Sexual Risks and Policing among Male Migrant and Non-migrant Market Vendors in Central Asia

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Abstract The following study examined associations between sexual risk behaviors and policing among external migrant, internal migrant, and non-migrant male market workers in Almaty, Kazakhstan. Negative binomial regression and logistic regressions examined associations between sexual risk behaviors and policing (questioning by market officials and migration police, and arrest) for 1342 external, internal, and non-migrant workers recruited using respondent-driven sampling (RDS). Incidence rate ratios (IRR) and adjusted odds ratios (OR) were stratified by migration status. External migrants were more likely than non-migrants to experience questioning by market officials (IRR = 2.07, $p < 0.01$), migration police (IRR = 3.60, $p < 0.001$), and arrest (OR = 5.32, $p < 0.001$). When stratified by migration status, being under the influence of drugs or alcohol (IRR = 3.04, $p < 0.01$) and sex with men (IRR = 2.71, $p < 0.05$) were associated with being questioned or harassed by market police among external migrants. External migrant who reported having more than one sex partner while traveling were also more likely to report being arrested than external migrants (OR = 3.92, $p < 0.05$). Meeting HIV prevention needs of labor migrants demands acknowledging the role of policing and allocating sufficient resources to support the implementation of HIV prevention programs in these settings.

Keywords Sexual behaviors · Police · Migrants · Risk environment

Introduction

Although global incidence of HIV has decreased gradually over the past 15 years, Kazakhstan is immersed in a rapidly expanding epidemic of HIV [1–6]. Kazakhstan is one of nine countries in the world that experienced a 25% or greater increase in the incidence of HIV from 2001 to 2009 [7], and migrants are one of 12 populations at greatest risk of falling behind in achieving milestones of ending the HIV epidemic by 2030 [8]. The dissolution of the Soviet Union in Central Asia precipitated an economic crisis of increasing unemployment, poverty, and mass emigration of labor migrants to Kazakhstan in search of more optimistic economic prospects [9–12]. In the ensuing decade from 1997 to 2006, migration rose 16-fold from 70,000 to more than 1,120,000, placing Kazakhstan 16th in the number of incoming migrants out of all the countries in the world [10, 13]. Migrants gravitate to Almaty, Kazakhstan, to work in the Baraholka Marketplace, the largest open-air market in Central Asia situated along the ancient Silk Road trading route [14, 15].

Prior research suggests mobility patterns heighten risk for biologically confirmed STI, sex trading, and unprotected sex among internal and non-migrants but not among external migrants from Tajikistan, Kyrgyzstan, and Uzbekistan [14, 15]. Other research in Central Asia and Eastern Europe suggests that external migrants

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are at an increased risk of engaging in commercial sex trading, unprotected sex, and sex under the influence of drugs due to estrangement from intimate partners, loneliness, and depression [16–18]. In addition to sexual risk behaviors, external and internal migrants are more likely to face incarceration, arrest, detention, and other criminal justice stressors related to the legal risk environment [19, 20].

Foreign visitors to Kazakhstan are required by law to register with the police. The International Federation for Human Rights estimate that out of the more than 1.3 million registered foreigners, only approximately 125,000 indicated an intention to work while in Kazakhstan [21]. A large majority of migrants do not maintain consistent work status, and approximately a million migrants work in Kazakhstan without legal work status [21]. Precarious work circumstances create fear of enduring negative legal actions by virtue of contact with the police. When apprehended by the police, migrants without legal work permits face incarceration and deportation, creating a negative consequence for reporting poor employment conditions, crime, and other public health concerns [21].

Adverse legal risk environments heighten risk of sexual behaviors because of structural factors that operate at multiple levels exogenous to the individual. The legal risk environment is characterized by drug law policies, attitudes of law enforcement officers, arrest, conditions of imprisonment, and many other factors [22–24]. The principles of the risk environment framework suggest that aggressive policing practices, discrimination, harassment, incarceration, and punitive policies toward migrant workers shape sexual decision-making at the individual level [22, 25, 26].

Deleterious social conditions of prisons in Central Asia and other parts of the world amplify the risk of acquiring HIV and other infectious diseases through exposure to extreme deprivation, violence, unsanitary conditions, overpopulation, and isolation from national and non-governmental AIDS organizations [7, 8, 24, 27]. Prisons account for disproportionate populations of people with HIV in Kazakhstan with more than 25% of all registered cases of HIV acquired in prisons [24]. Law enforcement practices in Central Asia and Eastern Europe target populations that are criminalized based on individual characteristics such as migration status, injection drug use, sex workers, sex, gender, race, and other factors [24, 27, 28]. Findings from a nationally representative sample of prisoners suggest that police

harassment prior to incarceration increases HIV risks and drug addiction among prisoners in Kyrgyzstan and Azerbaijan [29].

Similarly, prior research in Kazakhstan found that external migrants disproportionately experience questioning by law enforcement and incarceration compared to internal and non-migrants [15]. In Kazakhstan, legal authorities regulate migratory flows between other Central Asian countries along national borders and in the marketplace by stopping, questioning, and examining paperwork to ensure legal and residency status [10, 16, 30]. Immigration police and market officials in Kazakhstan have received criticism for failing to protect the rights of external labor migrants by neglecting to take action against illegal employment practices [30]. Prior research using qualitative interviews and focus groups with Uzbek labor migrants in Kazakhstan describes frequent questioning, harassment, physical beatings, arrest, and patrol of dwellings and worksites by the migration police and market officials [31]. However, no studies have examined the association between sexual risks and policing among external migrant populations in Kazakhstan or other countries throughout the world.

Examining the role of sexual risk behaviors and policing is crucial in order to inform strategies for HIV prevention and research among external and internal labor migrants in Kazakhstan. This study examines the extent to which sexual risk behaviors are associated with policing (questioning by market officials, questioning by migration police, and arrest) among a large sample of migrant and non-migrant male workers in Kazakhstan recruited from the Baraholka Marketplace in Almaty, Kazakhstan. We examine the data for associations between migration status and policing and hypothesize that external migrants will be at a greater risk of policing than internal and non-migrants. Given that existing literature suggests external migrants are targeted by policing activities more frequently than internal and non-migrants, we treat internal and non-migrants as the reference group. We examine overall associations between engaging in unprotected sex, sex under the influence of drugs or alcohol, commercial sex work, sex with men and multiple sex partners, and policing after adjusting for migration status and other sociodemographic factors. We hypothesize sexual risk behaviors (e.g., unprotected sex, sex under the influence of drugs or alcohol) will be associated with increased policing. Finally, in order to account for migration, we stratify our results by external migration status. In our stratified models, we hypothesize that engaging in

sexual risk behaviors will predict policing for external migrants and will not be significant for internal or non-migrants.

Methods

Data Source and Sample

This study uses data from The Silk Road Health Project, which recruited participants from the Baraholka Market in Almaty Kazakhstan, the largest open-air marketplace in Central Asia consisting of over 30,000 stalls using respondent-driven sampling (RDS). Trained research staff recruited 14 participants to function as “seeds” to begin recruitment of potential subjects for the study (two non-migrants, one internal migrant, and 11 external migrants). Upon enrollment into the study, seeds were given coupons and instructions to recruit three additional potential subjects into the study and this process was repeated until a representative sample was obtained. Additional information on sample RDS characteristics, social network characteristics, and homophily are reported elsewhere [16].

Eligibility and Inclusion Criteria

Eligibility criteria included participants who received a coupon or were selected as a seed; were between the ages of 18 and 50; possessed citizenship in either Kazakhstan, Kyrgyzstan, Tajikistan, or Uzbekistan; reported employment in Baraholka Market in Almaty in the past week; were fluent in Kazakh, Russian, or Tajik; and could provide informed consent. Reimbursement for participation in the study included approximately 1\$USD for agreeing to complete a screening assessment and 10\$USD for completing the full assessment. Seeds received approximately 5\$USD for each eligible participant referred and recruited into the study. Columbia University IRB approved the protocol for this study. The Audio Computer-Assisted Self-Interview (ACASI) method obtained collected data from participants in a private office space. Pretest counseling on HIV, HCV, and other STI's was performed by the Clinical Research Coordinator (CRC). Post-test counseling was provided at the time of notification, and referrals were given to STI/HIV treatment when results were positive. Information on biological testing methods and procedures are reported elsewhere [15].

Measures

Policing Participants were asked how many times they were stopped by market officials and migration police and if they had been arrested in the past 90 days.

Sociodemographic Characteristics Self-reported information was collected on education, ethnicity, income, age, co-residence, marital status migration status, hours worked in the market during a typical workweek, co-residence status (lived with spouse), and job responsibilities (owner, vendor, carrier, or other).

Sexually Transmitted Infections Lifetime and 90-day data was collected on self-reported history of HIV gonorrhea, chlamydia, herpes, syphilis, and other STI infections and combined into a single dichotomized variable. Biological assays were collected to test for the presence of HIV, syphilis, gonorrhea, and chlamydia.

Sexual Behaviors Participants were asked questions about sexual behaviors with primary and other partners within the past 90 days that included unprotected vaginal or anal sex, sex with more than one partner, sexual intercourse with their primary partner under the influence of alcohol or drugs, sex with men, engaging in oral or anal sex with men, engaging in commercial sex, and vaginal or anal sex with more than one intimate partner while traveling.

Data Analysis

Data was imported into STATA (v.14) for statistical analysis [32]. We applied RDS weights to estimate population proportions and means for sociodemographic characteristics, sexual risk behaviors, drug use, and risk environment characteristics for the overall sample and then stratified by type of policing (number of contacts with market officials, number of contacts with migration police, arrest, and incarceration) and migration status.

To examine the hypotheses of the study, we performed multivariate negative binomial and logistic regressions to first examine if external migrants were more likely to experience policing than internal and non-migrants [33]. Next, we examined if having multiple sexual partners, engaging in commercial sex work, having unprotected sex with any partner, sex under the influence of drugs or alcohol, and sex with men were

	Market officials				Migration police						
	Past 90 days		No times		Past 90 days		No times				
	Yes % (n)	No % (n)	Yes Mean (SD)	No Mean (SD)	Yes % (n)	No % (n)	Yes Mean (SD)	No Mean (SD)			
Overall	1342	13.6	86.4	0.91	18.18	81.82	1.84	15.88	84.12		
Sociodemographics											
Younger age (<25)	60.96	68.34 (136)	59.80 (631)	1.17 (0.32)	0.50 (0.09)	68.58 (177)	59.27 (590)	2.03 (0.52)	1.55 (0.45)	62.55 (180)	60.67 (587)
Migration status											
Non-migrant	52.67 (562)	46.22 (73)	53.69 (489)	0.99 (0.37)	0.81 (0.12)	46.27 (90)	54.09 (472)	1.57 (0.53)	2.14 (0.50)	33.11 (63)	56.36 (499)
Internal migrant	26.27 (278)	20.24 (28)	27.22 (250)	0.46 (0.12)	1.07 (0.27)	20.41 (44)	27.57 (234)	1.13 (0.24)	3.00 (0.26)	20.81 (32)	27.30 (246)
External migrant	21.06 (502)	33.54 (125)	19.09 (377)	1.26 (0.22)	0.82 (0.25)	33.32 (145)	18.33 (357)	3.75 (1.05)	1.33 (0.37)	46.08 (226)	16.34 (276)
Married	37.08 (587)	36.60 (99)	37.16 (488)	0.65 (0.11)	1.06 (0.32)	32.75 (111)	38.04 (476)	2.01 (0.51)	1.75 (0.50)	43.72 (162)	35.83 (425)
Hours worked, mean (SD)	42.90 (2.99)	37.58 (2.90)	43.74 (3.43)	0.0025 (0.005)		42.27 (4.04)	43.04 (3.55)	0.0026 (0.008)		39.43 (3.76)	43.56 (3.49)
Live with intimate partner	24.85 (358)	21.13 (50)	25.49 (308)	0.50 (0.11)	1.04 (0.27)	18.52 (56)	26.31 (302)	2.47 (0.75)	1.63 (0.42)	29.59 (83)	24.01 (275)
Have children	28.90 (461)	25.08 (80)	29.50 (381)	0.61 (0.13)	1.03 (0.28)	22.38 (87)	30.35 (374)	1.76 (0.46)	1.88 (0.46)	32.59 (122)	28.20 (339)
Live with own/others' children	21.32 (293)	13.30 (38)	22.58 (255)	0.41 (0.26)	1.04 (0.26)	17.99 (55)	22.06 (238)	0.91 (0.19)	2.10 (0.46)	18.62 (54)	21.83 (239)
Work in Baraholka as...											
Owner	4.72 (144)	8.60 (30)	4.11 (114)	0.97 (0.26)	0.91 (0.21)	7.60 (33)	4.08 (111)	2.88 (1.09)	1.79 (0.38)	5.14 (49)	4.64 (95)
Vendor or seller	30.81 (537)	23.02 (98)	32.04 (439)	1.43 (0.63)	0.67 (0.09)	25.57 (116)	31.98 (421)	2.83 (0.99)	1.40 (0.28)	26.90 (155)	31.55 (382)
Carrier	23.91 (258)	27.49 (39)	23.34 (219)	0.62 (0.12)	1.00 (0.27)	28.00 (48)	23.00 (210)	1.26 (0.37)	2.03 (0.47)	24.16 (46)	23.86 (212)
Other	6.31 (63)	8.30 (7)	5.99 (56)	1.02 (0.43)	0.90 (0.22)	13.02 (15)	4.82 (48)	1.08 (0.41)	1.89 (0.40)	3.52 (8)	6.84 (55)

associated with greater rates of contact with market officials and migration police and arrest. Finally, we stratified our results to account for differences in exposure to policing by migration status. Beta coefficients from negative binomial regressions were converted to incidence rate ratios (IRR) to compare rates of contact with migration officials and police across exposures to HIV sexual risk behaviors. Each model adjusted for age, household structure (lived with kids, lived with spouse), and whether or not the participant was a stall owner, seller, buyer, or transporter of goods in the marketplace. Statistical significance was indicated by a p value less than 0.05.

Results

Descriptive Statistics

Table 1 provides population estimates of socio-demographic characteristics of the overall sample stratified by policing. Overall, 18.18% of all participants in the sample reported being questioned by migration police in the past 90 days with a mean of 1.84 stops. In terms of market officials, 13.60% reported being questioned by market officials with a mean of 0.91 stops. A greater proportion of participants questioned by the police were external migrants compared to participants who were not questioned (33.33 vs. 18.33%). Arrest within the past 90 days was reported by 15.88% of the overall sample. External migrants accounted for close to half of the participants who were arrested compared to less than a fifth of participants who were not arrested (46.08 vs. 16.04%).

Sexual Risk Behaviors

In population estimates, more than a quarter of the sample reported unprotected anal or vaginal sex with any partner (28.89%, 441), and sex with multiple partners (28.81%, 355) (Table 2). More than one in ten participants reported having sex under the influence of drugs and alcohol (10.03%, 167) and 8.53% (119) of the sample reported trading money or other goods for sex. Regarding mobility and sexual risk behaviors, 7.19% of the sample engaged in sex while traveling on the last trip and 5.66% engaged in sex with more than one partner while traveling. A small proportion of the sample reported engaging in sex with other men (2.85%, 45).

Sexual Risk Behaviors by Policing and Migration Status Across each outcome variable, sexual risk behaviors were more common among participants who were involved in the criminal justice system than participants without involvement (Table 2). More external migrants who were questioned by market officials engaged in sex under the influence of drugs and alcohol (24.52%, 25) compared internal (4.16%, 5) and non-migrants (4.29%, 11). Similarly, more than a fifth of external migrants who were questioned by migration police had sex under the influence of drugs and alcohol (20.15%, 26) compared to less than 15% of internal (14.98%, 11) and non-migrants (8.09%, 13). External migrants who engaged in sex under the influence of drugs and alcohol experienced questioning by migration police more often (2.58) than internal (0.61) and non-migrants (2.03). Among participants who were arrested, a greater proportion of external migrants reported sex under the influence of drugs and alcohol (15.08%, 35) compared to internal (9.24%, 3) and non-migrants (10.58%, 14). Sex with more than one partner was most common non-migrants (32.92, 35) compared to internal (28.71%, 10) and external migrant groups (15.63%, 24).

Multivariate Analysis

Migration Status and Policing

In negative binomial regression models, the rate of contact with market officials (IRR = 2.07, (CI = 1.21, 3.54)) and rates of contact with migration police (IRR = 3.60, (CI = 1.91, 6.77)) was significantly greater than rates of contact for non-migrants and internal migrants (Table 3). The odds of arrest by migration police for external migrants were more than five times the odds of arrest for non-migrants (AOR = 5.32, (CI = 3.14, 9.00)). Internal migrants were less likely to be questioned by market officials (IRR = 0.52, (CI = 0.27, 0.99)).

Sexual Risk Behaviors

Unprotected sex with any partner (AOR 2.06, (CI = 1.19, 3.54)) was associated with increased odds of arrest after adjusting for potential confounders (Table 4). We observed significant relationships between paying for sex and greater rates of questioning by market officials (AIRR 3.41, (CI = 1.10, 10.53)) and odds of arrest (AOR 2.41, (CI = 1.12, 5.19)). Participants who

Table 2 Population estimates of self-reported and biologically confirmed cases of STI stratified by migration status

	Market officials						Migration police					
	Past 90 days						Past 90 days					
	No. times			No. times			No. times			No. times		
	Overall % (n)	Total % (n)	External % (n)	Internal % (n)	Non-migrant % (n)	Total mean (SD)	External mean (SD)	Internal mean (SD)	Non-migrant mean (SD)	Total % (n)	External % (n)	Internal % (n)
Individual level risk factors												
STI test results												
Biologically confirmed	8.74 (103)	6.38 (11)	8.66 (5)	6.403 (1)	2.26 (5)	0.50 (0.21)	0.81 (0.36)	0.28 (0.27)	0.50 (0.31)	4.88 (8)	6.56 (6)	4.88 (8)
Sexual behaviors												
Unprotected sex any partner	28.89 (441)	35.38 (98)	49.38 (59)	16.97 (8)	33.29 (31)	1.03 (0.27)	1.28 (0.27)	0.65 (0.31)	1.11 (0.48)	30.74 (192)	37.69 (60)	30.74 (192)
Unprotected sex primary partner	26.99 (413)	33.23 (91)	46.72 (57)	16.33 (7)	30.85 (27)	1.04 (0.29)	1.42 (0.31)	0.62 (0.31)	1.10 (0.51)	30.75 (100)	34.89 (57)	30.75 (100)
>1 sex partner	28.81 (355)	26.28 (69)	15.63 (24)	28.71 (10)	32.92 (35)	1.53 (0.67)	1.26 (0.66)	0.65 (0.29)	2.02 (1.12)	27.93 (83)	13.56 (25)	27.93 (83)
Visited paying sex partner	8.53 (119)	8.32 (30)	5.35 (9)	11.85 (7)	8.95 (14)	3.10 (2.07)	1.68 (1.17)	0.94 (0.37)	5.27 (4.44)	10.95 (41)	7.18 (12)	10.95 (41)
Sex under influence drugs/alcohol	10.03 (167)	11.05 (41)	24.52 (25)	4.16 (5)	4.29 (11)	1.80 (0.73)	2.58 (1.02)	0.61 (0.28)	2.03 (1.41)	13.52 (50)	20.15 (26)	13.52 (50)
Sex traveling last trip	7.19 (147)	16.36 (56)	10.58 (34)	16.01 (6)	20.70 (16)	3.86 (2.43)	1.32 (0.34)	0.74 (0.34)	7.05 (5.10)	15.69 (65)	13.13 (36)	15.69 (65)
>1 sex partner while traveling	5.66 (60)	12.15 (23)	1.93 (5)	13.45 (5)	19.00 (13)	4.37 (3.09)	0.68 (0.23)	0.60 (0.12)	8.11 (6.16)	12.21 (30)	5.67 (6)	12.21 (30)
Oral/anal sex with man	2.85 (45)	6.34 (15)	6.76 (7)	.64 (1)	8.54 (7)	1.99 (0.50)	2.80 (1.01)	1.75 (1.26)	1.80 (0.59)	6.35 (21)	4.76 (7)	6.35 (21)
Migration police												
	No. times						Arrested					
	Past 90 days			Past 90 days			Past 90 days			Past 90 days		
	Internal % (n)	Non-migrant % (n)	Total mean (SD)	External mean (SD)	Internal mean (SD)	Non-migrant mean (SD)	Total mean (SD)	External mean (SD)	Internal mean (SD)	Non-migrant mean (SD)	Total mean (SD)	Non-migrant mean (SD)
Individual level risk factors												
STI test results												
Biologically confirmed	4.75 (1)	5.54 (8)	0.96 (0.37)	2.31 (0.80)	0.65 (0.46)	0.77 (0.46)	8.65 (22)	9.86 (16)	8.89 (2)	6.83 (4)	8.89 (2)	6.83 (4)
Sexual behaviors												
Unprotected sex any partner	28.76 (16)	31.08 (33)	2.19 (0.75)	2.71 (0.65)	0.54 (0.16)	2.78 (1.41)	41.70 (136)	38.34 (94)	42.10 (12)	46.14 (30)	42.10 (12)	46.14 (30)
Unprotected sex primary partner	26.38 (14)	29.69 (29)	2.11 (0.79)	2.71 (0.65)	0.54 (0.16)	1.10 (0.51)	39.42 (125)	35.53 (88)	42.10 (12)	43.15 (25)	42.10 (12)	43.15 (25)
>1 sex partner	33.91 (17)	35.65 (41)	2.90 (1.07)	6.15 (3.67)	0.78 (0.24)	3.16 (1.60)	32.55 (82)	23.39 (43)	46.99 (12)	36.22 (27)	46.99 (12)	36.22 (27)
Visited paying sex partner	17.60 (12)	10.74 (17)	4.05 (2.24)	0.95 (0.36)	0.94 (0.32)	7.77 (4.85)	15.79 (39)	11.74 (23)	25.45 (6)	15.35 (10)	25.45 (6)	15.35 (10)
Sex under influence drugs/alcohol	14.98 (11)	8.09 (13)	3.56 (1.96)	2.31 (0.57)	0.48 (0.17)	5.98 (4.00)	12.37 (52)	15.08 (35)	9.24 (3)	10.58 (14)	9.24 (3)	10.58 (14)

Table 2 (continued)

	Migration police									
	Past 90 days			No. times			Arrested			
	Internal % (n)	Non-migrant % (n)	Total mean (SD)	External mean (SD)	Internal mean (SD)	Non-migrant mean (SD)	Total % (n)	External % (n)	Internal % (n)	Non-migrant % (n)
Sex traveling last trip	14.50 (9)	18.06 (20)	5.04 (2.53)	3.22 (0.69)	1.96 (0.97)	7.84 (5.28)	18.02 (70)	12.69 (49)	33.59 (7)	15.66 (14)
>1 sex partner while traveling	12.51 (7)	16.79 (17)	4.73 (0.34)	1.60 (0.71)	1.87 (1.00)	7.65 (6.16)	13.45 (26)	6.24 (9)	31.46 (6)	12.17 (11)
Oral/anal sex with man	6.18 (4)	7.57 (10)	3.41 (1.73)	4.88 (1.68)	1.07 (0.78)	3.75 (2.81)	6.16 (17)	3.47 (8)	3.56 (1)	11.55 (8)

Table 3 Population estimates of multivariable associations between migration status and policing (95% CI).

Variable	Questioned officials No. of times ¹ IRR _{adjusted}	Questioned by migration police No. of times ¹ IRR _{adjusted}	Arrested by migration police AOR
Migration status			
Internal	0.52 (0.27, 0.99)	0.62 (0.34, 1.14)	1.27 (0.66, 2.47)
External	2.07 (1.21, 3.54)	3.60 (1.91, 6.77)	5.32 (3.14, 9.00)

Bold indicates significance of <0.05; after adjusting for younger age, household structure, and hours worked in a typical workweek

reported having sex under the influence of drugs (AIRR = 2.06 (1.12, 3.81)) and engaged in commercial sex experienced greater rates of questioning by market officials (AIRR = 3.41, (1.10, 10.53)). Engaging in oral or anal sex with men was significantly associated with higher rates of contact with market officials (AIRR = 2.97, (CI = 1.44, 6.30)). Participants who engaged in sex while traveling experienced greater rates of questioning by market officials (IRR = 4.01, (CI = 1.85, 9.01)) and migration police (IRR = 4.51, (CI = 1.80, 11.25)) and risk of arrest (IRR = 3.22 (1.06, 9.77)) relative to their counterparts. Engaging in sex with more than one partner while traveling associated with higher rates of questioning by market officials (AIRR = 5.39, (1.59, 18.28)), migration police (AOR = 3.94, (CI = 1.26, 12.33)), and increased odds of arrest (AOR = 5.22, (2.12, 12.86)).

Sexual Risk Behaviors by Migration Status

Regarding external migrants, sex under the influence of drugs (IRR = 3.04, (CI = 1.52, 6.11)) and oral or anal sex with men (IRR = 2.71, (CI = 1.04, 7.03)) was associated with greater contacts with market officials. External migrants who engaged in sex with multiple partners while traveling (AOR = 3.92, (CI = 1.02, 28.27)) were more likely to report arrest than external migrants who had one or no partners. Internal and non-migrants who engaged in commercial sex (IRR = 4.61, (CI = 1.25, 16.92)), sex while traveling (IRR = 6.72, (CI = 2.33, 19.37)), multiple sexual partners while traveling in the past 90 days (IRR = 6.40, (CI = 1.84, 22.27)), and oral or anal sex with men (IRR = 3.21, (CI = 1.22, 8.45)) reported higher rates of contact with market officials than internal and non-migrants. Additionally, sex under the influence of drugs or alcohol (IRR = 3.15, (CI = 1.10, 9.01)), sex while traveling (IRR = 6.14, (CI = 2.26, 16.63)), and multiple sexual partners while traveling (IRR = 4.51, (CI = 1.33, 15.23)) was associated with

higher rates of contact with migration police. Internal and non-migrants who reported unprotected sex with any female partner (AOR = 2.52, (CI = 1.24, 3.52)), unprotected sex with other partners (AOR = 2.52, (CI = 1.01, 3.81)), commercial sex (AOR = 3.74, (CI = 1.50, 9.31)), sex while traveling (AOR = 6.73, (CI = 2.69, 17.17)), and multiple sexual partners while traveling (AOR = 6.29, (CI = 2.30, 17.17)) had significantly greater odds of arrest compared to their counterparts.

Discussion

Findings from this study illuminate intersections of sexual behaviors and policing in a sample of migrant and non-migrant male market vendors in Almaty, Kazakhstan. We found support for our hypothesis that external migrants are disproportionately questioned by market officials, migration police, arrested and incarcerated compared to internal and non-migrants. These results supports prior literature suggesting that the legal risk environment intersects with individual-level characteristics such as migration status to create a social context conducive to the production of HIV risk behaviors [16, 17]. The ascription of criminalized behaviors such as legal residency and work permit status to migrant status attracts increased surveillance and enforcement actions by police for migrants in Kazakhstan. After adjusting for migration status and other sociodemographic characteristics, sex under the influence of drugs and alcohol, paying for sex, unprotected sex, multiple sexual partners, sex under the influence of drugs and alcohol, sex while traveling, multiple sexual partners while traveling, and sex with men was associated with greater rates of policing. These findings suggest a relationship between sexual risk and the legal environment in the marketplace irrespective of external, internal, or non-migrant group membership.

Table 4 Population estimates of multivariable associations between HIV risks and policing stratified by migration status (95% CI)

Variable	Number of contact with market police			Number of contacts with migration police			Arrested by migration police		
	Overall IRR (95% CI)	External IRR (95% CI)	Internal non-migrant IRR (95% CI)	Overall IRR (95% CI)	External IRR (95% CI)	Internal Non-migrant IRR (95% CI)	Overall AOR (95% CI)	External AOR (95% CI)	Internal non-migrant AOR (95% CI)
Individual level factors									
STI and HIV infection									
Antibody and confirmatory STI test results	0.70 (0.33)	na	na	0.75 (0.32)	na	na	1.11 (0.55, 2.27)	na	na
Sexual behaviors									
Unprotected sex with any female partner	1.72 (0.99, 3.01)	1.48 (0.54)	1.89 (0.66)	1.32 (0.68, 2.56)	0.53 (0.39)	1.70 (0.66)	2.06 (1.19, 3.54)	1.61 (0.57)	2.52 (1.24, 3.52)
Unprotected sex with primary partner ¹	1.70 (0.97, 2.95)	1.80 (0.86, 3.79)	1.70 (0.85, 3.42)	1.18 (0.60, 2.30)	0.73 (0.35, 1.52)	1.70 (0.85, 3.42)	2.18 (1.24, 3.83)	1.85 (0.90, 3.77)	2.52 (1.01 3.83)
Multiple sexual partners ¹	1.85 (0.97, 3.51)	0.75 (0.36, 1.58)	2.06 (0.99, 4.29)	1.96 (1.05, 3.66)	2.23 (0.81, 6.15)	1.97 (0.93, 4.19)	1.65 (0.99, 2.75)		1.75 (0.91, 3.36)
Visited paying sex partner	3.41 (1.10, 10.53)	0.97 (0.37, 2.50)	4.61 (1.25, 16.92)	2.55 (0.80, 8.13)	0.31 (0.11, 0.81)	3.93 (1.16, 13.32)	2.41 (1.12, 5.19)	1.27 (0.48, 3.33)	3.74 (1.50, 9.31)
Sex under influence of drugs or alcohol with primary partner	2.06 (1.12, 3.81)	3.04 (1.52, 6.11)	1.86 (0.75, 4.62)	2.37 (0.91, 6.20)	1.11 (0.49, 2.54)	3.15 (1.10, 9.01)	1.17 (0.62, 2.23)	1.69 (0.64, 4.42)	1.17 (0.49, 2.83)
Sex while traveling	4.11 (1.83, 14.29)	1.70 (0.76, 3.83)	6.72 (2.33, 19.37)	4.51 (1.80, 11.25)	1.30 (0.28, 2.85)	6.14 (2.26, 16.63)	5.18 (2.48, 10.82)	3.44 (1.24, 9.55)	6.73 (2.69, 16.84)
Multiple sexual partners while traveling in past 90 days	3.41 (1.10, 10.53)	0.67 (0.17, 0.62)	6.40 (1.84, 22.27)	3.94 (1.26, 12.33)	1.01 (0.29, 3.40)	4.51 (1.33, 15.23)	5.22 (2.12, 12.86)	3.92 (1.02, 28.27)	6.29 (2.30, 17.17)
Ever oral or anal sex with a man	2.97 (1.44, 6.13)	2.71 (1.04, 7.03)	3.21 (1.22, 8.45)	2.93 (0.87, 9.89)	1.51 (0.61, 3.74)	4.81 (0.84, 27.68)	3.16 (0.98, 10.11)	1.44 (0.39, 5.30)	3.69 (0.94, 14.59)

Bold indicates significance of <0.05; after adjusting for younger age, household structure, migration status, and hours worked in a typical workweek

We conducted a subgroup analysis of the association between sexual risk factors and policing stratified by migration status. Prior analysis using this dataset suggests heightened sexual risk behaviors among non-migrant but not internal or external migrants [16]. Our research suggests that the association between sexual behaviors and legal risk environment may differ by migration status. Sex under the influence of drugs and alcohol was associated with increased rates of contact with market officials for external migrants, but not for internal migrants or non-migrants. Conversely, visiting a paying sex partner, sex while traveling, and multiple sexual partners while traveling were associated with questioning by market officials for internal or non-migrants and not external migrants. Ever engaging in anal or oral sex with men was associated with increased rates of questioning by market officials for both external and internal/non-migrants. Sexual risks were not significantly associated with rates of questioning by migration police for external migrants. Sex under the influence of drugs, multiple sexual partners, sex while traveling, and multiple sexual partners while traveling were associated with rates of questioning by migration police for internal and non-migrants. Sex while traveling was associated with arrest for external, internal, and non-migrants. Unprotected sex and sex with a paying sex partner was associated with arrest for only internal and non-migrants.

There are limitations of this study that warrant explanation and provide fruitful avenues of future research. First, the generalizability of study findings is confined to the Baraholka Market which was the only source of recruitment. Second, small cell sizes only permitted stratified analysis by external and internal/non-migrants as a combined category. However, our descriptive findings suggest that internal and non-migrants were relatively similar on many of the HIV risk exposures. Moreover, internal migrants did not differ significantly from non-migrants on questioning by migration police and arrest. Finally, our study is cross-sectional and does not endeavor to infer directionality or causation from our regression analyses.

Public Health Implications

Findings from this study generate several implications for the design and implementation of HIV prevention interventions. Prior research has concluded that men's primary goal for migration is to send money home and

earn wages, which facilitates tolerance of inhospitable living conditions and is protective against HIV risks and infection. Policing may be a driving force that acts against these motivations and increases engagement in HIV sexual risks for external migrants as well as their non-migrant and internal migrant counterparts. Criminal justice settings may be opportune venues to situate HIV prevention interventions to reach migrant populations. Aligning the goals of policing with behavioral HIV prevention interventions could address the concerns of the Gap report as well as advance toward milestones of ending the HIV epidemic by 2030 [21, 34, 35]. Police embody the views and practices of their communities and heighten HIV risk behaviors by virtue of discrimination, stigma, and aggressive policing tactics.

Integration of HIV prevention strategies into the criminal justice system alone is important, but insufficient to adequately attenuate the association between heightened sexual risks and policing. Comprehensive, structural reforms are necessary that address broad and widespread legal vulnerabilities of international labor migrants to police practices in reducing HIV/STI risks. Without political and legal reforms to policing practices that integrate legal public safety and public health systems, HIV prevention strategies will likely play only a palliative role rather than a catalyst of sustained, systemic, and broad changes. Reforms include adopting a harm reduction framework to policing people who use drugs, migrant populations, and other key HIV-affected populations. In the civil sector, reforms to work permits allowing for more migrants to register openly with the migration police without fear could increase migrants' willingness to engage in HIV prevention interventions.

Future research and HIV prevention interventions must recruit migration police and market officials as allies rather than adversaries in the struggle to end the HIV epidemic in Kazakhstan. Incorporating migration police and market officials must be a prominent goal of national HIV prevention efforts. Migrants are currently left out of the discussion of police-public health partnerships to address HIV infection among vulnerable and key-affected populations. Changes to police policies governing encounters with migrant workers must be guided by local knowledge and relationships with the police. Partnerships must be aligned with goals that migration police and market officials see as central to accomplishing their mission of public safety and order. A method that has worked in prior research involves adapting interventions to speak to police goals of

occupational health and safety [34]. Curriculum and training materials must focus on engaging migrant and non-migrant workers in the marketplace, protocols for referrals to HIV prevention, and substance abuse treatment programs. Limited geographical access to HIV prevention services perpetuates stigma and may be exacerbated by aggressive questioning by migration police and market officials.

Collaboration between the criminal justice system and HIV/STI prevention services must occur at the policy and organizational level to ensure open communication between public health and safety organizations that allows public health practitioners the opportunity to deliver effective evidence-based HIV/STI prevention interventions without interference from migration police and market officials. The allocation of additional resources and situating HIV/STI prevention interventions in the criminal justice system must not include mandating services, which could lead to further abuse of migrants, thus raising ethical concerns. Mandated HIV prevention services within criminal justice settings may create significant apprehension on the part of migrants to refuse participation in HIV prevention sessions conducted under the patronage by migration police. One potential solution is the adoption of no arrest strategies in which law enforcement and public health organizations reach agreements at the broad level to allow all migrants regardless of legal status to access HIV/STI prevention and other health services without threat of unwarranted involvement by police. Public health organizations from the civil sector and non-governmental organizations must work with policy organizations to reevaluate the impact of deporting migrants for testing positive for HIV and not receiving treatment on access to HIV prevention interventions including testing and sexual health services. Moreover, police reforms must focus on ensuring all migrants have access to sexual and reproductive health care and other health services regardless of legal status.

The police are a valuable resource that could benefit HIV prevention interventions. The incorporation of law enforcement officers in public health communication campaigns by virtue of distributing information and helping provide linkage to care for migrants to sexual health interventions could be a fruitful collaboration between the police and public health. Moreover, collaboration between police and public health practitioners must focus on developing police intervention strategies that do not interfere with the practices of public health

practitioners. Effective police-public health partnerships and reforms to the legal system to protect migrants from potential police misconduct are essential to shifting the legal risk environment from a barrier to accessing interventions to an environment that encourages migrants to seek HIV/STI prevention and sexual health services in Kazakhstan.

Distrust of migrants toward legal and regulatory systems undermines the effectiveness of social welfare services and interventions and public health programs for migrants in Kazakhstan [21]. Specifically, distrust of migrants toward various aspects of the criminal justice system including policing may severely erode the effectiveness of HIV prevention efforts including those with empirically demonstrated effectiveness in other contexts. In Kazakhstan, migrants may have to travel long distances to reach HIV testing and counseling clinics, primary care offices, or other public health venues, thus increasing fear of police contact by virtue of increased visibility and vulnerability to surveillance by law enforcement and migration police [21]. Issues around CJI and access and availability of STI prevention interventions are compounded by potential consequences of deportation for migrants who test positive for HIV [36]. Law enforcement officers may target common venues that draw large numbers of migrant populations for policing activities and increased patrol. As a result, migrants may be reluctant to seek HIV/STI and other sexual health prevention services. Findings from this study justify additional research to determine necessary reforms to improve policies governing police practices with regard to migrants. Policies including eliminating migrant arrest quotas and providing migrants with avenues to file complaints with law enforcement officers without fear of negative repercussions may transform an adverse legal risk environment by improving relationships between migrants and the police thereby attenuating a significant source of HIV/STI sexual risk behaviors.

It is essential that a future research agenda focus on developing a feasible, contextualized, and nuanced partnership between sectors of HIV prevention, public health population surveillance, migrant stakeholders, and criminal justice organizations in Kazakhstan. Policy makers must be given the tools for fundable and scalable frameworks to incorporate police and market officials in public health interventions in the marketplace. Recognizing the HIV prevention needs of labor and non-labor migrants involves acknowledging the role of the

criminal justice system in HIV prevention and allocating sufficient resources to support the implementation of HIV prevention programs in these settings. Existing programs must receive additional funding to test, scale up, and implement evidence-based HIV prevention interventions with migrant workers that incorporate the migration police and market officials. Funders, donor partners, and multilateral policymakers must invest in research and interventions that cultivate partnerships between law enforcement agencies and public health organizations.

Human rights principles must be integrated into standards and practices for migration police. Police departments must develop comprehensive human rights policies governing professional trainings and best practices particularly agencies that enforce laws among migrants and other vulnerable populations. A human rights framework includes respect for inherent dignity of all persons and universal application of the law without discrimination or preference given to any particular group [37]. The United Nations elucidates Human Rights Standards and Practices for the police in an expanded Pocket Book on Human rights for the Police [37]. At its core, human rights practices for the police includes in-service training programs to understand the limits of legal powers, chain of command and police practices, recognizing discrimination, and ensuring that avenues exist to report violations of local law and human rights [37]. Legislators must adapt the broad guidelines of human rights and police practices outlined by the United Nations to the local context of international labor migration in Kazakhstan.

Conclusions

This study supports public health and HIV prevention priorities for research that identifies structural barriers to effective delivery and scaling up of HIV prevention efforts. HIV prevention programs must cater directly to the social contexts of HIV risks among migrants. Peer-based and social network interventions show promise for HIV prevention among migrants, and further research must elucidate their potential in criminal justice settings. A combination of prevention strategies must be adapted for use with migrants in criminal justice settings and should include condom use, voluntary HIV testing, peer education drug and alcohol misuse treatment, and removing barriers to health services. This research sheds

insight into structural and policy reforms crucial for prevention efforts that include confronting HIV risk environments for labor migrants in Kazakhstan.

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References

1. Beyrer K. The changing epidemiology of HIV in 2013. *Curr Opin HIV AIDS*. 2013;8(4):306–10.
2. United Nations Joint Programme on HIV and AIDS. *Global AIDS Update, 2016*. Retrieved on 2 Oct 2016 from <http://www.unaids.org/en/resources/documents/2016/Global-AIDS-update-2016>.
3. El-Bassel N, Strathdee SA, El Sadr WM. HIV and people who use drugs in central Asia: confronting the perfect storm. *Drug Alcohol Depend*. 2013;132(0 1):S2.
4. DeHovitz J, Uuskula A, El-Bassel N. The HIV epidemic in Eastern Europe and Central Asia. *Current HIV/AIDS Reports*. 2014;11(2):168–76.
5. Donoghoe M. Why is the HIV epidemic in Eastern Europe and Central Asia the fastest growing in the world and what can we do to stop it. In *XIX International AIDS Conference*, 2012.
6. United Nations Joint Program on HIV and AIDS. *Global Report, 2012*. Retrieved on 2 Oct 2016 from http://www.unaids.org/en/resources/campaigns/20121120_globalreport2012/globalreport.
7. Godinho J, Renton A, Vinogradov V, Novotny T, Rivers M, Gotsadze G, Bravo M. *Reversing the tide: priorities for HIV/AIDS prevention in central Asia*. Washington, DC: World Bank; 2005.
8. United Nations Joint Programme on HIV and AIDS. *AIDS by the Numbers., 2015*. Retrieved on 2 Oct 2016 from: http://www.unaids.org/en/resources/documents/2015/AIDS_by_the_numbers_2015.
9. Laruelle M. Central Asian Labor Migrants in Russia: The ‘Diasporization’ of the Central Asian States?. In *The China and Eurasia Forum Quarterly*. 2007 (Vol. 5, No. 3, pp. 101–119).
10. Laruelle M. Kazakhstan, the new country of immigration for Central Asian workers. *Cent. Asia-Caucasus Anal*. 2008; 10(9)6–8.
11. Marat E. *Labor migration in Central Asia: implications of the global economic crisis*. Stockholm: Silk Road Studies Program, Institute for Security and Development Policy. Stockholm Sweden; 2009.
12. International Office on Migration. *World Migration Report, 2015*. Retrieved from: <https://www.iom.int/world-migration-report-2015>: Accessed 1 April 2017.
13. *Steppe change: once a place of forced exile, Kazakhstan is attracting large numbers of workers. Economist*. March 22, 2007. Available at: <http://www.economist.com/research>

- /articlesBySubject/displaystory.cfm?subjectid=549053 &story_id=E1_RRJRNT.
14. El-Bassel N, Gilbert L, Terlikbayeva A, West B, Bearman P, Wu E, et al. Implications of mobility patterns and HIV risks for HIV prevention among migrant market vendors in Kazakhstan. *Am J Public Health*. 2011;101(6):1075–81.
 15. El-Bassel N, Gilbert L, Shaw SA, Mergenova G, Terlikbayeva A, Primbetova S, et al. The Silk Road health project: how mobility and migration status influence HIV risks among male migrant workers in Central Asia. *PLoS One*. 2016;11(3):e0151278.
 16. Weine S, Bahromov M, Mirzoev A. Unprotected Tajik male migrant workers in Moscow at risk for HIV/AIDS. *J Immigr Minor Health*. 2008;10(5):461–8.
 17. Weine S, Bahromov M, Loue S, Owens L. HIV sexual risk behaviors and multilevel determinants among male labor migrants from Tajikistan. *J Immigr Minor Health*. 2013;15(4):700–10.
 18. Weine SM, Kashuba AB. Labor migration and HIV risk: a systematic review of the literature. *AIDS Behav*. 2012;16(6):1605–21.
 19. Liu H, Li X, Stanton B, Liu H, Liang G, Chen X, et al. Risk factors for sexually transmitted disease among rural-to-urban migrants in China: implications for HIV/sexually transmitted disease prevention. *AIDS Patient Care & STDs*. 2005;19(1):49–57.
 20. Sun IY, Hu R, Wong DF, He X, Li JC. One country, three populations: trust in police among migrants, villagers, and urbanites in China. *Soc Sci Res*. 2013;42(6):1737–49.
 21. International Federation of Human Rights. *Migrant workers in Kazakhstan: no status, no rights*. Retrieved on 2 Oct 2016 from: https://www.fidh.org/IMG/pdf/note_kazakhstan_681_a_6_sept_2016_uk_web.pdf 2016.
 22. Strathee SA, Beletsky L, Kerr T. HIV, drugs and the legal environment. *International Journal of Drug Policy*. 2015;26:S27–32.
 23. Rhodes T. The ‘risk environment’: a framework for understanding and reducing drug-related harm. *International journal of drug policy*. 2002;13(2):85–94.
 24. Altice FL, Azbel L, Stone J, Brooks-Pollock E, Smyrnov P, Dvoriak S, et al. The perfect storm: incarceration and the high-risk environment perpetuating transmission of HIV, hepatitis C virus, and tuberculosis in Eastern Europe and Central Asia. *Lancet*. 2016;388(10050):1228–48.
 25. Degenhardt L, Mathers B, Vickerman P, Rhodes T, Latkin C, Hickman M. Prevention of HIV infection for people who inject drugs: why individual, structural, and combination approaches are needed. *Lancet*. 2010;376(9737):285–301.
 26. Gupta GR, Parkhurst JO, Ogden JA, Aggleton P, Mahal A. Structural approaches to HIV prevention. *Lancet*. 2008;372(9640):764–75.
 27. Azbel L, Wickersham JA, Grishaev Y, Dvoryak S, Altice FL. Burden of infectious diseases, substance use disorders, and mental illness among Ukrainian prisoners transitioning to the community. *PLoS One*. 2013;8(3):e59643.
 28. Kutsa O, Marcus R, Bojko MJ, Zelenev A, Mazhnaya A, Dvoriak S, ... & Altice FL. Factors associated with physical and sexual violence by police among people who inject drugs in Ukraine: implications for retention on opioid agonist therapy. *J Int AIDS Soc*. 2016;19(4Suppl 3):1–8.
 29. Polonsky M, Azbel L, Wegman MP, Izenberg JM, Bachiredy C, Wickersham JA, ... & Altice FL. Pre-incarceration police harassment, drug addiction and HIV risk behaviours among prisoners in Kyrgyzstan and Azerbaijan: results from a nationally representative cross-sectional study. *J Int AIDS Soc*. 2016; 19(4Suppl 3).
 30. El-Bassel N, Gilbert L, Terlikbayeva A, Beyrer C, Wu E, Shaw SA, et al. HIV risks among injecting and non-injecting female partners of men who inject drugs in Almaty, Kazakhstan: implications for HIV prevention, research, and policy. *International Journal of Drug Policy*. 2014;25(6):1195–203.
 31. Huffman SA, Veen J, Hennink MM, McFarland DA. Exploitation, vulnerability to tuberculosis and access to treatment among Uzbek labor migrants in Kazakhstan. *Soc Sci Med*. 2012;74(6):864–72.
 32. STATA Corporation, 2016 STATA v14.
 33. Allison PD, Waterman RP. Fixed-effects negative binomial regression models. *Sociol Methodol*. 2002;32(1):247–65.
 34. Beletsky L, Thomas R, Shumskaya N, Artamonova I, Smelyanskaya M. Police education as a component of national HIV response: lessons from Kyrgyzstan. *Drug Alcohol Depend*. 2013;132:S48–52.
 35. Sidibé M. Changing police as barrier to police as solution. *J Int AIDS Soc*. 2016; 19(4Suppl 3).
 36. Todrys KW. *Returned to risk: deportation of HIV-positive migrants*. Human Rights Watch. New York City, New York; 2009.
 37. United Nations. *Human rights standards and practice for the police: expanded pocket book on human rights for the police*. Retrieved on 2 Oct 2016 from: <http://www.ohchr.org/Documents/Publications/training5Add3en.pdf> 2004.