







COVID-19-Related Diminished Peer HIV Communication Intentions Among Sexual and Gender Expansive Individuals in Kazakhstan

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Abstract

The COVID-19 pandemic disrupted HIV service use among sexual and gender expansive (SGE) individuals in Kazakhstan and could further erode other key behavioral dimensions of HIV prevention, such as peer HIV communication intentions. We examined the association between COVID-19 disruptions to HIV service use and behavioral intention of peer HIV communication among SGE individuals enrolled in an HIV prevention trial in Kazakhstan, using data from the first 6 months of COVID-19 disruptions assessment (May–October 2020). Among 455 participants retained in the clinical trial during this period, 101 (22%) reported any COVID-19-induced disruption to HIV service use and 212 (47%) fell in the low-range intention of peer HIV communication. Being in the low-range intention was positively associated with reporting HIV service use disruptions, especially among SGE individuals living with HIV. Study findings warrant efforts of to address pandemic disruptions when promoting and sustaining peer HIV communication among MSM and TSM in Kazakhstan.

Keywords

HIV, peer communication, men who have sex with men, transgender health, Kazakhstan

The COVID-19 pandemic and mitigation measures significantly disrupted HIV service use among sexual and gender expansive (SGE) populations. An online survey administered with cisgender men who have sex with men (MSM) across 20 countries at the outset of the pandemic showed that more than half of the respondents reported perceived disruptions to HIV self-testing and PrEP, nearly 40% reported disruptions to in-person HIV testing, and approximately 20% of those living with HIV reported disruptions to HIV treatment services (Rao et al., 2021). Similarly, an online survey involving transgender and nonbinary people living with HIV globally showed substantial declines in access to HIV treatment services during the pandemic (Restar et al., 2021). Research further indicated that disruptions to HIV service use could exacerbate HIV vulnerabilities and morbidities for people at risk for and living with HIV (Hogan et al., 2020; Jenness et al., 2021). These findings urge renewed efforts to promote and sustain HIV service use among SGE people, while anticipating and addressing large-scale disruptions.

Peer-led approaches have been central to HIV preventive efforts in SGE communities. In these approaches, peers, referring to individuals with shared identities, interests, or both as recipients, are enlisted to lead or aid intervention delivery within their networks (Simoni et al., 2011). Reviews of the state-of-the-art research on peer-led interventions involving SGE people have highlighted the successes of various peer-led interventions in promoting risk reduction, HIV testing,

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PrEP uptake and adherence, and HIV care continuum engagement (Freestone et al., 2022; Lacombe-Duncan et al., 2024; Shangani et al., 2017). Interpersonal communication is the hallmark of peer-led intervention delivery, facilitating a wide range of activities, such as information exchange, role modeling, and social support, that promote behavior change aligned with HIV prevention (Chang et al., 2021; Tobin et al., 2022). However, the impact of COVID-19 disruptions has been far reaching across HIV prevention efforts and may have extended to peer communication about HIV. Disruptions to peer HIV communication could contribute to less awareness or social support regarding HIV and available services, thus undermining HIV preventive efforts.

Little is known about how COVID-19 disruptions affected peer HIV communication among SGE people, particularly in low- and middle-income countries, such as Kazakhstan, with growing HIV epidemics. The number of new HIV infections in Kazakhstan increased by 88% between 2010 and 2021, and the HIV epidemic has disproportionately affected SGE populations (UNAIDS, 2023b). As of 2023, the HIV prevalence rate among MSM was estimated to be 8.8%, the highest of all key populations in Kazakhstan (UNAIDS, 2023a). Meanwhile, the COVID-19 mitigation measures led government-sponsored AIDS Centers to restrict or pause delivery of HIV services (McCrimmon et al., 2022). Our prior study in Kazakhstan showed that one in five people who are MSM and transgender and nonbinary individuals who have sex with men (TSM) reported disruptions to HIV service use at the outset of the COVID-19 pandemic (Paine et al., 2023). Whether or how COVID-19 disruptions affected peer HIV communication among MSM and TSM in Kazakhstan has not been examined. In this study, we investigated the association between COVID-19 disruptions to HIV service use and intention of peer HIV communication among MSM and TSM in Kazakhstan.

Method

Participants and Procedures

This study used data from a clinical trial of a peer-led behavioral intervention designed to increase the engagement of MSM and TSM in the HIV care continuum in the Kazakhstani cities of Almaty, Astana, and Shymkent (Wu et al., 2024). MSM and TSM were recruited from physical and online LGBTQ-branded venues. Inclusion criteria for participation in the trial were being 18+ years old, identifying as man or being assigned male at birth, reporting consensual sex with another man in the past 12 months, reporting heavy alcohol or illicit drug use in the past 90 days, and residing in one of the study cities. Participants meeting the inclusion criteria and providing informed consent completed a staff-administered survey at baseline and up to six follow-up assessments during the trial (August 2018–March 2022).

At the outset of the COVID-19 pandemic, the government of Kazakhstan imposed viral mitigation measures that effectively put restrictions on travel, staffing, and gathering. In compliance with these measures, we paused participant recruitment and shifted intervention delivery and panel data collection, including follow-up assessments conducted every six months, from in-person to remote delivery via teleconferencing platforms (Wu et al., 2022). In addition, we added to the follow-up survey a brief questionnaire assessing COVID-19 disruptions to HIV service use. Of 629 trial participants, 455 were retained for a remote follow-up assessment and completed the COVID-19 disruptions questionnaire during the first 6 months of its administration (May–October 2020). All study procedures were reviewed and approved by the Institutional Review Boards at Columbia University and Al-Farabi Kazakh National University and implemented by trained staff of Columbia University's Global Health Research Center of Central Asia and Social Intervention Group.

Measures

Intention of Peer HIV Communication. Participants were presented with the statements about willingness (“I want to reach out to other [MSM or TSM] in order to encourage them to get tested or treated for HIV.”) and expectations (“I am likely to reach out to other [MSM and TSM] in order to encourage them to get tested or treated for HIV.”) regarding performing peer HIV communication in the next 6 months. Participants rated how much they agreed with each statement on a 4-point Likert scale (0–3: 0 = *Strongly disagree*, 1 = *Disagree*, 2 = *Agree*, 3 = *Strongly agree*).

Subsequently, we created a composite variable indicating intention of peer HIV communication. Responses regarding willingness and expectations for peer HIV communication were collapsed into affirmative (i.e., “Strongly agree,” “Agree”) and negative (i.e., “Strongly disagree,” “Disagree”) categories. These responses (1 = Affirmative, 0 = Negative) were combined to develop a single *intention of peer HIV communication* variable. Specifically, the combination of responses denoting affirmation for both willingness and expectations were coded as falling in a high-range intention and the remaining combinations denoting any negation or disagreement as being in a low-range intention of peer HIV communication. For this study, the *intention of peer HIV communication* variable was reverse-coded (0 = High-range, 1 = Low-range).

COVID-19 Disruptions to HIV Service Use. Participants were asked whether the COVID-19 pandemic had limited their ability to receive HIV testing or treatment, that is, HIV service use (0 = No, 1 = Yes).

Sociodemographic Characteristics. Participants self-reported city of residence, age group, gender identity, sex assigned at birth, sexual orientation, employment status, and HIV status.

Responses for gender identity (woman, man, other) and sex assigned at birth (female, male, other) were combined into a single variable denoting gender modality (Ashley et al., 2024). In this study sample ($N = 455$), 416 participants identified as cisgender man (i.e., assigned male at birth and identifying as man), 22 as transgender woman (i.e., assigned male at birth and identifying as woman), 1 as transgender man (i.e., assigned female at birth and identifying as man), and 16 as nonbinary (i.e., assigned another sex at birth and/or reporting a nonbinary gender). Due to small cell sizes, responses of those identifying as transgender woman, transgender man, and nonbinary were collapsed into one category, resulting in a binary measure of gender modality.

Statistical Analyses

All statistical analyses were performed using SPSS version 28. Descriptive statistics were computed to characterize COVID-19 disruptions to HIV service use, intention of peer HIV communication, and sociodemographic backgrounds of study participants. We also performed chi-square tests to describe differences in these characteristics across HIV statuses. Due to the small cell size, the responses of unknown status were combined with those of negative status. A binomial logistic regression analysis was conducted to examine the association of intention of peer HIV communication with COVID-19 disruptions to HIV service use in the full sample, controlling for sociodemographic variables. We stratified this analysis by HIV status to examine the association in the subgroups of MSM and TSM who self-reported a negative or unknown status and a positive status. We calculated the odds ratios and 95% confidence intervals to interpret the association between reporting COVID-19 disruptions to HIV service use and being in the low-range intention of peer HIV communication. Statistical significance was determined at the p -value of .05.

Results

Results of descriptive analyses and chi-square tests are presented in Table 1. Of 455 participants completing a follow-up survey between May and October 2020, 118 (26%) were between the ages of 18 and 24, 53 (12%) were unemployed, and 27 (6%) were living outside of the study cities. Study participants also represented small minorities of individuals who were transgender or nonbinary ($n = 39$; 9%) and straight ($n = 29$; 6%). In this sample, 101 participants (22%) reported experiencing COVID-19 disruptions to HIV service use at least once and 212 (47%) fell in the low-range intention of peer HIV communication. With respect to HIV status, 363 (79.8%) self-reported a negative status, 71 (15.6%) a positive status, and 21 (4.6%) an unknown status.

Chi-square tests illustrated a statistically significant difference in age group membership across HIV statuses. Participants who were 25 and older accounted for a larger

percentage of participants reporting an HIV-positive status than of those reporting a negative or unknown status (84.5% vs. 72.1%, $p = .029$).

Results of regression analyses are presented in Table 2. In the full model, adjusting for sociodemographic characteristics, reporting COVID-19 disruptions to HIV service use was associated with higher odds of falling in the low-range intention of peer HIV communication (*Adjusted odds ratio* [*AOR*] = 1.8, *95% confidence interval* [*CI*] = 1.1, 2.8, $p = .017$). In sensitivity analyses, regression models examining the associations between each of the two constructs of intention—willingness ($AOR = 1.7$, $95\% CI = 1.0, 2.7$, $p = .032$) and expectations ($AOR = 1.3$, $95\% CI = 0.9, 2.1$, $p = .203$)—and COVID-19 disruptions to HIV service use showed similar trends; statistical significance remained for the model examining the association between COVID-19 disruptions to HIV service use and low-range willingness for peer HIV communication.

Similar patterns emerged in both subgroup models. Specifically, among MSM and TSM who self-reported an HIV-positive status, reporting COVID-19 disruptions to HIV service use was associated with higher odds of falling in the low-range intention of peer HIV communication ($AOR = 4.7$, $95\% CI = 1.2, 18.0$, $p = .025$); this model was statistically significant. Among MSM and TSM who self-reported HIV-negative or unknown statuses, reporting disruptions to HIV service use trended toward higher odds of falling in the low-range intention of peer HIV communication, but this association was not significant ($AOR = 1.6$, $95\% CI = 0.9, 2.6$, $p = .086$).

Discussion

In this exploratory study, we found diminished intention of peer HIV communication among MSM and TSM in Kazakhstan who experienced disruptions to HIV service use at the outset of the COVID-19 pandemic; this diminished intention was particularly evident among those living with HIV. Several health behavior models posit that behavioral intention occurs within the context of social cognitive influences, such as one's attitude toward the behavior (Montaño & Kasprzyk, 2015). It is possible that peer HIV communication intentions decreased among participants in this study, as they perceived service disruptions during the COVID-19 pandemic as an erosion in service delivery and in turn developed negative attitudes toward HIV service use for themselves as well as promoting it among others.

Prior studies reported lower rates of COVID-19 disruptions to HIV service use among MSM and transgender and nonbinary adults living with HIV (Poteat et al., 2023; Rao et al., 2021). However, in this study, a higher percentage of MSM and TSM self-reporting an HIV-positive status reported COVID-19 disruptions to HIV service use compared with those with a negative or unknown status. Our analyses further demonstrated that the association between reporting

Table 1. Sociodemographic and Behavioral Characteristics by HIV Status Among MSM and TSM in Kazakhstan (N = 455).

Participant characteristics	Full sample (N = 455)	HIV-negative/unknown	HIV-positive	Test statistics
	n (%)	n (%)	n (%)	
City of residence				
Almaty	166 (36.5)	132 (34.4)	34 (47.9)	$\chi^2(3) = 6.0$ $p = .11$
Astana	133 (29.2)	119 (31.0)	14 (19.7)	
Shymkent	129 (28.4)	111 (28.9)	18 (25.4)	
Other	27 (5.9)	22 (5.7)	5 (7.0)	
Age Groups (in years)				
18–24	118 (25.9)	107 (27.9)	11 (15.5)	$\chi^2(1) = 4.78$ $p = .029$
≥ 25	337 (74.1)	277 (72.1)	60 (84.5)	
Gender Modality				
Cisgender man	416 (91.4)	349 (90.9)	67 (94.4)	$\chi^2(1) = 0.93$ $p = .34$
Transgender or nonbinary	39 (8.6)	35 (9.1)	4 (5.6)	
Sexual Orientation				
Gay	268 (58.9)	218 (56.8)	50 (70.4)	$\chi^2(2) = 4.78$ $p = .09$
Bisexual or pansexual	158 (34.7)	141 (36.7)	17 (23.9)	
Straight	29 (6.4)	25 (6.5)	4 (5.6)	
Employment Status				
Employed full-time or part-time	364 (80.0)	304 (79.2)	60 (84.5)	$\chi^2(2) = 0.38$ $p = 1.94$
Unemployed	53 (11.6)	45 (11.7)	8 (11.3)	
Retired, student, or other	38 (8.4)	35 (9.1)	3(4.2)	
COVID-19 Disruptions to HIV Service Use				
Never	354 (77.8)	301 (78.4)	53 (74.6)	$\chi^2(1) = 0.49$ $p = .49$
At least once	101 (22.2)	83 (21.6)	18 (25.4)	
Intention of Peer HIV Communication				
High-range	243 (53.4)	182 (47.4)	30 (42.3)	$\chi^2(1) = 0.64$ $p = .43$
Low-range	212 (46.6)	202 (52.6)	41 (57.7)	

Chi-square tests were used to compare differences in sociodemographic and behavioral characteristics by HIV status among MSM and TSM in Kazakhstan.

Table 2. Association Between COVID-19 Disruptions to HIV Service Use and Low-Range Intention of Peer HIV Communication Among MSM and TSM in Kazakhstan: Total (N = 455) and Stratified by HIV Status.

Main predictor variable	Low-range intention of peer HIV communication		
	Full sample (N = 455)	HIV-negative/unknown (n = 384)	HIV-positive (n = 71)
	AOR ^a (95% CI)	AOR ^b (95% CI)	AOR ^b (95% CI)
COVID-19 Disruptions to HIV Service Use			
Never	Ref. 1.8 (1.1, 2.8)	Ref. 1.6 (0.9, 2.6)	Ref. 4.7 (1.2, 18.0)
At least once			

AOR: Adjusted odds ratio, CI: Confidence interval.

^aAdjusted for city of residence, age, gender modality, sexual orientation, employment status, HIV status. ^b Adjusted for city of residence, age, gender modality, sexual orientation, and employment status. Bold values indicate $p < .05$.

COVID-19 disruptions to HIV service use and falling in the low-range intention for peer HIV communication remained statistically significant for the participants self-reporting an HIV-positive status. These findings reflect broader research illustrating significant challenges in HIV service use among people living with HIV during the COVID-19 pandemic (SeyedAlinaghi et al., 2023).

Findings from this study must be interpreted with considerations of the study design limitations. The cross-sectional design limits the ability to discern causality and/or causal direction. While COVID-19 disruptions could have dampened intention of peer HIV communication, it is possible that MSM and TSM falling in the low-range intention represent those with lower motivation, knowledge, or self-efficacy








in overcoming barriers to HIV service use. In addition, this study's recruitment and sampling procedures limit generalizability of the findings to larger populations of MSM and TSM in Kazakhstan. Furthermore, we assessed intention and not the actual peer HIV communication behavior. However, research indicates that behavioral intention is a crucial motivation factor of a behavior, directly or indirectly predicting behavioral performance (Montaño & Kasprzyk, 2015; Sheeran, 2002). Longitudinal studies investigating the impact of COVID-19 disruptions on peer HIV communication intention and performance are warranted.

Despite these limitations, this study contributes to scientific knowledge about the context of peer HIV communication. Findings of this study indicate that developing strategies to ensure smooth delivery of HIV services in the face of mass disruptions, such as during the COVID-19 pandemic, may be warranted to promote and sustain peer HIV communication among MSM and TSM in Kazakhstan.

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Declaration of Conflicting Interests

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