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# Collective efficacy, alcohol outlet density, and young men's alcohol use in rural South Africa



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## ABSTRACT

Alcohol use contributes to morbidity and mortality in developing countries by increasing the risk of trauma and disease, including alcohol dependence. Limited research addresses determinants of alcohol use beyond the individual level in sub-Saharan Africa. We test the association of community collective efficacy and alcohol outlet density with young men's drinking in a cross-sectional, locally representative survey conducted in rural northeast South Africa. Informal social control and cohesion show protective associations with men's heavy drinking, while alcohol outlet density is associated with more potential problem drinking. These findings provide initial support for intervening at the community level to promote alcohol reduction.

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## 1. Introduction

### 1.1. Alcohol use in South Africa

The harmful use of alcohol is a growing global public health priority. Alcohol consumption contributes to over 200 health conditions, including injury and both communicable and non-communicable diseases (World Health Organization, 2014a). Although the causal pathways are not fully elucidated, alcohol-related harms can be occasioned by the volume of alcohol consumed as well as through the particular pattern of drinking (Rehm et al.,

2010). The broad effects of alcohol on risk of injury as well as communicable and non-communicable diseases are of particular salience in developing countries where other component causes of such outcomes are prevalent. Although levels of drinking tend to be lower in developing countries, the associated harms of alcohol use are disproportionately high (Room et al., 2002).

In South Africa, heavy alcohol consumption poses a serious risk to public health (Ferreira-Borges et al., 2015). Although over 40% of men in South Africa report abstinence from alcohol, consumption is high among drinkers; those who drink consume an average of over 30 l of pure alcohol (ethanol) per year (World Health Organization, 2014a), which is equivalent to nearly 3.5 U.S. pints of 5% alcohol-by-volume beer every day. This concentrated use results in considerable morbidity and mortality, particularly among men. As of 2012, an estimated 39,000 deaths were attributable to alcohol in South Africa (6.4% of all deaths), the vast majority of them

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among men (World Health Organization, 2014b). The contribution of alcohol use to alcohol use disorder (AUD), road traffic accidents, and liver cirrhosis alone accounted for approximately 5% of disability-adjusted life years (DALYs) among South African males in 2012 (World Health Organization, 2015). This represents only three of the health outcomes for which alcohol is a component cause and does not address morbidity and mortality from HIV, although increasing evidence of a role for alcohol in HIV transmission and progression to AIDS suggests that heavy alcohol consumption may be worsening South Africa's ongoing epidemic of HIV and AIDS (Hahn et al., 2011; Shuper et al., 2010; UNAIDS: Joint UN Program on HIV/AIDS, 2013; Woolf-King et al., 2013; World Health Organization, 2014a). Preventing alcohol-related harms and dependence is therefore a critical means of improving population health in South Africa.

### 1.2. Determinants of alcohol use

Alcohol use is a product of factors ranging from national historical context to individual genetic predisposition. Globally, level of alcohol consumption is associated with greater economic development between countries and higher socioeconomic status within countries (World Health Organization, 2014a). National and local policies on alcohol cost and availability as well as sanctions for alcohol-related offenses can shape individual consumption (Anderson et al., 2009). Individual-level characteristics consistently associated with alcohol use include age and gender; in South Africa as well as globally, alcohol consumption tends to increase with age and is much more common in men than women (Parry et al., 2005). Between national policy interventions and individual characteristics lie a number of potentially modifiable community factors, such as social norms around alcohol consumption, that may shape individual drinking. Although there is a long history of community-based prevention strategies in developed countries (Aguirre-Molina and Gorman, 1996), the relevance of this research to sub-Saharan Africa is only beginning to be assessed. Researchers recognize the need for prevention interventions that act on social and structural risk factors at the community level (Fritz et al., 2010; Kalichman, 2010). A more complete understanding of community causes of alcohol use in sub-Saharan Africa would facilitate effective population-level prevention of harmful alcohol use. We briefly review existing evidence, globally and in sub-Saharan Africa, of two potential community-level determinants of alcohol use: community collective efficacy and alcohol availability.

### 1.3. Collective efficacy and drinking

Motivated by theoretical work such as social disorganization theory, researchers have investigated links between community social context and drinking behavior (Bryden et al., 2013). Social disorganization theory posits that neighborhood structural conditions such as poverty and residential instability shape health outcomes through social factors like collective efficacy (Fulkerson et al., 2008). Collective efficacy is the capacity of a group to achieve a shared goal, and is comprised of two elements: working trust among community members (social cohesion) and, based on that trust, a mutual expectation to take action for shared interests (informal social control) (Sampson, 2003; Sampson et al., 1997). Although social factors have been linked to adolescent drinking, limited research addresses collective efficacy and adult alcohol use (Bryden et al., 2013). One study identified a protective association between informal social control and binge drinking among adults in Los Angeles, but found no association with cohesion (Carpiano, 2007). There is little research on this topic outside of the United States (Bryden et al., 2013).

In South Africa, initial examinations of social disorganization theory have produced mixed results. A small number of studies on the context of adolescent alcohol use support the relevance of community factors such as neighborhood dereliction in drinking behavior (Brook et al., 2011; Parry et al., 2004), with one study documenting a potential protective association between adolescents' perception of community affirmation and their consumption of home-brewed alcohol (Onya et al., 2012). Direct study of collective efficacy to date is scarce: a study in KwaZulu Natal employed a two-item measure of social cohesion that was correlated with lower social disorder (e.g., crime) and was associated with lower rates of adolescent sexual initiation, particularly for males (Burgard and Lee-Rife, 2009). However, social cohesion was weakly positively correlated with neighborhood disadvantage in this study, contrary to theoretical predictions. Cain et al. measured perceived collective efficacy among men and women in Cape Town as an individual's belief in their community's capacity to prevent HIV and found this to be associated with reduced frequency and quantity of alcohol use (Cain et al., 2013). It remains to be determined if community collective efficacy shapes alcohol use and HIV acquisition in South Africa.

### 1.4. Alcohol availability and drinking

Structural conditions such as alcohol availability comprise a second major focus of investigation into community-level determinants of alcohol use. Alcohol outlet density increases physical access to alcohol, which may lower alcohol prices and shape social behavior around drinking (Campbell et al., 2009). Ecologic studies from developed countries have shown overall alcohol consumption and alcohol-related harms to be higher in areas with greater outlet density (Popova et al., 2009). Findings have been mixed when assessing individual alcohol consumption, with studies in New Zealand and the United States finding no association between density of off-premise alcohol outlets (i.e. liquor stores) and average individual consumption (Connor et al., 2011; Pollack et al., 2005). A systematic review on availability of alcohol found the overall body of evidence to be inconclusive (Bryden et al., 2012). Nonetheless, the U.S. Guide to Community Preventive Services deems regulation of alcohol outlets a useful public health tool (Task Force on Community Preventive Services, 2009).

It is not yet known whether alcohol outlet density affects alcohol use in South Africa, where a majority of alcohol is sold at informal taverns or *shebeens*, as opposed to licensed on-premise (bar and restaurant) and off-premise alcohol outlets (Parry, 2010). A study from the Western Cape province found that socio-economic deprivation is associated with a higher concentration of unlicensed outlets and fewer licensed outlets (Bowers et al., 2014), suggesting that, as in existing studies of outlet density, surrounding poverty may act as a confounder (Ahern et al., 2013; Connor et al., 2011; Pollack et al., 2005). Few studies address both social and physical environmental predictors of alcohol use within communities, and none to our knowledge has addressed these questions in South Africa.

### 1.5. Study aims

We examine the relationship of community social and physical environmental factors with heavy alcohol consumption and potential problem drinking in a population-based sample of young men in rural South Africa. Heavy drinking is most consistently linked with alcohol-related morbidity and mortality, while the pattern and circumstances of drinking that comprise potential problem drinking are indicative of greater risk for future AUD. Fig. 1 shows the proposed causal model underlying this study. As posited by social disorganization theory, village structural

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