

Perceptions of Health-Related Community Reentry Challenges among Incarcerated Drug Users in Azerbaijan, Kyrgyzstan, and Ukraine

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Abstract Facing competing demands with limited resources following release from prison, people who inject drugs (PWID) may neglect health needs, with grave implications including relapse, overdose, and non-continuous care. We examined the relative importance of health-related tasks after release compared to tasks of everyday life among a total sample of 577 drug users incarcerated in Ukraine, Azerbaijan, and Kyrgyzstan. A proxy measure of whether participants identified a task as applicable (easy or hard) versus not applicable was used to determine the importance of each task. Correlates of the importance of health-related reentry tasks were analyzed using logistic regression, with a parsimonious model being derived using Bayesian lasso

method. Despite all participants having substance use disorders and high prevalence of comorbidities, participants in all three countries prioritized finding a source of income, reconnecting with family, and staying out of prison over receiving treatment for substance use disorders, general health conditions, and initiating methadone treatment. Participants with poorer general health were more likely to prioritize treatment for substance use disorders. While prior drug injection and opioid agonist treatment (OAT) correlated with any interest in methadone in all countries, only in Ukraine did a small number of participants prioritize getting methadone as the most important post-release task. While community-based OAT is available in all three countries and prison-

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based OAT only in Kyrgyzstan, Kyrgyz prisoners were less likely to choose help staying off drugs and getting methadone. Overall, prisoners consider methadone treatment inapplicable to their pre-release planning. Future studies that involve patient decision-making and scale-up of OAT within prison settings are needed to better improve individual and public health.

Keywords People who inject drugs · Prisoners · Incarceration · Post-release challenges · HIV · Opioid agonist treatment · Methadone · Eastern Europe and Central Asia

Introduction

Eastern Europe and Central Asia (EECA) remains the only region globally where HIV incidence and mortality continue to increase [1]. There are numerous economic, political, programmatic, and social reasons for the ongoing volatile epidemic in the region, including suboptimal HIV prevention and treatment in prisons [2]. Although diverse, EECA countries have commonalities in drug policy and addiction treatment practices rooted in shared post-Soviet value systems that prioritize collective needs over individual autonomy [3]. Harsh policies criminalizing drug use [4] result in the concentration of people with or at high risk for HIV in prisons [2, 5], where high-risk behavior such as drug injection often continues [6, 7]. Nationally representative surveys of prison populations show that HIV prevalence is 12–[8], 51–[9], and 37-times [10] greater in prisons than in the community in Ukraine, Kyrgyzstan, and Azerbaijan, respectively [2]. As drug use continues to remain largely criminalized, implementation and scale-up in prisons of evidence-based strategies for HIV prevention and treatment will be crucial tools for curbing the epidemic [2, 7, 11].

Nearly all prisoners, including those with substance use disorders, return to their communities, mostly in urban settings. Thus, transitioning prisoners contribute greatly to urban health and health service delivery. As incarcerated individuals (including recidivists) contemplate release, many experience a heightened sense of optimism about “renewing” their life, known as penal optimism [12], which extends to feeling optimistic about recovery and community reintegration [13]. Penal optimism is considered a psychological phenomenon of planning fallacy, when individuals have excessive

optimism bias towards the future, exaggerating their abilities, underestimating their challenges, and avoiding difficult realities [14, 15]. Similarly, during imprisonment, prisoners often minimize challenges that may impede their plans to make positive changes in their lives after release [16].

Qualitative research in the USA and elsewhere suggests that former prisoners often find themselves “in a world of chaos” characterized by competing demands on their limited resources, with basic needs like food and shelter taking priority [17]. For people who inject drugs (PWID), allowing one’s health needs to fall off this list of key priorities has grave implications for transitional care, particularly for addiction treatment and continued recovery [18, 19]. Discontinuity of care [20–22], relapse to drug use, overdose, and resultant death are common immediately after release [23]. Risk of death from opioid overdose increases more than sevenfold in the first 2 weeks after release [24], and 1 in 200 prisoners with a history of injecting opioids dies from overdose in the month following release [23, 25, 26]. Indeed, the only evidence-based therapy for opioid use disorder in prisoners is to use pharmacological treatment with methadone or buprenorphine within prison and continue it post-release.

Aside from overdose risk, post-incarceration relapse increases exposure to HIV infection [27]. Studies [28] show that rates of engagement in HIV care and receipt of ART decline more than twofold after release [21, 22, 28]. A comprehensive review that included EECA countries reported that ART adherence drops after release, especially for women, due to relapse to substance use, unstable housing and unemployment, reduced access to health care, and inability to access ART in the community [29]. To develop effective transitional programs from prison to community care, there is a need to better prioritize health tasks in prison that may shape planning for continued healthcare after release. Despite evidence that while in prison, individuals underestimate the difficulty of meeting post-release health challenges, there are no data on whether individuals incorporate their health status into how they prioritize their post-release needs, despite the overwhelming evidence that treatment for substance use disorders within prison and continued after release is associated with the best possible health, psychological, legal, and social integration outcomes.

In this study, we examine a cross-sectional survey of prisoners within 6 months of release that met criteria for

substance use disorders. Examining three EECA countries, we examine the relative importance of health-related tasks compared to tasks of everyday life, explore the correlates of prioritizing health-related tasks, and consider whether there are meaningful differences in findings by country.

Methods

Study Design

The design for the parent study has been described previously in each of the three countries: Ukraine [8], Kyrgyzstan [9], and Azerbaijan [10]. Briefly, using a random sampling scheme [30], prisoners being released within 6 months were recruited to participate from all prisons, excluding juveniles and hospital prisons. Both first time and recidivist prisoners were included. The target size of the sample was based on estimates of the number of inmates in non-specialized facilities in each country meeting eligibility criteria, proportional to the number of prisoners within 6 months of release in each facility [8–10].

Following informed consent, respondents answered survey questions (~45 min) using computer-assisted structured interviews (CASI) that included demographic characteristics; criminal justice history; social circumstances prior to incarceration; pre-incarceration substance use; self-perceived health status; sexual and drug risk behaviors prior to incarceration; validated measures of alcohol use disorder, depression, and social support; and reentry challenges and likelihood of recidivism. All instruments were translated and back-translated into both Russian and Ukrainian, Kyrgyz, and Azerbaijani, respectively [31]. All participants were then tested for HIV (followed by a second confirmatory HIV and CD4 testing), hepatitis C virus (HCV), hepatitis B virus (HBV), and syphilis, counseled, and referred for treatment.

Among the combined sample of 1280 prisoners, 577 (45%) self-reported previous drug use aside from cannabis or alcohol, which was defined as having a substance use disorder, and were included in the current analysis; drug use in EECA is often under-reported unless it is non-recreational and regular. Drug use is the major risk factor for HIV in EECA and also for increased morbidity, mortality, and social harm after release in prisoner populations [27, 32].

Study Settings

Azerbaijan is an upper middle-income country [33] of 9.8 million people with ~40,000 prisoners. HIV prevalence is 37-fold higher in prisoners (3.7%) than in the community (0.1%). The predominant religion is Islam and there are estimated to be 71,283 PWID [34] with an HIV prevalence of 19 to 24% [35]. The coverage of OAT using methadone in Azerbaijan was 0.2% or 155 PWID in 2014, falling far below the WHO-recommended coverage of at least 20% [34].

Kyrgyzstan is a lower income country [33] of 6.1 million people with 10,195 prisoners [36]. About half of the population is Muslim. HIV prevalence in prisoners (10.3%) is 51-fold higher than in the community (0.2%) [9] and OAT is provided in prisons. The OAT program in Kyrgyzstan has about 1200 clients [37], with coverage at 18%.

Ukraine is a lower middle-income country [38] that is the most secular among the three included countries. Ukraine has a population of about 42 million and a prisoner population of about 60,000 [39]. HIV prevalence among prisoners (19.4%) is 12 times higher than in the community (1.63%) [8]. It is estimated that there are 340,000 PWID [40], mostly of opioids, with high prevalence of substance use disorders among incarcerated individuals [8].

While in all three countries opioid agonist therapy (OAT) was introduced as part of HIV prevention and harm reduction efforts [41, 42], the addiction treatment community has been slow to adopt it as evidence-based drug treatment. Azerbaijan has a small pilot OAT program in the community, and Ukraine offers OAT using buprenorphine and methadone only in the community with relatively low coverage, while Kyrgyzstan offers OAT both in the community and in prisons.

Data Analysis

Basic characteristics of study participants include: demographic characteristics; pre-incarceration income; recidivism; history of drug use and OAT; HIV, HCV, HBV, and syphilis test results; medical screening variables; and a set of validated screening instruments for alcohol use disorders using the AUDIT [43], depression using the CES-D 10 [44], health-related quality of life (HRQoL) using the MOS short form 36 (SF-36) [45], and social support [46]. An alcohol use disorder was met if the scores were 8 or higher for males and 4 or higher

for females [47] and depression if the CES-D was 10 or greater [48]. The composite social support scale is an integer-valued measure and ranges from 1 (no support) to 5 (high support) [46].

To measure the general health status of the study participants, we constructed a multi-comorbidity index (MCI) as a weighted sum of the following conditions: asthma, skin ulcers, abscesses, arthritis/joint pain, gonorrhea and other STIs (except syphilis), seizures, high blood pressure, liver problems, pneumonia, cancer, heart disease, and tuberculosis. Weights were based on whether the condition is acute (1) or chronic (3) and symptomatic (1) versus asymptomatic (0). For example, an acute asymptomatic condition contributed a value of 1 to the multi-comorbidity index, and a presence of a chronic symptomatic condition added a value of 4 to the total. The total value of the MCI ranged from 0 to 26. HIV, HCV, HBV, and syphilis infections were analyzed separately and are not included in the index. The WHO Tuberculosis (TB) screening questionnaire captures the presence of TB symptoms based on self-report [49]. As recommended by the WHO for high prevalence settings, positive screening was defined as having a cough for at least 2 weeks or the presence of both sputum and unexplained weight loss (in the last 3 months) [49]. Because sensitivity is high for this symptom survey, those screening positive should undergo confirmatory testing to determine the need for treatment. Specificity, however, is low making this symptom survey not a true indicator of TB disease.

The outcomes of our analysis included: (1) assessment of each post-release task individually as very easy/easy/hard/very hard or not applicable and (2) identification of one most important post-release task. For the first outcome, categories “easy” and “very easy” were collapsed into “easy” and “hard” and “very hard” into “hard.” The list of potentially challenging post-release tasks was compiled based on previous research in this area [19, 50] and included a total of 18 items. Of these, health-related tasks included: getting access to HIV care, getting treatment for illnesses other than HIV, getting help staying off drugs, and getting OAT. Since the task of getting access to HIV care only applied to a small sub-sample, our analysis focused on the latter three potential challenges. To provide a comparison of how incarcerated individuals perceived the relative importance of their post-release tasks, we selected three “comparison” tasks of everyday life, namely: finding a job or a stable source of income, reuniting with family

and/or friends, and staying out of prison following release.

We used a proxy measure for whether a task was perceived as important. This proxy measure identified a task as applicable (easy or hard) versus not applicable. Correlates of identifying a health-related task as applicable were analyzed using logistic regression, and this analysis was performed separately for the three health-related tasks of interest. A parsimonious model was derived using Bayesian lasso method [51]. This method provides a more conservative way to perform variable selection and estimation of regression coefficients compared to traditional stepwise methods [52].

Statistical analyses were performed in SPSS (version 22.0, Chicago, IL) and R (Foundation for Statistical Computing, Vienna, Austria). Significance of between-country differences was assessed using ANOVA and chi-squared test for continuous and categorical variables respectively. R Package “EBglmnet” [53] was used to implement Bayesian lasso, and we used three-level hierarchical priors with normal/exponential/gamma distributions to perform variable selection and estimation of regression coefficients and their 95% credible intervals.

Ethics Statement

This study was approved by both the Institutional Review Boards at the Yale University School of Medicine and Institutional Review Boards in Ukraine, Azerbaijan, and Kyrgyzstan. Further safety assurances were provided by the Office for Human Research Protections.

Results

Characteristics of the Participant Population

As seen in Table 1, there was substantial diversity between participants in Azerbaijan, Kyrgyzstan, and Ukraine for several characteristics: religion, education, rate of recidivism, history of OAT, physical and mental wellness scores, and results of screening for diseases such as tuberculosis and HIV. In Ukraine, almost 80% of participants completed high school or received higher education in comparison to just over half of participants in Kyrgyzstan and just over a third in Azerbaijan. The rate of recidivism was generally high in our sample but was the highest in Kyrgyzstan (80%), while in Ukraine and Azerbaijan, it was

Table 1 Characteristics of study participants ($N = 577$)

Characteristic	Total $N = 577$	AZ $N = 191$	KYR $N = 146$	UA $N = 240$	p value ^a
Sex					
Male	494 (85.6)	179 (93.7)	125 (85.6)	190 (79.2)	< 0.001
Female	83 (14.4)	12 (6.3)	21 (14.4)	50 (20.8)	
Age, years; mean (S.D.)	34.9 (9.0)	39.4 (8.1)	36.5 (9.7)	30.4 (6.9)	< 0.001
Marital status					
Single	360 (62.4)	76 (39.8)	95 (65.1)	189 (78.8)	< 0.001
Has a partner	217 (37.6)	115 (60.2)	51 (34.9)	51 (21.2)	
Religion					
Christian	290 (50.3)	0 (0.0)	72 (49.3)	218 (90.8)	< 0.001
Muslim	258 (44.7)	186 (97.4)	72 (49.3)	0 (0.0)	
Other	29 (5.0)	5 (2.6)	2 (1.4)	22 (9.2)	
Education					
Completed high school	341 (59.1)	71 (37.2)	83 (56.8)	187 (77.9)	< 0.001
Less than high school	236 (40.9)	120 (62.8)	63 (43.2)	53 (22.1)	
Income pre-incarceration					
Above poverty line	279 (48.4)	85 (44.5)	92 (63.0)	102 (42.5)	< 0.001
Below poverty line	298 (51.6)	106 (55.5)	54 (37.0)	138 (57.5)	
Recidivism					
First time	245 (42.5)	97 (50.8)	29 (19.9)	119 (49.6)	< 0.001
Previously incarcerated	332 (57.5)	94 (49.2)	117 (80.1)	121 (50.4)	
History of injecting drugs					
No	114 (19.8)	30 (15.7)	37 (25.3)	47 (19.6)	0.088
Yes	463 (80.2)	161 (84.3)	109 (74.7)	193 (80.4)	
Duration of injecting drug use, years (among 463 who reported injecting), mean (S.D.)	15.4 (8.7)	19.3 (8.6)	15.0 (9.7)	12.4 (7.0)	< 0.001
Recent injecting drug use, 30 days prior to current incarceration					
None	244 (42.3)	55 (28.8)	93 (63.7)	96 (40.0)	< 0.001
Moderate (1–14 days)	186 (32.2)	98 (51.3)	26 (17.8)	62 (25.8)	
Heavy (15–30 days)	147 (25.5)	38 (19.9)	27 (18.5)	82 (34.2)	
History of opioid drug use					
No	126 (21.9)	25 (13.1)	39 (26.9)	62 (25.8)	0.003
Yes	450 (78.1)	166 (86.9)	106 (73.1)	178 (74.2)	
History of being prescribed OAT					
No	453 (78.5)	189 (99.0)	42 (28.8)	222 (92.5)	< 0.001
Yes	124 (21.5)	2 (1.0)	104 (71.2)	18 (7.5)	
Alcohol use disorder^b					
No	305 (52.9)	152 (79.6)	65 (44.5)	88 (36.7)	< 0.001
Yes	272 (47.1)	39 (20.4)	81 (55.5)	152 (63.3)	
Moderate to severe depression^c					
No	345 (59.8)	120 (62.8)	82 (56.2)	143 (59.6)	0.464
Yes	232 (40.2)	71 (37.2)	64 (43.8)	97 (40.4)	
Health-related quality of life: Physical Composite Score, mean (S.D.)	48.0 (5.7)	47.3 (4.7)	44.9 (5.8)	50.5 (5.3)	< 0.001
Health-related quality of life: Mental Composite Score, mean (S.D.)	41.9 (9.1)	36.7 (6.5)	38.3 (8.1)	48.2 (7.4)	< 0.001
Social Support, mean (S.D.) ^d	3.0 (1.1)	3.1 (1.1)	2.8 (1.0)	3.0 (1.1)	0.009

Table 1 (continued)

Characteristic	Total <i>N</i> = 577	AZ <i>N</i> = 191	KYR <i>N</i> = 146	UA <i>N</i> = 240	<i>p</i> value ^a
HIV status					
Negative	481 (83.4)	178 (93.2)	120 (82.2)	183 (76.2)	< 0.001
Positive and aware	58 (10.1)	11 (5.8)	14 (9.6)	33 (13.8)	
Positive and unaware	38 (6.6)	2 (1.0)	12 (8.2)	24 (10.0)	
Hepatitis C status					
Negative	137 (23.7)	47 (24.6)	38 (26.0)	52 (21.7)	0.585
Positive	440 (76.3)	144 (75.4)	108 (74.0)	188 (78.3)	
Hepatitis B status					
Negative	537 (93.1)	179 (93.7)	137 (93.8)	221 (92.1)	0.734
Positive	40 (6.9)	12 (6.3)	9 (6.2)	19 (7.9)	
Syphilis					
Negative	521 (90.3)	185 (96.9)	116 (79.5)	220 (91.7)	< 0.001
Yes	56 (9.7)	6 (3.1)	30 (20.5)	20 (8.3)	
Multi-comorbidity index; mean (S.D.) ^c	5.7 (5.4)	5.9 (6.1)	6.2 (5.6)	5.2 (4.7)	0.157
Medical screening: weight change over 5% during 1 month					
No	480 (83.2)	190 (99.5)	76 (52.1)	214 (89.2)	< 0.001
Yes	97 (16.8)	1 (0.5)	70 (47.9)	26 (10.8)	
Medical screening: hospitalization (last 30 days)					
No	558 (96.7)	187 (97.9)	131 (89.7)	240 (100)	< 0.001
Yes	19 (3.3)	4 (2.1)	15 (10.3)	0 (0.0)	
Symptoms indicative of tuberculosis (WHO Tuberculosis screening) ^f					
Not indicative of TB	457 (79.2)	182 (95.3)	70 (47.9)	205 (85.4)	< 0.001
Indicative of TB	120 (20.8)	9 (4.7)	76 (52.1)	35 (14.6)	

For categorical variables, data is presented in the form *N* (%) and for continuous variables mean (S.D.). Values may not sum up to totals due to missing values, and percentages may not sum up to 100 due to rounding

AZ Azerbaijan, KYR Kyrgyzstan, UA Ukraine, OAT opioid agonist therapy, WHO World Health Organization, S.D. standard deviation

^a*p* value for the ANOVA for continuous variables and chi-squared test for categorical variables

^bScreening positivity threshold for AUDIT is 8 or higher for males and 4 or higher for females

^cScreening positivity threshold for CES-D 10 scale is 10 or higher

^dInteger-valued scale that ranges from 1 (no support) to 5 (high support)

^eMulti-comorbidity index is a weighted sum of the following comorbid conditions: asthma, skin ulcers, abscesses, arthritis/joint pain, gonorrhea, and other STIs (except syphilis), seizures, high blood pressure, liver problems, pneumonia, cancer, heart disease, and tuberculosis. Weights are based on whether the condition is acute (1) or chronic (3) and symptomatic (1) versus asymptomatic (0). Minimum and maximum index value is 0 and 26, respectively. HIV, hepatitis C, hepatitis B, and syphilis are analyzed separately and not included into the multi-comorbidity index

^fScreening is indicative of tuberculosis if an individual had cough for at least 2 weeks or both production of sputum and unexplained weight loss in the last 3 months

about half of participants. The duration of injection drug use was also high (15 years on average), being the highest in Azerbaijan. While more than half of participants in Ukraine and more than two thirds of participants in Azerbaijan reported moderate (1–14 days) to heavy (15–30 days) drug injection in the month prior to incarceration, about two thirds of participants in

Kyrgyzstan stated they had not injected drugs in the month prior to incarceration. Over two thirds of Kyrgyzstan participants reported a history of participation in OAT in contrast to only 1% in Azerbaijan and 7.5% in Ukraine. Health-related quality of life (HRQoL) showed that the study population was sicker than the general population in all three countries. In all three countries,

HRQoL for physical health was similar to the general population level, but for mental health, it was markedly lower. HIV prevalence was the highest in Ukraine at 23.8% (with 42% of HIV positive unaware of their status) and the lowest in Azerbaijan at 6.8%. The three countries were similar on other health indicators such as prevalence of depression, hepatitis B and C, and multi-comorbidity index (Table 1).

Participants' Perceptions of Reentry Challenges

Figure 1 illustrates participants' perceptions of reentry challenges. In terms of health-related challenges, about half of participants considered that getting treatment for illnesses other than HIV and getting help staying off drugs is hard, and about two fifths of participants considered that getting methadone treatment is hard. Yet, a sizeable proportion of participants—between one fifth to over one third—considered that health-related challenges (especially initiating methadone treatment) were not applicable to them at all. This is particularly striking because all participants in our sample had a substance use disorder with 80% having an opioid use disorder. In terms of competing everyday life challenges, 61% of participants reported they thought finding a job and 54% indicated staying out of prison would be hard. Interestingly, while many participants considered health-related tasks as not applicable, very few (< 5%) participants considered everyday life challenges as irrelevant (Fig. 1).

Table 2 illustrates country differences in participants' perceptions of health-related reentry challenges. In Kyrgyzstan, where over two thirds of participants reported a history of OAT involvement, almost half of participants reported that getting help staying off drugs was not applicable to them and over two thirds of participants considered getting methadone treatment after release as non-applicable to them (Table 2).

Participants' Perceptions of Importance of Reentry Challenges

Figure 1 illustrates participants' perceptions regarding what in their view was the most important task upon reentry. Overall, about two thirds of participants identified that finding a job or a stable source of income was the most important task, while only 0.3% of participants thought that the most important task was getting methadone treatment.

The overwhelming majority of participants (all of whom had a history of drug use, mostly of opioids, and most of whom had injected drugs often just prior to incarceration) did not consider health-related tasks associated with their addiction treatment to be most important post-release. Furthermore, many participants did not consider getting help staying off drugs and getting methadone treatment as applicable to them at all. Thus, instead of determining the correlates of stated reentry challenges, “easy” versus “hard” in our regression analyses, we assessed the correlates of stated reentry challenges as “applicable” (which could be either easy or hard) versus “not applicable.”

Correlates of Considering Reentry Challenges as Applicable

Regression analyses (Table 3) demonstrated that participants in Kyrgyzstan were least likely to consider any of the health-related post-release tasks to be applicable. Participants in Ukraine were less likely than those in Azerbaijan to consider methadone treatment as applicable, but the adjusted odds ratio (AOR) for Ukraine was not nearly as extreme as that for Kyrgyzstan (0.24 versus 0.03, respectively).

Those with more education (completed high school) were less likely to consider getting help staying off drugs applicable. Conversely, those with a history of injecting drug use were more likely to consider getting help staying off drugs and getting methadone treatment applicable. Likewise, participants who reported moderate and especially heavy injection habits in the 30 days prior to incarceration were also more likely to consider getting help staying off drugs and getting methadone treatment relevant.

Having had previous experience with OAT was a statistically significant correlate of higher likelihood of considering getting methadone treatment. Meeting screening criteria for moderate to severe depression also positively correlated with higher likelihood of considering methadone treatment; however, 95% credible interval for this covariate includes the null.

Having higher levels of comorbidity was significantly correlated with choosing health-related reentry tasks as applicable. Participants, who were HIV positive and aware of their status, were more likely to consider treatment of illnesses other than HIV as applicable. While having a positive HIV status and being aware of it did not correlate with a higher likelihood to consider

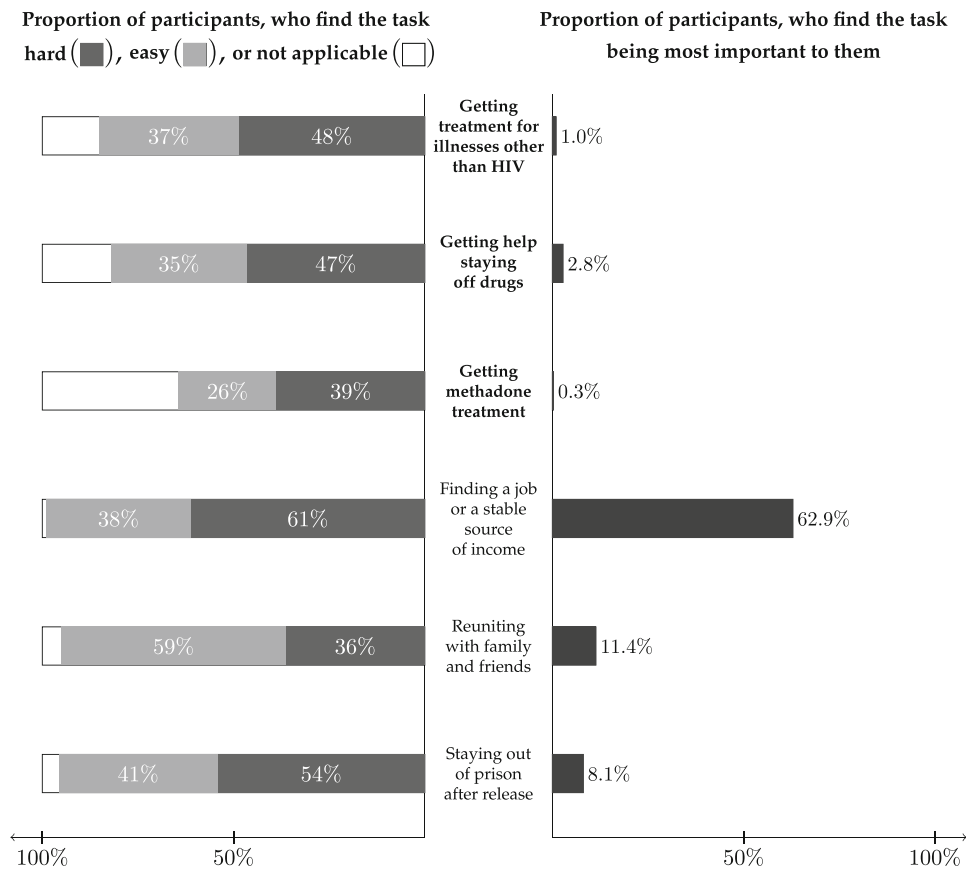


Fig. 1 Perceptions of reentry challenges (*N* = 577)

addiction-related reentry tasks as applicable, scoring higher on the multi-comorbidity index was associated with higher likelihood of considering all three health-related reentry tasks applicable.

A number of candidate covariates were not found to be associated with considering any of the health-related post-release tasks applicable. Of those, the most notable are: age, recidivism, HRQoL, hepatitis C and B status, and positive symptomatic screening for TB (Table 3).

Discussion

Most prisoners with substance use disorders return to urban settings that are often unequipped to deal with the myriad of health and social needs of individuals who have spent considerable time outside the fabric of these communities. Results from this study of soon-to-be-released prisoners with substance use disorders point to three main findings. First, overwhelmingly, prisoners prioritize basic needs over all else, including health, as

central to the transitional process. To improve support and preparation for release and reintegration for transitioning prisoners, a clear understanding of why prisoners prioritize everyday life challenges over health needs is essential, especially since good health is crucial to overcoming everyday life challenges. Maslow’s hierarchy of needs provides a useful framework for understanding these challenges [54], which posits that individuals prioritize basic needs (e.g., food, housing, safety) over secondary needs (e.g., healthcare and health safety). The findings here are similar to those reported elsewhere in prisoners in other settings where basic needs are prioritized over addiction treatment [18, 19, 21]. Unlike treatment for other conditions, addiction treatment with OAT results in improvements for most basic and secondary needs like improved family reintegration, employment, criminal activity, health-related quality of life, and other health benefits [2, 55, 56]. The challenges of soon-to-be released prisoners’ social reintegration [57], rather than indifference to health, may explain why, despite the high prevalence of

Table 2 Perceptions of importance and difficulty of reentry tasks: country differences ($N = 577$)

Reentry task	Total $N = 577$	AZ $N = 191$	KYR $N = 146$	UA $N = 240$	p value ^a
Health-related tasks					
Getting treatment for illnesses other than HIV					
Easy	211 (36.6)	86 (45.0)	43 (29.5)	82 (34.2)	< 0.001
Hard	281 (48.7)	91 (47.6)	67 (45.9)	123 (51.2)	
Not applicable	85 (14.7)	14 (7.3)	36 (24.7)	35 (14.6)	
Getting help staying off drugs					
Easy	204 (35.4)	61 (31.9)	36 (24.7)	107 (44.6)	< 0.001
Hard	269 (46.6)	120 (62.8)	44 (30.1)	105 (43.8)	
Not applicable	104 (18.0)	10 (5.2)	66 (45.2)	28 (11.7)	
Getting methadone treatment					
Easy	148 (25.6)	61 (31.9)	28 (19.2)	59 (24.6)	< 0.001
Hard	224 (38.8)	111 (58.1)	14 (9.6)	99 (41.2)	
Not applicable	205 (35.5)	19 (9.9)	104 (71.2)	82 (34.2)	
Everyday life tasks					
Finding a job or a stable source of income					
Easy	218 (37.8)	44 (23.0)	66 (45.2)	108 (45.0)	< 0.001
Hard	353 (61.2)	146 (76.4)	75 (51.4)	132 (55.0)	
Not applicable	6 (1.0)	1 (0.5)	5 (3.4)	0 (0.0)	
Reuniting with family or friends					
Easy	338 (58.6)	93 (48.7)	80 (54.8)	165 (68.8)	< 0.001
Hard	210 (36.4)	92 (48.2)	45 (30.8)	73 (30.4)	
Not applicable	29 (5.0)	6 (3.1)	21 (14.4)	2 (0.8)	
Staying out of prison following release					
Easy	239 (41.4)	74 (38.7)	54 (37.0)	111 (46.2)	< 0.001
Hard	313 (54.2)	116 (60.7)	76 (52.1)	121 (50.4)	
Not applicable	25 (4.3)	1 (0.5)	16 (11.0)	8 (3.3)	
The most important task					
Getting treatment for illnesses other than HIV	6 (1.0)	0 (0.0)	0 (0.0)	6 (2.5)	< 0.001
Getting help staying off drugs	16 (2.8)	0 (0.0)	4 (2.9)	12 (5.0)	
Getting methadone treatment	2 (0.3)	0 (0.0)	0 (0.0)	2 (0.8)	
Finding a job or a stable source of income	363 (62.9)	131 (70.4)	100 (72.5)	132 (55.2)	
Reuniting with family or friends	66 (11.4)	40 (21.5)	8 (5.8)	18 (7.5)	
Staying out of prison following release	47 (8.1)	1 (0.5)	12 (8.7)	34 (14.2)	

Data is presented in the form N (%). Values may not sum up to totals due to missing values, and percentages may not sum up to 100 due to rounding

AZ Azerbaijan, KYR Kyrgyzstan, UA Ukraine

^a p value for chi-square test or Fisher's exact test

morbidity (including HCV, HBV, TB, syphilis, and various acute and chronic conditions included into the comorbidity index) and a universal history of drug use in our sample, in all three countries, study participants prioritized finding a source of income, reconnecting with family, and staying out of prison as most important.

An alternate interpretation of this finding may be that tasks related to finding a job, reuniting with family, and staying out of prison are viewed by soon-to-be released prisoners as more essential to immediate survival than those related to health [58]. Rather than focusing on health issues, transitioning prisoners may prioritize

Table 3 Correlates of considering a reentry task being applicable ($N = 577$)

Covariate	AOR (95% CI)		
	Treatment for illnesses other than HIV	Getting help staying off drugs	Getting methadone treatment
Country			
Azerbaijan	Referent	Referent	Referent
Kyrgyzstan	0.39 (0.24–0.62)	0.09 (0.05–0.16)	0.03 (0.01–0.06)
Ukraine			0.24 (0.14–0.41)
Education			
Less than high school		Referent	
Completed high school		0.45 (0.26–0.75)	
History of injecting drugs			
No		Referent	Referent
Yes		4.54 (2.43–8.48)	1.87 (1.13–3.09)
Recent injecting drug use, 30 days prior to current incarceration			
None		Referent	Referent
Moderate (1–14 days)		2.36 (1.17–4.74)	1.56 (1.02–2.38)
Heavy (15–30 days)		3.68 (1.64–8.22)	
History of being prescribed OAT			
No			Referent
Yes			2.13 (1.03–4.40)
Moderate to severe depression			
No			Referent
Yes			1.36 (0.95–1.93)
HIV status			
Negative	Referent		
Positive and aware	2.54 (0.99–6.48)		
Positive and unaware			
Multi-comorbidity index	1.12 (1.06–1.18)	1.09 (1.03–1.14)	1.04 (1.00–1.08)

Covariates not associated with considering any of the health-related challenges being applicable include: gender, age, marital status, income pre-incarceration, recidivism, having alcohol use problems, health-related quality of life, social support, being HIV-positive and unaware, having hepatitis C and B, having syphilis, substantial recent weight change, and positive TB screening based on symptoms

AOR adjusted odds ratio, CI credible interval, OAT opioid agonist therapy

those things that are more meaningful to them, like work that is socially affirming and reintegrating with family as activities essential to the fulfillment of social roles and obligations. Qualitative research on people in EECA countries suggests that social and relational connectedness is central to a sense of purpose in life, and conversely, feeling unneeded by others who do not value what one has to give, may lead to worsening mental and physical health and even suicide [59]. While such socially affirming activities appear to be important to transitioning prisoners, what is concerning is how these individuals do not understand the positive role of addiction treatment (especially OAT) in family reintegration, employment, reduced criminal activity, and health-

related quality of life, which is often required to meet these socially affirming activities. Interventions that connect the role of OAT and dispel myths related to its use will be crucial to realistically meet the expectation of transitioning prisoners with substance use disorders.

It is concerning that over a third of participants considered starting methadone as “Not Applicable” despite most of them injecting nearly daily before incarceration. One possible explanation why these participants considered these challenges as irrelevant could be that they did not consider their drug use a chronic, relapsing disease (or methadone treatment initiated in prison and continued after release as the only evidence-based addiction treatment). Despite data from multiple clinical trials in

communities [60] and in prisoners documenting its efficacy and the high relapse rate after release from prison in its absence [61–63], data from two Eastern European countries suggest that methadone is not perceived an effective treatment [55, 56, 64–66], including in prisons [13, 67, 68]. Russia retains a strong influence in the EECA region with its staunch ban on all OAT for treatment of opioid use disorder. Alternatively, prisoners might inaccurately believe in their willpower to remain off drugs or have future plans on using heroin as a more natural and healthy substance than methadone [69]. Either way, informed decision-making aids that provide culturally accurate information [70–72] should be considered to help prisoners with substance use disorders plan for their transition to the community.

Second, for those prisoners with higher levels of medical comorbidity, this subset of participants was more willing to prioritize their health during transition to the community. While having HIV did not change the odds of seeking help for addiction problems, participants with poorer general health considered getting help to stay off drugs more frequently. This could indicate that individuals in poorer health may recognize the need to accomplish health-related tasks like staying off drugs. Alternatively, it could indicate these individuals perceived fewer available resources to pursue street drugs after release [73].

Third, in Kyrgyzstan where OAT coverage is highest, a significantly smaller portion of prisoners prioritized methadone treatment compared to the other two settings where OAT coverage is lower and unavailable in prisons. One explanation for this finding is that OAT was introduced in select EECA countries in the mid-2000s not as a treatment for addiction but for HIV prevention [74]. Thus, policy makers, providers, and even patients might perceive methadone as means to control and reduce the HIV epidemic rather than as an evidence-based addiction treatment. In some contexts, this approach might have shaped patients' attitudes towards the treatment. Research in other global settings revealed that individuals underprivileged by judicial and social regimes may experience OAT more as a tool wielded by those who wish to control them as the harm and less as a treatment meant to improve their health and wellness [75]. Another possible explanation may be that informal control of the prisons in post-Soviet settings by the prisoners themselves plays a strong role in shaping meanings of methadone in this context. Qualitative research is urgently needed to explore how the meanings

of harm reduction and OAT intersect in daily experiences of PWID and prisoners in EECA countries.

Besides these three main findings, we want to highlight several other interesting observations from our analyses. It was striking that recidivists did not prioritize post-release tasks any differently than participants incarcerated for the first time. This could signify the persistence of planning fallacy [14, 15] during subsequent re-incarcerations or misalign the impact of relapse to drug use as a contributor to re-incarceration on recidivism [76]. Further, understanding the impact of OAT on reducing recidivism may need emphasis in assisting prisoners with opioid use disorder in setting their priorities [76]. Interestingly, more educated participants were less likely to consider getting help staying off drugs. Our qualitative research in Ukraine showed that PWID perceive OAT engagement as a sign of deteriorating health [56]. Thus, higher education may indicate participants' higher socioeconomic status underlying more resourcefulness, but also higher drug use stigma, with methadone perceived as the last resort of those who are “really sick.”

We noted several interesting country differences. None of the study participants in Azerbaijan identified any of the three health-related tasks as the most important. A few (2.9%) study participants in Kyrgyzstan said that getting help staying off drugs was the most important reentry task, but despite the availability of methadone, no one identified such treatment as a priority. Only in Ukraine a small number of participants chose getting methadone treatment and getting treatment for general health conditions as the main post-release task, although the severity of health problems was comparable in all three countries. It is possible that the perceived criminalization of drugs is more severe in Ukraine than in Kyrgyzstan and Azerbaijan.

One limitation of our study was cross-sectional design as we only measured expectations for post-release challenges and not actual post-release behavior. During incarceration, participants could try to resolve cognitive dissonance [76, 77] regarding competing post-release challenges by defining challenges over which they felt least control, such as drug use, as not applicable. Previous research showed that PWID perceive more HIV and drug-related stigma post-release than within prison, and intentions to make changes in drug use are stronger in prison than after release [13]. Also, participants in prison may have overvalued their own self-efficacy and thus not felt that “help” getting off drugs was necessary, as

they believed they would be able to do so on their own [69]. Consequently, after release, our participants' little interest in health-related challenges may decrease further. Longitudinal research must examine how PWID's attitudes and behavior concerning addiction treatment change during post-prison transition. It would also be desirable for future surveys after release to ask participants to choose and rank their top three reentry challenges in order to expand analysis options.

Our findings have implications for policy and practice. Concerning is the high exposure to methadone in Kyrgyzstan, yet the relatively low interest in this treatment. Multiple factors may have contributed to this finding including the perceived ineffectiveness of this treatment. In a setting where methadone coverage is more prevalent, feelings toward methadone by other prisoners are extraordinarily negative leading to bullying and ostracism, such as reported in Moldova [68]. In this context, prisoners in the EECA region would benefit from potentially multiple types of interventions, including those delivered by professionals and peers or through use of informed or shared decision aids. Such strategies would focus on how abstaining from illegal drugs and initiating OAT may help released prisoners reclaim jobs, reunite with family, avoid overdose and reincarceration. As the prison environment also shapes participants' values and norms, custodial and clinical prison staff may benefit from similar interventions to enhance their understandings of prisoners' treatment goals [13, 78]. The key implication is that, despite the availability of OAT, prisoners may forego treatment. Future studies should explore effective methods to overcome barriers by using informed decision-making aids or delivery of effective motivational sessions using professionals or peers. Implementation science studies that overcome scale-up barriers are urgently needed to address patient-level factors. It is crucial to balance the evidence with prisoners' own priorities and design OAT programs in a way that would integrate support in addressing other social needs, like employment support or job training.

Conclusions

Prisoners in Ukraine, Kyrgyzstan, and Azerbaijan prioritized post-release everyday challenges like finding a source of income and reconnecting with family over health-related tasks, despite their history of drug use

and multiple comorbidities. Methadone was not viewed as an effective strategy for staying off drugs. Understanding and addressing the disconnect between the evidence and the belief that devalues that addiction is a disease that can be effectively treated like other chronic diseases will be crucial for scale-up. In designing programs for released prisoners, national and international organizations in EECA must consider educating prisoners and prison staff in how prioritizing addiction treatment helps accomplish other community transition goals.

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