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Situational and motivational factors associated with unhealthy alcohol use among Russian women with HIV and hepatitis C Virus co-infection

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Abstract

Introduction: Alcohol use is prevalent among Russian women with HIV and hepatitis C Virus (HCV) co-infection despite alcohol's known harmful health effects for this population. Identifying factors that facilitate continued unhealthy alcohol use is critical to developing effective alcohol reduction interventions. This study assessed situational and motivational factors associated with unhealthy alcohol use among HIV/HCV co-infected women in clinical care in St. Petersburg, Russia.

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Declaration of Competing Interest

No conflict declared.

Supplementary materials

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CRediT authorship contribution statement

N.B. Khalezova: Conceptualization, Investigation, Methodology, Writing – original draft. **A. Capasso:** Formal analysis, Methodology, Writing – original draft. **E.V. Boeva:** Data curation, Project administration, Writing – review & editing. **L.V. Gutova:** Funding acquisition, Writing – review & editing. **V.V. Rassokhin:** Funding acquisition, Writing – review & editing, Supervision. **N.G. Neznanov:** Methodology, Writing – review & editing. **N.A. Belyakov:** Funding acquisition, Writing – review & editing. **J.L. Brown:** Funding acquisition, Validation, Writing – review & editing. **R.J. DiClemente:** Conceptualization, Funding acquisition, Writing – review & editing, Supervision.

Methods: Guided by the motivational model for alcohol use, we conducted 30 semi-structured interviews with women living with HIV/HCV co-infection to identify situational and motivational factors associated with unhealthy drinking and barriers and facilitators to abstaining. Interviews were recorded and analyzed using a the-matic analysis approach.

Results: Despite awareness of the health risks associated with alcohol use, many women reported heavy episodic drinking, particularly in social situations. A key motive for drinking was coping with negative emotions triggered by stressful situations, such as work- and family-related conflicts. Key situational factors included drinking with family and friends and in social situations. Women who endorsed negative drinking coping motives were the most motivated to stop drinking. Health concerns were also cited as reasons to stop drinking; however, few women reported that their doctors recommended that they abstain.

Conclusions: Several situational and motivational facilitators of alcohol use and barriers to alcohol reduction were identified, as well as some opportunities for prevention, among women in care for HIV in Russia. Awareness-raising and training regarding the adverse consequences of alcohol use among persons with HIV/HCV co-infection should include clinicians, patients and relatives.

Keywords

HIV; Hepatitis C virus; Motivational model of alcohol use; Alcohol use disorder; Mental health

1. Introduction

In Russia, unhealthy alcohol use, HIV, and hepatitis C virus (HCV) infection are interconnected epidemics with adverse health consequences (Amirkhanian et al., 2011; Brown et al., 2016a; Butt et al., 2017). In 2019, over one million persons were living with HIV (PLWH) in Russia, with over a third of them being women (37%) (UNAIDS, 2019). The HIV epidemic in Russia is primarily driven by infection among women in their twenties, who have higher HIV infection rates than men (Rospotrebnadzor, 2018). The number of persons infected with HCV has also increased in Russia over the last two decades, reaching 5.8 million persons in 2017 (Rospotrebnadzor, 2018). One factor exacerbating both HIV and HCV disease progression is excessive alcohol consumption.

Among HIV/HCV co-infected Russian women, 15.6% reported problematic drinking as measured with the Alcohol Use Disorders Identification Test (AUDIT; score ≥ 8) (World Health Organization, 2018). No safe drinking level is established for persons with HIV/HCV co-infection (European Association for the Study of the Liver, 2018). Liver disease is the leading cause of morbidity and mortality among HIV/HCV co-infected persons (Salmon-Ceron et al., 2005). Further, alcohol use among persons with HIV/HCV co-infection accelerates liver fibrosis (Fuster et al., 2014; Poynard et al., 2003). Alcohol use also suppresses the immune response; thus, PLWH who consume alcohol are more likely than those who do not to progress from acute to chronic forms of HCV (Bagby et al., 2015; Fuster et al., 2016).

1.1. Theoretical framework

To examine the motivation and situational influences on alcohol use, we use motivation theory as the underlying theoretical model (Cox and Klinger, 1988). Motivation theory posits that alcohol use is driven by drinking motives and cued by different situational circumstances (Cooper et al., 2015). The decision to use alcohol is based on alcohol-related positive and negative expectations (Cooper et al., 2015; Cox and Klinger, 1988). Cooper et al. (2015) identified four categories of drinking motives: (1) self-focused or enhancement motives (e.g., drinking for pleasure); (2) self-focused avoidance or coping motives (e.g., drinking to cope with stress); (3) social approach or social motives (e.g., drinking to bond with friends); and (4) social avoidance or conforming motives (e.g., drinking to gain other's approval). Research has found that coping and social motives were the two most salient drinking motives endorsed by Russian women living with HIV, and that these motives were associated with excessive alcohol use in this population (Abdala et al., 2013; Elliott et al., 2014a, 2014b). On the other hand, negative expectations (such as beliefs that alcohol is harmful to health, or that it is socially unacceptable) are disincentives to drinking (Cooper et al., 2015).

1.2. Purpose of the study

Despite the high prevalence of drinking among women with HIV/HCV co-infection in Russia and the detrimental impact on both HIV and HCV disease progression, there is a dearth of empirical data available to guide the cultural adaptation of alcohol reduction interventions for this population. To culturally tailor alcohol reduction interventions for Russian women living with HIV/HCV, it is essential to understand the underlying situational and motivational factors associated with alcohol use. Thus, this study aimed to identify: (1) situational and motivational factors associated with drinking, and (2) barriers and facilitators to abstain from drinking to inform alcohol use reduction interventions among women with HIV/HCV co-infection engaged in HIV clinical care in St. Petersburg, Russia.

2. Methods

2.1. Setting and participants

Semi-structured interviews were conducted with women with HIV/HCV co-infection ($N = 30$) receiving medical care in St. Petersburg, Russia. The sample size was determined *a priori* as 30 has been proposed as the approximate number of interviews needed to obtain theoretical saturation (Morse, 2000). This was a convenience sample of consecutive clinic attenders recruited during their regularly scheduled medical appointments. A study clinician assessed preliminary eligibility criteria based on medical record review, approached potential participants, explained the study, including procedures for maintaining confidentiality, and invited women to participate. The study staff obtained written informed consent from all participants. Eligibility criteria included: (1) being a woman aged 18–45 years old; (2) having HIV/HCV co-infection; (3) having been prescribed antiretroviral therapy (ART); and (4) having consumed alcohol in the past 30 days. As assessed by the first author—a psychiatrist with expertise in caring for patients living with HIV infection and substance use disorders, women who were deemed cognitively or psychologically unable to participate were not enrolled. This analysis includes all participants interviewed by the first

author between May and June 2018. About 15% of those invited elected not to participate, citing lack of time and interest. Recruitment was terminated when the full complement of 30 women were enrolled. All interviews were conducted in Russian, lasted approximately 60 min, were audio-recorded, transcribed verbatim, and translated to English for analysis and review by the U.S. study team. Participants received a gift card valued at 1000 rubles (~16USD). The institutional review boards of New York University and St. Petersburg State University approved the study procedures.

2.2. Interview guide

The Russian and U.S. teams co-developed the semi-structured interview guide based on the motivational model of alcohol use. The guide consisted of the sections described below. Section 1 is quantitative, while sections 2 to 4 are primarily comprised of qualitative questions.

1. Medical and substance use history, with questions such as “When did you learn about your HCV status?” Alcohol use was assessed with the 10-item Alcohol Use Disorders Identification Test (AUDIT) screening tool (Babor et al., 2001).
2. Situational factors for drinking. Questions included with whom women drank and if anyone encouraged them to drink.
3. Motivational factors for drinking were assessed by asking women why they drank and how they felt.
4. Barriers and facilitators to reducing alcohol use assessed women’s perceptions of alcohol as a health problem, their readiness to stop drinking, and resources to help them stop drinking.

The interview guide was translated from English to Russian and back-translated from Russian to English to ensure accuracy and comprehension by participants and research staff. The guide consisted of both closed and open-ended questions. Open-ended questions followed close-ended prompts to expand their descriptions of motivational and situational factors associated with alcohol use and barriers and facilitators to reducing alcohol use.

2.3. Analytic approach

Descriptive statistics were calculated for the close-ended questions. We employed a conventional content analysis approach to identify key themes, whereby the open-ended questions were used to identify examples of the salient themes related to situational and motivational drinking factors (Hsieh and Shannon, 2005). The proportion of women endorsing different situational and motivational factors were derived from the qualitative assessment. Drinking motives were classified according to the 4-category classification above: enhancement, coping, social, and conforming motives. A codebook was developed to inform the qualitative analysis using a standard iterative process (MacQueen et al., 1998; Taylor and Bogdan, 1998). The first author read the transcripts multiple times to classify, identify and code motives and situational factors. Subsequently, the identification of factors was independently reviewed and confirmed by the second author. The two coders met to resolve any discrepancies. The Qualitative Research Review Guidelines (RATS) (Clark, 2003) are followed for reporting (S1 Table).

3. Results

3.1. Descriptive characteristics of the sample

Characteristics related to engagement with care and drinking patterns of the sample are detailed in Tables 1 and 2. Briefly, participants were aged 28 to 44, with a median age of 34. Most women were currently receiving HIV ART, and all knew their HCV status, although treatment levels for HCV were low. Women drank alcohol, on average, 3.5 days in the past month. Most participants (76.7%) reported at least one heavy episodic drinking (more than three drinks on a drinking occasion) day in the last month.

3.2. Situational factors associated with alcohol use

Many women reported that drinking occurred during social situations. Most described drinking alcohol as a normal part of socializing, such as during family gatherings, celebrations, or when going out with friends. Most women usually drank with friends (73.3%), spouses or intimate partners (56.7%), other relatives (36.7%), and work colleagues (36.7%). Fewer women (30.0%) reported drinking alone. Among the women prompted to drink by others ($n = 17$), 76.5% reported being encouraged to drink by friends and co-workers, 47.1% by spouses or intimate partners, and 29.4% by other relatives. Relatives and friends encouraged women to drink, despite the fact that, in all but one case, they were aware of the women's HCV status and that drinking was contraindicated for HCV-infected persons.

3.3. Motivations for alcohol use

Enhancement motives for drinking were often cited. Women said they drank to relax and elevate their mood. Four participants reported drinking in anticipation of positive emotions, expecting to be happy and feeling euphoric. Two women also spoke about the pleasurable physical effects of drinking. They used expressions, such as "Drinking helps me to relax" and "I like the taste of beer" to describe enhancement motives.

Negative coping motives were prevalent in the sample. For 40% of the women, alcohol consumption was related to personal, work, or financial problems and stressors, such as "family quarrels" and "misunderstandings with their husband." Many women drank as a result of mood and anxiety symptoms. Participants said they drank because they felt "anger," "resentment," "tiredness," "fear," "stress," "worry," and "anxiety." Some said they drank because they felt "like a failure" or "depressed" and were "trying to drown out the disturbed mind" with alcohol. Some women also mentioned specific events as triggers for drinking, such as a recent divorce or a death in the family. For others, drinking occurred in the context of ongoing stressful situations, such as housing problems, financial strain, family quarrels, and limited employment opportunities.

In follow-up questions, women who reported negative affect coping motives described the following factors associated with drinking: poor relationship with the spouse or intimate partner, experiencing domestic violence, conflicts with relatives, worries about divorce, deaths in the family, stressful living conditions, and the inability to cope with difficult situations. These participants also complained about poor physical and mental health and

reported that they felt helpless, resentful, guilty, angry, and disappointed with themselves after drinking.

No women cited conforming motives, such as belonging to a peer group or drinking in response to social anxiety. However, there may have been overlap with increased drinking in social situations where women may have felt pressured to drink given the pervasiveness of alcohol use in Russian social settings.

3.4. Perceived health risks of alcohol use

All but one woman perceived that alcohol use was harmful to persons with HIV/HCV co-infection. Half also believed that alcohol was toxic to the liver. Finally, some women felt that alcohol interfered with ART effectiveness (Table 3). Women noted that alcohol “destroys the organism,” and “decreases immunity,” and that you feel that “the cells are dying.” However, one woman stated that even though it harms the liver, “you cannot refuse it completely.”

When explicitly asked about the health effects of alcohol on persons with HCV, approximately one-quarter of women were not aware of any adverse health consequences. Women most commonly spoke of damaging or “overtaxing” the liver among those who perceived harmful effects. One woman said that alcohol “harms the liver and spoils the blood;” another that “the liver becomes inflamed and can decay.” Others indicated that alcohol “makes HCV worse.” Several women mentioned that they “turned yellow” when drinking. One woman summarized the effect of alcohol as; “You kill the liver, everything starts turning yellow. If I start drinking, I won’t live long. ”

One-third of women perceived the harmful effects of alcohol consumption as promoting HIV progression. The most common effect reported was that alcohol weakens the immune system; women used words such as “the virus grows, immunity goes down,” “cells fall,” and it “ruins the immune system.” Two women mentioned ART drugs losing their effectiveness, and one said that if abused, alcohol would affect her overall and liver health.

The majority of women did not believe that alcohol interfered with ART adherence. As seen in the quotes below, those who did indicated that alcohol interfered with adherence by making them skip or delay ART doses and making them miss medical appointments.

“...Several times I took the HIV medications late because I was drinking...”

“...Alcohol affects the timing of the medications, sometimes I’m 10 to 15 min late taking the medications. Last time, I took the medications with alcohol...A month ago, there was no water, so I took the pills with wine, I drank 1.5 liters of wine...”

“...In the past, I used to have periods when I was worse due to HIV infection. I did not take the medication, I skipped it, then I just did not take it... The reason I stopped the therapy was that I used to drink and I would skip [one dose], then another and another, and then I quit therapy...”

A majority of women reported negative emotions associated with knowing that alcohol was harmful to their health. Women reported that this knowledge elicited feelings

of helplessness, disappointment, resentment, anger, and frustration. Other women were indifferent to alcohol's harm. These neutral feelings were mainly associated with not believing that alcohol was harmful at their level of consumption. For example, one woman said, "I am not harming myself," another said, "I do not think it will be harmful as I rarely drink." One woman stated not being concerned about alcohol as she "had already done the most harm [to herself] with drugs."

3.5. Perceived barriers and facilitators to reducing alcohol use

Overall, the majority of women appeared willing to consider reducing their alcohol consumption. Only two women said that they did not feel the need to reduce their drinking as they drank very little. Women who experienced negative emotions towards drinking and those who reported that alcohol made them feel sick or made their HIV/HCV symptoms worse were more willing to stop drinking than those who experienced positive experiences or did not report such symptoms. More than half of the women were ready to learn more about alcohol and its impact on their health, and about 40% were willing to participate in substance use treatment.

Personal and social barriers to reduced drinking were also identified. Regarding personal obstacles, many women cited that drinking was their only way to relax; others mentioned increased feelings of fear and anxiety when they tried to reduce their drinking. One-third of the women said that they would not work or do household chores if they stopped drinking. Many women mentioned being surrounded by people who drink as a barrier to reduced consumption, particularly their husbands.

If they stopped drinking, most participants said that they would spend more time with their family; a third said that they would begin hobbies, travel, play sports, or go to church. One participant said she would switch alcohol dependence for food dependence, and another would smoke marijuana.

The main motive for reducing drinking was health reasons, especially feeling sick after drinking, if recommended by a doctor's order, or due to concerns about drinking during pregnancy. About 1 in 10 women indicated that they would stop drinking if they gained stress management skills or participated in substance use treatment. Other participants noted they could modify their drinking without help if they decided to do so.

4. Discussion

This is amongst the first studies to qualitatively assess situational factors associated with unhealthy drinking and drinking motives among Russian women with HIV/HCV co-infection. A large proportion of women in this sample had a history of heavy episodic drinking, which may result in adverse health outcomes for this population (Asimwe et al., 2017; Barve et al., 2010; Salmon-Ceron et al., 2005). Our findings aligned with the four types of drinking motives described by Cooper et al.'s motivational model for alcohol use (Cooper et al., 2015). For situational features of drinking, women endorsed drinking in social situations, with most drinking occurring during holidays and social gatherings. Whereas women did not report conforming motives specifically, alcohol's prevalence and

social acceptability appear to be a barrier to alcohol reduction in this sample (World Health Organization, 2018). This is further underscored by the fact that even though family and friends knew about the women's HCV infection and alcohol's adverse effects, they prompted women to drink.

Often, coping and social motives overlapped. Whereas many women drank in social contexts, these same women reported drinking in response to stressful situations. In addition, drinking was also used to cope with depressed moods. Drinking to cope with negative affect is a known risk factor for relapse, heavy episodic drinking, and alcohol dependence among PLWH (Elliott et al., 2014 a, 2014b).

Women whose primary drinking motive was to manage negative emotions, often associated with family conflict or financial stress, also reported feelings of helplessness and guilt after drinking. The theme of guilt associated with alcohol consumption among women with HCV has been reported in other studies (Harris, 2010). These women were also more likely to be willing to reduce alcohol use. Even though not studied directly, HIV-related stigma could be one pathway that leads women to drink as a coping strategy. High levels of HIV stigma have been reported in Russia (Calabrese et al., 2016; Lunze et al., 2017; Pecoraro et al., 2014). Further, studies identified worse health outcomes and quality of life among women affected by HIV stigma in Russia (Burke et al., 2015), as well as an association of HIV stigma with lower ART adherence (Katz et al., 2013) and stigma and loss-to-care (Pecoraro et al., 2014). One recent study among persons who inject drugs in St. Petersburg, Russia, found that participants with alcohol use disorder reported significantly higher HIV stigma than those without such a diagnosis (Lunze et al., 2017).

Many women reported partner-related factors associated with drinking, either due to direct pressures from partners to drink or as a result of domestic violence. This pattern supports the role of sex-based power inequalities as a driver to unhealthy drinking, as observed in other samples of women (Capasso and DiClemente, 2019). Further, our previous research has pointed to different patterns of risk engagement among Russian women living with HIV based on alcohol use and partner and relationship characteristics (e.g., in relationship with steady partners) (Brown et al., 2016b). The interpersonal dynamics of violence as drivers of unhealthy alcohol use among women should be further explored in this population.

One of the main barriers to reducing alcohol use was that women did not believe it was necessary. Whereas women receive general counseling by clinical staff on the risks of alcohol consumption for HCV disease progression, it may be that the alcohol reduction messaging is not sufficiently salient. In the U.S. there is an increasing push towards the integration of HIV and substance use services; such an approach may be particularly useful within the Russian context to enhance counseling around risks posed by alcohol for PLWH (Haldane et al., 2017). Consistent with prior research in Russia, one of the strongest facilitators for alcohol reduction were health reasons (Taylor et al., 2019). Thus, counseling and interventions that provide information regarding the specific adverse health consequences of alcohol use for PLWH with co-occurring HCV infection that can be integrated in HIV care models may be particularly important.

Women were aware that alcohol was harmful to persons with HIV/HCV co-infection; however, this knowledge tended to be abstract rather than specific. Women knew that alcohol was detrimental to the body as a whole and contributed to overall poor health. However, fewer women had particular knowledge of the medical risks of drinking alcohol on HCV disease progression. There was a qualitative difference between believing that alcohol was harmful and substantial knowledge about its specific health consequences. More women perceived alcohol as harmful to the liver than to HIV disease progression. Whereas knowledge about harm from alcohol consumption on HCV progression tended to be related to direct harm on the body overall or, to the liver specifically, with expressions such as “*You kill the liver*” or “*The liver becomes inflamed,*” the harmful effects of alcohol on HIV was associated with behavior, such as skipping or stopping ART. Contrary to previous studies, women did not endorse a belief regarding toxic interactions between alcohol and ART medication (Kalichman et al., 2013). One woman even reported taking her ART medication with alcohol. Alcohol was mainly seen to interfere with adherence-related behaviors rather than with perceived toxicity with ART. To increase effectiveness, information and clinician counseling on alcohol use for this population should more specifically describe the health effects of alcohol use.

Often, women did not believe that drinking in moderation was harmful, and instead, believed that only heavy drinking was associated with poor health outcomes. Previous research among PLWH found that perceived medical risks of alcohol consumption do not predict drinking reduction (Elliott et al., 2014). This lack of association may be mediated by the immediate adverse physical effects on the body resulting from drinking and specific knowledge about the mechanisms of action.

4.1. Limitations

This sample is not representative of all women infected with HIV/HCV in Russia. The sample only consisted of women in care at one clinical site and willing to participate. The current research focused on women of reproductive age given the higher prevalence of HIV infection in this age group compared to the population of Russia as a whole (1.5% vs. 0.8%) and because of the added perinatal risks of alcohol consumption during pregnancy (Rospotrebnadzor, 2021). It is estimated that about 44.5% of all PLWH in Russia were not receiving ART in 2021 (Rospotrebnadzor, 2021). Women engaged in HIV care may have different drinking motives than those not involved in care. Willingness to participate in itself might be a bias representing women who are in better health than those unwilling to do so. Also, this sample only included women who drank in the last 30 days. However, focus on this group is critical as women co-infected with HIV/HCV are more likely to consume higher amounts of alcohol and to have a history of other drug use than those mono-infected with HIV (Brown et al., 2016b).

The binational study team is comprised of infectious disease doctors, mental health professionals and behavioral scientists with expertise in working with women with substance use disorders and HIV. Importantly, the interviewer is a psychiatrist with specific training in treating persons with substance use disorders, and this understanding informed the interview modality and question formulation. We recognize that the development of the

research question, data collection and interpretation were influenced by the backgrounds and experiences of the research team. Further, the study clinician in charge of recruitment was an infectious disease doctor providing women's HIV care. Whereas the consent language clearly mentioned that refusing to participate would not affect care, some women may have been more likely to participate because of this existing relationship. However, the psychiatrist who conducted the interviews was not the women's provider and met them for the first time during the interviews. Further, none of the U.S. research team members conducting statistical analyses met the study participants.

5. Conclusions

Drinking in social situations coupled with enhancement and negative coping motives were prevalent in this sample. One barrier to reduce alcohol use was that drinking at social gatherings was the norm and encouraged by family and friends. Another barrier was that women viewed alcohol as necessary to relax and detach from negative emotional states or stressful situations. Knowledge gaps regarding the impact of alcohol on HIV and HCV outcomes emerged, with women sharing the belief that moderate levels of alcohol use were not harmful.

To improve the quality of care for women with HIV/HCV co-infection, the role of screening and substance use treatment is critical. Awareness-raising and training regarding the dangers of alcohol for persons with HIV/HCV co-infection should include patients and relatives. In addition, clinicians should receive training on screening and delivering brief alcohol reduction interventions, particularly those tailored to this population. The literature regarding the efficacy of interventions in reducing alcohol use frequency and quantity among PLWH is mixed (Brown et al., 2013). Brief cognitive-behavioral therapy that enables women to reduce drinking may be promising. However, a broader approach incorporating social-contextual and interpersonal factors related to sex-based inequalities may be required to obtain a long-lasting effect. This study contributes to the body of knowledge to understand and intervene with HIV/HCV co-infected women based on their motives for drinking and drinking patterns.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Medical care engagement among Russian women with HIV/HCV co-infection.

Variable	<i>n</i> (%) or median (IQR)
Age	34 (32, 37)
Years since HIV diagnosis	9.5 (5, 15)
Currently on ART	28 (93.3%)
Years on ART	3 (1, 6)
Self-reported HIV viral load	
Undetectable	16 (53.3%)
Detectable	4 (13.3%)
Do not Know	10 (33.3%)
Years since HCV diagnosis	8 (6, 15)
Chronic HCV diagnosis	26 (86.7%)
HCV treatment status	
Never treated	25 (83.3%)
Treated in the past	3 (10.0%)
Currently being treated	2 (6.7%)

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Table 2

Alcohol use patterns of Russian women with HIV/HCV co-infection.

Variable	<i>n</i> (%) or median (IQR)
Drinking days in the past month	3.5 (1, 5)
Maximum number of drinks in drinking days	5 (4, 9)
Any heavy episodic drinking past month (>3 drinks/occasion)	23 (76.7%)

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Table 3

Perceived health risks of alcohol use reported by women with HIV/HCV co-infection.

	<i>n</i> (%)
Harms the body as a whole	20 (66.7%)
Damages the liver	15 (50.0%)
Reduces ART effectiveness	4 (13.3%)

Note: The % does not add to 100 because multiple options are possible.

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