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# The impact of an alcohol harm reduction intervention on interpersonal violence and engagement in sex work among female sex workers in Mombasa, Kenya: Results from a randomized controlled trial☆

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ABSTRACT

*Aims:* To evaluate whether an alcohol harm reduction intervention was associated with reduced interpersonal violence or engagement in sex work among female sex workers (FSWs) in Mombasa, Kenya.
*Design:* Randomized controlled trial.
*Setting:* HIV prevention drop-in centers in Mombasa, Kenya.
*Participants:* 818 women 18 or older in Mombasa who visited HIV prevention drop-in centers, were moderate-risk drinkers and engaged in transactional sex in past six months (410 and 408 in intervention and control arms, respectively).
*Intervention:* 6 session alcohol harm reduction intervention.
*Comparator:* 6 session non-alcohol related nutrition intervention.
*Measurements:* In-person interviews were conducted at enrollment, immediately post-intervention and 6-months post-intervention. General linear mixed models examined associations between intervention assignment and recent violence (physical violence, verbal abuse, and being robbed in the past 30 days) from paying and non-paying sex partners and engagement in sex work in the past 30 days.
*Findings:* The alcohol intervention was associated with statistically significant decreases in physical violence from paying partners at 6 months post-intervention and verbal abuse from paying partners immediately post-intervention and 6-months post-intervention. Those assigned to the alcohol intervention had significantly reduced odds of engaging in sex work immediately post-intervention and 6-months post-intervention.
*Conclusions:* The alcohol intervention was associated with reductions in some forms of violence and with reductions in engagement in sex work among FSWs in Mombasa, Kenya.


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## 1. Introduction

Alcohol use is prevalent among female sex workers (FSWs) worldwide (Chersich et al., 2007; Li et al., 2010; Scorgie et al., 2012). FSWs drink alcohol for a variety of reasons, including to self-medicate as a result of past trauma and to facilitate participation in commercial sex (Khantzian, 1997). FSWs often report being encouraged or coerced to drink alcohol by clients and pimps (Markosyan et al., 2007; Su et al., 2014). Binge drinking is also prevalent among FSWs across global settings (Li et al., 2010). A study of FSWs in South Africa found that 26% report binge drinking weekly and 18% report binge drinking daily (Richter et al., 2013). Forty-five percent of FSWs surveyed in Kenya report non-binge drinking and 33% report binge drinking monthly (Chersich et al., 2007).

Binge drinking has been consistently associated with HIV risk among FSWs (World Health Organization, 2011; Wechsberg et al., 2006). Among FSWs in Kenya, binge drinkers were more likely to report having unprotected sex and having a sexually transmitted infection (STI) than non-binge drinkers (Chersich et al., 2007). In addition, greater alcohol use has been associated with greater number of sex partners among female STI clinic patients (Carey et al., 2015).

FSWs are at high risk of multiple forms of interpersonal violence worldwide (Beattie et al., 2010; Decker et al., 2012; Karandikar and Prospero, 2010; Reed et al., 2010; Simic and Rhodes, 2009; Swain et al., 2011). According to the World Health Organization (WHO), interpersonal violence includes violence between intimate partners as well as violence from family members, acquaintances or strangers (Dahlberg and Krug, 2002). Interpersonal violence can take many forms including child or elder abuse, intimate partner violence, stranger violence and workplace violence (Dahlberg and Krug, 2002). Among FSWs in Kenya, 77% reported lifetime physical or sexual violence (Tegang et al., 2010). Among FSWs in Nigeria, 36% reported physical violence and 32% reported psychological abuse in the past six months (Fawole and Dagunduro, 2014). Physical and emotional violence perpetrated by non-commercial sex partners was reported by 20% and 25% of Canadian FSWs, respectively (Muldoon et al., 2015). Alcohol use has been consistently associated with violence against FSWs (Li et al., 2010; Scorgie et al., 2012; Wechsberg et al., 2005, 2006). Alcohol use may increase vulnerability to violence through impaired judgment and reasoning and increased risk taking (George and Stoner, 2000). Among FSWs in Uganda, those who reported binge drinking had significantly increased odds of having experienced physical violence, verbal abuse, and not being paid as agreed to by a client (Schwitters et al., 2015).

Due to the high prevalence of binge drinking among FSWs (Li et al., 2010) and the associations among binge drinking, violence, and HIV risk (Chersich et al., 2014; Wechsberg et al., 2006), alcohol reduction interventions with FSWs have the potential to influence non-alcohol related health outcomes. The primary objectives of the current analysis are to investigate whether, compared to an equal-attention control condition, an alcohol harm reduction intervention was associated with reduced interpersonal violence (e.g., physical violence, verbal abuse, being robbed or not paid as agreed to by a client), engagement in sex work, or number of sex partners among a cohort of FSWs in Mombasa, Kenya. Previous analyses indicated that the alcohol harm reduction intervention was associated with reduced drinking frequency and binge drinking immediately post-intervention and 6 months post-intervention (L'Engle et al., 2014). The intervention was also associated with significantly reduced forced sex by paying sex partners immediately post-intervention and 6 months post-intervention (L'Engle et al., 2014).

The current analysis expands this previous work to examine whether the alcohol harm reduction intervention was also associated with reductions in three other forms of interpersonal violence (physical violence, verbal abuse, and being robbed or not paid as agreed to by a client as well) as well as engagement in sex work and number of sexual partners. While being robbed or not paid as agreed to by a client is not commonly included within the definition of interpersonal violence, it is included here as an attempt to measure economic violence or coercion specifically in the context of sex work. Examining whether an intervention exclusively targeting alcohol use influences violence and HIV risk can illuminate potential pathways and intervention strategies to effectively address binge drinking, violence and HIV risk behaviors among FSWs.

## 2. Materials and methods

### 2.1. Sample

Baseline data were collected between March and September, 2011 as part of a randomized controlled alcohol harm reduction intervention study with FSWs in Mombasa, Kenya (L'Engle et al., 2014). Follow up data were collected between October, 2011 and October, 2012. The primary objective of the parent study was to investigate whether the intervention was associated with reduced alcohol use and binge drinking, STIs, or HIV seroconversion among a cohort of FSWs in Mombasa, Kenya. The secondary objectives of the original study were to investigate whether the intervention was associated with condom use or forced sex. The study was conducted by FHI 360 and the International Center for Reproductive Health, with funding from the United States Agency for International Development (USAID). Study participants were recruited from three USAID-funded AIDS, Population, Health and Integrated Assistance (APHIA) II drop-in centers in Mombasa. The drop-in centers serve approximately 15,000 FSWs in Mombasa through health education and services and condom distribution.

Women were eligible for study enrollment if they: were 18 years of age or older; had visited one of the HIV drop-in centers; planned to live in Mombasa for at least 12 months; reported transactional sex (i.e., self-report of exchange of oral, anal, or vaginal sex for money or gifts) in the past six months; and were moderate-risk drinkers (i.e., scored between 7 and 19 on the Alcohol Use Disorders Identification Test [AUDIT]). AUDIT scores 20 or greater indicate possible alcohol dependence (Babor et al., 2001). Women who scored 20 or greater were ineligible and referred to an alcohol treatment program. The study intervention was not designed to treat individuals with alcohol dependence who generally require greater clinical management than provided through brief interventions (Babor and Higgins-Biddle, 2001).

FSWs provided verbal informed consent for screening prior to AUDIT administration. Eligible FSWs provided written informed consent prior to enrollment. The study protocol for the parent study was approved by ethical research committees at FHI 360 and Kenyatta National Hospital. The study protocol for the current study was submitted to the Institutional Review Board at the University of North Carolina at Chapel Hill who determined it did not constitute human subjects research as it consisted exclusively of secondary analysis of de-identified data.

A total of 818 FSWs were enrolled and followed up with immediately post-intervention and 6 months post-intervention. At enrollment, FSWs were randomly assigned to a six-session intervention ($n = 410$) or a six session control arm ($n = 408$). Information about randomization procedures, sample size determination, data confidentiality and linking data over time were previously reported (L'Engle et al., 2014). Briefly, participants were individually randomized to the alcohol intervention or control condition in a 1:1 ratio, separately for each drop-in center. Random assignment was made after volunteers were screened for eligibility, provided consent, and completed baseline data collection. The parent trial was registered with ClinicalTrials.gov, NCT01756469.

### 2.2. Intervention

The intervention condition received the WHO's Brief Intervention (BI) for Hazardous and Harmful Drinking, adapted for the context of alcohol use and sex work by staff from Support for Addiction Prevention and Treatment in Africa (SAPTA), a Kenyan substance use prevention and treatment organization (Babor and Higgins-Biddle, 2001). The BI was developed for non-treatment seeking, non-dependent hazardous or harmful drinkers (Nilsen, 2010). The BI is intended as secondary prevention for alcohol abuse and is informed by Stages of Change theory (L'Engle et al., 2014; Nilsen, 2010). The executive director of SAPTA trained nurse-counselors to implement the intervention and provided clinical supervision. Intervention participants met for six monthly individual sessions with a trained nurse-counselor. During the first session, nurse-counselors reviewed participants' AUDIT screening results and discussed health effects associated with their level of alcohol use. Subsequent sessions included: assessment of motivation and readiness to change, development of goals for low-risk drinking and a habit-breaking plan, implementation of plan to reduce drinking, and discussions of reasons to drink less, management of high-risk situations, coping strategies for boredom and strategies for achieving goals. As this was a harm reduction intervention, messaging focused on reducing drinking frequency and binge drinking rather than abstinence. The equal-attention