 (15.8)	5 (8.6)	3 (3.7)	25 (30.9) *	24.9	<.01

Note.

* = *p* .05.

Adjusted standardized residual greater than 1.96.

Anxiety disorder was not measured in Ukraine.

Table 3.

Contingency table of sexually transmitted infection (STI) and self-reported history of chronic illnesses in Azerbaijan (AZE), Kyrgyzstan (KYR) and Ukraine (UKR)

	Country				χ^2	<i>p</i>
	Total (n = 220)	AZE (n = 58)	KYR (n = 81)	UKR (n = 81)		
Ever been tested for HIV?	181 (82.2)	49 (84.5)	71 (87.7)	61 (75.3)	6.2	.04
Received HIV test result	139 (63.2)	46 (79.3)	44(54.3)	49 (60.5)	14.9	<.01
HIV+	26 (11.8)	1 (1.7)	2 (2.7)	23 (28.4) *	33.8	<.01
Hepatitis C	72 (32.7)	6 (10.3)	14 (17.3)	52 (64.2) *	57.9	<.01
Hepatitis B	7 (3.2)	0	5 (6.2)	2 (2.5)	4.6	0.09
Syphilis	38 (17.7)	0	25 (30.9) *	13 (16.1)	24.7	<.01
Have you been told by a doctor you have high blood pressure	82 (39.4)	7 (12.1)	27 (33.3)	48 (59.5) *	27.3	<.01
Have you been told by a doctor you have liver problems	51 (24.4)	3 (5.2)	24 (29.6)	24 (29.6)	11.1	<.01
Have you been told by a doctor you have heart disease	55 (26.4)	8 (13.8)	19 (23.5)	28 (34.6) *	5.6	.06
Have you been told by a doctor you have tuberculosis	17 (8.2)	0	8 (9.9)	9 (11.1)	5.5	.06

Note.

* = *p* .05.

Adjusted standardized residual appear greater than 1.96.