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Building Competencies to Prevent Youth Substance Use in Kazakhstan: Mixed Methods Findings from a Pilot Family-Focused Multimedia Trial

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 A B S T R A C T

Purpose: The knowledge-based approach to substance use and HIV prevention, commonly used in Central Asia, does not equip at-risk adolescents with risk reduction skills. This pilot study aims to adapt and test the feasibility and estimate the effect size parameters of a skill-based and family-focused intervention for at-risk adolescents from communities affected by heroin trade and use in Kazakhstan, located on the major drug trafficking route from Afghanistan.

Methods: This National Institute on Drug Abuse-funded pilot trial used a mixed-methods approach and included 181 adolescents (ages 14–17) that reported at least one risk factor (e.g., substance-using family members or friends and parental criminal history). In addition to the school-based health education program, intervention-arm adolescent-caregiver dyads received three computerized pilot sessions focusing on risk reduction self-efficacy, resistance to peer pressure, and strengthening of family relationships. Adolescents completed baseline, 3- and 6-month Audio Computer-Assisted Self-Interview surveys in Russian and treatment group adolescents (n = 12) also participated in postintervention focus groups.

Results: Small size effects were observed for youth-level theoretical mediators associated with lower substance use. Compared to the control group, intervention-arm adolescents showed improvement in personal and social competencies such as assertiveness (Cohen's $d = .21$) and self-esteem ($d = .22$) at 3 months and increased engagement in prosocial activities at 6 months ($d = .41$). Adolescents from the intervention group also reported improved self-control skills helping alleviate emotional distress (an increase in anger and tension management $d = .30$ at 3 months and a reduction in temper $d = -.27$ at 6 months) along with a lower likelihood of binge drinking at 6 months (odds ratio = .18, $p = .023$).

Conclusions: In middle-income countries like Kazakhstan, an intervention that utilizes interactive technologies and combines an empirically tested skills-based approach with family involvement may be an engaging, acceptable, and culturally appropriate tool for preventing substance use among at-risk youth.

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 IMPLICATIONS AND
 CONTRIBUTION

This pilot trial demonstrates that multimedia family-based substance use prevention intervention is feasible and culturally acceptable for at-risk youth in Central Asia. Prevention efforts should engage most at-risk youth and go beyond providing preventive information to build their personal competencies and strengthen their positive relationships with peers, school, and families.

Preventing drug use is critical to changing the trajectory of the HIV epidemic in Central Asia, a region struggling with some of the

fastest growing rates of HIV in the world [1]. Kazakhstan is located on the heaviest opium and heroin trafficking route from Afghanistan, and host to the world's largest crop of wild uncultivated cannabis [2], making opiates, marijuana, and other drugs easily available at a low price [1]. The annual prevalence rate of opiate use is among the highest in the world (.96%) [3] and the United Nations estimates that 100,000–450,000 Kazakhstanis inject drugs

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[4]. Out of people officially registered with Narcological Centers in Kazakhstan with drug addiction, 70% are injecting drugs and about a third are under the age of 30 [5].

To be effective, preventive interventions should be introduced in adolescence, when youths begin to adopt HIV-related drug and sexual risk behaviors [6]. In Kazakhstan, one fifth of adolescents living in drug-risk areas had been exposed to heroin at home or in the community [7]. By the age of 16, 12% of adolescents reported ever using drugs [8] with the rates being twice higher among Russian-speaking youth and 10 times higher among at-risk youth [9,10].

Schools in Kazakhstan offer health information about HIV and drug use, but these national prevention initiatives are often limited to health education sessions. Although the majority of youth in Kazakhstan are aware of harmful effects of alcohol and drugs, 81% report trying substances out of curiosity or peer pressure [10]. Over half (52%) of sexually active adolescents in Kazakhstan report initiating sex due to inability to refuse partner or peer pressure, fear of losing a partner, or to spite their parents and a fifth of 15–17-year-old adolescents reported initiating sex under the influence of drugs or alcohol [10].

Systematic reviews of HIV and drug prevention programs for youth in the United States and sub-Saharan Africa show that skills-based approaches, especially with gender-sensitive and culturally tailored messages, are more efficacious than knowledge-based approaches in delaying onset and changing risk behaviors as they equip youth with skills to analyze social influences and to resist peer or partner pressure [6,11,12].

Initiation of injection drug use (IDU) is associated with drug use beginning at an early age; daily consumption of alcohol; history of hallucinogen, cocaine/crack, or heroin use; and level and length of addiction [13,14]. To reduce the risk of transitioning to IDU, interventions should attempt to prevent initiation, delay onset, reduce the frequency of drug use and prevent a transition from softer (cannabis) to harder drugs (e.g., cocaine and heroin) [15].

The aim of this pilot study was to adapt and test feasibility of a youth drug prevention intervention called Kazakhstani Family Together (KFT) that engages youths' caregivers and utilizes a multimedia approach [16]. Computerized interventions are known for high fidelity, scalability, and inexpensive dissemination [17,18], but their use has not been tested in a middle-income country like Kazakhstan.

This study targets at-risk youth from communities with high drug availability in Kazakhstan. Exposure to drug dealers, peers approving drug use, and (most significantly) proximate relationships with people injecting drugs are among the most common family- and community-level factors associated with IDU [13,14]. Family risk factors such as a parent's substance misuse and a parent's criminal history further increase youths' vulnerability for drug use [14,15].

Theoretical Framework

The cognitive-behavioral component of the intervention was guided by the Integrated Behavioral Model suggesting that HIV-risk behaviors are related to intentions that are shaped by drug and sexual preventive knowledge and attitudes, subjective norms, and perceptions of personal control including self-efficacy [19]. In order to translate preventive knowledge into practice and control substance use and sexual risk activities, youth should develop skills to deal with peer and partner pressure, desire for social acceptance, and fear of rejection, and increase perceived self-

efficacy in making healthy choices [20]. The intervention's family involvement component was informed by Family Interaction Theory [21], which posits that substance use and sexual experimentation can be delayed by fostering parent–adolescent attachment, supervision, and support. The study's conceptual model (see online Supplementary Materials) integrates both theories and shows how the core intervention components may result in concomitant changes in youth risk behavior outcomes by targeting youth- and caregiver-level theoretical mediators (the pathways or mechanisms through which the intervention can affect change).

This pilot feasibility trial includes a small sample size and is not powered to test intervention effects. It was designed to test the feasibility and obtain preliminary estimates of the effect size parameters of the adapted intervention compared to the standard care on: (1) youth-level theoretically relevant mediating variables (youth's personal and social competences such as assertiveness, self-esteem, self-control, and coping skills; refusal skills and resistance to peer pressure; and risk reduction self-efficacy) and (2) substance use intentions and behaviors. The estimates of effect size parameters on caregiver–youth mediators are described elsewhere and incorporate youth's and caregivers' quantitative and qualitative responses [16].

Methods

This National Institute for Drug Abuse-funded pilot study is registered with ClinicalTrials.gov (#NCT01969305) and has been approved by the Institutional Review Boards at the University of Chicago (IRB13-0841), Columbia University (IRB-AAAL1064), and by the ethics review board of the Kazakhstan School of Public Health (IRB-A043).

Sample and eligibility criteria

Through consultations with experts and mapping of risk factors, four districts in Almaty (Auzovskiy, Alatauskiy, Turksibski, and Zhetesuyskiy districts) have been identified as a "drug-risk area" with a concentration of drug trafficking, supply, and use [7]. The study used convenience sampling. School police "inspectors" who are based at local public schools and work with at-risk adolescents (e.g., with poor academic performance and poor school discipline) invited these adolescents and their parents/guardians to attend a meeting with the research staff to learn about the study. Research assistants administered assent and parental consent and screened interested candidates for the eligibility criteria: (1) being between the ages of 14–17; (2) having at least one risk factor (substance-using friends, parental criminal history or problem substance use, adolescent's history of drug use, running away, and dropping out of school or history of sexual activity); and (3) being fluent in Russian, the country's second official language. Out of 375 screened adolescents, 181 adolescents met the eligibility criteria and agreed to participate (Figure 1). Each eligible adolescent involved a parent of his/her choice. Adolescents whose parents were unable to participate in the study (but provided consent) were asked to involve any other adult family member who provided them care (e.g., grandparent, uncle/aunt, and adult sibling).

Study design

The study used a randomized control design with three waves of data. Immediately after baseline surveys, the project manager randomized participants into two study arms: (1) *Usual Care Alone*,

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