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# Alcohol use disorder, contexts of alcohol use, and the risk of HIV transmission among South African male patrons of shebeens

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### ABSTRACT

**Background:** Shebeens in South Africa are settings in which alcohol use and sexual behavior often co-occur. The prevalence of alcohol use disorder (AUD), and the association between AUD, situations and settings, and sexual risk behavior, in shebeens remains unknown.

**Methods:** Men ( $n = 763$ ; mean age = 30; 98% Black African) were recruited from townships in Cape Town, South Africa and completed a self-administered survey that assessed alcohol use, sexual risk behaviors, and situations and settings of alcohol use. The Alcohol Use Disorder and Associated Disabilities Interview Schedule DSV-IV Version (AUDADIS-IV) was used to identify the likelihood of AUD. Bivariate regression analyses assessed whether screening for AUD predicted sexual risk behaviors. Multivariate regression analyses examined whether AUD and/or situations/settings predicted risk behaviors.

**Results:** Nearly two-thirds of men (62%) endorsed sufficient criteria for AUD; 25%, 17%, and 20% were classified as having a mild, moderate, or severe AUD, respectively. AUD was associated with HIV risk such that men with AUD reported more unprotected sex than men without AUD. Analyses indicated that (a) individual (i.e., AUD) and (b) settings (i.e., frequency of having sex with a partner in a shebeen, tavern, or bottle store) interacted to predict unprotected sex.

**Conclusions:** The prevalence of AUD among shebeen patrons was high and was associated with unprotected sex. Findings suggest the need to integrate both individual and situational/setting factors to prevent HIV among patrons of shebeens.

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## 1. Introduction

The HIV/AIDS epidemic remains a major public health concern in South Africa. This country is home to the largest number of people living with HIV in the world with an estimated 6.1 million South Africans infected (UNAIDS, 2013). Not only do South Africans bear the heaviest HIV burden, they also have the highest levels of alcohol consumption per adult drinker worldwide (Rehm et al., 2003). Rates of hazardous or harmful drinking (defined as a pattern of drinking that increases the risk of adverse health events or consequences)

are also high with one-third of South African adult drinkers reporting hazardous or harmful alcohol use (Peltzer et al., 2011). Prior research in sub-Saharan Africa shows that alcohol use is associated with increased sexual risk behaviors that put people at risk for HIV (Kalichman et al., 2007; Woolf-King and Maisto, 2011). Thus, alcohol consumption, as a contributing factor of HIV infection as well as other health consequences, is a major public health concern in South Africa (Hahn et al., 2011).

The association between alcohol, sexual risk behaviors, and HIV is complex. Research addressing the alcohol and HIV association varies considerably in methodological approach and includes (a) *global* (correlating overall alcohol use and sexual behavior), (b) *situational* (correlating the frequency of alcohol and sexual behavior during a specific time interval), and (c) *event-level* (alcohol consumption during specific sexual events) approaches. An association between alcohol and risky sexual behavior is typically found in

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global and situational studies; however, results from event-level studies have varied depending on whether the study assessed a single or multiple-sexual events (Cook and Clark, 2005; Cooper, 2006; Leigh and Stall, 1993; Weinhardt and Carey, 2000). Researchers have also suggested that alcohol and sexual behavior (regardless of the measurement approach) may not be directly related; instead, any number of factors (e.g., gender, environment) may explain this association (Cooper, 2006; Woolf-King and Maisto, 2011). For example, alcohol-serving venues provide individuals not only with the opportunity to consume alcohol but also a location to meet sexual partners. These settings may help explain why alcohol use is associated with sexual risk-taking. In South Africa, the settings in which people drink play an important role in HIV transmission (Hahn et al., 2011; Kalichman et al., 2007; Scribner et al., 2010; Woolf-King and Maisto, 2011).

Shebeens are important community-based social gathering places in South Africa (Watt et al., 2012). Informal public drinking venues, such as shebeens, are settings where alcohol and sexual risk behaviors converge (Kalichman et al., 2007). Weir et al. (2003) found that shebeens are often the places in which people meet new sexual partners. For example, 93% of adults living in Cape Town townships report meeting new sex partners in shebeens and other drinking venues (e.g., bars, taverns). Sex between new or casual partners often occurs at or around drinking venues (Kalichman et al., 2008; Morojele et al., 2006; Myer et al., 2002) but less than 30% of shebeen patrons reported using a condom at last sexual occasion (Weir et al., 2003). Shebeens may facilitate the sexual transmission of HIV, in part, through sexual networks (Kalichman, 2010). In this regard, the prevalence of HIV is higher among patrons of public drinking venues (e.g., shebeens or beer halls) than the general population (Bassett et al., 1996; Kalichman et al., 2008). Thus, sexual behaviors in the context of shebeens are likely to confer higher levels of risk.

South African men are twice more likely to drink in a public drinking venue than women (Weir et al., 2003). Compared to women, men report significantly higher rates of overall alcohol consumption (40 vs. 24 liters) and hazardous or harmful alcohol use (39% vs. 17%; Peltzer et al., 2011; World Health Organization, 2011). Men who drink in shebeens report greater quantity and frequency of alcohol use than those do not patronize shebeens (Cain et al., 2012). Alcohol abuse is a considerable health burden, especially among South African men, in which alcohol abuse accounts for more than 10% of all disability-adjusted life years (DALYs; Schneider et al., 2007). Furthermore, alcohol use disorders account for four times the number of deaths among South African men vs. women (Schneider et al., 2007). Reducing the harm caused by alcohol abuse will require prevention efforts targeted toward men most at risk and in the places where men drink.

From an ecological perspective, the individual, interpersonal, neighborhood, and societal contexts in which alcohol use affects sexual behavior are important. Scribner et al.'s (2010) ecological framework provides a useful conceptual model to help identify HIV-related risk factors (i.e., alcohol and high risk sexual behavior) and their interactions within an alcohol environment. According to this model, individual-level factors such as alcohol use and sexual risk behaviors are important predictors of HIV in an alcohol environment. This model further proposes that the association between alcohol and sexual behavior is moderated by interpersonal factors such as the situation and setting (see Fig. 2, p. 181). Research has shown that situational factors (e.g., drinking before sex, partner drinking before sex, partner type; Barta et al., 2008; Brown and Vanable, 2007; Kiene et al., 2009, 2008; Scott-Sheldon et al., 2010, 2012) impact the alcohol-sexual risk association in sub-Saharan Africa and other locations; however, little research has explored how the setting (i.e., alcohol venues) affects the degree to which alcohol use or misuse is related to risky sex (cf. Kalichman, 2010).

Prior research has examined alcohol use and sexual risk behaviors among male patrons of shebeens but, to our knowledge, no prior study has screened for alcohol use disorder (AUD) and tested whether AUD is associated with sexual risk behaviors among venue patrons. Therefore, the primary purpose of this study was (a) to assess AUD as a risk factor for HIV transmission among male patrons of shebeens in Cape Town. Specifically, we expected that men who met criteria for AUD would be more likely to report sexual risk behavior but the association would differ by AUD severity. Furthermore, it is likely that the situation (e.g., drinking before sex) and setting (e.g., having sex with partners in a shebeen, tavern, or bottle store) in which alcohol is consumed may be a contributing factor in the alcohol-sexual risk association (Kalichman et al., 2007; Morojele et al., 2006; Scribner et al., 2010). Therefore, secondary purpose of this study was (b) to examine whether the situation (i.e., drinking before sex) and/or the setting (i.e., having sex with a partner in the drinking environment) moderated the alcohol-risky sex relation. We hypothesized that the situation and setting would be significant independent predictors of sexual risk behavior (main effects). Consistent with the conceptual model guiding the current analyses (i.e., Scribner et al.'s (2010)), we expected that the situation and/or setting to moderate the association between AUD and sexual risk behavior (interaction). That is, we expect that the association between AUD and sexual risk behavior will be enhanced for men who report (a) drinking before sex (situation) or (b) having sex with a partner in a drinking venue (setting). Examining the patterns of alcohol use, the situation and/or setting in which sex occurs, and sexual risk behaviors, among patrons of shebeens can guide intervention development specific to the places in which sexual risk occurs.

## 2. Methods

### 2.1. Participants and procedures

Baseline data from a randomized community-level trial evaluating a multilevel HIV/AIDS risk reduction intervention for men who drink alcohol in informal drinking establishments in Cape Town, South Africa, were used to test our hypotheses (Kalichman et al., 2013). We restricted our analyses to the 763 (out of 975) participants who reported drinking in alcohol serving venues (e.g., bars, taverns, or shebeens) in the past 30 days. Participants were men (mean age = 30, 98% Black African, 6% married, 35% had at least a high school education, and 4% employed) from four primarily Xhosa-speaking African townships just outside Cape Town, South Africa. Men were recruited using the chain referral method in which 8–10 "seeds" who drank at informal drinking establishments (known as shebeens) in each of the 12 distinct sections of the four townships were invited to participate in a multilevel alcohol and HIV risk reduction intervention at a local community center in one of the townships. These "seeds" recruited other men to participate in the study. Men who reported being 18 years or older and residing within the township section were eligible to participate in the intervention. Eligible participants (79% of the men approached) were given details about the study and, if interested in participating, they provided written informed consent. Participants completed paper-and-pencil surveys and were reimbursed R100 (13 US dollars) for their time. Baseline surveys were conducted between September 1, 2008 and November 30, 2010. All procedures were approved by the Institutional Review Boards of participating institutions.

### 2.2. Measures

Surveys assessed (a) demographic information (e.g., age, ethnicity), (b) the likelihood of an alcohol use disorder, (c) situation (alcohol use before sex) and setting (having sex with partners in a shebeen, tavern, or bottle store), (d) sexual behaviors (number of sexual partners, unprotected vaginal and anal sex), and (e) additional measures (e.g., attitudes, social norms) as part of the larger study.

**2.2.1. Alcohol use disorder.** Identification of AUD was assessed using items from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) Alcohol Use Disorder and Associated Disabilities Interview Schedule DSV-IV Version (AUDADIS-IV), adapted as a self-administered survey format (Grant et al., 2001). The AUDADIS-IV is based on criteria for alcohol use disorders as described in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994). Items represent four abuse criteria (failing to fulfill obligations, continuing to drink despite problems, recurrent drinking in hazardous situations, or alcohol-related legal problems) and seven dependence criteria (tolerance, withdrawal, drinking larger amounts over longer time intervals, persistent desire or

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