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## Understanding patients' experiences with a brief alcohol reduction intervention among people living with HIV in Uganda: a qualitative study

Margaret W. Gichane<sup>1</sup>, Carol S. Camlin<sup>1</sup>, Monica Getahun<sup>2</sup>, Nneka Emenyonu<sup>3</sup>, Sarah Woolf-King<sup>4</sup>, Naomi Sanyu<sup>5</sup>, Anita Katusiime<sup>5</sup>, Robin Fatch<sup>3</sup>, Winnie Muyindike<sup>5</sup>, Judith A. Hahn<sup>3</sup>

<sup>1</sup>Department of Obstetrics, Gynecology & Reproductive Sciences, University of California, San Francisco

<sup>2</sup>Institute for Global Health Sciences, University of California, San Francisco, San Francisco, California, United States of America

<sup>3</sup>Department of Medicine, University of California, San Francisco

<sup>4</sup>Department of Psychology, Syracuse University

<sup>5</sup>Mbarara University of Science and Technology (MUST)

### Abstract

**Background:** Brief alcohol reduction interventions for people living with HIV (PLWH) have resulted in mixed findings with some studies showing null or limited treatment effects. To better understand factors that may contribute to their success or failure, this qualitative study sought to explore participants' experiences in a randomized trial (RCT) of a brief counselling-based alcohol reduction intervention, including challenges that may have impeded alcohol reduction.

**Methods:** We conducted in-depth semi-structured interviews with 24 PLWH engaging in unhealthy alcohol use, who were enrolled in an RCT to reduce alcohol consumption conducted in southwestern Uganda in 2019–2020 (NCT03928418). We used a collaborative thematic approach to analyze data from transcribed and translated audio recordings.

**Results:** Perceived benefits of the intervention included increased awareness of alcohol use and its impact on personal finances, the relationship between alcohol use and violence, and a commitment to drinking reduction. Participants experienced several barriers to decreasing their alcohol use, including: prevailing social norms about alcohol use, lack of social support, and economic and social consequences of the COVID-19 pandemic.

**Conclusion:** Factors in the immediate contexts of PLWH in low-income settings, including social norms influencing alcohol consumption and lack of social support, may impede the impact

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Margaret Gichane, waru.gichane@ucsf.edu.

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Disclosure statement

The authors have no competing interests to declare

of alcohol reduction interventions, especially during times of stress such as the COVID-19 pandemic.

### Keywords

brief intervention; people living with HIV; alcohol

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## Background

Alcohol use is a major contributor to morbidity and mortality globally (WHO, 2018). For people living with HIV (PLWH), unhealthy alcohol use is associated with reduced antiretroviral (ARV) adherence, decreased viral suppression, and increased mortality (Hendershot et al., 2009; Velloza et al., 2020). Uganda is among nations with the highest levels of alcohol consumption in sub-Saharan Africa (SSA) (WHO, 2018), and heavy alcohol use is common among PLWH nationally (Gnatienko et al., 2021; Hahn et al., 2016; Velloza et al., 2020; Wandera et al., 2015). Developing strategies to reduce heavy alcohol use may improve health outcomes for PLWH.

In recent years there has been emergence of interventions focused on alcohol use reduction among PLWH (Madhombiro et al., 2019; Scott-Sheldon et al., 2017). A meta-analysis found that behavioral interventions reduced alcohol consumption, improved antiretroviral adherence, and reduced viral load (Scott-Sheldon et al., 2017). Interventions conducted in SSA have shown mixed findings (Carrasco et al., 2016; Sileo et al., 2021; Wechsberg, Browne, Bonner, et al., 2021). Multi-session interventions (Madhombiro et al., 2020; Papas et al., 2021; Wechsberg, Browne, Ndirangu, et al., 2021) have resulted in greater and more sustained reductions in self-reported alcohol use, as compared to single session interventions (Huis in 't Veld et al., 2019; Wandera et al., 2017), although none examined alcohol biomarkers to confirm self-report. The development and use of biomarkers has been recognized as a key priority in translational research for treatment of hazardous alcohol use (Ray et al., 2021).

The *Extend* study sought to culturally adapt and evaluate the efficacy of the *Healthy Women Healthy Living (HWHL)* intervention (Chander et al., 2015), a brief counselling-based alcohol reduction intervention grounded in the Information-Motivation-Behavioral Skills (IMB) model (Fisher & Fisher, 1992). The manualized brief intervention included: the creation of a drinking agreement, self-monitoring via drinking diary cards, discussion of risky moods/situation, and strategies for managing these moods/situations. The adapted HWHL was evaluated in a three-arm randomized controlled trial (RCT) in Mbarara, Southwest Uganda. Participants in the two intervention arms received two in-person sessions and booster sessions delivered either monthly via live counsellor phone calls, or twice-weekly via an automated system, using two-way text messaging or interactive voice response. The two intervention arms were compared to a standard of care control arm at follow-up (six and nine months after baseline). Main findings from the *Extend* RCT showed self-reported reductions in number of drinking days; however, there were no significant reductions in phosphatidylethanol (PEth), a biomarker for prior 2–4 weeks' alcohol consumption [Authors, 2023].

To disentangle the conflicting evidence on the impact of behavioral interventions on alcohol use in this setting (Sileo et al., 2021; Wechsberg, Browne, Bonner, et al., 2021), there is a critical need for studies which evaluate the factors that may drive limited treatment effects. We conducted qualitative interviews in the *Extend* RCT after intervention delivery but prior to study-arm unblinding to determine acceptability and experiences with the three study arms. Additionally, given the lack of change in PEth results among intervention participants, we also sought to examine discrepancies between self-report and PEth measures of alcohol use, as well as the challenges which may have impeded alcohol reduction.

## Methods

### Setting

The present study was conducted among adults receiving care at the Immune Suppression Syndrome (ISS) Clinic. The ISS Clinic is an HIV/AIDS treatment and research facility nested within the Mbarara Regional Referral Hospital (MRRH) which currently serves 21,600 patients. Newly enrolled patients are offered individual and group adherence counseling from HIV counselors (Sundararajan et al., 2015). Patients served at the ISS clinic largely come from surrounding urban and rural districts whose economies are primarily driven by small business and subsistence agriculture. Adult HIV prevalence in Southwest Uganda is 6.3% (Ministry of Health Uganda, 2022).

### Study Design

The *Extend* study estimated the uptake and acceptability, efficacy, and cost of methods of delivery of the intervention to reduce unhealthy drinking and HIV viral failure in a RCT among 270 persons. The RCT used a mixed methods, Quantitative-QUAL design (Palinkas et al., 2011) where qualitative data were collected to explore acceptability and experiences with all study arms. The *Extend* RCT was conducted between September 2019 and September 2021. Participants were randomized to one of three arms (1:1:1) which included two manualized in-person counselling sessions conducted three months apart, (1) with interim monthly booster phone calls (live call arm), or (2) twice-weekly automated booster sessions, via either text message (SMS) or interactive voice response (IVR) (technology arm), or (3) standard of care (SOC) which included brief advice about alcohol use, given by the research assistants. During the first in-person counselling session, Arm 1 and 2 participants received a workbook and drinking diary to track their daily number and type of drinks, and worked with the counselor to create a drinking agreement to a set a goal for reducing alcohol consumption, which they revisited in the second session. Participants included PWH 18 years and older who self-reported unhealthy use (Alcohol Use Disorders Identification Test – Consumption, prior 3 months, women  $\geq 3$  and men  $\geq 4$ ), engaged in HIV care, on ART for at least 6 months and who had access to a working phone. Exclusion criteria included intention to move out of the catchment area within 6 months, enrollment in another HIV-related research study, and inability to give informed consent. The primary outcomes were the number of drinking days in the prior 21 using the timeline follow back (Sobell & Sobell, 1992), and PEth (Walther et al., 2015), at 6 and 9 months, and viral suppression (<40 copies/ml) at 9 months.

## Intervention

The cultural adaptation of the *HWHL* intervention, including using formative qualitative research both to culturally adapt the in-person counseling intervention and to develop the tailored 2-way automated IVR/SMS booster sessions, is described elsewhere ([Authors], 2021). In brief, key intervention adaptations included culturally relevant messages about motivations to drink and harms of drinking, tracking drinking costs, drinking diary feedback, and guidance on selecting a treatment helper.

## Sampling and recruitment

We purposively selected 36 participants from the *Extend* trial for in-depth interviews (IDIs) post-intervention, between the 3- and 6-month study visit. We recruited from randomly generated lists of study participants within the three study arms; to attain varied study experiences, we selected a proportional number of participants based on gender, literacy level, age (age <35/age 35+), self-reported alcohol consumption at 3-month follow up, and study arm (with 12 participants per arm). These recruitment categories were selected based on epidemiological evidence of differences in drinking based on gender and age (Wandera et al., 2015), as well as considerations that the technology interventions may be received differently by participants based on age and literacy level. Participants in the technology arm were sampled proportionately to the numbers in each sub-group (SMS and IVR) in the overall RCT. In this analysis we focused on the 24 participants in the intervention arms. Participant characteristics are described in Table 1.

## Data collection

IDIs were conducted in the local language, Runyankole, by two Bachelors trained Ugandan interviewers with experience in qualitative research methods. The interviewers pursued questions across multiple domains of inquiry : 1) demographics and livelihood; 2) attitudes, beliefs, and experiences with heavy drinking; 3) social support; 4) intimate partnerships (relationship quality, communication, and trust); 5) HIV related stigma and disclosure; and 6) experiences with intervention components including counseling sessions, intervention workbook, and tech booster sessions. Interviews were conducted using a semi-structured guide to ensure that all topics were covered and that data could be effectively analyzed. Interviews were conducted in a private location at the MRRH and lasted between 38–122 minutes. The interviews were audio-recorded, translated, and transcribed into English by the interviewers.

## Data analysis

Interview transcripts were analyzed using a team-based thematic analytical approach (MacQueen et al., 1998) in which four study team members jointly coded and analyzed the data. A team based approach was selected to facilitate internal member checking in analysis and interpretation for our U.S. and Uganda based team. Dedoose software, was used to assist with coding and data organization. An initial coding framework was developed and modified collaboratively at several defined stages in the coding process. The jointly developed codes were applied, then codes queried, and resulting texts analyzed. The team conducted several analysis workshops to interpret data. Coded data and data summaries were transferred

into analytical matrices (Nadin & Cassell, 2004) displaying major emergent themes. An additional analysis step was taken to examine participant experiences by drinking reporting pattern. Drinking pattern was based on participant's self-reported drinking compared to their PEth results. We categorized participants' reporting patterns into the following categories: concordance, defined as when self-reported drinking days and PEth results both indicated a decline across timepoints or when self-reported drinking days and PEth results both indicated a consistently high or low level of alcohol intake (54%); and discordance, defined as when PEth and self-reported drinking levels were inconsistent and indicated low self-reported drinking days but high PEth levels or vice versa (46%). Within each theme, we report on variations based on drinking pattern.

### **Ethical approval**

All study procedures were approved by the institutional review boards of the University of California, San Francisco, the Mbarara University of Science and Technology, and the Uganda National Council on Science and Technology. The study was registered at [ClinicalTrials.gov \(NCT03928418\)](https://clinicaltrials.gov/ct2/show/study/NCT03928418).

### **Results**

Below, we describe perceived benefits which highlight the positive impacts of the intervention, including increased financial savings, increased awareness of the impact of alcohol on physical health and interpersonal relationships, and commitment to drinking reduction goals. We also describe barriers to alcohol reduction including prevailing social norms, lack of social support, and the economic and social impact of the COVID-19 pandemic. Finally, we address evidence for variations in these themes across by concordance.

### **Perceived benefits**

#### **Savings and financial awareness**

One of the most commonly reported benefits of reducing alcohol consumption was increased financial savings. Participants with both discordant and concordant drinking patterns often discussed how their spending on alcohol reduced over the course of the study. Most participants described their changes in alcohol use based on how much less they were spending on alcohol. As one participant noted:

“At first I would drink 4 bottles per day before I joined the study and when the health worker advised me, the one I first met said, “Can you reduce less on what you are taking?” when I followed that I realized that the expenditure I was making on the 4 bottles was almost 12,000 shillings. I then reduced and started spending 6,000 shillings but finally I realized alcohol is useless”-Male, 49 years, technology arm

For one participant, spending less on alcohol provided her with extra savings she could use instead of relying on others during emergencies:

I have found that the 500 shillings you spend on alcohol is a lot. I look for a box and I pretended that whenever I throw in the 500 shilling coin, it is like I have bought a glass of waragi in bar...I can now save some money in that when I get a problem I can easily help myself out of that problem instead of going around asking people to lend you money.- Female, 35 years, technology arm

The positive reinforcement of seeing savings accumulate gave participants a sense of accomplishment. Participants discussed how their savings were being invested in businesses and meeting their family needs:

When I would go in the records in my drinking diary and I see how I am reducing alcohol, I would feel motivated. And also when I would see the benefits of not drinking that I was getting such as saving money, the children feeding on better meals than they used to, the TV subscription is available and they can watch, you have your motorcycle and you are working, all that is peace which encouraged me more to keep the agreement.- Male, 32 years, technology arm

### **Awareness of alcohol's physical and social impact**

For many participants, an important benefit of the intervention was the opportunity to reflect on the social and physical impacts of drinking. For some participants the most salient changes they experienced from intervention participation was reductions in violence within their families and communities. One man shared about how his relationship with his wife changed:

Another thing, domestic violence, because when I would come back drunk I would quarrel with my wife, when someone would disturb me in the bar I would go back and displace my anger to my wife, we would not fight but we would quarrel. I don't usually beat my wife. But since I stopped alcohol I no longer quarrel with her. -Male, 34 years, live call arm

This was reiterated by a woman who shared:

It helped me because on the first page [of the workbook] they were saying that when you stop drinking alcohol you get peace in your home, you get peace in your village, you get peace with your partner. You become settled- 38 years, technology arm

Due to the reductions in violence, participants reported having better relationships with their spouses and families.

Participants discussed the impact of reduced alcohol intake on overall health. Health benefits included: weight gain, improved appetite, sleep, and ART adherence.

When I would drink alcohol I would spend a lot of time in the bar drinking and I forget the time to swallow my ART drugs. I would swallow when it is past time. But now I swallow my drugs in time. - Female, 35 years, technology arm

Another participant reported:

I used to think that when I don't drink I will delay to sleep, but ever since I reduced alcohol I now sleep early, I wake up feeling fine without any pain. -Male, 47 years, live call arm

### **Commitment to alcohol reduction goals**

Most participants reported that they had made some form of commitment to reduce their alcohol intake. Drinking agreements were a formal part of the study and involved setting a goal for alcohol reduction made between themselves and the counselor. The consistency and frequency of messages and calls from counselors made participants feel like their commitment to their drinking agreements was important to their counselors as well. One participant reported:

I was seeing the responsibility they were taking to follow me up yet I am not related to them in any way. I looked at the time they were taking, every Tuesday and Thursday yet they didn't know me personally, so it would also motivate me to try and keep to my agreement. -Female, 54 years, technology arm

This sentiment was reiterated by another participant.

I had made the agreement to reduce the alcohol I was taking. So the phone call did something big. We had made the agreement that he would keep calling me after every three weeks. So when he kept calling me, I knew that the counselor is serious, let me also be serious.- Male, 54 years, live call arm

Some participants compared the seriousness of the agreement to that of a covenant with God:

After making that agreement I started looking for ways to keep that agreement so that I don't fail depending on the commitment I had made personally because if you make a promise it means that you have even involved God in your decision. -Male, 32 years, technology arm

However, in many cases, participants experienced circumstances which made it challenging to maintain the drinking reduction goals they set. Participants with discordant drinking patterns often pledged to completely stop drinking or reduce their intake by more than half. When participants were unable to meet their drinking goals, a few expressed remorse that they may have disappointed the study staff. One participant shared his feelings after he drank at a rally:

...it seemed like I had lied to myself or lied to him [counselor]. I had agreed that I will not drink again but there I was, I had drunk again. So it became like a lie on my side. It made me feel bad...So I asked myself ... (counselor) is an old [mature] person, he took his time to counsel me, why then did I again drink? It became a debt on my side. I called him and told him, 'Forgive me but I drunk. He then told me, I know you cannot quit alcohol at once, but then try to keep your agreement. When he told me that, it felt like I had really done something bad.- Male, 59 years, live call arm



This sense of concern highlights how important the drinking agreement was for the participant, despite the challenge in maintenance.

## Barriers to alcohol reduction

### Social norms

Managing social norms around drinking was challenging for many participants who were unable to reduce their alcohol use. The intervention workbook encouraged participants to avoid triggers by going to drinking venues less often, or by switching to non-alcoholic drinks. Participants often found this challenging to implement, especially in the context of peer pressure. One participant described how not drinking may have suggested that he was living with HIV:

I was still going to the bars because at that time I had not fully understood the whole thing. I didn't know that I can go in the bar and sit with my friends and fail to drink and ask for water. If they see you drinking water, they ask you, Why are you drinking water? Are you sick?' so you will end up drinking.- Male, 32 years, technology arm

Avoiding drinking while at a bar was viewed as socially unacceptable. Participants voiced concerns that refraining from drinking would draw unwanted attention. One man discussed how he would sometimes drink to avoid scrutiny and judgement:

When we are in our free time, and you tell your friend that I do not want alcohol, your friends start seeing you differently. It is as if you are starting to be proud, and that you want to become rich, or you [are] being a miser, but to avoid all that judgment, you drink as well so that you can fit in the group.-Male, 47 years, technology arm

In this quote the participant highlights how avoiding purchasing drinks for oneself or for others may indicate that he sees himself as better than others or it may suggest a high level of frugality.

Several participants described how changing their drinking patterns made them unable to maintain the same friendships. Participants who were successful in reducing their drinking changed their social groups:

But the other friends wouldn't give me good advice, they would only advise me to destroy my home. But the ones I have currently advise me to build my home, others have also stopped drinking and you find us seated, having good conversation about building the family and looking for jobs.- Male, 34 years, live call arm

### Lack of social support

Participants were asked (but not required) to bring in a trusted person to support them in maintaining their goals to reduce drinking. Most participants with discordant drinking reports in the qualitative sample did not have a treatment helper. Among who did not bring a treatment helper, the majority reported that they had identified a treatment helper but were unable to bring them to their second intervention visit. Some barriers included a lack of



transport money for their helper, work schedules, and that their desired helper lived far away. One woman described her challenge in bringing a helper:

No I immediately told him [counselor] that I will not get a helper because I do not stay with my partner otherwise I would have brought him. I stay alone, and for the rest of the people I do not feel comfortable. I do not have my very close friends in [name of town]. -Female, 24 years, live call arm

In addition to logistical and economic barriers to bringing desired treatment helpers to the clinic, there was also a sense that there were some people who could not be trusted because they may disclose their alcohol use or HIV status:

I would maybe have brought my child the one I stay with at home...or may be my friend. But friends nowadays cannot be trusted. If you bring one, they might go back to tell other the reason why you had brought her.- Female, 54 years, technology arm

Treatment helpers were recognized as an important accountability system for alcohol reduction even among those who did not have them. A man who did not have a treatment helper reported:

It would have helped me, because the person you have told something is not the same as the person who has seen something. So maybe he would have been more motivated to guide me more when we are at home and say, 'You said you would do this, now have you forgotten?' -Male, 47 years, technology arm

Just one participant without a treatment helper reported that she did not bring one due to a lack of interest. She reported that she did not bring a helper because she ultimately believed it was up to her to change her drinking:

I didn't need that person[treatment helper] because I am old enough, I can understand what they were telling me, so I asked myself, 'why should I bring someone to witness whether I was going to leave alcohol or not.'...I can decide for myself to stop drinking. -Female, 54 years, technology arm

### **COVID-19 lockdowns and restrictions**

A key contextual factor underlying the study was the COVID-19 pandemic and associated lockdowns and restrictions during the study period in Uganda. A major consequence of the pandemic was the economic strain it caused for many participants. Some reported fewer opportunities for wage labor, lowered price for goods, and a decrease in their profit margins. For some participants, the economic strain translated into reductions in drinking during periods of the pandemic. Participants discussed purchasing decision-making, including forgoing alcohol to take care of their families.

But when 'corona' started, I reduced my drinking because the situation became bad- there was no money. I only had to look for money to feed my children. Another thing if you wanted to drink 2 litres, you would instead drink 1 litre because there was no gathering in groups.- Male, 45 years, live call arm

One of the structural changes made by the government was the closing of drinking venues. This shifted the social aspect of drinking. In urban areas, bars and trading centers were officially closed. Some participants were able to pick up alcohol from bars to drink at home. Being found drinking in bars increased anxiety because it meant a possible encounter with the police, who were enforcing lockdown restrictions:

Once in a while we go to the trading centers in our village though it is rare. So during Covid we would drink while hiding, when they would find us, they [police] would beat us or at times ask us to pay fine. So we would at times remain home and not go to the bars. - Female, 28 years, live call

However, the impact of COVID-19 restrictions varied based on geography and participants' own risk tolerance. In rural areas there was less enforcement of restrictions:

COVID hasn't changed anything. The situation in the villages is not like the one in the towns. We do not have curfew in our village, it is you who decides to go back home. To tell you the truth the bars are open in our village.- Male, 47 years, technology arm

Participants who were willing to take on risk to access alcohol described ways to circumvent the restrictions. There were some bars or shops that were still willing to sell alcohol to patrons:

Do you think if you want alcohol you can fail to get it? There are people who have shops; and in the display they show they are selling food stuff but below the counters they have alcohol. ...The place where I buy myself alcohol is similar to that, they also sell the alcohol from below the counter.- Female, 24 years, live call arm

## Discussion

This qualitative study of participants' experiences of a brief alcohol reduction intervention identified several factors which may have led to limited treatment effects as well as perceived benefits: participants experienced challenges in decreasing their alcohol use due to prevailing social norms and peer pressure, a lack of social support, fear of judgment, and COVID-19 restrictions. Participants benefitted from gaining skills in savings and financial literacy, as well as increased information about the social and physical impacts of alcohol use.

Findings suggest that intervention components aimed at addressing motivation within the IMB model may not have been fully realized in *Extend*. Motivation was enhanced in this alcohol intervention by providing personalized normative feedback, exploring ambivalence, and presenting participants with information related to the negative effects of alcohol use. Moreover, while the intervention encouraged participants to set realistic drinking reduction goals, many opted to set very stringent goals for themselves (e.g. total abstinence) rather than small attainable goals that could have reinforced self-efficacy for reducing consumption. Additionally while participants felt like treatment counselors cared for them and were also committed to their goals, it is possible that the care led some participants

to withhold disclosing challenges maintaining their their drinking reduction goals to avoid disappointing the counselor. Drawing on the concept of therapeutic citizenship (Nguyen et al., 2007; Russell et al., 2016), participants may have felt shame or guilt for not meeting their responsibility to be a good and adherent patient. This fear may have limited the counselor's ability to provide personalized feedback and strategies to help meeting drinking goals. Counseling-based interventions should take measured approaches to ensure that participants feel comfortable sharing any challenges they experience and encouraging them if they need to adjust drinking reduction goals.

The treatment helper was an intervention strategy designed to support participants in the implementation and maintenance of their drinking agreements. Participants who did not reduce their alcohol use were more likely to report not having a helper, though we cannot determine if this was cause or effect. Finding a treatment helper required participants to disclose their alcohol use and potentially their HIV status to others which may have been challenging due to fears of stigma. While expansion of HIV treatment has led to a decrease in HIV related stigma (Camlin et al., 2020), there remains significant challenges to status disclosure among people living with HIV. The compounded internalized and enacted stigma due to HIV status and alcohol use may further inhibit individuals from seeking out support (Nalwadda et al., 2018; Wolff et al., 2006). Incorporating a treatment helper in recovery may be more effective for participants who experience challenges with finding support within their communities (Tracy & Wallace, 2016).

Our findings align with research highlighting the critical role of social norms and peer pressure in alcohol use (Perkins et al., 2022). Among the *Extend* participants, refusing or not consuming alcohol in social settings made some men vulnerable to perceptions that they were sick or that they were not generous. Participants may have feared that not drinking may inadvertently disclose their HIV status and leave them vulnerable to stigma. Additionally, not paying for their own drinks and those of others may have defied social expectations, thus they may have feared it could impact their standing in their community. Intervention activities included building skills to anticipate social scenarios where it may be difficult to refuse a drink and to employ alternative strategies (e.g. drinking non-alcoholic drinks, fewer drinks). However, it is possible that such practice may not have been sufficient for the real pressures participants once in the situation. Future research, including iterations of the *Extend* intervention, should explore what additional skills building is needed to navigate social pressures and role expectations related to drinking.

Intervention participation led to increased awareness of savings and financial literacy. Through tracking drinking expenditures, participants were able to reflect on their drinking habits. For some participants, savings from reducing drinking were redirected to providing for their families, paying for educational expenses, and building businesses. Savings interventions have shown positive impacts on HIV prevention (Jennings et al., 2016; Ssewamala et al., 2010) and viral suppression (Ssewamala et al., 2020). Incorporating a savings component in brief alcohol interventions such as *Extend* may have an added impact and sustain behavior change.

We note that the *Extend* trial took place during the early days of the COVID-19 pandemic. Lockdowns occurred between March 30, 2020 and June 4, 2020 which just preceded the qualitative interviews. During the lockdown period a curfew was in place restricting people from leaving their homes between 7pm and 6:30am (Haider et al., 2020). While alcohol sales were not strictly prohibited, bars and nightclubs were closed, gatherings over 10 people were banned, and supermarkets were only allowed to sell essential products (Kalema, 2022). Participants described challenges such as economic strain from losing their income and bar restrictions which limited gatherings and increased fears of police violence.

Our findings should be considered in light of a few limitations. This sample was recruited prior to the unmasking of trial results. Therefore the interviews did not focus on barriers to self-reporting in the RCT. It is also unknown how social desirability may have impacted participants' IDI responses. However, by using matrices to compare participant transcripts, we were able to analyze how intervention experiences differed on drinking pattern, study arm, and other demographic characteristics.

## Conclusion

Our study highlighted key barriers to alcohol reduction and reporting in the context of a brief intervention. By comparing participant experiences by self-reported and biological markers of alcohol use, we were able to understand factors which may have limited intervention impact. To improve efficacy of counseling-based alcohol interventions, close attention needs to be paid to threats of social desirability to ensure participants are comfortable sharing challenges in reducing alcohol use. Participants may also benefit from additional skill building in avoiding social pressure, increasing financial literacy, and facilitating the inclusion of a peer supporter.

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**Table 1.**

## Participant Characteristics

	Technology N (%)	Live call N (%)	Total N (%)
Age (Median (IQR))	43 (34–52)	45 (39–53)	44 (35–52)
Sex			
Male	6 (50%)	8 (67%)	14 (58%)
Female	6 (50%)	4 (33%)	10 (42%)
Literacy			
Low literacy	2 (17%)	4 (33%)	6 (25%)
High literacy	10 (83%)	8 (67%)	18 (75%)
Drinking pattern			
Concordant	3 (25%)	3 (17%)	6 (54%)
Discordant	9 (75%)	9 (17%)	18 (46%)

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