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## A qualitative study on alcohol consumption and HIV treatment adherence among men living with HIV in Ugandan fishing communities

Katelyn M. Sileo<sup>a,b</sup>, Williams Kizito<sup>c</sup>, Rhoda K. Wanyenze<sup>d</sup>, Harriet Chemusto<sup>c</sup>, William Musoke<sup>c</sup>, Barbara Mukasa<sup>c</sup>, Susan M. Kiene<sup>a</sup>

<sup>a</sup>Graduate School of Public Health, San Diego State University, San Diego, CA, USA; <sup>b</sup>The Center for Interdisciplinary Research on AIDS, Yale University, New Haven, CT; <sup>c</sup>Mildmay Uganda, Kampala, Uganda; <sup>d</sup>Makerere School of Public Health, Makerere University, Kampala, Uganda

### Abstract

Ugandan fishing communities are dually burdened with high rates of HIV and alcohol use. This qualitative study explores context and motivation of alcohol consumption, and alcohol's effect on antiretroviral treatment (ART) adherence, among male fisherfolk living with HIV in Wakiso District, Uganda. We conducted in-depth semi-structured interviews with 30 men in HIV care and on ART, and used a thematic analysis approach for analysis. Alcohol use was identified as a major barrier to ART adherence through cognitive impairment and the intentional skipping of doses when drinking. Men reportedly reduced their drinking since HIV diagnosis – motivated by counseling received from providers and a newfound desire to live a healthy lifestyle. However, social, occupational, and stress-related influences that make alcohol reduction difficult were identified. Our findings suggest alcohol use may pose a challenge to ART adherence for fishermen living with HIV – and has implications for the tailoring of screening and brief intervention for alcohol reduction in HIV care for this population.

### Keywords

Alcohol; HIV/AIDS; fisherfolk; Uganda; medication adherence

### Introduction

It is recommended that people living with HIV/AIDS (PLHIV) minimize or abstain completely from alcohol use (Alcohol Research Center on HIV, 2018). Alcohol use results in lower CD4 counts, increases disease progression, and further weakens the immune system of PLHIV (Hahn & Samet, 2010). By making it more difficult to adhere to antiretroviral treatment (ART) (Hendershot, Stoner, Pantalone, & Simoni, 2009, Sileo et al., 2016),

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alcohol use can also interfere with viral load suppression and increase the risk of becoming resistant to ART (Kader, Govender, Seedat, Koch, & Parry, 2015). Counseling PLHIV to reduce their alcohol consumption is therefore of significant clinical and public health importance, especially in HIV populations engaging in heavy alcohol consumption.

In Uganda, it is estimated that 22–40% of fishing populations may be HIV-infected (Chang et al., 2016; Kiwanuka et al., 2013; Opio, Muyonga, & Mulumba, 2013) compared to 6.5% in the general adult population in 2016 (UNAIDS, 2018). Moreover, a recent study estimated 64% of new infections in fishing communities are attributed to alcohol consumption (Kiwanuka et al., 2017). In a study with Ugandan fisherfolk, nearly 70% of fishermen were classified as “hazardous” drinkers (Tumwesigye et al., 2012) – a pattern of alcohol consumption that increases the risk of harmful consequences for the user and others (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001), and is associated with sub-optimal treatment adherence (Kader et al., 2015). Given the heavy burden of HIV/AIDS in this setting, the Ugandan government has prioritized the scale up of HIV treatment with fisherfolk, resulting in a growing number of fisherfolk in HIV care (Uganda Ministry of Health, 2016). However, with high rates of drinking among fishermen, qualitative research is needed to understand the drinking behavior of fishermen on ART. These data could inform the development of integrated HIV-alcohol reduction interventions, and subsequent policy improvements, tailored to this population. Although prior research has explored drinking motivation and behavior among the general population of Ugandan fisherfolk (e.g., Sileo, Kintu, Chanes-Mora, & Kiene, 2016; Tumwesigye et al., 2012), no studies exist with this aim among fisherfolk living with HIV.

We conducted a qualitative study to explore alcohol consumption among male fisherfolk on ART in Ugandan fishing communities. Through in-depth interviews, we explored men’s knowledge of the consequences of alcohol use for PLHIV, how their consumption had changed since HIV diagnosis, and the context and motivations for alcohol use and reduction. In addition, we qualitatively explored the effect of alcohol on treatment adherence and the mechanisms by which alcohol use may lead to poor adherence.

## Methods

This qualitative study was conducted with HIV infected male fisherfolk on ART in Wakiso District, Uganda. This study was part of a larger cross-sectional mixed methods study that included a quantitative survey with a total sample of 300 men, and a sub-sample of men participating in in-depth interviews (IDIs). The data analyzed and presented in this paper includes only the subsample of men completing an IDI ( $n = 30$ ). Recruitment and data collection occurred between October 2016 and March 2017 in partnership with Mildmay Uganda. Men were recruited directly from one of seven Mildmay-supported ART clinics in Wakiso District, Uganda, including three on land: Kigungu Health Center III (HCIII), Kasenyi outreach site, Entebbe Hospital, and four sites on one of three islands: Zzinga outreach site on ZZinga Island, Bussi HCIII and Rapha Medical Center on Bussi Island, and Kachanga outreach site on Kachanga Island.

To be eligible for participation in an IDI, men had to first participate in the quantitative portion of the study, which had the following inclusion criterion: male, at least 18 years old, fisherman or employed in another fishing occupation, HIV infected, and on ART for at least 6 months. Using purposive sampling to find men with these specific characteristics, a trained male research assistant (RA) non-randomly approached men during HIV clinic days, and called men on the telephone, to inform them of the study. After consenting participants and administering the questionnaire, we then purposively sampled a subset of 30 men who completed the quantitative questionnaire to also participate in IDIs, ensuring at least half of participants reported missed ARVs in prior 4 days and any alcohol use in the prior 30 days to ensure the ability to explore our qualitative research questions. Five out of thirty-five men invited to participate in an IDI declined due to time constraints.

The same male RA who recruited men and obtained written informed consent conducted all interviews. Men completed a one-on-one, audio-recorded IDI (~40 min) in English or Luganda in a private setting in the clinic or another agreed upon location. We enrolled men until saturation was reached, which was determined by consultation with the RA and on-going review of the transcribed interviews by the first author. Audio-recordings were transcribed and translated by the RA and a second experienced translator. Men received 15,000 Ugandan Shillings (~4 USD) to compensate them for their time. All procedures were approved by the institutional review boards at San Diego State University and Makerere University School of Public Health, as well as the Uganda National Council for Science and Technology.

## Measures and data analysis

Socio-demographic items reported from the quantitative questionnaire include: age, marital status, education, monthly income, months since HIV diagnosis and ART initiation. The Adult AIDS Clinical Trial Group (AACTG) scale was used to measure self-reported ART adherence (Chesney et al., 2000), which includes recall questions about ARVs missed for the four days prior to the interview and has demonstrated construct validity in Uganda (Oyugi et al., 2007). We operationalize adherence as the proportion of doses taken in the prior four days, out of the total prescribed, and also report adherence categorized into sub-optimal (<95% doses taken) vs. optimal adherence (Ortego et al., 2011). In addition, we report men's overall scores (possible range 0–40) and alcohol-risk classifications as measured the Alcohol use Disorders Identification Test (AUDIT) (WHO, 2001), which classifies individuals at different levels of risky drinking: hazardous alcohol use (score of 8 or more), high risk or harmful use (16–19), and dependence (20 or more) (Babor et al., 2001).

IDIs followed a semi-structured protocol including open-ended questions on alcohol use and barriers to ART adherence. We asked about reasons for alcohol use and the specific circumstances in which alcohol is more likely to be used (settings, social networks, community norms). Finally, a series of questions and probes were included to assess if/how being diagnosed with HIV has changed men's alcohol use, reasons for changes in consumption since diagnosis or otherwise, and if/how alcohol use affects men's ability to take their medications. IDIs were analyzed using a thematic analysis approach (Saldaña, 2015). The first author reviewed the transcripts and developed a coding scheme based on the

interview guide, with domains related to barriers to medication adherence, context and motivation for alcohol use/reduction, and mechanisms in which alcohol use influences ART adherence. The coding scheme was then modified after review of the data. The first author and a trained research assistant independently coded the data. Discrepancies in coding were discussed and consensus reached. Finally, through an iterative process of reviewing of the coded data, major themes were identified.

## Results

### Participant characteristics

On average, men were 34 years old ( $SD = 6.9$ ). Ninety percent of men were employed as a fisherman, as opposed to fish sellers, boat operators and loaders. Men had been aware of their HIV status for an average of 21.4 months ( $SD = 10.0$ ) and initiated ART soon after diagnosis (mean = 18.9 months,  $SD = 19.5$ ). On average, men reported taking only 70.8% of their prescribed ARV doses over the 4-day recall period, making 60.0% of men “sub-optimally adherent”. The average AUDIT score was 10.4 ( $SD = 4.7$ , range 0–20), indicating overall hazardous drinking among the sample over the prior year – with 80.0% of men classified as “hazardous drinkers” (AUDIT score 8 or greater). Only one man classified as a dependent drinker (AUDIT 20 or greater). See Table 1 for more details on our sample ( $N = 30$ ).

### Context of and motivation for alcohol use

IDIs revealed alcohol use occurs in both social and occupational settings. When drinking socially, it was usually in the company of other men (peers, family) and in bars during the daytime and evening, depending on men’s work schedules. When asked what prompted men to drink, nearly a third of men interviewed implied some social or peer influence from other men. Most men said they drink casually with friends, but not to get drunk. However, a smaller proportion of men described drinking with friends as “partying”, which involved heavier drinking, going to dance clubs, and meeting women. Alcohol was considered part of the ritual in meeting women, as one fisherman (age 27) explained: “In order to start a conversation with her, you need to buy alcohol for her”.

Alcohol use was also considered a normalized part of the fishing occupation, as one fisherman (age 25) stated: “with us, the fishermen, alcohol is part of our daily lives”. Men described using alcohol to cope with long working hours, being on the lake overnight, to help them sleep in off-hours, and to deal with the cold and winds. “If you don’t take any alcohol you would feel so cold while on the lake” (fisherman, 29 years old).

A third of men interviewed discussed using alcohol for stress relief. Specific stressors named included: marital and interpersonal conflict, coping with HIV-related stress, and financial worries. Financial concerns centered on earning enough money for food security, and the ability to provide for one’s children. Specific HIV-related stressors identified by men included being diagnosed with HIV, grief from loved ones who died from HIV, and HIV-related stigma, as one fisherman (age 23) explained: “Some of my friends mock me that am on ARVs, and any time you are going to die. “Some of my friends mock me that am on

ARVs, and any time you are going to die. This mockery prompts me to take alcohol such that I can do away with the stigmatizing statements from my friends”.

Despite 80% of the overall sample being classified as “hazardous” drinkers based on their AUDIT score, and an awareness of the dangers of drinking for PLHIV, men did not express concern about their level of drinking if it did not interfere with their ART adherence or interpersonal relationships. Only a few men said they drank because they had a need for alcohol.

### Alcohol and HIV/AIDS

**Change in alcohol use since HIV diagnosis**—All 30 men demonstrated awareness that PLHIV should avoid or reduce alcohol use because of its effects on adherence and treatment efficacy. This knowledge was primarily obtained from healthcare providers. Note that about half of men were purposively sampled because they drank. Nevertheless, only three men in the sample reported abstaining from alcohol use in the prior month. When asked if their alcohol use has changed since HIV diagnosis, most participants said they had reduced their drinking. Several participants stated a temporary increase in drinking right after diagnosis; however, after coming to terms with their status, they reduced their consumption.

**Effect of alcohol use on ART adherence**—Alcohol use emerged unsolicited as one of the main barriers to ART adherence. When probed on how alcohol impacts adherence, two pathways emerged. First, men reported forgetting to take their ARVs when drinking because of alcohol’s effect on their cognitive functioning, or because they stay out too late drinking with their ARVs at home. The second pathway identified is the intentional skipping of doses when drinking, which some men reported doing to avoid perceived side effects from mixing alcohol with their ARVs. For example, one fisherman (age 37) explained: “It is not that I just forget to take my medication, but just fear that since I have taken some alcohol or since I am drunk, if I swallow my medication I would go through a very bad experience”.

The men in the sample who said alcohol does not affect their adherence reported either reducing their alcohol use already, or making intentional efforts to plan their drinking around their ART regimen to avoid missed doses or perceived interactions between alcohol/ARVs. As explained by one fisherman (age 38):

It [alcohol] doesn’t affect me, because I swallow my drugs at 8:00 PM and 8:00 AM, so if I plan to drink some alcohol at 8:00 PM, I would wait three hours after swallowing those drugs to allow them to flow in the body and then go and take some alcohol.

**Reasons for alcohol reduction**—When asked the main reasons men had stopped or reduced their drinking, most responses were related directly to men’s HIV status and health – namely, learning about alcohol’s negative effect on health, medication adherence, and treatment efficacy. Most men stated that this decision was influenced by counseling from health care providers, as explained by one fisherman (age 30): “Sometimes I drank and forgot taking my medication! It wasn’t until the care providers gave me the right counseling session and told me to quit alcohol [that I reduced drinking]”.

Other reasons men reported alcohol reduction included the desire to save money, to better fulfill their role of father and provider, and for their general health. In general, men stated that they were motivated to take their ARVs so that they could continue to provide for their families and children. Their diagnosis had motivated them to plan more for the future, sharing specific goals to earn and save enough to leave their families with money or property. Alcohol reduction was one aspect of their shift towards adopting a healthy lifestyle and saving money for the future since learning their HIV status, as exemplified in the following quotation: It [HIV] has reduced on my usage of all those substances like alcohol, and has also made it possible to save money to build my son a home (boat loader, age 30).

## Discussion

Fisherfolk are a priority population for the scale up of antiretroviral treatment (ART) in Uganda, but high rates of alcohol use in this setting poses a major threat to ART adherence and the health of fisherfolk living with HIV. Through IDIs with male fisherfolk on ART, this study shed light on social and contextual factors influencing alcohol consumption and motivation for alcohol reduction since being diagnosed with HIV – research questions that had not been previously examined with this most-at-risk population. Though we sampled men who drank and the majority drank at hazardous levels, we found men were aware of the need to reduce their alcohol use, and had made conscious efforts to do so since their HIV diagnosis. Men attributed their motivation for alcohol reduction to the counseling received by care providers and a newfound desire to live a healthy lifestyle since being diagnosed with HIV. Despite these efforts, alcohol use was discussed as a barrier to men's treatment adherence. Several social, occupational, and stress-related influences were identified that make alcohol reduction difficult – highlighting potential areas for intervention, discussed below. Our findings highlight alcohol use as an important driver of poor treatment adherence among fishermen, contributing to a growing literature linking alcohol and non-adherence to HIV medication globally (Hendershot et al., 2009).

Our findings also add to our understanding of the mechanisms by which alcohol use affects adherence – a gap in the HIV-alcohol literature (Hendershot et al., 2009). Cognitive impairment, one intuitive pathway, is supported by our study. However, men also intentionally skipped their ARVs when drinking; other studies in the United States similarly report toxicity beliefs regarding the mixing of alcohol and ARVs interferes with treatment adherence (Kalichman et al., 2009, 2013; Sankar, Wunderlich, Neufeld, & Luborsky, 2007). While our interview guide was developed with prior knowledge of this literature, these responses appeared to emerge regardless of our a priori hypotheses. It is recommended that PLHIV continue to take their ARVs even when drinking (Alcohol Research Center on HIV, 2018), as there is no empirical evidence to support the occurrence of adverse health effects from mixing alcohol and ARVs (Neuman, Schneider, Nanau, & Parry, 2012; Price & Thio, 2010; Szabo & Zakhari, 2011). Thus, this finding highlights an important knowledge gap that needs to be addressed with our sample and should be explored in future studies with PLHIV who drink, since intervention implications will differ based on the mechanisms linking drinking and non-adherence. Given overlap in findings with US-based populations (Kalichman et al., 2009, 2013; Sankar et al., 2007), researchers could consider the cultural adaptation of interventions found efficacious in addressing toxicity beliefs and improving

adherence in the United States for the Ugandan context. Our study provides data to inform the cultural adaption of such interventions so that they address other culturally-relevant drivers of alcohol use and ART non-adherence specific to Ugandan fisherfolk.

Despite awareness that PLHIV should reduce their alcohol use, and most men interviewed stating that they have made efforts to reduce their drinking since HIV diagnosis, men in our sample drank at overall hazardous levels. Note, since we purposively sampled men who drank, these findings are not generalizable to the larger population. Nevertheless, our findings suggest the integration of screening and brief intervention (SBI) (Babor et al., 2007) into HIV clinical care for clinics that serve fisherfolk may be needed. SBI includes universal screening for alcohol misuse, followed by targeted efforts to provide information, increase motivation, and teach behavioral change skills to reduce alcohol use, typically using motivational interviewing (MI) techniques (Babor et al., 2007). Men reported a desire to reduce their drinking, and reverence for health providers, suggesting a provider-delivered MI-based intervention may be acceptable. Men reportedly drank to cope with external stressors, including interpersonal conflict, work related stress, and HIV stigma. Thus, counseling that provides men with healthy coping skills to employ, in lieu of alcohol use, may be beneficial. In addition, our findings suggest emphasizing how alcohol reduction and adherence can help men achieve their goals towards better health, savings, and providing for their family may increase men's motivation for alcohol reduction. Further research is needed to test the effectiveness of SBI for fisherfolk, and implementation research is needed to understand how to best structure and deliver an intervention in the unique environmental context of clinics on Lake Victoria.

Among the study's limitations, social desirability bias may have skewed men's responses resulting in underreporting of alcohol consumption and ART non-adherence; we did not include a measure of social desirability to assess its effect. The qualitative nature of this study limits our ability to generalize the findings beyond this study. However, the goal of this study was not to assess the prevalence of alcohol consumption in this population, but to qualitatively explore this issue among men who drink. For this reason, our purposive sampling of men who drink and men struggling with adherence was appropriate for the study's aims. Representative quantitative studies are needed to characterize HIV-infected men's alcohol consumption and its effect on ART adherence in this setting.

## Conclusions

Our findings suggest alcohol use may be a key barrier to ART adherence for men in HIV care in Ugandan fishing communities. Despite the desire to reduce drinking, men identified considerable stress, social, and occupational barriers to alcohol reduction. Research is needed to develop and test the effectiveness of interventions aimed to reduce alcohol use, and subsequently improve ART adherence, for Ugandan fishermen living with HIV.

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**Table 1.**

Participant characteristics, Uganda, 2016–17, N = 30.

	(%)/Mean	SD	Range	<i>n</i>
Socio-demographics				
Age	33.8	6.9	20–50	
Marital status				
Never married	3 (10.0%)			
Divorced	9 (30.0%)			
Widowed	1 (3.3%)			
Married and separated	3 (10.0%)			
Married and living together	14 (46.7%)			Education
No schooling	18 (60.0%)			
Primary level	8 (26.7%)			
Secondary level	4 (13.3%)			
Monthly income (approximate USD)	75.3	51.3	22.2–250.0	Occupation
Fishermen	27 (90.0%)			
Other (fish seller, boat operator, boat loader)	3 (10.0%)			
Mobility (traveled/slept away in prior year)				
Yes	23 (76.7%)			
No	7 (23.3%)			
Travel time to clinic (minutes)	58.6	56.6	2–240	
Months since HIV diagnosis	21.4	10.3	8–46	
Months since ART initiation	18.9	19.5	4–45	
ART adherence (% of pills taken as prescribed)	70.8%	30.9%	0–100%	
Optimally adherent to ART				
Yes, at least 95% of doses taken	12 (40.0%)			
No, < 95% of doses taken	18 (60.0%)			
Any drinking (prior 30 days)	27 (90.0%)			
Number of drinks on typical drinking days				
No drinks	3 (10%)			
1–2 drinks	14 (46.7%)			
3–4 drinks	12 (40.0%)			
5–6 drinks	1 (3.3%)			
AUDIT score	10.40	4.71	0–20	
Hazardous alcohol use (AUDIT = 8+)	24 (80.0%)			
Harmful alcohol use (AUDIT = 16+)	1 (3.3%)			
Dependent alcohol use (AUDIT = 20+)	1 (3.3%)			

Note: ART = antiretroviral therapy; AUDIT = Alcohol Use Disorders Identification Test; ART adherence measured by the Adult AIDS Clinical Trial Group adherence questionnaire (number of doses taken as prescribed out of total prescribed over prior four days).