Published in final edited form as:

AIDS Behav. 2014 October ; 18(10): 1835–1846. doi:10.1007/s10461-013-0615-9.

Alcohol and Sexual Risk Reduction Interventions among People Living in Russia: A Systematic Review and Meta-Analysis

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Abstract

Russia has one of the highest rates of alcohol consumption and is experiencing one of the fastest-growing HIV epidemics in the world. Given these co-occurring health problems, we systematically reviewed combined alcohol and sexual risk interventions to reduce HIV among Russians. We completed comprehensive electronic searches to locate studies that (a) sampled people living in Russia, (b) used a behavioral intervention, and (c) assessed both alcohol and sexual risk behavior. These searches yielded 584 studies, of these, 2 were included. Compared with controls, intervention participants reported increasing their condom use (*ds* ranged from 0.12 to 0.85). Within-group improvements in sexual behaviors were found for both groups (*ds* ranged from 0.19 to 1.94); participants reported fewer sexual partners, more condom use, and reduced alcohol or drug use before sex. These findings support the need and potential benefits for alcohol and HIV interventions among Russians, and suggest directions for public policy.

Keywords

sexual risk reduction; HIV; alcohol; behavioral intervention; condoms

INTRODUCTION

HIV and Russia: A Succinct History

The impact of the HIV pandemic on Russia has increased dramatically over the past three decades. Early in the pandemic, the Union of Soviet Socialist Republics (USSR) remained largely unaffected by HIV [1]. The incidence of HIV remained low with approximately 100 to 200 new cases registered each year during the early 1990s [1]. With the collapse of the Soviet Union in 1991, Russia experienced one of the most rapidly growing HIV epidemics globally, accounting for nearly 70% of the known infections in Eastern Europe and Central Asia today [2].

Many causes explain the escalating HIV epidemic in Russia. The political, social, and economic instability of the post-Soviet Russian Federation led to increased prostitution, injection drug use (IDU), and alcohol as well as other substance abuse [3]. Economic upheaval, unemployment, and limited resources for dealing with social and health problems created an environment conducive to rapid expansion of the HIV epidemic in the circumstances of post-Soviet transformation [4, 5].

As the epidemic increased in scope, measures to address its growing impact have been hampered by late recognition of the scale of the problem, a misunderstanding regarding the cause of HIV (i.e., as HIV was presumed to be associated with homosexuality and homosexuality remained a punishable offence until 1993 under Article 121 of the Soviet Criminal Code [6]), and cultural stigma toward IDUs—the primary affected group in Russia [1]. Underestimates of the incidence and prevalence of HIV meant that inadequate resources were invested in fighting HIV. In addition, competing health priorities and counterproductive narcotics legislation also fueled the epidemic [1].

Since 1995, a series of outbreaks of HIV infection have occurred in over 30 cities in the Russian Federation [7–10]. Nearly 63,000 Russians tested positive for HIV in the first ten months of 2012, a 13% increase from the previous year, and the HIV/AIDS mortality rate grew by 14% from January to October 2012 [11]. The number of HIV cases in Russia grew rapidly during the late 1990s and continues to increase [11, 12]; the number of people officially registered as living with HIV in the Russian Federation is 125 times more than the rates 10 years ago [13]. Moreover, the epidemic is distributed unevenly across the country, with more than half of all infections being reported in just 10 regions (see Figure 1) [12].

As the epidemic in Russia has evolved, so too have the behaviors associated with its spread. For example, transmission of HIV was initially concentrated among IDUs but recent surveillance data suggest that the epidemic is more widespread [14]. The proportion of HIV cases caused by heterosexual intercourse has increased steadily since the late 1990s, making heterosexual contact the leading cause of new infections [11]. In Orenburg, for example, one of the most affected regions in Russia, 64% of newly registered HIV cases were attributed to sexual intercourse [15]. HIV transmission through heterosexual contact increased from 6 to 25% between 2001 and 2004 [13, 16]. The bridge between IDUs and the general population occurs through heterosexual contact with sexual partners of IDUs and commercial sex workers [17, 18].

HIV is now the third leading cause of premature death in Russia [19]. The impact of the HIV epidemic threatens to devastate Russia within the coming years and could greatly affect the economic and political stability of the country [1]. In order to arrest the emerging HIV epidemic, research is urgently investigating the factors driving the Russian epidemic in order to identify targets for intervention practice and policy. Among the behavioral factors driving the epidemic is widespread alcohol use and abuse.

Alcohol Use and HIV Risk in Russia

Russia has one of the highest rates of alcohol consumption per capita in the world; consequently, it experiences the highest percentage of all disability-adjusted life-years (DALYs) attributable to alcohol globally [20]. Heavy drinking is part of the culture and drinking alcohol is an integral part of Russian life [21]. Russian men (15 years and older) consume, on average, 35 liters of alcohol per year [22]. Given the same level of alcohol consumption, Russia is one of the few countries with high patterns of risk drinking that result in greater alcohol-attributable burden of disease for the country [22]. Russian women now also consume alcohol at very high levels; in the short period from 1996 to 2005, Russian women's alcohol consumption increased from 1.5 to 16 liters per capita [22, 23].

The importance of alcohol consumption on sexual decision-making is widely recognized, and a substantial body of research supports an association between alcohol use and sexual risk behaviors among a wide variety of populations [24–30]. Consuming large quantities of alcohol is associated with having more sexual partners, unprotected sex, and concurrent sexual partners [31], sexual behaviors and patterns that increase the risk of acquiring HIV infection [32].

A high rate of alcohol consumption among Russians likely increases their risk for sexual transmission of HIV. Substance use, including alcohol, as well as substance use prior to sex is associated with sexual risk behaviors among Russians [33, 34]. Among patients at a Russian sexually transmitted infection (STI) clinic, 50% showed evidence of alcohol misuse [34]. Among heavy drinkers (defined as more than 14 drinks per week for men and 7 drinks per week for women [35]), 13% tested positive for an STI and 48% reported ever having an STI [36]. The literature documenting an association between alcohol use and sexual risk behaviors in Russia “provides a compelling call to action” [37].

The Current Study

The impact of the HIV epidemic threatens to devastate Russia within the coming years and could greatly affect the stability of the country [1]. Identifying populations at risk for HIV and developing interventions to reduce sexual risk behaviors in populations vulnerable to HIV is of great public health importance. Despite the growing HIV epidemic among alcohol-abusing populations in Russia, limited research has addressed sexual risk behaviors among alcohol using or abusing populations in Russia. Therefore, the purpose of this study is to conduct a systematic review and meta-analysis of combined alcohol and sexual behavior interventions to reduce HIV among Russians. We examine the extent to which combined alcohol and sexual risk reduction interventions affect (a) condom use, (b) number of partners, and (c) alcohol use. We hypothesized that participants who receive a behavioral

intervention would report fewer sexual risk behaviors and lower alcohol consumption compared to controls. This study contributes to our understanding of the HIV epidemic in the Russian Federation, identifies the potential impact of interventions addressing alcohol and sexual risk behavior, and provides recommendations for intervention development.

METHODS

Search Strategy

Several strategies were used to obtain relevant studies meeting our inclusion criteria. First, studies were retrieved from electronic databases (PsycINFO, The Cochrane Library, CINAHL, Web of Science, Global Health, Dissertation Abstracts, CORK, PubMed, ERIC, and EMBASE) using a Boolean search strategy. The searches consisted of the following broad terms: alcohol, sex, and Russia. Search terms were modified using individual database search guidelines, as needed, for each electronic database searched. For example, the search terms used in our PubMed search were as follows: (binge drinking OR (binge AND (alcohol OR ethanol)) OR alcohol drinking OR alcohol abuse OR alcoholic OR alcohol OR “alcohol-related disorders”[MeSH] OR alcoholism OR intoxicat* OR drunk*) AND (“sexually transmitted diseases”[Mesh] OR “sexually transmitted”[tiab] OR STI OR STD OR AIDS[sb] OR condom OR unsafe sex OR sexual behavior OR (risk OR risk taking OR risk factor*) AND (sex OR sexu* OR sexual behavior)) AND (Russia or “Russian Federation” or Russian). Second, reference sections of relevant reviews and included studies were reviewed. Finally, unpublished papers (e.g., dissertations or conference reports) were sought to avoid publication bias (positive and stronger effects reported in published vs. unpublished studies) [38]. No language restrictions were applied.

Inclusion criteria

Studies were included if they (a) sampled people living in Russia, (b) provided a combined alcohol and sexual risk reduction intervention, (c) assessed both alcohol and sexual risk behaviors, (d) included a control or comparison group, and (e) provided sufficient information needed to calculate between-group effect size estimates. Consistent with the selection criteria, studies were excluded if they did not focus on alcohol and sexual risk behavior, or failed to include a comparison condition. Studies that fulfilled selection criteria and were available by April 2013 were included. Comprehensive electronic searches identified 584 potentially relevant reports; of these, 367 were excluded on the basis of their titles and abstracts because they did not meet inclusion criteria. Of the 130 full-text articles screened for eligibility, 123 were excluded because they did not (a) provide a combined alcohol and sexual risk reduction intervention, (b) assess both alcohol and sexual risk behavior, or (c) include a control or comparison group. We included 2 studies (and 5 supplemental manuscripts providing further study, sample, and intervention details) in the final analysis (see Figure 3) [39–45]. To examine the efficacy of combined alcohol and sexual risk reduction interventions for people living in Russia, we conducted a systematic review and meta-analysis based on the two available studies.

Study Outcomes

We calculated individual effect sizes for each alcohol or sexual behavior outcome available in the manuscripts reporting data from the two studies. Ten outcomes were included: (a) multiple sexual partners, (b) consistent condom use, (c) percentage of participants who used condoms, (d) percentage of sexual events protected by condoms, (e) used condom at last sexual intercourse, (f) number of protected (unprotected) sex acts, (g) alcohol use before sex, (h) drug use before sex, (i) heavy drinking, and (j) injection drug use. All behaviors were measured at 3- and 6-month follow-ups for the prior 3 months except for condom use at last sexual intercourse.

Effect Size Derivation

Effect sizes (ES) were calculated for alcohol and sexual risk behavior outcomes. We calculated ES in the form of the standardized mean difference (between-study) or standardized mean gain (within-study), d , which is defined as the mean difference between the intervention and control group or mean change from baseline to follow-up divided by the pooled standard deviation or the standard deviation of the pre-post difference score [46, 47]. We controlled for baseline in calculating the standardized mean difference [47]. Reported odds ratios (OR) (e.g., used condom at last sexual intercourse) were transformed to d using the Cox transformation [48]. The standard error for each d was used to calculate 95% confidence intervals [49]. If the 95% confidence interval around d includes zero, the effect size is considered non-significant. When interpreting the magnitude of d , we used Cohen's [46] guidelines of small ($d = 0.20$), medium ($d = 0.50$), and large ($d = 0.80$).

Multiple d s were calculated from each study because more than one outcome of interest was reported. When a study contained more than one measure of the same outcome (i.e., count of protected sex was measured using the number of protected sex acts and the inverse, the number of unprotected sexual acts during the past 3 months), the effect sizes were averaged. Positive values indicate alcohol and sexual risk-reduction (i.e., fewer unprotected sex acts) among (a) intervention (vs. control) participants and (b) over time.

Statistical Analysis

We calculated the weighted mean ES for (a) consistent condom and (b) any condom use using fixed effects procedures [50]. (Participants reporting consistent condom use or any condom use were the only variables consistently measured across the two studies.) The homogeneity statistic, Q , was also computed in order to determine whether the weighted mean effect size, d_+ , for consistent condom or any condom use shared a common effect size; a significant Q indicates a lack of homogeneity and an inference of heterogeneity. All analyses were conducted in Stata 12.0 [51] using macros provided by Lipsey and Wilson [50].

Coding and Reliability

Two independent coders (CWL, LAJSS) extracted study information, design and measurement (e.g., recruitment method, method of assessments), sample characteristics (e.g., gender, marital status), and content of control and intervention condition (e.g., number

of sessions, total dosage). Methodological study quality of the individual studies was assessed using 17 items (e.g., random assignment, blinding) adapted from previous measures [52–54]. The mean agreement between coders was 85%, signifying high reliability. Coding disagreements between coders were resolved through further review of the manuscript content and discussion.

RESULTS

Description of Studies, Samples, and Interventions

Overview—Tables 1 and 2 provide sample and intervention details for the studies. The studies were published in journals in 2008 (PREVENT) [39] and 2012 (The STI Clinic Study) [42]. The earliest dates of data collection were 2004 and 2009 for PREVENT and The STI Clinic Study, respectively. The two studies sampled a total of 415 adults living in Russia with an average retention rate of 88% and 83% at the 3- and 6-month follow-ups, respectively. Of the 451 participants sampled, 73% were men with a mean of 30 years of age (range from 18 to 56). Most (71%) participants reported having two or more sexual partners, 45% reported condom use, 38% reported having a STI, and of those with known HIV status, 15% were positive. Few participants (23%) reported current drug use (e.g., marijuana, heroin, and other stimulants). Most participants in The STI Clinic Study (82%) reported using alcohol prior to sex; all participants in PREVENT reported having a history of alcohol treatment. Both studies reported using behavioral science theory and conceptual models to guide their intervention design. Participants were followed-up at 3- and 6-months after baseline assessment. The total methodological quality score, used to assess overall quality of each intervention, was high (The STI Clinic Study = 84%; PREVENT = 88%).

The STI Clinic Study—Abdala et al. [42] evaluated a brief HIV prevention counseling intervention based on the Information-Motivation-Behavioral Skills model among patients receiving service at a STI clinic in St. Petersburg, Russia. This publicly-funded clinic provided services free of charge or for a nominal fee to all local residents. The IMB model was used to tailor the intervention to each participant's underlying risk factors, including alcohol and drug use, in attempt to promote sexual health and reinforce sexual risk reduction. STI clinic physicians referred patients to the study. Eligible patients (i.e., those patients 18 years of age or older who reported having two or more sexual partners or at least one causal partner and engaging in unprotected sex in the past 3 months) who consented to participate in the study completed a baseline assessment, a single counseling session (intervention participants only), and follow-up assessments at 3- and 6-months post-intervention. Participants randomized to the intervention condition received a 60-minute counseling session that consisted of information, motivation, and alcohol-related sexual risk reduction skills-building training to prevent HIV; the control group received the same written HIV prevention information material as was provided to the intervention group. The counseling session contained three main components: (a) HIV prevention information (e.g., dispelling myths about STD/HIV infection), (b) HIV prevention motivation (e.g., decisional balance exercises), and (c) HIV prevention behavioral skills (e.g., functional analysis of risk behaviors and goal setting exercise). The session included a review of substance-related lapses to unsafe behavior with alcohol use identified as a major trigger for risk behaviors.

The counselors discussed the concept of triggers and asked participants to think of ways to manage triggers to reduce their risks. Participants practiced risk-reduction skills by role-playing with the counselor.

PREVENT—Samet et al. [39] evaluated a sexual risk reduction intervention among narcology patients in St. Petersburg. Patients with alcohol and/or drug dependence were recruited from two substance abuse facilities. The intervention used in PREVENT (Partnership to Reduce the Epidemic Via Engagement in Narcology Treatment) was based on the Brief Counseling intervention used in Project RESPECT [55], a Centers for Disease Control and Prevention (CDC) designated evidence-based US-based intervention. The brief counseling intervention, guided by the Theory of Reasoned Action [56] and Social Cognitive Theory [57], is a 2-session counseling intervention designed to reduce sexual risk by focusing on personal risks and emphasizing risk reduction skills. This intervention was modified by including both HIV-positive and -negative patients, emphasizing basic HIV-related information (low in this population), including a skills-training component that emphasized sexual, alcohol, and injection drug use behaviors, and provided boosters to sustain intervention effects. Trained physician research associates approached patients after initial detoxification to assess for eligibility. Patients were eligible for the study if they were 18 years of age, were given a primary diagnosis of alcohol or drug dependence (60% alcohol, 32% heroin, and 8% alcohol and drugs), reported unprotected vaginal or anal sex in the past 6 months, and were willing to undergo HIV testing or had been previously diagnosis with HIV. Patients who agreed to participate in the study were randomly assigned to either PREVENT (intervention) or standard treatment (control). Intervention participants received two, 30- to 60-minute, personalized sexual behavior counseling sessions plus three monthly telephone booster sessions ($M = 2.20$, $SD = 1.03$); controls received regular addiction treatment that did not include sexual behavior counseling. The first session included a personalized risk assessment and the second session included HIV test results and risk-reduction skills building that included developing positive attitudes regarding sexual health and emphasized the role of alcohol. Booster sessions reinforced participants' risk-reduction goals. Participants completed baseline assessments and follow-up assessments at 3- and 6-months post-intervention.

Between-Groups Changes: Impact of Intervention Compared with Controls

The between-group d for each included study appears in Table 3. Compared with controls, the intervention participants in The STI Clinic Study reported more consistent condom use at 3-month ($d=0.28$), higher proportion of condom use at 3- and 6-months follow-ups ($ds = 0.28$ and 0.12 , respectively), and lower drug use before sex at 6-month follow-up ($d=0.29$). In PREVENT, intervention participants reported consistent condom use ($d=0.80$) or any condom use ($d=0.85$) at 6-month follow-up compared with controls.

Within-Group Changes: Impact of Intervention over Time

As detailed in Table 4, within-group improvements in sexual risk behaviors emerged for both intervention and control groups; within-group effect sizes range from 0.19 to 1.94. The effect sizes for all outcomes were statistical significant (i.e., 95% CI does not contain zero), except for the number of protected sex acts and the proportion of participants who use

condom at 6-months and drug use before sex at 3-months in The STI Clinic Study. These trends were maintained at 6-month follow-ups, with the largest effect size emerging for consistent condom use among the intervention participants in PREVENT ($d = 1.94$, 95% CI = 0.81, 1.21).

Proportion of Participants Using Condoms

Following fixed effects assumptions in all analyses, we calculated the weighted mean ES (d_+) for two variables, consistent condom use and any condom use, that was measured consistently across both The STI Clinic Study and PREVENT. For between-group analyses, intervention participants reported consistent condom use at the 3-month ($d_+ = 0.33$, 95% CI = 0.09, 0.56) but not at the 6-month follow-ups ($d_+ = 0.22$, 95% CI = -0.02, 0.46). The ES were homogeneous at the 3-month follow-up, $Q(1) = 0.49$, $p = 0.48$, but not at the 6-month follow-up, $Q(1) = 6.66$, $p < 0.01$. There were no differences between the intervention and control participants with respect to any condom use ($d_{+s} = 0.12$ and 0.18 for 3- and 6-month assessments, respectively).

We also examined changes over time (i.e., within-group analyses). Both the intervention and control groups reported consistent condom use at 3-month ($d_+ = 1.20$, 95% CI = 1.03, 1.37; $d_+ = 0.89$, 95% CI = 0.73, 1.04) and 6-month follow-up ($d_+ = 0.56$, 95% CI = 0.41, 0.71; $d_+ = 0.53$, 95% CI = 0.39, 0.68). Significant heterogeneity was found across the 3- and 6-month assessments for the intervention and control groups: (a) intervention at 3-months, $Q(1) = 16.02$, $p < .01$, (b) intervention at 6-month, $Q(1) = 56.79$, $p < .001$, (c) controls at 3-months, $Q(1) = 11.94$, $p < .001$, and (d) controls at 6 months. $Q(1) = 18.20$, $p < .001$. To examine variation in improvement across the intervention and control groups, we calculated Q_B . Compared with controls, intervention participants reported more condom use at the 3-month follow-up, $Q_B(1) = 7.08$, $p = .01$, but no difference in condom use at the 6-month follow-up, $Q_B(1) = 0.06$, $p = .81$. Consistent with the findings for consistent condom use, both the intervention and control groups reported changes in any condom use at 3-month ($d_+ = 0.54$, 95% CI = 0.40, 0.68; $d_+ = 0.42$, 95% CI = 0.28, 0.56) and 6-month follow-up ($d_+ = 0.37$, 95% CI = 0.23, 0.51; $d_+ = 0.23$, 95% CI = 0.10, 0.37). Significant heterogeneity was found across the 3- and 6-month assessments for the intervention and control groups, except for any condom use at 6-months for the controls: (a) intervention at 3-months, $Q(1) = 13.92$, $p < .001$, (b) intervention at 6-month, $Q(1) = 32.18$, $p < .001$, (c) controls at 3-months, $Q(1) = 15.24$, $p < .001$, and (d) controls at 6 months. $Q(1) = 0.51$, $p = .48$. No differences in any condom use were found between the intervention and control groups at 3- or 6-month follow-up.

DISCUSSION

This systematic review and meta-analysis evaluated combined alcohol and sexual risk reduction interventions for HIV prevention among people living in Russia. We integrated the results of two alcohol and HIV-risk reduction interventions involving 451 participants in St. Petersburg. For this initial systematic review, we examined the efficacy of the interventions for reducing alcohol and risky sexual behavior using both between-group comparisons as well as temporal trends within groups. Overall, our analyses showed that (a)

intervention participants reported increases in condom use relative to controls and (b) both intervention and control participants reduced their alcohol and sexual risk behaviors over time.

Overall, these early results are encouraging with respect to the success of interventions that address both alcohol and sexual risk behavior to prevent HIV. Our findings are consistent with past work documenting the efficacy of combined alcohol and sexual risk behavioral interventions for increasing condom use [58–60] and, to our knowledge, this meta-analysis is the first to examine the efficacy of combined alcohol and sexual risk reduction counseling intervention of HIV among people living in Russia. By documenting the efficacy of interventions, meta-analyses provide an empirical foundation on which future development of interventions may rest as well as recommendations for additional, primary-level research. This approach will direct scientific resources most efficiently towards the specific intervention needs of people living in Russia.

The studies assessed alcohol and sexual risk behaviors over a limited time period, with the longest assessment at 6 months post-intervention. For PREVENT, the analysis shows large within-group ES at 3- and 6-month follow-ups whereas The STI Clinic intervention generally reported larger effects in the short-term. One possible explanation for these differences is methodological; that is, many of the participants in PREVENT had prior experiences with the negative effects of alcohol consumption and sexual risk behavior and may have been more receptive to change their behavior [61]. A second explanation for that the larger effect seen at 6-month follow-up in PREVENT is that it reflects the intervention dose (i.e., multiple vs. single-session intervention in The STI Clinic Study), this finding is consistent with previous studies [62]. A review of meta-analyses of behavioral HIV interventions found that intervention intensity (i.e., number of sessions and duration) moderates intervention efficacy [63]. Furthermore, a number of longitudinal studies have examined changes in HIV risk behaviors for patients currently in substance abuse treatments and found that longer retention in treatment as well as completion of treatment correlate with an increase in protective behaviors [64]. The results from PREVENT suggest that interventions targeting alcohol use may be more successful in reducing sexual risk behavior. Interventions that address both alcohol use and sexual risk behaviors among South Africans have shown similar reductions in sexual risk behaviors at 3- and 6-month follow-ups [65, 66]. Additional research is needed to fully assess the efficacy of interventions targeting alcohol abuse populations to strengthen or reinforce safer sexual behavior in the Russian Federation.

Limitations

Study findings need to be understood in light of limitations. First, all outcomes were self-reported, which are vulnerable to social and cognitive biases [67]. Second, as with any meta-analysis and particularly given the early stage of research on this topic in Russia, we were limited by the number and features of the studies available. Our comprehensive literature search indicated that only two alcohol and HIV interventions have been conducted in Russia, limiting our ability to compare efficacy across types of interventions, to determine the relation between study characteristics and the magnitude of effect sizes, and to

generalize beyond the participants, sites, and regions investigated. Finally, the interventions were conducted in St. Petersburg even though a large proportion (59%) of HIV cases is concentrated within 10 major cities and regions (see Figure 1). To date, prevention efforts have been largely restricted to a few central hospitals in Russia. Our hope is that intervention efforts will spread to other cities/regions that are also experiencing high rates of HIV.

Despite the modest sample size, meta-analytic scholars maintain that two studies are sufficient to conduct a meta-analysis [68]. Conducting a meta-analysis rather than a narrative review enabled transparent, valid, and reliable methods such as (a) the use of a comprehensive search strategy, (b) systematic coding of study, sample, and intervention characteristics, and (c) precise estimation of effect size magnitude. Calculation of effect size statistics not only permits cross-study comparisons, but also identifies the *magnitude* and *direction* (as well as the significance) of the observed effects. Narrative reviews often rely on statistical significance (rather than effect size magnitude) to judge the study findings; the former is a poor basis for comparing studies because effects of identical magnitude can differ in statistical significance [69]. Rigorous methods used by meta-analysts provide a *best practices approach* for reaching conclusions, especially when a literature is small.

Implications for Intervention Research

An important gap identified by our research is the limited attention to interventions for women. Earlier, we noted that there has been a dramatic increase in hazardous alcohol use among women [70]; in addition, the overall proportion of Russian women with HIV increased from 22% to 42% from 2001 to 2009 [11]. The total number of HIV infections through heterosexual contact increased from 18% to 34% from 2001 to 2007, and sexual contact accounts for 63% of the transmissions among women [71]. Furthermore, in 2009, women aged 15–19 years and 20–24 years reported more newly diagnosed HIV infection than men [11], showing a clear emerging trend of HIV transmission from the main vulnerable groups to general public through sexual contact. Despite these data, few women were included in the extant studies. These facts suggest that interventions that include more women in the sample and provide relevant resources may see greater intervention success. Multiple treatments approach targeting alcohol abuse population will be required to combat the HIV epidemic and to effectively reduce HIV infection. [72]. Specific recommendations for future development of programs to prevent HIV in Russia appear in Box 1.

Box 1

Recommendations for Research on Alcohol-related HIV Interventions in Russia

- Alcohol use should be integrated as a risk factor in programs to prevent HIV.
- Increase the number of women receiving sexual risk reduction programs and enrolled in randomized controlled trials.
- Recruit people with different socio-demographic characteristics or risk profiles to increase the ecological value of the intervention.

- Increase the length of follow-ups as well as inclusion of booster sessions to determine and sustain the long-term programmatic effects of alcohol and sexual risk reduction interventions to reduce the incidence of HIV.
- Measure biological outcomes to determine whether changes in sexual risk behaviors lead to reductions in disease transmission.

CONCLUSIONS

Our analysis shows that brief alcohol and HIV interventions can also advance HIV risk reduction goals. The literature supporting this conclusion is limited, especially in light of the magnitude of the HIV and alcohol epidemics in Russia. Continued research is needed to develop interventions that lead to larger and more durable effects, to tailor interventions to meet the needs of women as well as men, to explore the generalizability of these results to the wide variety of settings throughout the Russian Federation.

Acknowledgments

Research reported in this manuscript was supported by the National Institute of Alcohol Abuse and Alcoholism of the National Institutes of Health under award number R01-AA021355 to Lori A. J. Scott-Sheldon. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. We thank Tania B. Huedo-Medina, PhD, for translating our abstract from English to Spanish.

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Figure 1.

Prevalence of HIV in the Russian Federation (2003)

Map data source: Federal AIDS Center, Russian Federation

Map production: Public Health mapping and GIS, World Health Organization [12]. Used with permission from the World Health Organization.

Figure 3.
Selection process for study inclusion in the analysis

Table 1
Characteristics of the Sample and Interventions Included in the Systematic Review

Study (Year)	Sample	Narrative Description	Design and Dose	Risk Behaviors
The STI Clinic Study: Abdala et al. (2012)[42]	STI Clinic Patients: N _{INTERV} = 154, N _{CTRL} = 153; mean age = 27 (SD = 8); 71% men; 21% married; 51% completed some post-secondary education; 42% earned less than 15,000 rubles (484 USD); 73% alcohol misuse (AUDIT score 8)	Based on the IMB model of HIV prevention. The intervention included an individual-level HIV/AIDS education, motivation, behavioral skills intervention that included role-playing alcohol-related sexual risk reduction skills.	RCT; 1 session, total dose = 60 minutes	72% MSP; 40% CDM; 36% IDU; 36% STI; 82% ABS
PREVENT: Samet et al. (2008) [39]	Alcohol and Drug Treatment Patients: N _{INTERV} = 77, N _{CTRL} = 67; mean age = 33; 75% men; 33% married; 93% had at least a high school education; 60% alcohol dependent, 32% heroin dependent, 8% dual diagnosis	Adopted from the Brief Counseling Intervention of Project Respect [55] which is based on the Theory of Reasoned Action and Social Cognitive Theory [56, 57]. The intervention included HIV and alcohol education, HIV testing and counseling, addiction treatment, and condom promotion and distribution plus three telephone boosters.	RCT; 2 sessions, total dose = 90 minutes	69% MSP; 55% CDM; 40% IDU; 15% HIV; 43% STI

Note. N_{INTERV} number of people in intervention group; N_{CTRL} number of people in control group; USD, U.S. Dollars; AUDIT, Alcohol Use Disorders Identification Test [73]; IMB, Information, Motivation, and Behavioral Skills Model; RCT, randomized controlled trial; MSP multiple sexual partners; CDM, condom use; IDU injection drug user; STI sexually transmitted infections; ABS, used alcohol before sex.

Table 2

Description of the Intervention Goals and Measures

Study	Intervention Goals		Measures	
	Information and Psychosocial	Behavioral Skills	Sexual and Other Risk Behaviors	
The STI Clinic Study [42]	• Attitudes	• Condom skills	• Number of protected (unprotected) sex acts	
	• Decision balance exercises	• Communication Skills	• Percentage of sex events protected by condom	
	• Functional analysis of risk behaviors	• Self-management skills	• Condom use, last sex event	
	• Goal setting exercises	• Managing relapse and triggers	• Consistent condom use	
	• Relapse/triggers	• Alternative activities for reducing risk	• Any condom use • Multiple sexual partners • Alcohol or drug use before sex	
PREVENT [39]	• HIV knowledge	• Condom skills	• Number and percentage of safe sex episodes	
	• Attitudes	• Communication/negotiation skills	• Consistent condom use	
	• Sexual risk sensitization	• Injection drug use skills	• Any condom use	
	• Identifying high-risk situations and barriers to safer sex	• Discussion of personal risk and risk reduction		
		• Development of a behavioral change plan		

Table 3

Effect Sizes for Between-Group Analyses

Study	Recall (weeks)	N _{interv}	N _{ctrl}	Sexual Behavior, <i>d</i> (95% CI)					
				Multiple partners	Consistent Condom Use	Condom Use (% participants)	Condom use (% sex acts)	Use condom at last sex	Protected sex acts (number)
Abdala et al. [42–45]	13	154	153	0.10 (−0.13, 0.35)	0.28 (0.01, 0.55)	0.13 (−0.11, 0.36)	0.28 (0.25, 0.30)	0.03 (−0.21, 0.27)	0.09 (−0.14, 0.31)
	26	154	153	0.17 (−0.08, 0.43)	0.05 (−0.22, 0.32)	−0.06 (−0.28, 0.17)	0.12 (0.09, 0.14)	0.05 (−0.18, 0.28)	0.11 (−0.12, 0.33)
Samet et al. [39–41]	13	84	78	-	0.48 (−0.01, 0.96)	0.10 (−0.27, 0.47)	-	-	-
	26	77	67	-	0.80 (0.30, 1.30)	0.85 (0.47, 1.23)	-	-	-
Alcohol and Drug Use, <i>d</i> (95% CI)									
Abdala et al. [42–45]	13	154	153	Alcohol use before sex	Drug use before sex	Heavy Drinking	Intravenous Drug Use		
	26	154	153	0.08 (−0.15, 0.31)	0.20 (−0.03, 0.42)	-	-		
Samet et al. [39–41]	13	84	78	0.00 (−0.23, 0.23)	0.29 (0.05, 0.53)	-	-		
	26	77	67	-	-	−0.31 (−0.64, 0.02)	0.11 (−0.22, 0.44)		

Note. Positive effect sizes should be interpreted as improvements in the intervention group compared with controls. All effect sizes were controlled for differences at baseline. Partner type (steady, casual, or other) and type of sex act (vaginal or anal) was unspecified in both studies except for proportion of participants reporting condom use, proportion of sexual acts in which condoms were used, and the number of protected sex. For these three measures, the type of sex act was identified as vaginal or anal sex.

Table 4

Effect Sizes for Within-Group Analysis

		Dependent measure, <i>d</i> (95% CI)						
Study (recall week)	Multiple partners	Consistent Condom Use	Condom Use (% participants)	Condom use (% sex acts)	Use condom at last sex	Protected sex acts (number)	Alcohol use before sex	Drug use before sex
Abdala et al. [42–45] [†]								
13	0.60 (0.42, 0.76)	1.01 (0.81, 1.21)	0.38 (0.21, 0.54)	0.59 (0.57, 0.62)	0.44 (0.28, 0.61)	0.17 (−0.05, 0.40)	0.37 (0.20, 0.53)	0.33 (0.17, 0.50)
	0.49 (0.32, 0.66)	0.73 (0.55, 0.91)	0.25 (0.09, 0.41)	0.31 (0.29, 0.34)	0.41 (0.25, 0.58)	0.08 (−0.14, 0.31)	0.29 (0.13, 0.45)	0.14 (−0.02, 0.30)
26	0.87 (0.68, 1.06)	0.32 (0.15, 0.48)	0.14 (−0.02, 0.30)	0.46 (0.43, 0.48)	0.32 (0.15, 0.48)	0.16 (−0.06, 0.38)	0.20 (0.04, 0.36)	0.59 (0.42, 0.76)
	0.70 (0.52, 0.88)	0.37 (0.20, 0.53)	0.20 (0.04, 0.36)	0.34 (0.31, 0.37)	0.37 (0.20, 0.53)	0.05 (−0.17, 0.28)	0.19 (0.03, 0.35)	0.30 (0.14, 0.46)
Samet et al. [39–41] [‡]								
13	-	1.85 (1.49, 2.21)	0.97 (0.70, 1.23)	-	-	-	-	-
	-	1.37 (1.05, 1.69)	0.87 (0.60, 1.13)	-	-	-	-	-
26	-	1.94 (0.81, 1.21)	1.10 (0.81, 1.39)	-	-	-	-	-
	-	1.14 (0.83, 1.45)	0.31 (0.06, 0.56)	-	-	-	-	-

Note. Positive effect sizes should be interpreted as risk reduction over time (i.e., pre- to post-intervention). Shaded rows indicate intervention groups.

[†] Sample sizes: treatment *n* = 154; control *n* = 153.

[‡] Sample sizes: treatment *n* = 84 at 3 months, *n* = 78 at 6 months; control *n* = 77 at 3 months, *n* = 67 at 6 months.