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Socioecological Factors Related to Hazardous Alcohol use Among Female Sex Workers in Lilongwe, Malawi: A Mixed Methods Study

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Abstract

Background—Alcohol use is pervasive among female sex workers (FSW) placing them at increased risk of violence and sexual risk behaviors. FSW often live and work where alcohol is highly normative.

Objective—To understand the socioecological influences on hazardous alcohol use among FSW in Malawi.

Methods—In 2014, 200 FSW identified through venue-based sampling in Lilongwe, Malawi, completed a quantitative behavioral survey, with a sub-sample participating in qualitative interviews. Multivariable log-binomial regression was used to identify associations between hazardous alcohol use (AUDIT score ≥ 7) and time in sex work, clients per week, unprotected sex, alcohol use with clients, and living environment. Qualitative interviews enhanced findings from quantitative data and identify emergent themes around socioecological influences on alcohol use.

Results—Over 50% reported hazardous alcohol use and lived in an alcohol-serving venue. Hazardous alcohol use was associated with sex work duration of ≥2 years (aPR: 1.30; 95%CI: 1.02,1.65) and alcohol use at last sex with a client (aPR: 1.29; 25%CI: 1.06,1.57). FSW perceived

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Declaration of interest

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alcohol as a facilitator for sex work by reducing inhibitions and attracting clients, but acknowledged alcohol leads to violence and/or unprotected sex. Despite these risks and a motivation to reduce use, FSW feared that refusing to drink would be tantamount to turning away clients.

Conclusions—Although FSW recognized alcohol-related risks, the norms and power dynamics of sex work perpetuated hazardous alcohol use. Multilevel interventions are needed to collectively change norms around drinking and sex work that will enable FSW to reduce alcohol consumption when engaging in their work.

Keywords

Alcohol use; motivations; norms; sex work; sub-Saharan Africa; violence

Introduction

Globally, alcohol use among female sex workers (FSW) is highly prevalent (Li, Li, & Stanton, 2010; Scorgie et al., 2012) with approximately 70% reporting alcohol use in the past month (Li, Li, & Stanton, 2010). Sex workers may use alcohol to cope with the stress and challenges of their occupation (Shiffman, 1985). FSW use alcohol to facilitate sex work, and both FSW and clients often consume alcohol at the time of sex (Chersich et al., 2007; de Graaf, Vanwesenbeeck, van Zessen, Straver, & Visser, 1995; El-Bassel, Witte, Wada, Gilbert, & Wallace, 2001; Li, Li, & Stanton, 2010). FSW use alcohol to reduce their insecurities or become more comfortable when approaching potential clients (Onyango et al., 2015). Clients also often purchase alcohol for FSW prior to sex to establish the sexual transaction (Li, Li, & Stanton, 2010; Wojcicki & Malala, 2001). Additionally, clients often prefer FSW who drink due to the belief that alcohol will reduce sexual inhibitions (Li, Li, & Stanton, 2010; MacQueen et al., 1996).

Alcohol use impairs judgment and cognitive function, increasing the likelihood for unprotected sex and sexual coercion (Babor, 2001; Chersich et al., 2007; Hagger-Johnson, Bewick, Conner, O'Connor, & Shickle, 2011; Kalichman, Simbayi, Kaufman, Cain, & Jooste, 2007; Wechsberg et al., 2009). In sub-Saharan Africa, alcohol use among FSW increases sexual risk behaviors and sexual violence (Chersich, Bosire, King'ola, Temmerman, & Luchters, 2014; Chersich et al., 2007). Consequently, FSW with hazardous alcohol use, an alcohol consumption pattern that increases the risk of harmful consequences to the person or others (World Health Organization (WHO), 2000), may be at greater risk for HIV and sexually transmitted infections (STIs) acquisition and transmission (Lancaster et al., 2016). Alcohol reduction strategies for FSW are needed to decrease HIV and STIs risk, sexual violence, and alcohol consumption.

Alcohol reduction interventions for FSW have primarily focused on reducing alcohol use individually. These individual-level interventions have been largely effective in reducing short-term alcohol use (L'Engle, Mwarogo, Kingola, Sinkele, & Weiner, 2014; Wechsberg, Luseno, Lam, Parry, & Morojele, 2006). However, long-term alcohol use was not evaluated. For long-term alcohol reduction to be sustainable, interventions may need to address the larger socioecological influences on alcohol reduction for FSW.

To develop effective long-term alcohol reduction strategies, we must understand the impact of the alcohol use environment on FSW behavior in alcohol serving venues. The socioecological framework proposes a reciprocal interaction where both the social and physical context can influence particular health outcomes, such as hazardous alcohol use (Sudhinaraset, Wigglesworth, & Takeuchi, 2016). Generally, the framework begins at the individual level, which is nested first within an interpersonal level and then a structural level. This framework recognizes the interplays among individual-level, social network, and environmental determinants (Sudhinaraset, Wigglesworth, & Takeuchi, 2016). Socioecological determinants, such as unprotected sex and living environment, have been well-established for alcohol use among non-FSW populations but are less understood for hazardous alcohol use specifically among venue-based FSW (Hershow et al., Submitted; Rhodes, 2009; Strathdee et al., 2010). Identifying socioecological factors that are associated with hazardous alcohol use can provide important insights for alcohol reduction and ultimately, HIV/STIs and violence prevention for FSW in these settings.

We used quantitative and qualitative methods to describe the prevalence and patterns of alcohol use among FSW soliciting sex in alcohol-serving venues and to explore the relationship between socioecological factors and hazardous alcohol use among FSW in Lilongwe, Malawi.

Methods

Study setting and recruitment

The study was conducted in Lilongwe, located in the Central Region of the Republic of Malawi. Nested within the district is Malawi's administrative capital, Lilongwe City, with an estimated population of approximately one million. In 2011, the Family Planning Association of Malawi conducted a situation analysis of the magnitude of FSW. An estimated 3,500 FSW are in Lilongwe. FSW were mostly 20–24 years old, and found working at bars, bottle stores, and guesthouses (Family Planning Association of Malawi, 2011).

This research was designed and implemented through a partnership between The University of North Carolina at Chapel Hill, UNC Project Malawi, and Theatre for a Change (TfaC), a non-governmental organization in Malawi with programmatic activities in the sex work community. This study was a descriptive, cross-sectional biological and behavioral study among FSW in Lilongwe, Malawi. From July through September 2014, we systematically recruited FSW using venue-based sampling at venues where FSW are known to solicit sex (Johnston, Sabin, Mai, & Pham, 2006; Peitzmeier et al., 2014). Our outreach team comprised HIV testing counselors, interviewers, a study nurse, a driver for the mobile clinic, and a peer FSW to facilitate approaching women at the venues.

Members of our outreach team approached women at the venues and asked their willingness to participate in a study for women at risk for HIV. We used the 2011 Family Planning Association of Malawi's definition of sex work: someone "who had received money in exchange for sex either regularly or occasionally up to 12 months" prior to the survey

(Family Planning Association of Malawi, 2011). Women were eligible for enrollment if they were ≥ 18 years of age and self-reported as a FSW.

This study protocol received ethical approval from the Non-Biomedical Institutional Review Board at the University of North Carolina and the Malawi Ministry of Health and Population National Health Sciences Research Committee. All participants provided written informed consent. All study related activities were conducted in a safe and private location at each recruitment venue.

Data collection

We used quantitative and qualitative methods to explore the prevalence, patterns, and context of alcohol use among FSW. Specifically, we nested a data-linked qualitative subsample within a larger cross-sectional evaluation to provide a more nuanced understanding of the context of alcohol use, including reasons for drinking and perceived consequences of alcohol consumption.

Trained field workers administered a structured behavioral survey for all consented FSW to obtain information about demographics, alcohol use, and socioecological factors. The survey was translated from English to Chichewa, the predominant language in Malawi, and back translated. The survey was available in both English and Chichewa. The survey was completed within a safe and private location and took approximately 40–60 minutes to complete. All survey responses were electronically captured on encrypted Android-based tablets using open source software, Open Data Kit Collect.

A subset of 14 FSW were purposively selected for their reported current substance use, either alcohol (Alcohol Use Identification Test (AUDIT) score ≥ 7) or marijuana (used ≥ 5 days in past 30 days) use, in the survey to participate in in-depth interviews to further explore the context of substance use and sex work. All 14 women approached agreed and consented to participate. Interviews explored the daily patterns and practices of participants' drinking and drinking practices while engaging in sex work. Interviewers were experienced in qualitative methods and completed an intensive three-day training on study-specific procedures and guides. Qualitative interviews were conducted in Chichewa within a safe and private location and took approximately 60 minutes. All interviews were audio recorded, transcribed, and translated into English. Interviewers also recorded field notes to capture nonverbal expressions and contextual insights.

Alcohol use measures

Alcohol use was captured using the World Health Organization's AUDIT (Babor, 2001; World Health Organization (WHO), 2000). The AUDIT is a screening tool for hazardous drinking, a pattern of drinking that poses high risk of future damage to physical or mental health. This screening tool has been validated in various populations and has been widely used to screen for hazardous drinking in sub-Saharan Africa (Parry et al., 2005; Woolf-King & Maisto, 2011). The AUDIT is a brief 10-question survey that consists of questions related to specific domains, like hazardous alcohol use, harmful alcohol use, and alcohol dependence symptoms. Hazardous alcohol use is an alcohol consumption pattern that does not represent a current alcohol use disorder but increases the risk of harmful consequences to

the person or others. Harmful alcohol use is an alcohol consumption pattern that leads to adverse physical and mental health outcomes. Alcohol dependence is a condition in which a person experiences a strong desire to drink and difficulty controlling alcohol use. Each of the 10 questions has a set of responses with a corresponding score of 0 to 4, which are added from each question, resulting in one composite score ranging from 0 to 40. A score of 8 or above indicates hazardous drinking, with an average sensitivity of 90% and specificity of 80% varying among populations and countries. The WHO recommends shifting the cut-off for indication of hazardous drinking to a score of 7 among women to increase sensitivity in this group (World Health Organization (WHO), 2000). Therefore, an AUDIT score of 0–6 was considered indicative of abstinence or nonhazardous drinking, 7–15 of hazardous drinking, 16–19 of harmful drinking, and ≥20 of alcohol dependency (World Health Organization (WHO), 2000).

Data analyses

Our analysis approach followed a quant-qual mixed methods design, whereby we first analyzed the quantitative data and then drew upon the in-depth interviews to enhance quantitative findings and identify emergent themes around socioecological influences on alcohol use (Creswell, 2013; Tashakkori & Teddlie, 2010).

Quantitative analysis—For the behavioral survey, we used frequency distributions and descriptive statistics to characterize the study population. We examined the association between a parsimonious set of socioecological factors and hazardous alcohol use (AUDIT score of ≥ 7) in a series of multivariable models among FSW who reported current alcohol use within the past 90 days. Based on the literature, these socioecological factors included: living environment (private house, bar or bottle shop, guesthouse or hotel) (Mbonye et al., 2013), years in sex work (<2, ≥2 years) (Li, Li, & Stanton, 2010), weekly number of clients (<10, 10–19, 20–29, ≥30 clients) (Li, Li, & Stanton, 2010), client ever demanded not using a condom during sex (yes, no) (Li, Li, & Stanton, 2010), condom use with client in the past 7 days (inconsistent, consistent) (Chersich et al., 2014; Chersich et al., 2007; Li, Li, & Stanton, 2010; Zachariah et al., 2003), reported alcohol use at last sex with a client (yes, no) (Chersich et al., 2007; de Graaf, Vanwesenbeeck, van Zessen, Straver, & Visser, 1995; Li, Li, & Stanton, 2010; Wojcicki & Malala, 2001), self-reported known HIV status (Li, Li, & Stanton, 2010), and self-reported receipt of STI treatment in prior 12 months (Chersich et al., 2007; Zachariah et al., 2003). The question used to assess consistency of condom use was “How often did you use condoms during vaginal sex with a paying sexual client in the last 7 days?”. Consistent condom use was defined as reporting “always” using condoms, whereas reporting “never”, “rarely”, “sometimes”, or “most times” was defined as inconsistent condom use. We used a separate log-binomial regression model for each socioecological factor to estimate prevalence ratios (PR) and 95% confidence intervals (CI), controlling for age, marital status, and education. Socioecological factors found to be associated with hazardous alcohol use were also explored for an interaction effect on hazardous alcohol use.

Qualitative analysis—To specifically understand alcohol use and the socioecological influences, we included FSW those who participated in the qualitative interviews and had

AUDIT score ≥ 7 for the qualitative analysis (n = 13). The interviews were imported in NVivo (10.2.2) qualitative analysis software for coding and analysis. After reviewing each transcript multiple times, investigators compared key themes and topics of interest. Preliminary codes were developed and described in a codebook. Ten percent of transcripts were double-coded individually by two investigators to assess inter-rater reliability. The investigators then discussed similarities and differences in how codes were applied to refine preliminary codes. After coding all transcripts, patterns were compared across different groups of participants and within the individual narratives. Themes and relationships among codes were discussed and exemplar quotes were selected to illustrate important concepts and analytic insights.

Results

Quantitative findings

A total of 200 FSW were recruited from 23 different venues within Lilongwe; primarily venues were bars and bottle shops. Thirteen venues were bars, six were guesthouses or lodges, two were bottle shops, and two were bottle shops and guesthouses. Venues were visited by both male and females and typically socialize for more than hour at a time. The median age among the total study population (n = 200) was 24 years (IQR: 22–28) and nearly all (98%) were Malawian (Table 1). Only 34% had completed primary school or beyond and 81% reported being separated, divorced, or widowed. The majority (58%) of FSW reported living in a bar or bottle shop and 91% solicited sex within these venues. The median duration of engaging in sex work was 3 years (IQR: 1–5), with a median number of clients in the past 7 days of 21 (IQR: 10–35).

Within our entire sample, just over 80% of FSW reported lifetime alcohol use, with 78% reporting alcohol use in the prior 90 days (Table 2). Nearly half (49%) of FSW reported consuming 5 or more drinks in one day in the prior 90 days. Forty-two percent of FSW were at high risk for alcohol-related long-term health risks (>41 g/day). The mean AUDIT score was 12.0 (SD: 7.1) and the median was 11 (IQR: 6–17). Among those reporting current alcohol use, FSW consumed alcohol approximately 3 days a week (SD: 1.9) on average, and on days when FSW drank within the prior 90 days, they consumed an average of 6 drinks a day (SD: 8.8).

Multivariable analyses (Table 3) were conducted among those reporting current alcohol use (N = 156). Engaging in sex work for ≥ 2 years (versus < 2 years) was associated with hazardous alcohol use (adjusted prevalence ratio 1.30, 95% CI: 1.02, 1.65). FSW who reported alcohol use at last sex with client were 1.29 (95% CI: 1.06, 1.57) times as likely to report hazardous alcohol use. Longer duration of sex work did not modify the relationship between alcohol use prior to last sex with a client and hazardous alcohol use (results from model with interaction term not shown).

Qualitative findings

Similar to the full study population, FSW who participated in the qualitative interviews had a median age of 27 (IQR: 22–30) and a median duration of sex work of 4 years (IQR: 3–10).

Half of the FSW reported living in a bar or bottle shop (n = 7), while the others reported living in a guesthouse or hotel (n = 6). The mean AUDIT score was 15 (SD: 6) and the median was 17 (IQR: 11–18). The mean and median AUDIT score were higher among those who participated in the qualitative interviews by design of selecting those reporting hazardous drinking.

Alcohol availability and norms—The subset of FSW who participated in in-depth interviews reported that alcohol was readily available and frequently used throughout the day and night. Many stated that FSW generally consume alcohol where it is sold, such as at bars or bottle shops. Various types of beer, including sorghum beer, standard lager, and stout, were most commonly consumed with FSW also reporting drinking spirits contained within plastic sachets. The majority of FSW reported that clients will often purchase their alcohol. Alcohol is therefore easily available at all times, especially for FSW living at bars or bottle shops.

FSW explained that acceptability of alcohol use changed depending on the time of day. Commonly, FSW reported drinking throughout the day but felt it was less acceptable to drink during the daytime, as this is when daily chores and household tasks, such as cooking and cleaning for oneself and family, should be completed before drinking. “When am up I was making sure I do all the household chores then take a bath, and then free to take alcohol.” (age 32, AUDIT score = 11) FSW who drank during the day when chores were to be completed were identified by peer FSW as those whose drinking was a problem. FSW perceived that women, in general, who drink, are viewed negatively within their community. Many felt it was important for these FSW to reduce their consumption. It was most common and acceptable for drinking, including binge drinking, to occur at night when potential clients were also drinking.

Alcohol use and facilitation of sex work—Participants described alcohol use and sex work as intrinsically inter-twined, explaining that alcohol facilitates solicitation with clients, price negotiation, and subsequently income generation from engaging in sex work. Consistent with our quantitative finding of an association between hazardous alcohol use and using alcohol prior to last sex with a paying sexual client, FSW identified several pathways through which alcohol use occurs when engaging with clients. FSW explained that they drink either because they are motivated to drink due to the invitation by clients prior to exchanging sex or as a means to initiate contact with potential clients.

In general, FSW did not feel they were physically or verbally forced to drink by a particular person or groups of people. Instead, they felt that the pressures of alcohol use are more subtle and indirect, but just as powerful. FSW described several occasions of drinking to retain their client base. Most FSW mentioned that clients buy alcohol for the sex workers and that refusal to drink may be perceived as unwelcoming and/or lead to client suspicions of potential theft by the FSW. As a result, FSW feared that refusing a drink could cost them a client, particularly in a competitive sex work environment, where the client can easily go to another sex worker who is willing to drink.

> "No one forces you to drink. But sometimes a [client] may force you to drink thinking that if you are sober you may think of stealing from him. So you are forced to drink because you want his money and you fear that he may go to someone else." (age 20, AUDIT score = 18)

One FSW explained how clients may not force sex workers to drink but that sex workers can feel obligated to drink with clients.

> "We drink willingly. Nobody forces us. Some customers fear that when we are sober we may steal from them and they become scared. But when you are getting drunk, they become assured that we may just go to the rooms to enjoy ourselves." (age 28, AUDIT score = 22)

Thus, clients exert power through their ability to choose FSW who drink over those who don't. This observations helps to explain our quantitative findings: women who have been in sex work longer are more likely to engage in hazardous drinking and women who drink before having sex with a client are more likely to drink heavily, as both are indicators of being more subject to the client-sex worker power dynamic that stems from demand and supply.

Most felt that drinking allows FSW to feel more comfortable and be less shy when pursuing clients. As a result, they are able to interact with more potential clients and also feel more confident to negotiate a higher price. Some FSW explicitly linked drinking or being drunk to earning money.

> "When [the clients] see that you are drunk, that's when they call you … so when you are drunk that's when you make money." (age 27; AUDIT score = 18)

Despite the social norms around drinking, several FSW also acknowledged a trade-off between drinking too much and losing the potential for earning money. FSW recognized that drinking to the point of becoming drunk would often lead to engaging with fewer clients due to falling asleep before soliciting clients. It was unclear how frequently this phenomenon occurred. FSW also felt that if they were too drunk, they negotiated ineffectively, leading to less income. FSW who noted the drawbacks of excessive alcohol consumption had a greater tendency to express a desire to reduce alcohol use than did FSW who only felt drinking was necessary to earn money.

Alcohol use related risks—Although not specifically asked, FSW felt that drinking alcohol directly places them at risk for unprotected sex and violence, as both perpetrators and victims. Drinking alcohol, particularly to the point of being drunk, can lead FSW to engage in unprotected sex, either the inability to recognize condom breakage or through a client not using a condom. One FSW explained, that when FSW become drunk, "some men might just come and have sex with you without a condom when you are fast asleep". (age 39, AUDIT score = 15)

Drinking also makes FSW more susceptible to violence or theft. FSW who drink reported being victims of violence from their clients, who were typically drunk themselves. When asked about problems when drinking too much, one explained, "When you [are] drunk,

people can beat you up and injure you." (age 23, AUDIT score = 10) FSW acknowledged that when they drink they are more commonly to become violent and get in fights with other FSW or bar patrons.

> "[Sex workers] do crazy things … just falling over and beating people … just picking people's comments … because of alcohol." (age 27, AUDIT score = 18)

Some FSW acknowledged that alcohol may directly lead to violence and as a result felt they should reduce their alcohol consumption to protect themselves.

Conclusions

Together, the quantitative and qualitative findings identify socioecological factors, such as alcohol availability and alcohol norms, which influence hazardous alcohol use. Additionally, our findings reveal the intertwined relationship between alcohol use and sex work, including alcohol-related risks for FSW. Both our quantitative and qualitative data suggest that alcohol was often gifted and physically available particularly for the majority of FSW who reported living at alcohol serving venues. In qualitative interviews, FSW reported drinking alcohol to attract clients and to reduce inhibitions when soliciting clients. Believing that clients expected alcohol to lower sexual inhibitions, FSW feared that refusal to drink would lead to losing clients to other FSW who were willing to drink. Our quantitative finding that drinking with clients before sex was associated with hazardous alcohol use suggests that those more enmeshed in the client-FSW alcohol norms were more likely to drink heavily. Consistent with our qualitative findings of the perceived benefits of drinking and costs of not drinking, hazardous alcohol use was highly prevalent and FSW who had been in sex work longer were more likely to report hazardous alcohol use. FSW also described several alcohol-related risks, including violence (both as perpetrator and victim) and unprotected sex with clients.

The use of alcohol as a disinhibitor for engaging clients is common among FSW in sub-Saharan Africa (Chersich et al., 2007; de Graaf, Vanwesenbeeck, van Zessen, Straver, & Visser, 1995; El-Bassel, Witte, Wada, Gilbert, & Wallace, 2001; Li, Li, & Stanton, 2010; Mbonye et al., 2013; Scorgie et al., 2012). Contrary to FSW in South Africa where alcohol use was explicitly part of the sex transaction (Wojcicki & Malala, 2001), FSW within our sample perceived alcohol as implicitly necessary to engage and attract clients. Despite a perception by FSW that alcohol use was voluntary and not forced, drinking was seen as a means to maintain their livelihood.

The risk of violence and unprotected sex with alcohol use among FSW has been well-documented globally (Chersich et al., 2007; El-Bassel, Witte, Wada, Gilbert, & Wallace, 2001; Li, Li, & Stanton, 2010; Mbonye, Rutakumwa, Weiss, & Seeley, 2014; Onyango et al., 2015; Wechsberg, Luseno, & Lam, 2005). Yet, knowledge has been limited on how FSW understand these risks within the context of their own alcohol use. In our qualitative interviews, FSW described their increased susceptibility of perpetrating or suffering from violence and unprotected sex when drinking, and also expressed their desire for alcohol reduction to prevent violence from occurring. Despite this motivation for alcohol reduction, however, FSW are likely to continue drinking if the alcohol norms and client influence remain unaddressed.

To alter alcohol and sex work norms, collective, communal approaches to alcohol harm and consumption reduction will be essential for alcohol-using FSW in Malawi. Alcohol reduction interventions for FSW have largely relied on addressing alcohol use at the individual level, leaving the socioecological factors unaddressed (L'Engle et al., 2014; Wechsberg et al., 2006). In addition to reducing alcohol consumption, combination interventions that integrate effective methods for reducing HIV and STIs risk, such a pre-exposure propholaxis (PrEP) and condom promotion, along with alcohol harm reduction may be further improve the health and safety of FSW. Multilevel interventions that target the broader structural and environmental influences on alcohol use may hold stronger promise.

Structural interventions, like community mobilization, have been largely effective in reducing sexually transmitted diseases through the collective power for condom use with clients among FSW (Beattie et al., 2014; Kerrigan et al., 2006; Lippman et al., 2012). The 100% condom campaign among FSW in Thailand was successful at altering condom use norms by empowering FSW to use condoms with clients, leaving clients without a choice on condom use (Rojanapithayakorn, 2006; Rojanapithayakorn & Hanenberg, 1996). This approach required partnerships among several stakeholders, such as the Ministry of Health, sex workers, business owners, and police, to enforce the campaign. As a result, clients no longer had the power to demand not using a condom or pursue another FSW who would not use condoms. Similar approaches of mobilizing and empowering FSW to act together and advocate for positive change are under-utilized for alcohol related harms and alcohol reduction. Future multilevel interventions may need to draw on community mobilization and empowerment approaches to reduce alcohol harms and consumption for FSW. The high prevalence of alcohol use may not representative of non-venue based FSW. Indeed studies have found that alcohol-venue-based FSW in sub-Saharan Africa are more likely to consume alcohol compared to FSW working outside alcohol-serving venues (Abdool Karim et al., 2010; Agha & Chulu Nchima, 2004; Chersich et al., 2007). Given the environmental influence on alcohol use, FSW who work within alcohol serving venues should be a key population to engage in alcohol reduction strategies.

Alcohol specific policies may have the potential to effectively reduce alcohol harms for alcohol norms and availability for patrons and FSW in Malawi. Several countries in the region have implemented alcohol control policies to reduce hazardous alcohol consumption more widely. Zambia has banned the packaging of liquor in sachets to reduce the availability small and affordable quantities of high alcohol content liquor (Mbonye, Rutakumwa, Weiss, & Seeley, 2014). Additionally, Botswana implemented a 30% alcohol tax in 2008, which was later increased in 2010 (Sebego et al., 2014). In both South Africa and Kenya restrictions on alcohol advertisement (Carrasco, Esser, Sparks, & Kaufman, 2016; Mbonye, Rutakumwa, Weiss, & Seeley, 2014). The potential effectiveness of similar alcohol policies must be further explored within Malawi.

Future studies will be needed to further understand the alcohol-serving environment in which FSW live and work by including interviews with venue owners or managers and alcohol availability for patrons. The interaction between FSW and male clients and the influence of alcohol use should also be explored from the clients' perspectives. Specifically, a more comprehensive understanding is needed on clients' motivations for preferring FSW

who drink. Together, this work among venue owners and FSW clients could inform the development of multilevel interventions for alcohol reduction among FSW.

The results from this study elucidate the socioecological influences on hazardous alcohol consumption among FSW within alcohol-serving venues in Malawi. Our quantitative and qualitative findings underscore the motivation and potential for FSW to reduce their alcohol consumption collectively to alleviate the power clients have on their alcohol use. Multilevel interventions that combine individual, interpersonal, and structural or environmental levels are needed to alter norms for alcohol use and sex work, with the ultimate goal of reducing the risk of violence, unprotected sex, and alcohol consumption.

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Table 1

Characteristics of female sex workers in Lilongwe, Malawi, July–September 2014.

	Total Population (*n* = 200)	
	n	**(%)**
Age (years)		
18–24	101	(51)
25–29	54	(27)
≥30	45	(22)
Nationality		
Malawian	195	(98)
Other	5	(2)
Education		
Never attended school	15	(7)
Some primary	117	(59)
Completed primary	20	(10)
Some secondary	44	(22)
Completed secondary	4	(2)
Marital status *		
Never married	28	(14)
Married (legal or traditional) or co-habitating	9	(4)
Separated, divorced, or widowed	162	(81)
Living environment		
Private house	27	(13)
Bar or Bottle shop	115	(58)
Guesthouse or hotel	58	(29)
Duration of sex work (years) *		
<1.0	25	(12)
1.0–1.9	39	(20)
2.0–2.9	34	(17)
≥3.0	100	(50)
Location for soliciting clients		
Bar or bottle shop	181	(91)
Other	19	(9)
Number of clients per week *		
<10	43	(21)
10–19	45	(23)
20–29	52	(26)
≥30	58	(29)
Client ever demanded not using a condom		
Yes	45	(28)
No	116	(72)

	Total Population (n = 200)	
	n	**(%)**
Condom use with client in past 7 days *		
Inconsistent	49	(25)
Consistent	151	(76)
Alcohol use at last sex with a client		
Yes	60	(30)
No	140	(70)

* Missing data due to not knowing or refused to answer: marital status: n = 1; number of years exchanging sex for money: n = 2; number of paying sexual partners in past 7 days: n = 2.

Table 2

Frequency and patterns of alcohol use among female sex workers in Lilongwe, Malawi, July–September 2014, *N* = 200.

	Total study population *N* = 200		
Substance use	***n (%)***	**Mean (SD)***	**Median (IQR)***
Alcohol use			
Ever used alcohol	161 (81%)		
Current alcohol use**	156 (78%)		
Number of days consumed alcohol in past 90 days		28.7 (24.5)	24 (11–36)
Number of standard drinks consumed in a day		6.3 (8.8)	5 (3–7)
Consumed 5 or more drinks in one day in past 90 days	97 (49%)		
Number of days consumed 5 or more drinks in past 90 days		14.4 (20.9)	6 (0–24)
AUDIT			
AUDIT score		12.0 (7.1)	11 (6–17)
No drinking or non-hazardous drinking (score 0–6)	85 (42%)		
Hazardous drinking (score 7–15)	62 (31%)		
Harmful drinking (score 16–19)	28 (14%)		
Alcohol dependence (score ≥ 20)	25 (13%)		

*Among those who report current alcohol use (*n* = 156).

**Current use defined as reported alcohol use in past 90 days.

Table 3

Multivariable associations between socioecological factors and hazardous alcohol use among FSW reporting current alcohol use, N = 156.

	Unadjusted PR (95% CI)		Adjusted PR (95% CI)	
Living environment				
Private house	1.00		1.00	
Bar or Bottle shop	0.93	(0.69, 1.26)	0.92	(0.68, 1.24)
Guesthouse or hotel	1.08	(0.80, 1.47)	1.02	(0.75, 1.39)
Time in sex work (years)				
<2.0	1.00		1.00	
≥2.0	1.20	(0.94, 1.54)	1.30	(1.02, 1.65)
Number of clients per week				
<10	1.00		1.00	
10–19	1.16	(0.86, 1.55)	1.09	(0.83, 1.43)
20–29	1.03	(0.75, 1.41)	0.98	(0.73, 1.33)
≥30	1.15	(0.87, 1.52)	1.13	(0.86, 1.49)
Client ever demanded not using a condom				
Yes	1.20	(0.96, 1.50)	1.20	(0.96, 1.47)
No	1.00		1.00	
Condom use with client in past 7 days *				
Inconsistent	0.96	(0.76, 1.22)	0.93	(0.74, 1.17)
Consistent	1.00		1.00	
Alcohol use at last sex with a client				
Yes	1.30	(1.90, 1.57)	1.29	(1.06, 1.57)
No	1.00		1.00	
Known HIV status				
Positive	0.82	(0.67, 1.01)	0.84	(0.55, 1.28)
Negative	1.00		1.00	
Received treatment for STI in prior 12 months				
Yes	1.09	(0.88, 1.34)	1.20	(0.95, 1.51)
No	1.00		1.00	

PR: prevalence ratio; CI: confidence interval.

Each estimate is from a separate model for hazardous alcohol use and each socioecological factor adjusting for age, marital status, and education.

*Inconsistent includes FSW who responded “never”, “rarely”, “sometimes”, or “most times”; Consistent includes FSW who responded “always.”