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Computerized intervention to prevent drug use among at-risk adolescents in Central Asia: Preliminary family-level findings from a pilot mixed methods trial

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ABSTRACT

Background: The rapidly growing rates of HIV infection in Kazakhstan are largely driven by injection drug use. The study adapts a family-focused evidence-based HIV and substance use prevention intervention for at-risk adolescents from communities in Almaty that have been greatly affected by heroin trade and use.

Methods: This NIDA-funded pilot feasibility trial included 181 at-risk adolescents (ages 14–17) recruited through local schools and 181 of their parents or other adult family members. To be eligible, youth had to reside in city areas with high drug exposure and have at least one personal or family risk factor (e.g., substance-using family members or friends, parental criminal history). In addition to the standard school-based health education program on drug use and HIV, intervention arm adolescent–caregiver dyads received three pilot computerized sessions focused on caregiver-adolescent communication, support and monitoring. Adolescents and caregivers completed ACASI surveys in Russian at baseline, 3- and 6-month follow-ups and a subsample from the treatment group (n = 24 dyads) also participated in post-intervention focus group interviews.

Results: At 6-month follow-up, small effect sizes were detected for parenting practices as the key theoretical mediating variable. Intervention arm participants reported a reduction in harsh discipline practices (Cohen's d = −.35, p = .026), an increase in positive and supportive parenting (d = 0.26, p = .042), and a decline in poor monitoring (according to caregivers d = −0.23, p = .137 and adolescents d = −0.25, p = .113). Post-intervention focus groups provided examples of how the intervention content allowed caregivers to reconnect with their children and get more involved in each other's lives.

Conclusion: In middle-income countries like Kazakhstan, interventions that integrate family involvement approaches and utilize interactive technologies may represent an engaging and potentially effective tool with high fidelity and easy scalability to reduce substance use and other risk-taking behaviors among at-risk youth.

Introduction

Located on major drug trafficking routes, Central Asia (CA), and particularly Kazakhstan, is experiencing one of the fastest growing rates of HIV infection in the world (Thorne, Ferencic, Malyuta, Mimica, & Niemiec, 2010). Largely driven by injection drug use (IDU), this epidemic is expanding into the general population following the trajectory of Russia and Ukraine (Mathers et al., 2008; National AIDS Center - Kazakhstan, 2018). Young people (aged 15–29) in Kazakhstan are overrepresented among HIV infected persons and among the key risk groups—IDUs and their partners, sex workers and their clients (National AIDS Center - Kazakhstan, 2018).

No evidence-based and culturally-tailored HIV and drug abuse prevention programs are available for at-risk youth in Kazakhstan or other CA countries. The country's HIV and drug abuse prevention for youth is limited to health education sessions commonly offered by medical personnel or other health professionals at public schools or community youth centers. Thus, this knowledge-based approach does not include family members, who play a significant protective role in the family-oriented culture of CA (Thorne et al., 2010; Zhusupov, 2000). Research in the U.S. shows that HIV and drug prevention interventions that strengthen the protective role of families (Austin, Macgowan, & Wagner, 2005; Dusenbury, 2000) are more efficacious than providing HIV and drug prevention information alone (Miller et al., 2011; Perrino, Gonzalez-Soldevilla, Pantin, & Szapocznik, 2000).

This study has adapted an empirically-tested, family-based

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multimedia drug abuse prevention intervention (Di Noia & Schinke, 2007; Schinke, Fang, & Cole, 2009) to the socio-cultural context of drug-exposed communities to establish the feasibility of delivering a family-based intervention to at-risk Kazakhstani adolescents and their families. The study targets youth from communities with high availability of drugs who are particularly at risk for drug use and HIV in Kazakhstan. Proximity and exposure to drug use or drug trade in the family or in the community are closely associated with initiating drug use (Abelson et al., 2006; Roy et al., 2011).

It is crucial to target 14–17 year old adolescents prior to their escalation of risk behaviors, at an age when it is culturally appropriate to address these issues in the traditional Central Asian society. This is in contrast to many effective HIV and substance use prevention programs in the U.S., which target middle school children (Gottfredson & Wilson, 2003), although programs for high school at-risk youth also demonstrate positive outcomes (Cho, Hallfors, & Sánchez, 2005). In consultation with our collaborators in Kazakhstan, we decided that the KFT intervention would target 14–17 year old adolescents who are in their last four years of secondary education because intervening at this age seemed more culturally and contextually appropriate to Central Asian culture, where parents approve of interventions discussing sensitive topics for high schoolers more than for middle graders.

Using a mixed methods approach, the aims of this paper are: 1) to obtain preliminary estimates of the effect sizes of the Usual Care Plus Kazakhstani Families Together (KFT) intervention compared to the Usual Care Alone on family-level theoretical mediating variables (youth-parent relationship quality, risk behavior communication, and parenting practices) associated with sexual and substance use-related outcomes at 3- and 6-month follow-ups; 2) to estimate potential moderators of intervention effects; and 3) to explore participants' experiences with the pilot intervention using qualitative interviews. The preliminary effects on youth-level mediators (e.g., coping skills, impulse management, social competences) and substance use outcomes are described elsewhere (Ismayilova & Terlikbayeva, 2018).

Theoretical framework

The intervention is informed by Family Interaction Theory/FIT (Brook, Brook, Gordon, Whiteman, & Cohen, 1990) and the Integrated Behavioral Model/IBM (Montano & Kasprzyk, 2008). FIT posits that parent attachment, social learning, and intrapersonal characteristics jointly influence adolescent risk taking behaviors (Brook et al., 1990). When families enjoy warm, nurturing relationships, adolescents are less likely to use drugs and engage in sexual risk behaviors. When parents are unable to support their children, youths may attach to their peers, particularly to deviant ones, and use harmful substances at inordinately high rates (Marshal & Chassin, 2000) or engage in early and risky sex (Moilanen, Crockett, Raffaelli, & Jones, 2010). Theoretically, substance use and sexual experimentation can be delayed by fostering parent-adolescent attachment, supervision, and support. The cognitive behavioral component of risk behaviors is guided by the Integrated Behavior Model /IBM (Montano & Kasprzyk, 2008), which integrates key concepts from the Social Cognitive Theory (SCT) (Bandura, 1994). The theoretical understanding of how adolescent social and personal development is shaped through interactions with parents and other people in the community fits within the values and narratives of family-oriented and collectivist culture of Central Asia (Richter, Beyrer, Kippax, & Heidari, 2010). In this environment of intergenerational households and strong extended family networks, caregiving responsibilities are shared among different members of the family (uncles, aunts, grandparents, adult siblings, etc.), who are involved along with the parents in raising the child.

Family involvement in youth drug prevention in Central Asia

Family-level factors (e.g., involvement, supervision, and support) protect youth from early sexual debut, sexual risk activities and alcohol and drug use (Donenberg, Paikoff, & Pequegnat, 2006; Perrino et al., 2000). While a third of adolescents in Kazakhstan perceive their parents as a potential source of support in decisions related to sexuality, HIV/STIs and substance use, only half of them seek help from their parents (NCHL and UNICEF, 2005). Parents are currently overlooked by drug and HIV prevention efforts in Kazakhstan and are not prepared to deal with the growing risks of substance use and HIV infection for their children face. Most of these parents grew up during the Soviet regime that their children never experienced, an intergenerational gap that creates misunderstandings between youths and parents about the changing lifestyles of Kazakhstani youth (Longfield, Robinson, Gray, & Jones, 2004). Working with families can be effective in preventing youth substance use, and active parental involvement, strengthening familial bonds, and managing conflict are core elements of family-based prevention programs (Petrie, Bunn, & Byrne, 2007).

When designing interventions, it is critical to consider cultural differences in youth risk behaviors, family norms, and youth-parent interactions (Bearinger, Sieving, Ferguson, & Sharma, 2007). Yet few culturally-tailored family-based HIV and substance abuse prevention programs are available for at-risk youth (Lescano, Brown, Raffaelli, & Lima, 2009; Villarruel, Loveland Cherry, & Ronis, 2010), particularly not for families living in communities affected by heroin use in Central Asia.

The social context of drug use among youth in the former Soviet Union, who tend to maintain strong family connections, differs from the experiences of isolated homeless youth in Western urban cultures (AOSI & USAID, 2007; Pilkington, 2006). Strengthening family bonds may prevent young drug users from sliding into the subculture of isolation that commonly accompanies drug dependency. The KFT intervention focuses on strengthening family relationships shown to be efficacious in preventing youth risk behaviors (Austin et al., 2005; Dusenbury, 2000) and sustaining the effect of individual skills-based prevention programs (Perrino et al., 2000).

While strengthening the adolescent-parent relationship is often linked to a reduction in youth substance use and sexual risk taking (DiClemente, Crosby, & Salazar, 2006; Donenberg et al., 2006; Dusenbury, 2000; Perrino et al., 2000), youth from socially disadvantaged families—who are at higher risk for drug use and sexual risk behaviors and are particularly in need of family support—have parents who are less likely to be engaged in a youth's life, including participation in prevention programs. Standard procedures for improving recruitment of parents of at-risk youth (e.g., emphasizing the benefits of participation, minimizing respondent burden, projecting a non-judgmental attitude, acknowledging parents' expertise) (Coday et al., 2005; Hooven, Walsh, Willgerodt, & Salazar, 2011) typically help improve generally low rates of engagement among parents. However, prevention programs often fail to provide family-based services to youth whose parents are unable to overcome multiple barriers (substance use, family violence, multiple jobs) to participate in prevention programs. In consultation with our local partners, we decided to examine alternative ways of providing family support to at-risk youth by involving their extended family members and building on natural systems of support available to youth within their larger families. The protective role of extended family networks against youth substance use has been observed in Latino and Pacific Asian communities with close familial ties (Akeo et al., 2008; Ramirez et al., 2004). Involving parents or other adult family members in prevention programs for youth is grounded in the local culture and fits the family-oriented values of Kazakhstan. Young people in CA usually live with their parents until marriage and even after marriage often form intergenerational families, which provides an opportunity for on-going support from parents or other adult family members residing with them.

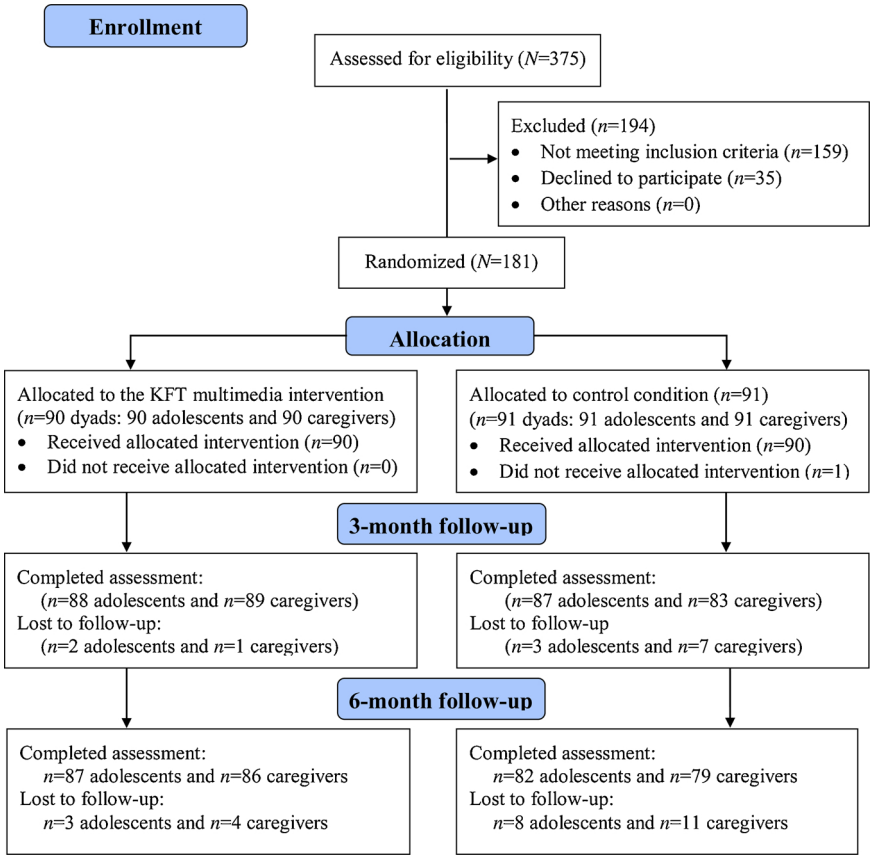

Fig. 1. Participant flow chart.

Computerized delivery of preventive interventions in middle-income countries

Low- and middle-income countries have limited human and financial resources to implement preventive health interventions. School and group-based programs involving parents are labor intensive, logistically complex, and experience difficulties in recruiting and retaining parents due to their busy schedules (Kumpfer, Alvarado, Smith, & Bellamy, 2002). Computerized interventions are affordable, flexible, demonstrate fidelity, and meet tight scheduling demands, which may facilitate parental involvement (Schinke, Schwinn, Di Noia, & Cole, 2004; Schinke, Fang, Cole, & Cohen-Cutler, 2011). The intervention in this study is modeled on evidence-based interventions developed by Dr. Schinke to prevent HIV, drug abuse, and underage drinking among youth in African American, Latino, and high-risk impoverished youth in the U.S. (Schinke et al., 2011). Two-year follow-up data from a computerized prevention program with adolescent girls and their mothers found that mothers in the intervention arm reported improved results on key mediating parental variables such as communication and closeness with their child and monitoring of adolescents' out-of-home activities; intervention-arm girls demonstrated improved adolescent-parent interactions (e.g., communicated more often and felt closer to their mothers) and reported less use of alcohol, marijuana, prescription drugs, and inhalants (Schinke, Di Noia, Schwinn, & Cole, 2006, 2011). Our study included three pilot sessions to test if a multimedia approach to preventive health interventions is feasible in a middle-income country like Kazakhstan. More details about the adaptation and implementation process, feasibility, and acceptability of the intervention will be provided in a separate paper.

Methods

Ethical approval

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study 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). The study is registered with the ClinicalTrial.gov database (ID: NCT01969305).

Sample and eligibility criteria

This study uses data from a pilot randomized control trial (RCT) to test the feasibility of a family-based multimedia intervention called Kazakhstani Families Together (KFT) that is designed to reduce drug and sexual risk behaviors among at-risk adolescents in Almaty, Kazakhstan. Almaty is Kazakhstan's largest city and its former capital. Through consultations with experts and mapping risk factors, four districts in Almaty (the Auzovskiy, Alatauskiy, Turksibski, and Zhetesuyskiy districts) were identified as a 'drug-risk area' with a concentration of drug trafficking, supply, and use (AOSI & USAID, 2007). Adolescents were recruited from local secondary public schools in these districts. School police 'inspectors' based at local schools who were working with at-risk adolescents (e.g., those with failing academic performance and/or school disciplinary problems) invited these adolescents and their parents to attend a meeting with the research staff, who described the study and invited families to participate. Trained Russian-speaking research assistants administered assent and parental

consent and screened potential youths and caregivers to determine eligibility. Children underwent the consent process separately from parents to avoid coercion. A total number of 375 adolescents participated in a 10-minute screening survey to assess their eligibility for the study. Adolescents were included in the study if they 1) were between the ages of 14–17; 2) had at least one personal or family risk factor (parental history of drug use or alcohol problems, parental criminal history, substance-using peers or friends, adolescent's history of drug use, running away, school drop-out or history of sexual activity); 3) both the youth and caregiver (parent or other caregiving adult family member) read and speak Russian; 4) did not plan to move in the next six months; and 5) both youth and caregiver could commit to the study. Each adolescent was given the option to involve a parent of his/her choice. Adolescents whose parents were unable to participate in the study but provided parental or legal guardian consent, were offered to involve any other adult family member providing care to them (e.g., grandparent, uncle/aunt, adult sibling).

As shown in Fig. 1, 159 adolescents did not meet the eligibility criteria (mainly due to the age limit or due to lack of risk factors such as a parent with substance use or legal history, etc.) and 35 eligible adolescents or parents refused to participate. Reasons for refusal included a lack of interest or the parents' busy schedule. Each eligible adolescent involved one parent of his/her choice (N = 181 child-caregiver dyads). The attrition rate at 6-month follow-up was 9% in the control group and 2% in the KFT group, for a cumulative attrition of 5.6%.

To compensate the participants for their time and travel, they were paid incentives of 1500 Kazakhstani Tenge /KZT (the equivalent of approximately $10 USD) per interview, and families assigned to the treatment condition also received 1500 KZT (per entire family) per each attended session.

Study design

The formative and adaptation phase (the first 20 months) included focused group interviews and ongoing collaboration with community collaborate boards to culturally adapt and refine content for three pilot sessions. Final scripts for each session were programmed to include storylines, skill demonstrations, exercises, quizzes, and games. A more detailed description of the adaptation process is provided elsewhere (Ismayilova & Terlikbayeva, 2018). The multimedia program was saved on a flash drive and was available offline, which was essential for areas with weak internet connectivity. In a pilot RCT, 181 at-risk adolescents and 181 of their caregivers were randomized into two arms: 1) Usual Care Alone, a school-based health education program on HIV and drug abuse delivered by outreach health workers or 2) Usual Care + KFT intervention. Randomization was conducted immediately after the baseline survey and the first intervention session was scheduled within a week of the baseline assessment. After all participants received intervention sessions and completed follow-up quantitative assessments, the post-intervention focus group interviews with a subsample of intervention-arm caregivers and adolescents were conducted to solicit families' experiences that would not be captured by the standardized quantitative tools used to measure changes in youth–parent relationships and interactions.

Overview of the interventions

Multimedia family-based intervention

The KFT included three pilot interactive multimedia sessions designed to reduce sexual and substance use risks by enhancing youth's peer-pressure resistance skills and strengthening caregiver-adolescent relationships and interactions (Harakeh, Scholte, de Vries, & Engels, 2005). Youths were guided to recognize and refuse negative peer pressure. Caregivers are guided to better communicate with, support and monitor their children, and to reward adolescents for positive behavior. With avatars customized for each user's gender and role (youth or parent), each caregiver-youth pair worked together and engaged in discussions, exercises, and behavioral rehearsal as directed by the program. The program also permitted youths and caregivers to assume each others' roles in interactions, allowing each to experience the challenges faced by the other and creating teachable moments (see screenshots and video in Appendix). A more detailed description of the intervention is provided elsewhere (Ismayilova & Terlikbayeva, 2018).

The usual care

Adolescents from both study arms received the standard health education program on prevention of HIV/STIs and drug use delivered at schools by health educators, typically medical doctors. After 6-month data collection, control-arm participants received flash drives with the KFT intervention to gain access to the prevention program.

Hypotheses

To address the study aim 1 and obtain preliminary effects of the adapted intervention compared to the standard care, the study will test the following hypothesis:

H1a. Compared to the Usual Care Alone, youth participants receiving the Usual Care plus KFT intervention will demonstrate improved a) child-caregiver relationship; b) risk behavior communication; and c) parenting practices at 3- and 6-month follow-up periods;

H1b. Compared to the Usual Care Alone, caregivers receiving the Usual Care plus KFT intervention will demonstrate improved parenting practices at 3- and 6-month follow-up periods.

H2. Youth participants' gender, age, and ethnicity will moderate the intervention effects on youth–caregiver relationships and interactions.

There are no hypotheses for the exploratory study aim 3.

Quantitative data collection

Both the adolescent and his/her participating caregiver completed 1–1.5 h baseline, 3-month and 6-month follow-up assessments. All surveys were conducted in Russian on laptops at the field research office or the participants' home using Audio Computer Assisted Self-Interview (ACASI) software. Youth and caregivers completed surveys separately in private rooms or cubicles. Research assistants were trained to assist youth and their caregivers with the computer program without viewing answers.

Measures

Quality of youth-caregiver relationship

Adolescent Family Process (AFP) Scale (Vazsonyi, Hibbert, & Blake Snider, 2003) included 30 items to measure the youth's relationship with a participating parent or caregiver on a 5-point Likert scale (from 1 strongly disagree or never to 5 strongly agree or very often). An exploratory factor analysis identified three factors and average scores were created for each subscale: Closeness (11 items, e.g., My parent/caregiver trusts me; My parent gives me the right amount of affection; $\alpha = .838$), Conflict (7 items, e.g. How often do you have disagreements or arguments with your parent? Sometimes my parent won't listen to me or my opinions; $\alpha = .83$) and Intimate and Instrumental Communication (11 items, e.g., How often do you talk with your parent about problems you have at school? How often do you talk to your parent about major personal decisions? $\alpha = .859$).

Communication about risk behaviors

The Parent-Teen Sexual Risk Communication Scale/PTSRC III (Hutchinson, 2007) asked the youth to assess how frequently in the past 3 months (from 0 never to 4 always) their parents talked to them about 10 risky behaviors or situations (e.g., alcohol and drinking, drugs, preventing pregnancy, STI or HIV; $\alpha = .89$).

Parenting practices

Both the youth and caregiver filled out the Alabama Parenting Questionnaire /APQ (Essau, Sasagawa, & Frick, 2006) that included 42 items rated on a scale from 1 (never) to 5 (always) and designed for children ages 6–18 and their parents to assess parenting practices relevant to child externalizing problems: Involvement, Praise, Positive Parenting, Poor Supervision, Use of corporal punishment; Inconsistent Discipline and Other discipline practices. Factor analysis identified a three-factor solution and items with factor loadings > 0.4 were retained: Positive Parenting (17 items, e.g., Your parent helps you (you help your child) with your homework; You praise your child (your parent praises you) for behaving well; α = .905 for youth and α = .889 for parents); Harsh Parenting (6 items, e.g., Your parent hit you with a belt, switch, or other object when you have done something wrong; α = .820 and α = .798, respectively), and Poor Supervision (10 items, e.g., You/your child go/es out without a set time to be home; You go out after dark without an adult with you; α = .772 and α = .819).

Socio-demographic characteristics. Covariates included child's age (in years), gender, education status (secondary school vs. vocational college), and ethnicity (Kazakhs, Russian, other). Caregiver and family characteristics included caregiver's gender, age, marital status, employment, household size, caregiver type (relationship to the child), and family structure. Given that intergenerational households are common in Central Asia, we included a measure of household type assessing whether children lived in a nuclear household (with one or both parents) or with extended family members (e.g., grandparents, aunt/s, uncle/s).

Post-intervention qualitative interviews

Upon completion of all pilot intervention sessions and follow-up assessments, we conducted three focus groups with youth and three focus groups with caregivers (8 persons per group, 6 focus groups, n = 48). The interviews were conducted separately and were designed to explore youth and caregiver experiences during the intervention, how it was helpful, what they liked or disliked about the intervention core components, how it affected family relations and communication about risk taking, and what barriers affected parental involvement. Focus group participants (n = 24 adolescent-caregiver dyads) for were selected randomly from the list of intervention arm participants.

Data analysis

The statistical analysis was performed in Stata 15 (StataCorp, 2017). This pilot study was not powered for outcome or mediation analysis, and what could theoretically be youth–caregiver mediating variables were collected for descriptive purposes and to estimate effect size parameters. To obtain preliminary estimates of the effects on these theoretical mediators, we arranged data in the long format (one observation for each time point for each participant) and tested H_{1a} and H_{1b} through mixed effects regressions with random effects modelled at the individual level to account for the repeated observations nested within individuals over time. Since the relatively small sample size is likely to prohibit more sophisticated statistical models (e.g., growth curve modeling), this approach is the preferred analytic framework for randomized trials with two or more time points accounting for autocorrelation of observations nested within individuals over time (Siddique, Hedeker, & Gibbons, 2017). We used linear (Gaussian) link function for continuous variables and included the intervention assignment × time interaction terms to estimate intervention effects for each wave. Models included Restricted Maximum Likelihood (REML) estimators and unstructured within-subject covariance. The mean difference between the treatment and control groups, both pre- and posttest standard deviations for both groups at each wave, and autocorrelation between waves were used to calculate effect size estimates (d statistic) for future studies (Cohen, 1988). Effect sizes (d) of 0.2, 0.5, and 0.8 are considered small, medium, and large, respectively (Cohen, 1988). Using 3-way interactions, we also tested whether effect estimates varied by key moderators (H_2)—gender, age group (14–15 vs. 16–17), or ethnicity (Kazakh vs. other). Incomplete surveys cannot be submitted in ACASI and there was a negligible amount of missing data.

Qualitative interviews were transcribed verbatim and analyzed in Russian language. The bilingual Principal Investigator and two coders reviewed the transcribed tapes and conducted Thematic Analysis (Boyatzis, 1998) using Dedoose, a web-based software for qualitative data analysis (Dedoose, 2016). Data were coded and analyzed by reading transcripts, listing themes and concepts, and analyzing similarities and differences around program engagement, child-parent interactions and family relations, and any observed changes in response to the intervention. Qualitative data were incorporated to explore and capture experiences overlooked by quantitative measures and to inform future revisions to the intervention.

Results

Characteristics of the sample

Out of the total sample (N = 181), the majority of adolescents were male (61%), about half were ethnically Russian (48%), and 90% spoke Russian at home (Table 1). The average age of adolescents was 15.27 years (SD = 1.01). The majority of adolescents were in the 8-11th grade of secondary school (equivalent to high school in the U.S.), and about 8% attended kollege, a two-year vocational school for students who left or dropped out of secondary school after 9th grade (two years prior to completing full secondary education). The majority of participating caregivers were female (mothers, grandmothers). Most adolescents (78%) lived in multi-generational households together with extended family members (e.g. uncles, aunts, cousins, grandparents). About a quarter (24%) of adolescents lived with a family member who had problems with drinking, and 3% with one with drug use problems. Up to 25% of the families were struggling with meeting basic needs (e.g., food, school supplies, heating, or electricity).

Only one dyad dropped out after the first session and 99% of the dyads attended all three pilot sessions. Sessions lasted about 30–40 min each and were delivered weekly on a laptop at participants' home or in the field office. A number of factors may have contributed to high session completion rates. First, families received non-coercive monetary incentives for completing intervention sessions. (Given that compensating for participation in research is a new concept for most Kazakhstanis, many families initially rejected the incentives, stating that they felt uncomfortable for taking money just to share their opinion.) Further, the computerized modality allowed the research staff to deliver the intervention in whichever location was most convenient to study participants who were not able to come to the field office. Finally, this feasibility study tested only three pilot intervention sessions. Although the participants, especially caregivers, feel a great need to receive more intervention content on issues related to youth–parent communication and the prevention of drug use, we assume that the intervention completion rates might be lower for the full intervention of 10–12 sessions.

Youth described feeling close to their caregivers (M = 4.04, SD = 0.53), while positive parenting practices (M = 3.35, SD = 0.72) and conversations with caregivers (M = 2.91, SD = 0.71) about what truly mattered to adolescents occurred only 'sometimes' (Table 2). Youth also reported that they 'never' to 'rarely' talked about risk behaviors with their caregivers (M = 0.58, SD = 0.68). Family conflicts as well as poor supervision (reported both by youth and caregivers) were positively associated with youth's reports of alcohol and drug use. Positive parenting was associated with lower marihuana use (r = −0.16, p = .05) and binge drinking (r = −0.17, p = .05).

Table 1
Socio-demographic characteristics of the sample at baseline ($N = 181$).

	Total ($N=181$)	Control Group ($n=90$)	Intervention Group ($n=91$)	t-test/χ^2
CHILD'S CHARACTERISTICS	Frequency (Percentage, %) or Mean (*SD*)			
Gender:				0.73
Boys	111 (61.33)	58 (64.44)	53 (58.24)	
Girls	70 (38.67)	32 (35.56)	38 (41.76)	
Child's age in years, *mean* (min 14 / max 17)	15.27 (1.01)	15.23 (0.99)	15.31 (1.03)	−0.49
Age groups				0.17
14–15 year olds (middle adolescents)	116 (64.09)	59 (65.56)	57 (62.64)	
16–17 year olds (late adolescents)	65 (35.91)	31 (34.44)	34 (37.36)	
Ethnicity:				1.37
Kazakh	50 (27.62)	22 (24.44)	28 (30.77)	
Russian	87 (48.07)	47 (52.22)	40 (43.96)	
Other (Tatar, Uighur, Korean, Uzbek)	44 (24.31)	21 (23.33)	23 (25.27)	
CAREGIVER'S CHARACTERISTICS				
Participating caregiver's gender:				3.27
Male	31 (17.13)	20 (22.22)	11 (12.09)	
Female	150 (82.87)	70 (77.78)	80 (87.91)	
Participating Caregiver:				$\chi^2 = 14.3$, $p = .074$
Mother	131 (72.38)	57 (63.33)	74 (81.32)	
Father	15 (8.29)	10 (11.11)	5 (5.49)	
Grandmother	6 (3.31)	4 (4.44)	2 (2.20)	
Older sibling	16 (8.84)	13 (14.44)	3 (3.30)	
Other (aunt, cousin, stepmother)	13 (7.18)	6 (6.67)	7 (7.69)	
Caregiver's age in years, *mean* (min 18/max 68)	39.33 (9.77)	37.63 (10.76)	41 (8.42)	**−2.34***
Marital status:				3.24
Single	18 (10.00)	12 (13.48)	6 (6.59)	
Married	91 (50.56)	44 (49.44)	47 (51.65)	
Cohabitating / living as married	18 (10.00)	10 (11.24)	8 (8.79)	
Divorced	34 (18.89)	15 (16.85)	19 (20.88)	
Widowed	19 (10.56)	8 (8.99)	1 (12.09)	
Religious affiliation:				3.44
No religion	18 (10.00)	11 (12.36)	8 (8.79)	
Islam	65 (36.11)	27 (30.34)	38 (41.76)	
Christianity	96 (53.33)	51 (57.30)	45 (49.45)	
Caregiver's education				0.46
Primary or less	3 (1.67)	2. (2.25)	1 (3.33)	
Mandatory secondary (up to 9th grade)	11 (6.11)	5 (5.62)	6 (6.59)	
Higher secondary (grades 10-11, an equivalent of high school)	50 (27.78)	25 (28.09)	25 (27.47)	
Specialized secondary (vocational school, professional or technical college)	66 (36.67)	32 (35.96)	34 (37.36)	
Higher education (university)	50 (27.78)	25 (28.09)	25 (27.47)	
Employment status				2.14
Employed (full-time)	95 (52.78)	47 (52.81)	48 (52.75)	
Employed (part-time or hourly)	38 (21.11)	21 (23.60)	17 (18.68)	
Retired or Disability	12 (6.67)	7 (7.87)	5 (5.49)	
Unemployed	35 (19.44)	14 (15.73)	21 (23.08)	
HOUSEHOLD CHARACTERISTICS				
Household size (number of people living at home), *mean* (min 2 / max 14)	4.49 (1.79)	4.63 (1.48)	4.35 (2.06)	1.06
Family structure:				0.62
Nuclear family	39 (21.55)	18 (20.00)	21 (23.08)	
Multigenerational household	142 (78.45)	72 (80.00)	70 (76.92)	
Household's economic situation				$\chi^2 = 9.28$, $p = .054$
Good or average	160 (88.89)	83 (93.25)	77 (84.62)	
Bad or very bad	20 (11.12)	6 (6.74)	14 (15.38)	
Socio-economic deprivation (household is experiencing problems with basic essentials *constantly* or *sometimes* vs. never)				
Basic food (bread, sugar, milk)	45 (25.14)	17 (19.32)	28 (30.77)	3.14
Heating	25 (14.62)	6 (7.14)	19 (21.84)	**8.68***
Electricity	14 (8.05)	3 (3.45)	11 (12.64)	$\chi^2 = 5.73$, $p = .057$
Essential school supplies or textbooks	34 (19.54)	17 (19.77)	17 (19.32)	1.04
Basic medical care	42 (24.42)	20 (23.26)	22 (25.58)	1.06
RISK EXPOSURE				
Child has witnessed someone selling or using drugs in community	77 (42.54)	37 (41.11)	40 (43.96)	0.70
Child has been offered to use drugs by someone in the community	55 (30.39)	26 (28.89)	29 (31.87)	0.66
Family history of alcohol problems (child lives with a family member who has problems with alcohol)	43 (23.76)	21 (23.33)	22 (24.18)	0.89
Family history of drug use problems (child lives with a family member who uses drugs)	6 (3.33)	4 (4.49)	2 (2.20)	0.39
Family legal history (parent or family member who lives with a child has ever been incarcerated, spent time in jail or prison)	17 (9.39)	5 (5.56)	12 (13.19)	0.08

*p ≤ .05.
** p ≤ .01.
***p ≤ .001.

Table 2
Correlation table among key youth-caregiver variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Reported by youth																
Youth-Parent Relationships																
1 Closeness	1															
2 Conflict	−.28***	1														
3 Communication	.53***	−.22**	1													
4 **Risk Behavior Communication**	.07	−.04	.29***	1												
Parenting Practices																
5 Positive Parenting	.55***	−.38***	.61***	0.12	1											
6 Harsh Parenting	−.23**	.52***	−.21**	0.07	−.25***	1										
7 Poor Supervision	−.24***	.28***	−.07	0.12	−.15*	.38***	1									
Reported by caregiver																
Parenting Practices																
8 Positive Parenting	.20**	−.21**	.29***	−.01	.48***	−.23**	−.15*	1								
9 Harsh Parenting	−.27***	.36***	−.21**	−.08	−.16*	.47***	.17*	−.18*	1							
10 Poor Supervision	−.19**	.35***	−.16*	.02	−.24**	.31***	.41***	−.37***	.48***	1						
Substance use (reported by youth)																
11 Alcohol lifetime	−.12	.18*	−.01	.15*	−.14	.17*	.35***	−.01	.03	.09	1					
12 Any drug use lifetime	−.11	.31***	−.08	.03	−.11	.12	.23**	−.10	.10	.16*	.23**	1				
13 Marijuana use lifetime	−.13	.31***	−.09	.05	−.13	.10	.13	−.16*	.14	.19*	.22**	.80***	1			
14 Any drug use (past 3 months)	−.10	.24**	−.08	−.06	−.10	.15	.26***	−.12	.04	.20**	.12	.63***	.46***	1		
15 Polydrug use (past 3 months)	−.10	.20**	−.04	.01	−.09	.11	.23**	−.13	−.03	.15*	.13	.54***	.47***	.88***	1	
16 Binge drinking (past 3 months)	−.19*	.25***	−.02	.12	−.17*	.23**	.43***	−.17*	.24***	.26***	.37***	.41***	.34***	.29***	.29***	1
Mean	*4.04*	*2.58*	*2.91*	*.58*	*3.35*	*1.75*	*2.41*	*3.66*	*1.93*	*2.22*	*.57*	*.18*	*.12*	*.08*	*.11*	*.18*
SD	*.53*	*.75*	*.71*	*.68*	*.72*	*.74*	*.64*	*.61*	*.72*	*.71*	*.50*	*.38*	*.33*	*.28*	*.43*	*.38*

* $p \leq .05$.
** $p \leq .01$.
*** $p \leq .001$.

Intervention effects estimates

As shown in Table 3, compared to the usual care, at 6-month follow-up caregivers in the Usual Care Plus arm reported an improvement in positive parenting (d = 0.26, p = .042, small effect sizes as operationalized by Cohen), while adolescents reported a reduction in their participating caregivers' use of corporal punishment and harsh discipline practices (d = –0.35, p = .026). Both caregivers and adolescents reported a decrease in poor supervision (d = –0.23, p = .137 and d = –0.25, p = .113, respectively) by caregivers who received the pilot KFT sessions, compared to the control group. There were no significant changes in risk behavior communication.

Interaction terms showed that improvements in the use of positive parenting skills were particularly significant among male caregivers (b = 0.55, p = .01), caregivers of boys (b = 0.23, p = .023), and ethnically Kazakh caregivers (b = 0.34, p = .045). Reduction in the use of harsh parenting practices by caregivers was detected mainly among younger boys (b = –0.49, p = .015), while parents reported an increase in the use of harsh discipline with older children (b = 0.60, p = .008). Caregivers of boys reported a reduction in poor supervision (b = –0.27, p = .04) and it was confirmed by boys themselves (b = –0.33, p = .015). Boys, particularly those who participated in the intervention

Table 3
Estimates of the intervention effects (time x group interaction) on youth-caregiver interactions.

Youth-Parent mediators	Treatment			Control			Group x Wave 2		Group x Wave 3	
	Wave 1 *M (SD)*	Wave 2 *M (SD)*	Wave 3 *M (SD)*	Wave 1 *M (SD)*	Wave 2 *M (SD)*	Wave 3 *M (SD)*	*d*	*p*-value	*d*	*p*-value
Reported by youth										
Youth-Parent Relationships										
Closeness	3.99 (.53)	3.95 (.55)	4.01 (.56)	4.09 (53)	4.02 (.51)	4.05 (.46)	*0.07*	0.633	*0.17*	0.250
Conflict	2.64 (.76)	2.7 (.76)	2.72 (.77)	2.52 (.75)	2.58 (.67)	2.62 (.68)	*0.02*	0.897	*0.02*	0.912
Communication	2.88 (.71)	2.95 (.72)	2.94 (.73)	2.93 (.71)	2.97 (.73)	3.11 (.64)	*0.05*	0.726	*−0.12*	0.404
Risk Behavior Communication	.52 (.55)	.75 (.78)	.70 (.80)	.64 (.8)	.82 (.93)	.88 (.94)	*0.08*	0.607	*−0.09*	0.547
Parenting Practices										
Positive Parenting	3.35 (.72)	3.33 (.72)	3.35 (.7)	3.36 (.72)	3.43 (.67)	3.38 (.66)	*−0.10*	0.495	*−0.02*	0.900
Harsh Parenting	1.86 (.77)	1.90 (.88)	1.83 (.85)	1.64 (.71)	1.82 (.67)	1.94 (.86)	*−0.15*	0.343	***−0.35***	0.026
Poor Supervision	2.44 (.62)	2.50 (.7)	2.55 (.71)	2.37 (.67)	2.48 (.57)	2.66 (.73)	*−0.06*	0.702	***−0.25***	0.113
Reported by caregiver										
Parenting Practices										
Positive Parenting	3.62 (.63)	3.58 (.61)	3.62 (.54)	3.7 (.58)	3.66 (.59)	3.52 (.62)	0.01	0.958	**0.26**	0.042
Harsh Parenting	1.99 (.71)	1.86 (.7)	1.75 (.66)	1.88 (.74)	1.76 (.59)	1.71 (.59)	0.01	0.940	−0.04	0.783
Poor Supervision	2.34 (.76)	2.34 (.75)	2.39 (.60)	2.11 (.64)	2.18 (.68)	2.34 (.68)	−0.05	0.710	**−0.23**	0.137

Note: Mean scores are adjusted for youth's and their caregiver's age, gender, and ethnicity.
Note: AFP = Adolescent Family Process, APQ = Alabama Parenting Questionnaire.
* $p \leq .05$.
** $p \leq .01$.
*** $p \leq .001$.

with a male caregiver, reported a significant improvement in the quality child-caregiver relationship and reported feeling closer to their caregiver at 6-month follow-up (b = 0.59, p = .015).

Qualitative findings

Parent engagement vs. Alienation

Post-intervention focus group interviews illustrated that parents truly appreciated the opportunity to be involved in a preventive intervention designed to assist their children and appreciated its strengths-focused approach. Families of at-risk children usually felt rejected by schools and blamed by teachers and school administrators for their children's problems.

"*School does not do it at all. They never gather children and parents together…and even if they do [for parent-teacher meetings, родительские собрания], it is usually to blame and shame parents why their children are not studying.*"

"*Wrong approach at school. School does not involve us, parents. They only blame us…*"

"*You feel like a human being [here]. We were treated with care, attention, kindness, and with an individual approach….you rarely see such treatment nowadays.*"

Strengths-based or positive parenting

Parents acknowledged having tremendous difficulties managing or controlling their children and often felt lost and unprepared. They shared that the intervention exercises and even survey questions made them reflect on their own behaviors and how it contributed to problematic interactions with their children. Specifically, parents realized that they did not focus on positive and supportive aspects of parenting, which was one of the key strategies promoted by the intervention. As one mother of a teenage boy described:

"*One of the questions asked, how many times do you tell your child you love them? I don't tell them that. I tell them I care about them, but I didn't realize this before...*"

Interviews with adolescents also confirmed parents do not always openly express their positive emotions and a shift toward more supportive parent-youth interactions was the most valuable experience from the programs. A boy participant shared "We know that they feel this way… but we do not always say it".

When asked what their favorite exercise was, most youth and parents mentioned 'Gift Giving' game, when they were asked to wrap (on the screen) gift boxes with various praises for each other. A teenage girl shared:

"*We did it with dad. I even cried (расплакалась)….it was very pleasant to hear good things….We do it so rarely…maybe it is some kind of fear….But I really felt good (мне действительно стало приятно) that dad thinks about me like this.*"

Togetherness and attention from parents

Parents appreciated that the program gave them an opportunity to spend more time and reconnect with their child, which they assumed their children did not value or need anymore because they were not little.

"*The program gave us the opportunity to spend more time with my child, especially since he was not embarrassed to go somewhere with me.*"

"*When we had to plan a day together, my son wanted to do so many things together, there was not even so many hours in a day… That meant to me that kids have that desire. I thought they do not want to spend time with us (parents) anymore.*"

"*If not for this program, I would have lost my [teenage] son. He was already barely speaking with me and I was too focused on his younger brother…and I did not realize he still needs me.*"

Parents also realized that often they were preoccupied with financial worries and had to work multiple jobs to make ends meet or were struggling to raise children alone and they did not realize that they were not sharing enough time with their children and sometimes were even releasing their stress on children.

"*I have three children. Two act almost like twins. It is hard for me to deal with how different they behave. The questions forced me to think that I have to act a little different towards them and have them understand that we are not trying to be aggressive to them. Rather, we act this way because of other life problems or other things going on…*"

"*Now the time is so busy and occupied (загруженное время сейчас. суета сует). Sometimes there is no even time to think (задуматься) if we are raising our children correctly. We live all our life and learn."*

Children also confirmed that the quality time with their parents was the most valuable. "The information was not new [regarding drugs and smoking]… But the experience of doing things together, coming [to the center] together, discussing things together, gave us time together".

Despite their busy schedules, mothers were convinced that there was nothing that could stop them from participating in such programs because it concerned their children. "*Only laziness. If a person has a child, he/she will 100% be interested. Mothers are very responsible. With dads is a bit more difficult. Their primary goal is to earn money*." While other mothers joked that maybe fathers should be brought to the program "*by force*".

Parents also noted that the computerized modality of the intervention made the delivery flexible. "*My husband works in shifts. It is difficult for him to find time. But through computer, he can watch it at home.*"

Restoring mutual understanding and respect

Parents thought the exercises and discussions prompted by the intervention increased understanding between parents and children. Not only it gave parents an opportunity to learn more about their children, but it also gave children an opportunity to understand and learn more about their parents.

"*I had conflicts with my son… often… I would tell him about how I don't like to see kids on the street smoking together and he responded by saying 'I don't ask you which friends you have!" I told him "What friends?! I leave [for work] at 4am by bus to save money, so what friends could I have?!*"

"*The benefit of the program was not only that parents learned more about their children, but also that the children learned about the goals, dreams, and struggles of their parents.*"

Parents also noticed that their children became more aware of their behavior and became more understanding of their parents.

"*After watching the [intervention] videos, we talked more about the topics covered and about other things. The program really helped. He was really aggressive with his responses to me before, even yelling at me. And now he has started to contemplate his actions. After yelling, he would come up to me and apologize.*"

Parents acknowledged that growing up under the Soviet regime, they were exposed to a different reality and their children do not always understand or appreciate their struggles, upbringing, and past.

"*They [kids] show they are smarter, better [than us]. Therefore, I would suggest for children to be more patient with their parents and grandparents. We grew up in different times; we do not understand many things [now].*"

"*Everything is so different now. My older son says: Mom, you aged…not physically…[mentally]….now it's not Soviet Union anymore. As a side story, I asked him to get a stamp for his Employment Record Card (трудовой стаж в трудовой книжке)…and he said: Mom, in what century to do you live?! But that's what we did in the Soviet Union, you*

had to…everyone did that. And he said, mom, but the card does not exist anymore. Can you imagine?! I thought it did and I had to check for myself because I could not believe him. Turns out everything I am offering is not the same anymore (уже не то)….That's possibly because where we are from. We [parents] are from the Soviet Union….but these are modern children."

The generational differences also affected norms around sexuality and around openness of conversions at home. One mother shared: "*Before it was obvious. Parents would always would say No to 'bed' (постели, referring to any sexual relationships)… Now they don't even say it, they just say protect yourself.*" Parents acknowledged that they did grow up in a culture where discussing risk behaviors with parents was normative and it transferred into their relationships with their children and their children confirmed: "*Only smoking…discussing [other risk behaviors] with parents is uncomfortable.*"

Parents almost felt they lost the authority role for their children and appreciated that the program was helping their children restore the respect for parents.

"*Children go often to friends, not to parents. They do not respect our opinion now. We are from different times. Our ideals are outdated [for them].*"

A teenage boy shared "Conflicts or disagreements (разногласия) with parents happen in every family. But not everyone can solve problems in a delicate way (не все умеют деликатно решать проблемы). It [the program] teaches [youth] how to talk and how to respect parents.

Concerns and suggestions

However, parents expressed concerns related to the intervention's focus on at-risk children. Although parents were glad to join the project, they were concerned that it might stigmatize their children at school because participation indicated that they are considered 'problematic'. They thought it would be beneficial for all children and parents to participate in the intervention instead of targeting just children with academic or behavioral problems at school.

Further, both adolescents and caregivers mentioned that it would be essential for both parents or other family members to be involved as well. A teenage girl, who participated with her father, shared: "*We started communicating (общаться) more with dad. Before I had to lie because I knew they [parents] would not let me to go out (не отпустят). It would be useful for mom to come as well.*"

Parents suggested enhancing the content and extending the number of sessions, especially the ones focusing on child-parent relationships and risk behaviors (smoking, drugs): "*Three sessions were too little… Keep the same topics but focus even more in-depth.*" Finally, parents believed that it would be beneficial to introduce the program earlier, especially starting with parents "*It is better to start the program earlier, maybe around grade 4 (age 10). In this case, the child will understand more by teen years. And for parents, starts even earlier, for parents of 7-year old children. Maybe for children it is too early at that time.*"

Discussion

The study was the first RCT of HIV and drug abuse prevention for at-risk youth living along the Central Asian drug trafficking route. The study is innovative for the region because a) it adapts an evidence-based intervention to the new population of at-risk youth exposed to heroin trade and use, b) uses engaging and potentially cost-effective multi-media computer technology that may be scaled up, and c) it strengthens family support available to at-risk youth by involving their parents or extended family members. Capitalizing on the strength of multigenerational households and extended family networks to prevent HIV and drug use among at-risk youth is innovative and culturally appropriate for Central Asian region.

Brief, personalized, and interactive interventions delivered via computer or online show promise in the prevention of substance use among secondary school students in remote and under-resourced settings (Milano et al., 2017; UNODC, 2017), and this pilot study showed that the multimedia family-focused intervention for at-risk youth is feasible and acceptable in the context of a middle-income country affected by a drug epidemic. Despite initial hesitance from community board members about the intervention's ability to engage and retain parents of at-risk youth, every family in the study except one attended all pilot sessions and were eager to receive additional information.

While this pilot feasibility study was not designed to test intervention effects, the most promising changes were observed in the area of family relations and parenting, particularly in improved positive parenting strategies and a reduction of harsh discipline. Disrupted family structure and troubled family environment are often cited among the strongest correlates of high risk health behaviors among adolescents in post-Soviet countries (Kislitsyna, Stickley, Gilmore, & McKee, 2010; Scheer & Unger, 1998; Александров, Котова, Розанов, & Климович, 2010). Therefore, interventions that foster a positive family environment and help families maintain a strong adolescent–caregiver bond are crucial for building resilience and protective mechanisms for youth who may experience social adversity and drug exposure (Stockings et al., 2016; Velleman, Templeton, & Copello, 2005). Most parents in the study grew up during the Soviet regime and were raised in an environment where strict, authoritarian parenting that emphasized control over warmth, criticism over praise, and achievements over feelings was common (Golofast, 1991; Hart et al., 2000). Faced with disobedience and child 'misbehavior' (e.g., smoking, drinking, or associating with the 'wrong peers'), parents would often respond in a restrictive way with even greater control and physical punishment (Shor, 2000), which can further isolate and distance an at-risk adolescent who is already struggling with pressures at school or from his/her peers.

Parents appreciated that the intervention focused not only on changing parenting skills, but also paid substantial attention to restoring respect toward parents and elders, which is crucial in collective and family-oriented Central Asian culture, but which has been undermined during the economically challenging transitional period. The end of the socially protected socialist welfare system of the Soviet era followed by the post-independence economic crisis of 1990s left many parents and grandparents economically vulnerable, overburdened, and unprepared to survive in a new market economy (Chernova, 2012a; Issoupova, 2012). Overwhelmed by economic pressures, parents had less time and energy to be actively involved in their children's lives (Dugarova, 2016). Furthermore, not being able to adjust in the new economic environment has also undermined the authority of parents, who were no longer viewed as role models by their children. Raising children born during the post-independence period, a time of changing lifestyles and greater exposure to risk situations, exacerbated an intergenerational gap and clash in norms between Kazakhstani youths and their caregivers. Parents who lived during the Cold War period and were therefore separated from foreign influences by the so-called 'iron curtain', had limited exposure to international drug trafficking and were relatively unprepared for the growing risks of drug use (Poznyak, Pelipas, Vievski, & Miroshnichenko, 2002).

While caregiving responsibilities predominantly fall on women, the greatest changes were observed among male caregivers in the study, especially when they participated jointly with their boys. This is particularly promising as the institute of family and parenting is undergoing changes in Kazakhstan and the role of father as 'the invisible parent'— viewed primarily as the breadwinner and authority figure for disciplining—is transforming (Kabakova & Maulsharif, 2013). Fathers are becoming more democratic and more actively involved in emotional and social lives of their children (Chernova, 2012b; Shabdenova & Verevkin, 2016). While the democratization of parenting roles predominantly affects urban families, the rebirth of religiosity and strong traditional Muslim values, more visible in rural settings, is reshaping

parenting approaches in the post-communist period (Kabakova & Maulsharif, 2013; Wejnert & Djumabaeva, 2005). Increased 'modernization' was perceived to threaten Islamic family-centered values that traditionally kept the experimentations of youth in check. Examining ethnic differences in adolescent–caregiver interventions and risk exposure situations warrants additional attention.

Additionally, the moderation analysis suggested that stronger changes were observed among adolescent boys, compared to girls. The study revealed that girls may experience more complex pathways to risk exposure situations and drug use (Ismayilova & Terlikbayeva, 2018) and, therefore, the future tailoring of this intervention should incorporate trauma-informed and gender-responsive content addressing issues related to dating and interpersonal violence and childhood abuse (Covington, 2008; Goodman, 2017).

Finally, qualitative findings pointed out that schools subject the families of at-risk adolescents to alienation, exclusion, and blame, which confirms the need for a multi-component approach to drug prevention that targets not only youth and families but the school system as well (Ляпустина, 2011). Family-strengthening interventions like Family and Schools Together (FAST) that encourage parent involvement and promote the bond between parents and schools are being piloted in five Central Asian countries (Turkmenistan, Kyrgyzstan, Tajikistan, Kazakhstan and Uzbekistan) (Maalouf & Campello, 2014). To maximize gains and create a truly supportive environment, these interventions should be implemented in tandem with programs that will transform schools' perceptions of at-risk adolescents as deviants in need of punishment to an approach that sees them as children in need of additional attention and resources.

Limitations

This pilot feasibility study is not powered sufficiently to test intervention effects. Providing the intervention on office computers created equal conditions for families regardless of their access to computers at home, but may have limited caregivers' availability to attend all sessions at the field office. Home visits and flexible scheduling, including evening and weekend hours, were offered to minimize poor attendance among caregivers. We acknowledge the limitation of including children only from four districts from the capital city. At-risk youth living in drug-exposed areas constitute a "hard-to-reach" population in Kazakhstan, and that for the purposes of establishing the feasibility, secondary schools are perhaps the safest and least stigmatized way to reach these adolescents. While recruiting youths referred by school inspectors granted us access to at-risk youth, which is important for secondary or selective prevention programs, it may run the risk of stigmatizing intervention participants. Enrolling participants through schools ensured the ethical integrity of random assignment, as all youth enrolled received, at minimum, the standard care available for HIV and drug use prevention for youth. The majority of caregivers were women and, in the future, more efforts should be made to actively recruit male caregivers. The intervention was piloted in an urban setting in Russian (the country's second official language) and should undergo additional adaptation to be relevant in rural settings and in the Kazakh language.

Conclusions

A family-based multimedia intervention is feasible in the Central Asian context and represents a potentially engaging, cost-effective and scalable prevention tool for at-risk youth and their families. In the family-oriented and collectivist culture of Central Asia, where caregiving responsibilities are often shared by different members of the family, involving other caregivers (e.g., grandparents, adult siblings, uncles, aunts) can be a potential intervention option, when parents are not available to participate due to substance use problems or busy work schedules. While the intervention included avatars customized for girls and boys, gender-specific content should be further developed to better target at-risk girls and different family dynamics and risk factors that affect them. Schools should consider engaging parents more actively to better serve youth in at-risk communities.

Disclosure of potential conflicts of interest

The authors declare that they have no conflict of interest.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.drugpo.2019.03.022.

References

Abelson, J., Treloar, C., Crawford, J., Kippax, S., Van Beek, I., & Howard, J. (2006). Some characteristics of early-onset injection drug users prior to and at the time of their first injection. *Addiction, 101*(4), 548–555.

Akeo, N. P., Bunyan, E. S., Burgess, K. N., Eckart, D. R., Evensen, S. L., Hirose-Wong, S. M., ... Vasconcellos, C. G. (2008). Hui Malama O Ke Kai: Mobilizing to prevent youth violence and substance use with passion, common goals, and culture. *American Journal of Preventive Medicine, 34*(3), S67–S71.

AOSI, & USAID (2007). *Youth power centers: USAID-funded drug demand reduction program in Uzbekistan, Tajikistan and Fergana Valley of Kyrgyzstan. Collection of best practices.* Almaty, Kazakhstan: Alliance for Open Society International [AOSI] and United States Agency for International Development [USAID].

Austin, A. M., Macgowan, M. J., & Wagner, E. F. (2005). Effective family-based interventions for adolescents with substance use problems: A systematic review. *Research on Social Work Practice, 15*(2), 67–83.

Bandura, A. (1994). *Social cognitive theory and exercise of control over HIV infection. Preventing AIDS: Theories and methods of behavioral interventions.* 25–59.

Bearinger, L. H., Sieving, R. E., Ferguson, J., & Sharma, V. (2007). Global perspectives on the sexual and reproductive health of adolescents: Patterns, prevention, and potential. *The Lancet, 369*(9568), 1220–1231.

Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development.* Sage.

Brook, J., Brook, D., Gordon, A., Whiteman, M., & Cohen, P. (1990). The psychosocial etiology of adolescent drug use: A family interactional approach. *Genetic, Social, and General Psychology Monographs, 116*(2), 111.

Chernova, Z. (2012a). Parenthood in Russia: From the state duty to personal responsibility and mutual cooperation. *Anthropology of East Europe Review, 30*(2), 1–19.

Chernova, Z. (2012b). The model of "soviet" fatherhood: Discursive prescriptions. *Russian Studies in History, 51*(2), 35–62.

Cho, H., Hallfors, D. D., & Sánchez, V. (2005). Evaluation of a high school peer group intervention for at-risk youth. *Journal of Abnormal Child Psychology, 33*(3), 363–374.

Coday, M., Boutin-Foster, C., Sher, T., Tennant, J., Greaney, M., Saunders, S., ... Somes, G. (2005). Strategies for retaining study participants in behavioral intervention trials: Retention experiences of the nih behavior change consortium. *Annals of Behavioral Medicine, 29*(2), 55–65.

Cohen, J. (1988). *Statistical power for the behavioral sciences.* Hillsdale, NJ: Erlbaum.

Covington, S. S. (2008). Women and addiction: A trauma-informed approach. *Journal of Psychoactive Drugs, 40*(sup5), 377–385.

Dedoose (2016). *Web application for managing, analyzing, and presenting qualitative and mixed method research data (Version 7.0.23).* Retrieved fromLos Angeles, CA: SocioCultural Research Consultants, LLC. www.dedoose.com.

DiClemente, R. J., Crosby, R. A., & Salazar, L. F. (2006). Family influences on adolescents sexual health: Synthesis of the research and implications for clinical practice. *Current Pediatric Reviews, 2*(4), 369–373.

Donenberg, G. R., Paikoff, R., & Pequegnat, W. (2006). Introduction to the special section

on families, youth, and HIV: Family-based intervention studies. *Journal of Pediatric Psychology, 31*(9), 869–873.
Dugarova, E. (2016). *The family in a new social contract: The case of Russia, Kazakhstan and Mongolia.* UNRISD Research PaperGeneva: UNRISD.
Dusenbury, L. (2000). Family-based drug abuse prevention programs: A review. *The Journal of Primary Prevention, 20*(4), 337–352.
Essau, C. A., Sasagawa, S., & Frick, P. J. (2006). Psychometric properties of the Alabama parenting questionnaire. *Journal of Child and Family Studies, 15*(5), 595–614.
Golofast, V. (1991). *Social system and parenting in the USSR. European parents in the 1990s: Contradictions and comparisions.* Chapter 15259–270.
Goodman, R. (2017). Trauma theory and trauma-informed care in substance use disorders: A conceptual model for integrating coping and resilience. *Advances in Social Work, 18*(1), 186–201.
Gottfredson, D. C., & Wilson, D. B. (2003). Characteristics of effective school-based substance abuse prevention. *Prevention Science, 4*(1), 27–38.
Harakeh, Z., Scholte, R., de Vries, H., & Engels, R. (2005). Parental rules and communication: Their association with adolescent smoking. *Addiction, 100*(6), 862–870.
Hart, C., Nelson, D. A., Robinson, C. C., Olsen, S. F., McNeilly-Choque, M. K., Porter, C. L., ... McKee, T. R. (2000). *Russian parenting styles and family processes: Linkages with subtypes of victimization and aggression. Family and peers: Linking two social worlds*47–84.
Hooven, C., Walsh, E., Willgerodt, M., & Salazar, A. (2011). Articles: Increasing participation in prevention research: Strategies for youths, parents, and schools. *Journal of Child and Adolescent Psychiatric Nursing, 24*(3), 137–149.
Hutchinson, M. K. (2007). The parent-teen sexual risk communication scale (PTSRC-III): Instrument development and psychometrics. *Nursing Research, 56*(1), 1–8.
Ismayilova, L., & Terlikbayeva, A. (2018). Building competencies to prevent youth substance use in Kazakhstan: Mixed methods findings from a pilot family-focused multimedia trial. *Journal of Adolescent Health, 63*(3), 301–312.
Issoupova, O. (2012). *From duty to pleasure? Motherhood in Soviet and post-Soviet Russia. Gender, state and society in Soviet and post-Soviet Russia.* Routledge40–64.
Kabakova, M., & Maulsharif, M. (2013). Transformation of social roles and marital relations in Modern Kazakhstan: Social-psychological analysis. *Procedia-Social and Behavioral Sciences, 82*, 638–641.
Kislitsyna, O., Stickley, A., Gilmore, A., & McKee, M. (2010). The social determinants of adolescent smoking in Russia in 2004. *International Journal of Public Health, 55*(6), 619–626.
Kumpfer, K. L., Alvarado, R., Smith, P., & Bellamy, N. (2002). Cultural sensitivity and adaptation in family-based prevention interventions. *Prevention Science, 3*(3), 241–246.
Lescano, C. M., Brown, L. K., Raffaelli, M., & Lima, L. A. (2009). Cultural factors and family-based HIV prevention intervention for Latino youth. *Journal of Pediatric Psychology, 34*(10), 1041–1052.
Longfield, K., Robinson, A., Gray, R., & Jones, C. (2004). *A qualitative assessment of youth and adult perspectives on drug use, heroin, and risk for HIV/AIDS in Tajikistan and Uzbekistan, Central Asia.*
Maalouf, W., & Campello, G. (2014). The influence of family skills programmes on violence indicators: Experience from a multi-site project of the United Nations Office on Drugs and Crime in low and middle income countries. *Aggression and Violent Behavior, 6*(19), 616–624.
Marshal, M. P., & Chassin, L. (2000). Peer influence on adolescent alcohol use: The moderating role of parental support and discipline. *Applied Developmental Science, 4*(2), 80–88.
Mathers, B., Degenhardt, L., Phillips, B., Wiessing, L., Hickman, M., Strathdee, S., ... Toufik, A. (2008). Global epidemiology of injecting drug use and HIV among people who inject drugs: A systematic review. *The Lancet, 372*(9651), 1733–1745.
Milano, G., Saenz, E., Clark, N., Busse, A., Gale, J., Campello, G., ... Martelli, A. (2017). Report on the international workshop on drug prevention and treatment in rural settings organized by united nation office on drugs and crime (UNODC) and world health organization (WHO). *Substance Use & Misuse, 52*(13), 1801–1807.
Miller, K. S., Forehand, R., Wiegand, R., Fasula, A. M., Armistead, L., Long, N., ... Wyckoff, S. C. (2011). Making HIV prevention programming count: Identifying predictors of success in a parent-based HIV prevention program for youth. *AIDS Education and Prevention, 23*(1), 38–53.
Moilanen, K. L., Crockett, L. J., Raffaelli, M., & Jones, B. L. (2010). Trajectories of sexual risk from middle adolescence to early adulthood. *Journal of Research on Adolescence, 20*(1), 114–139.
Montano, D. E., & Kasprzyk, D. (2008). *Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. Health behavior and health education: Theory, research, and practice.* San Francisco, CA: Jossey-Bass67–92.
National AIDS Center - Kazakhstan (2018). *Global AIDS monitoring. Country report - Kazakhstan. Reporting period 2017. Astana, Kazakhstan*Retrieved fromwww.unaids.org/sites/default/files/country/documents/KAZ_2018_countryreport.pdf.
National Centre on Healthy Lifestyles (NCHL), United Nations Children's Fund (UNICEF), Public Opition Research Center (2005). *Youth's Knowledge, Attitudes, and Practices concerning HIV/AIDS, STIs, and Substance Use.* Almaty, Kazakhstan: National Centre on Healthy Lifestyles.
Noia, J. D., & Schinke, S. P. (2007). Gender–specific HIV prevention with urban early-adolescent girls: Outcomes of the keepin'It Safe Program. *AIDS Education & Prevention, 19*(6), 479–488.
Perrino, T., Gonzalez-Soldevilla, A., Pantin, H., & Szapocznik, J. (2000). The role of families in adolescent HIV prevention: A review. *Clinical Child and Family Psychology Review, 3*(2), 81–96.
Petrie, J., Bunn, F., & Byrne, G. (2007). Parenting programmes for preventing tobacco, alcohol or drugs misuse in children < 18: A systematic review. *Health Education Research, 22*(2), 177–191.
Pilkington, H. (2006). 'For us it is normal': Exploring the 'Recreational' Use of heroin in Russian youth cultural practice. *The Journal of Communist Studies and Transition Politics, 22*(1), 24–53.
Poznyak, V. B., Pelipas, V. E., Vievski, A. N., & Miroshnichenko, L. (2002). Illicit drug use and its health consequences in Belarus, Russian Federation and Ukraine: Impact of transition. *European Addiction Research, 8*(4), 184–189.
Ramirez, J. R., Crano, W. D., Quist, R., Burgoon, M., Alvaro, E. M., & Grandpre, J. (2004). Acculturation, familism, parental monitoring, and knowledge as predictors of marijuana and inhalant use in adolescents. *Psychology of Addictive Behaviors, 18*(1), 3–11.
Richter, L., Beyrer, C., Kippax, S., & Heidari, S. (2010). Visioning services for children affected by HIV and AIDS through a family lens. *Journal of the International AIDS Society, 13*(Suppl 2), I1.
Roy, É., Godin, G., Boudreau, J. F., Côté, P. B., Denis, V., Haley, N., ... Boivin, J. F. (2011). Modeling initiation into drug injection among street youth. *Journal of Drug Education, 41*(2), 119–134.
Scheer, S. D., & Unger, D. G. (1998). Russian adolescents in the era of emergent democracy: The role of family environment in substance use and depression. *Family Relations,* 297–303.
Schinke, S., Di Noia, J., Schwinn, T., & Cole, K. (2006). Drug abuse risk and protective factors among black urban adolescent girls: A group-randomized trial of computer-delivered mother-daughter intervention. *Psychology of Addictive Behaviors, 20*(4), 496–500.
Schinke, S. P., Fang, L., Cole, K. C., & Cohen-Cutler, S. (2011). Preventing substance use among black and hispanic adolescent girls: Results from a computer-delivered, mother-daughter intervention approach. *Substance Use & Misuse, 46*(1), 35–45.
Schinke, S. P., Schwinn, T. M., Di Noia, J., & Cole, K. C. (2004). Reducing the risks of alcohol use among urban youth: Three-year effects of a computer-based intervention with and without parent involvement. *Journal of Studies on Alcohol, 65*(4), 443–449.
Schinke, S. P., Fang, L., & Cole, K. C. (2009). Computer-delivered, parent-involvement intervention to prevent substance use among adolescent girls. *Preventive Medicine, 49*(5), 429–435.
Shabdenova, A., & Verevkin, A. (2016). Institute of parenthood in the context of the changing socio-economic conditions and strategies of life of modern family. *The Journal of Psychology & Sociology, 57*(2), 101–106.
Shor, R. (2000). Jewish immigrant parents from the former Soviet Union: A method for studying their views of how to respond to children's misbehavior. *Child Abuse & Neglect, 24*(3), 353–362.
Siddique, J., Hedeker, D., & Gibbons, R. D. (2017). Analysis of repeated measures and longitudinal data in health services research. *Methods in Health Services Research,* 1–27.
StataCorp (2017). *Stata: Multilevel Mixed-Effects Reference Manual, Release 15.* College Station, TX: StataCorp LLC. Retrieved from https://www.stata.com/manuals/me.pdf.
Stockings, E., Hall, W. D., Lynskey, M., Morley, K. I., Reavley, N., Strang, J., ... Degenhardt, L. (2016). Prevention, early intervention, harm reduction, and treatment of substance use in young people. *The Lancet Psychiatry, 3*(3), 280–296.
Thorne, C., Ferencic, N., Malyuta, R., Mimica, J., & Niemiec, T. (2010). Central Asia: Hotspot in the worldwide HIV epidemic. *The Lancet Infectious Diseases, 10*(7), 479–488.
UNODC (2017). *Prevention of drug use and treatment of drug use disorders in rural settings.* Vienna: United Nations Office on Drugs and Crime.
Vazsonyi, A. T., Hibbert, J. R., & Blake Snider, J. (2003). Exotic enterprise no more? Adolescent reports of family and parenting processes from youth in four countries. *Journal of Research on Adolescence, 13*(2), 129–160.
Velleman, R. D., Templeton, L. J., & Copello, A. G. (2005). The role of the family in preventing and intervening with substance use and misuse: A comprehensive review of family interventions, with a focus on young people. *Drug and Alcohol Review, 24*(2), 93–109.
Villarruel, A. M., Loveland Cherry, C. J., & Ronis, D. L. (2010). Testing the efficacy of a computer based parent adolescent sexual communication intervention for latino parents. *Family Relations, 59*(5), 533–543.
Wejnert, B., & Djumabaeva, A. (2005). From patriarchy to egalitarianism: Parenting roles in democratizing Poland and Kyrgyzstan. *Marriage & Family Review, 36*(3-4), 147–171.
Zhusupov, B. (2000). *Women, youth and HIV/AIDS in Kazakhstan.* Retrieved from Almaty, Kazakhstanwww.un.org/womenwatch/daw/csw/hivaids/Zhusupov.html.
Александров, А., Котова, М., Розанов, В., & Климович, В. (2010). Опыт профилактики употребления алкоголя среди детей и подростков. *Вопросы Наркологии, 2*, 57–64.
Ляпустина, О.В. (2011). Обзор адаптированных американских и отечественных многокомпонентных антинаркотических программ для детей и подростков. *Вестник Ленинградского Государственного Университета им. АС Пушкина, 5*(3), 74–84.