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Research Article

Alcohol use, antiretroviral medication adherence and Sexual behaviors among young HIV-Infected Women engaged in HIV Medical Care in St. Petersburg, Russia

Abstract

With over a million people diagnosed with HIV by the beginning of 2016, Russia has one of the world's most rapidly developing HIV epidemics. Evidence suggests young women in Russia are at high risk for HIV and comprise a substantial portion of newly infected people. Our study is one of the first to explore via qualitative interviews among young Russian women in HIV care in St. Petersburg (N=30) the role of alcohol use in their HIV treatment adherence and sexual behaviors. Our study reveals that alcohol misuse among Russian women being treated for HIV may be underreported and misinterpreted. Findings emphasize the role of biographic and socio-environmental factors and differences in how alcohol fuels potentially risky and harmful health behaviors among young HIV-infected women under treatment. Programs designed with the focus on individual variations in the difficulties women face in reducing their alcohol use that are gender- and culturally-congruent in Russia are urgently needed.

Introduction

In Russia the HIV and injection drug use (IDU) epidemics are intertwined, with HIV prevalence and incidence rates showing marked increases; in 2014, for example, HIV incidence was 87% higher than in 2013 [1]. In 2015 1% of the population was HIV-infected across Russian regions [2], with estimates suggesting as many as one-third of HIV-infected individuals who inject drugs globally reside in Russia [3]. Over the last decade there was an increasing concern regarding the potential for HIV transmission from male injection drug users (IDUs) - an initial core group of the HIV epidemic in Russia - to their female sexual partners [4,5]. By the end of 2014 the cumulative number of women living with HIV/ AIDS tripled since 2006 (from 116,501 to 330,000) and reached 36.9% of registered HIV cases [1,6]. According to the Head of the Federal Scientific and Methodological Center for Prevention and Control of AIDS in Russia, by the end of 2015 over a million people were to be officially registered as living with HIV/AIDS and in two to three years this number is projected to double [7]. Currently, 2.5% of men and 1.2% of women between the ages of 30 and 35 are registered as having HIV; however, the actual prevalence may be as much as two times higher [7]. Thus, there is an urgent need to improve HIV prevention efforts, including strategies to promote the number of young HIV-infected women in HIV medical care who receive treatment and achieve high levels of antiretroviral (ARV) medication adherence.

St. Petersburg is the second largest city in Russia with a population over 5 million people. Similar to elsewhere in the country, the HIV epidemic in St. Petersburg was initially driven by IDU among young men [8]. In 2013 the cumulative number of registered HIV cases in the region was 54,513 [9], with an HIV prevalence rate exceeding 1% [2]. Annually, there are over 3,500 incident HIV cases in St. Petersburg, making it one of the most severely affected regions of the country. According to the St. Petersburg AIDS Center, by the end of 2012 there were 29,676 patients registered for outpatient HIV medical care, of which 8,571 (29%) were receiving ARVs [10]. One recent study among IDU in St. Petersburg revealed that only 9% of those with HIV were in care; one the most significant factors contributing to patient loss along the treatment cascade is

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alcohol use [11]. Many HIV-infected women in St. Petersburg, who were not IDU, were infected via sexual contacts with IDU, and such risks were enhanced by alcohol use [8].

Previous studies suggest the need to focus on alcohol misuse to better understand its association with HIV-risks behaviors - unsafe injection practices among IDUs, such as sharing injection tools and drug solution with infected individuals, and not condom protected sex in Russia [12,13], and in other international settings [14,15]. In Russia adult consumption measured in pure alcohol is estimated to be 15.7 liters per capita and mainly characterized by consumption of spirits [16]. The consumption of beer and light alcoholic beverages among youth and young women is increasing, reflected in the 20% annual growth in sales of gin-tonic drinks [2]. In 2010 alcohol consumption among women reached 12.6 liters per capita, with the 10.3% of women believed to be heavy drinkers [17]. Alcohol inebriation [18], abuse or dependence has been shown as a significant factor contributing to sexual risk and drug risk behaviors among IDU [19], their non-drug using sexual partners [20], and HIV-infected patients in St. Petersburg, Russia [21]. As in many other countries, in Russia alcohol misuse was associated with HIV treatment termination, and poor adherence to ARV medication regimens [22].

Alcohol use before sexual intercourse is not uncommon among young Russian women and is associated with sexual risk behavior engagement [23]. In one study, 85% of Russian sexual transmitted disease (STD) clinics patients reported occasional or multiple instances of recent alcohol use prior to sex [24]. Female patients with alcohol abuse or dependency have also been found to engage in more sexual risk behaviors relative to males in St. Petersburg [25]. Sex work was associated with unprotected sex and increased odds of sexually transmitted infections (STI) among HIV-infected Russians reporting heavy alcohol use [26]. After diagnosis many HIV-infected patients remain sexually active and engage in transmission risk behaviors; in St. Petersburg 16% of patients refused prescribed ARVs, over 50% had sexual contacts with HIV-negative or people with unknown status, and 30% of sexual episodes were not condom protected [27]. Existing studies with Russian HIV-infected samples suggest that alcohol use is associated with greater engagement in sexual risk behaviors, including sexual encounters with uninfected partners. Less is known about the role of alcohol in individual efforts to maintain health among women patients on HIV-treatment.

Despite the expanding HIV and IDU epidemics, the need to better understand and address the HIV epidemic in Russia still is under recognized [28]. While there has been significant progress and expanding knowledge regarding biomedical and socio-behavioral approaches for HIV epidemic control internationally [29], there are a limited number of efficacious HIV prevention and treatment interventions developed for Russia, with the majority of extant studies focused on IDUs [30-33]. For example, a recent systematic review revealed only two HIV prevention studies to address the intersection of alcohol and sexual risk behaviors in Russia [34]. Additionally, there is a paucity of studies conducted among young HIV-infected Russian women, despite the increasing incidence. Thus, this study is one of the first to explore young HIV-infected Russian women's experiences and perceptions regarding the impact of alcohol use on ARV adherence and sexual risk behaviors.

Methods

Procedures

From April to May, 2013 semi-structured individual elicitation interviews were conducted with HIV-infected women at the St. Petersburg clinic to explore the intersection between alcohol use, sexual behaviors, ARV adherence, and HIV medical care engagement. Participants were recruited during routine HIV medical care visits. The study inclusion criteria were: female, age 18-35, receiving ARV medications, and cognitively able to participate (as determined by medical staff). Each patient who met the eligibility criteria and was interested in participating, was referred to study staff until the full sample (N=30) was enrolled. Research participation was voluntary and confidential in compliance with the study's protocol as approved by Institutional Review Boards of Emory University (USA) and St. Petersburg AIDS Center (Russia). The elicitation interviews were conducted by trained psychologists who used a structured interview guide. At the end of the study participants were provided with HIV-related service referrals, informational materials and vitamins (with an approximately $15 value) as a compensation for their time and participation.

Interview guide

The overarching goal of the interview guide was to examine the role of alcohol in relationship to risk behavior and ARV adherence, and the challenges women report in maintaining safer sex behaviors and adherence to ARV medications. A structured interview guide was developed collaboratively by U.S. and Russian investigators. The interview guide began with less sensitive questions discussing general life circumstances (e.g., current living conditions; typical way to spend free time). The guide then progressed to a discussion the participant's substance use history, including IDU and alcohol use. Next, the association between alcohol use and sexual behaviors, including condom use, was addressed. Last, the guide included questions regarding the link between alcohol use and ARV adherence and engagement in HIV medical care. The interview guide was translated from English by a native speaker into Russian, and then back translated from Russian into English after piloting the guide with N=6 HIV-infected women recruited from the same clinic.

Qualitative data analyses

The individual interviews were audio recorded, transcribed verbatim, and analyzed using ATLAS.ti qualitative data analysis software (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany) based on Noticing-Collecting-Thinking (NTC) model of qualitative data analysis [35,36] following established methods to code for qualitative themes [37]. Themes and categories were identified inductively by the first author, a native Russian speaker, and were verified by the research team after translation into English and combined with supporting quotations. Quotes

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attributed to different categories often co-occur and overlap; for some quotes we created super-codes (themes), with secondary analyses for corresponding categories.

Sample characteristics

The sample comprised of 30 young HIV-infected women, 18 to 35 years of age (*M*=27 years), in specialized HIV care. Half the sample (15 respondents) reported past IDU experiences, 2 women revealed past engagement in sex work, 1 had prison experience, and 2 had partners with prison experience. Many women reported HIV-positive status and/or drug use of their past sexual partners. Most study participants had secondary vocational or university education and some professional experience. At the time of the data collection 19 had a permanent male partner, of which 11 were known being HIV-positive, 19 had children, 15 were employed.

Results

Alcohol use among young HIV-infected women: preferences and patterns

HIV-infected women reported a wide range of alcohol use patterns and preferences, from remaining sober to binge drinking as illustrated in what follows.

R20. ...None at all [alcohol] for half a year already. And not so much before that. Maybe just some beer at the weekend...I mean let's say you went to the cinema, took a beer there, or just simply vodka...

R17. ...I let myself relax...of course it is a good wine, it is champagne, it is martini...That is to say a good hook into the liver.

A common response to questions regarding actual alcohol use was drinking "a little for holidays". The alcohol of choice varied from beer and wine to strong liquors, such as vodka. Some women also mixed various kinds of alcohol. Alcohol was often used for "rest and relaxation" and in some cases constituted part of regular recreational social practices with friends and/or family. A majority of women described changes in alcohol use patterns over time with no or very limited alcohol use at the time of data collection, but reported greater alcohol use in the past.

R10. ...Half a liter of vodka I was always able to drink, well, when was healthy more or less.

Some women started drinking alcohol below the legal age, the youngest reported drinking at age 13.

R21. For the last time I had alcohol 5 years ago...I started smoking at 11, had a drink at about 13...during the evening I could have about 2 liters of beer easily...That is how we were resting.

Systematic binge drinking was considered by some respondents as part of their lifestyle until a certain point of their lives. Participants described alcohol misuse in young age as a group social (sub-cultural) practice, with, in some cases, exotic toxic beverages and/or drugs involved. Quality of drinks consumed in significant amounts were characterized by some respondents as extremely low or even not meant for use by humans and known to be harmful. Gin and tonics were mentioned by our respondents as a usual choice of alcoholic beverage, which could have been used combined with stronger liquors, such as vodka.

R22. ... I must have been under 18. ...we were meeting, drinking the liquid "Bome", weakening it with water. It is a kind of homeless thing, it was a very cool punk drink. Later we were always drinking port "Three of Seven's", getting together. "3 of 7s" is a kind of port out of a bath-tub bottled at some basement... [We were drinking it] in large amounts...

R25. ... in 2008 I got into the prison. So before 2008, for about 2 years, since 2006 I was using a lot of alcohol. And plus drugs, alcohol... any kind of, all kinds available, like gin, vodka - everything...A lot of it....

Women were not always consistent in their reports about and/or demonstrated realistic estimates regarding the extent of individual alcohol (mis) use (if to use as a scale the conventional health standards, WHO), claiming none, very low or moderate alcohol use in some cases, which most likely could be considered by public health standards as excessive drinking.

R4. I feel bad with alcohol. I don't drink... A bottle for two and that's it.

R14. If we get a bottle of wine for the two of us, it is nothing bad, as I think...red dry wine...I may have vodka, don't reject that, but also not in big amounts...we may have 2 bottles of wine for the two of us, for example, within 8 hours...And some vodka, don't know, about 300 ml at maximum, that is for a little bit...

Polysubstance use in conjunction with alcohol use was reported by young women with varying trajectories across their lifetimes - from initiation to post-substance abuse rehabilitation. Most participants described polysubstance use as occurring in the past.

R20. ...being under alcohol it becomes interesting - how it [drugs] works. And nobody wants to be different. Everybody wants to try.

R22. For the whole day we are getting together and looking for the money, combining it and drinking alcohol...and go to old women to Vladimirskaya [metro] to buy "Cyclodol"...

Respondents with past drug use experiences talked about alcohol as a method to increase the effects of drugs, deal with drug abstinence and/or psychosocial difficulties related to post-drug dependency treatment, which, in Russia, is most commonly detoxification from drugs [38].

R21. ...it is hard to manage [after rehabilitation], because most parents say that now it's your problem - paying for some of your needs... same was with me, when it was really hard, pressing, it was tempting to say - I don't need anything, I know the solution.

R25. Drugs didn't make same effect as before that is why possibly I was taking alcohol, because there was an idea that everything works better on the top of it.

Limiting or abstinence from substance use was in some cases described as the official requirement at the AIDS Center for the permission to start HIV treatment.

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R14. At first I was visiting the Center. I was not given therapy there that is [substance users] don't take well [their medications], miss [doses]. I was going to the rehabilitation center. Brought a document from there that I don't use anything, only then I was given therapy.

Attitudes towards alcohol use

Respondents demonstrated a wide range of attitudes to alcohol use: some considered the negative impact of alcohol use on their life, health, and treatment progress, while others intended to limit or restrict alcohol use, although admitted it's relaxing and moderating social interactions effects.

R10. ... I don't need it at all - alcohol, cigarettes and all of it, as I have bad health...

R19. Show me at least one person who doesn't get a better mood [under alcohol]

The important role of using ARV in changing alcohol use patterns was emphasized: women reported changing place of living, recreational practices, and type of alcoholic beverages.

R28. ... I could have a cognac, but for the last 5 years, I know, I have a diagnosis. I am sort of not predisposed... I need something lighter.

R30. ...I left my district. Specifically, [to not meet friends] ...I take alcohol rarely, only at holidays. Because alcohol is not compatible with our medications.

Women commonly expressed their intention to reduce/eliminate alcohol use, claiming the need/search for other ways of dealing with old challenges, which alcohol was considered "a helper" within the past.

R13. ...I am trying to not enter such events when others are drinking [alcohol]...

R18. ... if before I could leave for a weekend and roughly speaking drink there for two days, then now I wouldn't let myself doing that. And will never do, because my health is more precious to me...

R25. ..Since I came to God, I realized I don't need alcohol.

Negative experiences related to alcohol misuse described by HIV-infected women illustrate its possible role as a moderator or catalyzer of psychological or mental health problems.

R3. ...all of it was in a sight of a child...I don't want to come back to it...it [alcohol] has always caused aggression in me, that is why I was making affords to drink out of home...

R29. ...alcohol doesn't help with the positive side, that is may be at some point it relaxes, but for me over years I realized it is exacerbating depression and is not a helper...That is I am looking for some other ways, but so far it is not working that well.

Perceived interaction of alcohol use, health status and HIV-treatment

Despite the young age of women in this study, many of them admitted the damaging impact alcohol had on their health status. Participants also attributed changes in alcohol use to actual or anticipated future health problems, and/or the beginning of treatment for other chronic health conditions, such as hepatitis, pancreatitis, or depression.

R14. No gin and tonics I have now by any means, because likely I have pancreatitis because of that.

Many women were not sure about alcohol and ARV medication interactions, and, because of that, had worries about their health, possible adverse treatment effects. As a result, they changed their alcohol use patterns. Some participants kept specific time intervals between ingesting ARV pills and alcohol, some preferred to never mix ARV medications and alcohol, while others made efforts (not always successful) to limit their overall alcohol intake.

R17. ...it became impossible to have drinks and to take all of it [medications]...I started drink less...

R8. In any case, under any...even if I use alcohol, I drink [medications].

R26. When I started taking therapy, it was a big step for me. That is why I didn't drink [alcohol] then...I even don't know; don't remember why I started drinking again. May be loneliness...

R7. I will force throw up at first, clean up the bowel, I know how it works - it's needed to take a lot of water and tea with lemon, and then to take the medications.

Negative physiological responses to alcohol during ARV treatment were also reported. Only one respondent in our sample reported that she didn't have to change her drinking habits because she never drank much.

R1. ...it is because you are always afraid that you would drink more [alcohol], and, suddenly, something may happen... what if I start feeling bad or something else, like pills wouldn't work... I am thinking of it, when taking a glass of wine or champagne, or even that beer...

ARV use was not always perceived to have potential adverse interactions with alcohol.

R26. I have no idea [how ARV and alcohol interact], and was not interested.

Women who had difficulties being adherent to ARV medications in the past did not always consider alcohol, drugs as an important factor contributing to poor medication adherence.

30. It [alcohol and drug use] didn't influence adherence. I had an alarm clock with me, always had medications if I was leaving somewhere...I didn't forget to take meds.

Partners and family members influence on alcohol use and ARV adherence perceived by women

Women described both positive and negative impact of their sexual partners and relatives on alcohol use and adherence to ARV medication. Such influences were evidenced on the level

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of interpersonal communication between family members (including reminders for the need to take ARV medications, controlling alcohol use or ignorance of special health needs of a woman) and on a level of family structures (lifestyles for women to belong to or fight with like drug production, alcohol parties, etc).

R8. My husband says that I can't take even a small shot. These are medications, they are working.

R 22. ...recently a young man I was living with was producing "pervitin" himself... It was impossible. Impossible, until he was arrested.

Alcohol use by parents was considered by some women as related to their own alcohol use, and served as an example for them, both for modeling or restricting alcohol use.

R3. My parents are alcoholics. It's in our family... I have alcohol use or substance use as the only example of any problem solving... that is why for many years I was dealing with my problems this way.

R4. ...when I was like 15-16... We were drinking, getting drunk... The cheapest one [alcohol], some kind of gin-tonics, beer. Later when I went to study starting the second year I stopped, because my mother was not letting me.

Pregnancy or children were not always perceived as factors for limiting alcohol use, although for many women having children was a life-changing event they attributed to using alcohol less and maintaining higher ARV adherence. Not all women were able to manage substance use and consequently were separated from their children who were raised by other relatives.

R16.... I didn't know yet [of pregnancy], but had a thought I was. But, anyway...was [drinking alcohol] once in two weeks...in big amounts.

R20. ...I got scared that I was alone with two kids...the second husband was part of it. He has shown all of it [drug use] initially... And after the delivery somehow it got started...

Perceived association of traumatic experiences with alcohol use and ARV adherence

The variety of traumatic experiences young women reported played an important role in the context of alcohol use and misuse and treatment adherence. Such life circumstances that were described as traumatic included: death of partners, health problems, depression, family rejection, poverty, and homelessness. Women admit alcohol may increase negative emotional conditions, some of them choose to not use it in such circumstances, although cases of conscious destructive choices were also present.

R21. ... An abortion was unfortunate...so I lost a job and a young man left... So I call it a search of death. All that years which I was using, at any time I was ready and wanted to die.

R25. ...when you have such lifestyle [alcohol and drug use, homelessness], it already doesn't matter what will happen to your life... I used drugs and alcohol practically since 14, right after school. I had immoral life style, practically was not working...constantly was imprisoned...

R26. I had problems with alcohol. I was drinking heavily after [my] husband's death...

R30. [I was drinking] to make it worse. That kind of mood I had after that wonderful rehabilitation center...

Sexual behavior, disclosure, and condom use

Along with sexually active young women, including sex workers, participants in our study also included single individuals who associated the absence of sexual relationships to their HIV status. In some cases, women considered their HIV diagnosis as a barrier to finding a partner and/or having a healthy future partner.

R10. ...because I have HIV, I can't find a man. That is, I need a man of a same kind as myself, right...

R29. ... I just can't imagine how I would now meet a man and tell him, that I have HIV. ..So I am not opened now for meeting someone.

As expected, women said that HIV-status disclosure remains a significant challenge for them in existing relationships and for building future intimate relationships. Respondents told us both about cases of non-disclosure in partnerships involving children, and also expressed strong desire for disclosure.

R18. ...I know some girls, they don't tell their men [about HIV status]; they give birth of them and still...I say he would learn and kill you.

With some exceptions, respondents' personal stories illustrated their engagement in a variety of risky sexual behaviors, low knowledge of risks of HIV-transmission and insufficient condom use both in stable and casual relationships.

R5. I don't know his status, anything at all. Told about mine. The next morning, after everything already. [After unsafe sex], yes.

R18. ...never [use condoms]

R19. ..And sort of there were more partners, and healthy ones, but there was a condom, always...

Women with strong attitudes for condom use could not always present a clear rationale for their use. Most explicit motivation for condom use was expressed in regards to protection of a sexual partner from HIV, with no self-protective arguments mentioned in the interviews.

R14. I simply asked to use a condom...I even more worried for him, for him to not get infected.

Multiple women demonstrated poor knowledge and understanding of disease management, such as the belief that condom use is not necessary between HIV-infected partners or the possibility of transmission of hepatitis C viruses.

R10. [Boyfriend] died three years ago. Never used condoms.

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I don't know, we just didn't think of it, at all...He had the same diagnoses as me that is why I thought that everything would be fine.

R23. ... I was confident about hepatitis that it is not sexually transmittable. That is, it...My [HIV negative] partner didn't offer to use condoms [after I got HIV diagnoses] because by then we were living together already for two years. There was no sense to begin.

Sex, alcohol and drug use: attitudes and practices

Women reported different attitudes towards alcohol use before sex: from rejection to a preference and even the need of it.

R4. I am trying to choose men who don't drink. It is because frankly speaking my father was an alcoholic. ... So I had a too bright example in life, and don't want any of that.

R18. Of course [we were drinking alcohol], of course, there is no way without it...

Alcohol was also reported as part of a chosen strategy when searching for a new sexual partner.

R16. ...it was happening very often. ...alcohol use resulted in... [Sexual contact] ...It worked so that if I didn't drink I didn't let myself anything.

As follows from the interviews, alcohol use was not always a barrier for consistent condom use for HIV-infected women, as women provided multiple examples highlighting the importance of condom use.

R9. ...we were drinking [alcohol] every day that is why sex was under alcohol for the most...with him I did use condoms constantly.

R15. ...since I learned that HIV-infected all intercourse I had were with condoms disregard of alcohol presence or absence.

In cases of drug use combined with alcohol use condom use was commented as of "no concern".

R16. ...plenty of partners. No, it didn't matter to use a condom or not. Depends if the partner wants it.

Some women attributed greater risk for unprotected sex to being under the influence of alcohol relative to other drugs, because they believed that other substances may allow for more control over individual behaviors and/or that certain drugs suppressed their interest in sex (as documented by Heimer and colleagues (2016) [22], before 2012 most common drug of choice in St. Petersburg was heroin) [39].

R17. ..[Alcohol] could have helped...Not under drugs - then you better control your mind...so more [condom use under drugs]..

R11. ... More drugs - less sex; it is such arelax that no sex is needed...

Alcohol was perceived by some of our respondents as increasing the chances of unplanned and unprotected sexual intercourse.

R13. ...There could be beer, yes...It could have been someone I saw for the first time, and there were couple of cases like that, random. We used condoms. It was partner's initiative. Don't know what would have happened if they didn't [offer to use a condom].

Women's perspective on their sexual partner contribution to health-risks practices

HIV-infected women often expressed their sexual partner's responsibility for acquiring HIV. Women reported some cases of partners intentional infecting them with HIV and not informing them about the potential risks of non-condom use with some indicating their partners' unwillingness to use condoms.

R16. ...there was such a partner who was saying that he never uses protection.

R19. ...Then it happened so that we stopped using it [condom] in several months...but he knew all of it [his positive HIV status], and I learned from completely different people...He didn't warn me. Probably thought of a luck, don't know...

R28. He told me, explained to me that wanted to reserve me for himself. That is, he told me later, when I already was... [That is he infected purposefully?] Yes ...I know that it is criminalized...

Alcohol and drug use by a partner were mentioned as a contextual factor, but not a primary factor contributing to non-condom use. Participants noted examples of HIV transmission in long term partnerships with one of the partners in HIV or substance use care, illustrating a lack of communication regarding health topics between partners and, possibly, insufficient professional support from treatment professionals.

R16. ... after repeatedly he was receiving negative results, it absolutely unmanageable to force him put it on...when he has a drink, obviously, potential goes down and it is easier for me to agree on...

R18. ...He was on [substance abuse] treatment, there is testing there. They should have told him...It is double insulting for me that he knew [his HIV status] and told nothing to me...

Men tended to take risks of being infected with HIV, choosing not using condoms or get tested routinely even knowing their partner's HIV positive status.

R28. ...but, may be, he is ill, because I have this disease for a long time already... He never got tested... We never had protected sex.

Interviews were in agreement that when both partners are HIV-infected, this may create a good basis for negotiation and engaging in consistent condom use.

R16. ...One knew diagnoses...he had the same one. We talked about condoms easily. Got protected.

Women told us of negative experiences illustrative of high self-imposed, anticipated and/or experienced HIV stigma.

R5. A young man, he knew, but he behaved so that I had an impression he was afraid even to kiss me...

R30. A person did a lot for me. That is, he took me out of that circle, so called suicidal thoughts all of that. But that feeling inside.I need to start liking myself at first before giving love to somebody else.

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Discussion

Although recruitment strategy in HIV care center may confer limitations due to self-selection of participants, the sample reflects the epidemiologic trends in the co-occurring HIV/IDU epidemics development in St. Petersburg [40]. Participants included a significant proportion of individuals endorsing IDU by themselves and/or their sexual partners and also included women who had been imprisoned or had sex work experience. Alcohol use preferences among respondents reflect similar observed trends as in general population of young HIV uninfected women – the choice of beer or gin-tonic as the most easily accessible and comparatively inexpensive beverages [41]. In our study most women reported alcohol misuse and/or heavy use as their past routines, which subsequently changed to reduced alcohol use or abstinence from alcohol use, which typically coincided with a desire to adhere to their ARV medications or concerns regarding their HIV treatment. These results may be partially explained by social desirability effects, especially given high substance use related stigma in Russia [42,43], and since the data collection took place at a specialized medical treatment facility, where both HIV and substance use related stigmas may be present [44,45]. That said, the data obtained provide evidence of alcohol misuse as a key challenge among HIV-infected young women engaged in HIV care. In our study only one of 30 women reported that she did not have to modify her alcohol use in conjunction with her HIV treatment and ARV regimen. Women's health status emerged as an important reason that women on ARV significantly restricted their alcohol use. Women also reported stopping alcohol use after beginning HIV treatment, especially if they had co-infections (hepatitis, TB) and/or additional secondary diseases or complications (e.g., liver related medical problems).

Some women demonstrated a lack of knowledge regarding what constitutes alcohol misuse and/or reflected perceived norms of greater alcohol use. These perceived alcohol use norms, and beliefs regarding what constitutes excessive alcohol use varied and likely exemplifies the varying alcohol use patterns and drinking subcultures within Russia. These findings combined with the self-report method employed in this study suggests that alcohol misuse may be underreported and misinterpreted by HIV-infected patients and their health-providers, which may have important implications for successful treatment and prevention in such populations.

In contrast to findings among drinkers from the other study in St. Petersburg [14], beliefs about alcohol and HIV medication interactions among our respondents were not found to be related to intentional non-adherence. Risks of low adherence and/or treatment interruption due to alcohol misuse may be different for women with different alcohol use experiences. Women with a history of alcohol misuse may need different treatment approaches than those who do not have a history of alcohol misuse, but do have misconceptions about norms and comparatively safe alcohol use practices for people on ARV medication. Non-drinking women exposed to risk factors, such as drinking partners, family members or stressful and traumatic life circumstances, should be, as with women who drink alcohol, addressed within prevention interventions.

As our respondents noted, substance use abstinence for 6 months could have been a formal requirement to start HIV treatment at the AIDS Center [46], and colleagues in 2012 reported such requirements as a barrier for IDU access to HIV-care. This conflicts with international recommendations on combating the epidemic by first treating most affected population [47], which, for Russia, are IDU and their sex-partners, many of whom excessively drink alcohol [48]. Obviously, patients with polydrug use have found ways to get access to ARV, but may have challenges in remaining engaged in treatment due to the perceived need to hide their substance use from their HIV care providers. Although having only women engaged in HIV care is a study limitation, it is evident that even in this group, there is a wide range of past or current health and treatment risks. Lack of knowledge about alcohol, substance use and ARV adverse interactions is an important problem for many patients, and creates the conditions to spread potentially health damaging or useless prevention/self-medication measures, such as artificial bowel cleanings.

Alcohol and managing mental health issues, like drug abuse, trauma, and depression, emerged an important sub-theme. Women admitted alcohol use and the need for other solutions to help them cope with their psychological and emotional problems and stressful life events. In agreement with earlier work [49], the stories of our respondents described experiences of early drinking initiation followed by drug abuse, and unprotected and unplanned sex under alcohol. Women perceived their HIV diagnosis as a barrier to having a healthy relationship, which was evidence of a self-imposed stigma and/or lack of anticipated HIV stigma resilience. The lack of HIV status disclosure, signs of self-imposed and anticipated HIV and substance use related stigma, low levels of partner cooperation in condom use, identified in our study, are not surprising and support previous work [50,51].

Insufficient condom usage and low awareness of HIV-related risk behaviors among our respondents despite the availability of a wide range of information sources for the patients in St. Petersburg (online and off-line consultations, pamphlets, specialized journals, patient organizations and groups) are indicative of poor targeting, provision and/or communication of crucial health-protective messages at least to some part of the population at-risk for HIV or HIV-infected individuals.

As expected, partners, parents and children often played an important role in HIV-infected young women's health in how well women are able to manage their HIV-treatment and alcohol use, but were not always supportive of health promoting behaviors and, in some cases, created a highly risky environment for women to maintain their health. Positive HIV-status of a partner in our study was mentioned as a way to facilitate communication about condom use, but also represented a barrier to reducing high risk behaviors with partners who had low awareness of potential adverse health consequences. As in the case of the perceived norms of "safe" drinking, patients rooted in families with histories of alcohol misuse by close relatives, even if correctly perceived by women as a risky environment or attributed to the past, may still serve as a negative model, adjusting their perceptions and behavioral patterns, and may require specifically targeted interventions by HIV-care providers.

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Conclusions

Consistent with expectations and studies in other countries [52], alcohol fuels behaviors that are potentially risky and harmful for the health of young HIV-infected women in Russia. The diagnosis of highly risky behaviors leading to HIV infection should be well recognized and prophylaxis should be provided, especially to the risk's groups. To limit HIV transmission behaviors and promote greater adherence to HIV treatment, health providers should focus more on individual variations in the difficulties women face in reducing their alcohol use.

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