

A Population-Based Study on Alcohol and High-Risk Sexual Behaviors in Botswana

Weiser, Sheri D, MD, MPH^{1,2}; Leiter, Karen, JD, MPH¹; Heisler, Michele, MD, MPA^{1,3}; McFarland, Willi, MD, PhD^{2,4}; Percy-de Korte, Fiona, DPH¹; DeMonner, Sonya, MPH¹; Tlou, Sheila, PhD⁵; Phaladze, Nthabiseng, PhD⁵; Iacopino, Vincent, MD, PhD^{1,6}; Bangsberg, David R, MD, MPH^{7,8}

1) Physicians for Human Rights, Cambridge, MA; 2) Center for AIDS Prevention Studies, University of California, San Francisco (UCSF); 3) Veterans Affairs Ann Arbor Health System and Department of Internal Medicine, University of Michigan School of Medicine, Ann Arbor, MI; 4) San Francisco Department of Public Health, San Francisco, CA; 5) Department of Nursing, University of Botswana, Gaborone, Botswana; 6) Department of Medicine, University of Minnesota, Minneapolis, MN; 7) Epidemiology and Prevention Interventions (EPI) Center, Division of Infectious Diseases; San Francisco General Hospital, UCSF, San Francisco, CA; 8) Positive Health Program, San Francisco General Hospital, UCSF, San Francisco, CA

Contact:
Sheri Weiser, MD, MPH
Epidemiology and Prevention
Interventions Center
UCSF Box 1372
San Francisco, CA 94110-1372
e-mail: Sheri.Weiser@ucsf.edu
tel: 415-566-7140
fax: 415-226-3378

Abstract

Background: In Botswana, an estimated 37% of adults ages 15-49 years are infected with HIV. Alcohol use is strongly associated with HIV infection in Africa; however, few population-based studies have characterized alcohol use's associations with specific high-risk sexual behaviors. **Methods:** We conducted a cross-sectional, population-based study of 1,268 adults from 5 districts in Botswana using a stratified two-stage probability sample design. Multivariate logistic regression was used to assess correlates of heavy alcohol consumption (>14 drinks/week for women, and >21 drinks for men) and to examine gender-specific associations between heavy alcohol use and: (a) unprotected sex with a non-monogamous partner; (b) having multiple sexual partners; and (c) paying for or selling sex in exchange for money or other resources. **Results:** Thirty-one percent of men and 17% of women met criteria for heavy drinking. Forty-five percent of participants identified alcohol use as the most important factor that makes men and women vulnerable to HIV in Botswana. Adjusted correlates of heavy alcohol use included male gender (AOR=2.3, 95% CI=1.7-3.0), intergenerational relationships (>=10 years age gap) (AOR=2.7, 95% CI=2.0-3.8), higher education (AOR=1.4, 95% CI=1.0-1.8), residence in rural areas (AOR=1.5, 95% CI=1.1-2.1), and greater projected stigma related to HIV (AOR=1.1, 95% CI=1.0-1.2). Among men, heavy alcohol use was associated with higher odds of all risky sex outcomes examined including unprotected sex with a non-monogamous partner (AOR=3.4, 95% CI=1.9-6.2), having multiple partners (AOR=2.4, 95% CI=1.6-3.6), and paying for sex (AOR=3.9, 95% CI=2.2-7.0). Similarly, among women, heavy alcohol consumption was associated with higher odds of unprotected sex (AOR=3.1, 95% CI=1.7-5.6), having multiple partners (AOR=2.8, 95% CI=1.8-4.7), and selling sex in exchange for money or other resources (AOR=5.9, 95% CI=2.6-13.4). Intergenerational relationships were significantly associated with all high-risk sexual behaviors for both genders, and lack of control in sexual decision-making was strongly associated with risky sex among women. **Discussion:** Alcohol use is associated with multiple risks for HIV transmission among both men and women. Findings underscore the need to integrate alcohol abuse and HIV prevention efforts in Botswana and elsewhere.

Background

- In Botswana, an estimated 37% of adults ages 15–49 are infected with HIV.
- Alcohol use is associated with HIV prevalence and incidence in Africa and elsewhere.
- Alcohol is the most common form of substance abuse in Africa, and may be one of the most potentially modifiable HIV risk factors.
- Most studies looking at interaction between alcohol and risky sex have used potentially biased venue-based sampling strategies.
- Risk factors for heavy drinking have not been adequately characterized.
- Little data exists on whether gender modifies the relationship between alcohol and risky sex.

Study Aims

- To assess the prevalence and correlates of heavy alcohol consumption
- To assess gender-specific associations between heavy alcohol use and HIV transmission risk behaviors

Methods

Sampling

- Cross-sectional study using stratified 2-stage probability sample design among 1,268 adults from 5 districts in Botswana
- Inclusion criteria: ages 18–49, fluent in English or Setswana, resident of Botswana
- Structured instruments with questions on socio-demographics, alcohol use, health status, health care access, HIV testing, HIV knowledge, HIV stigma, sexual practices

Analysis

- Primary outcomes:
 - Unprotected sex with a non-monogamous partner
 - Having multiple partners
 - Selling or paying for sex for money or resources
- Primary independent variable:
 - Heavy drinking defined as >14 drinks/week for women, >21 drinks/week for men
- In adjusted analyses, we controlled for
 - Demographics
 - Knowledge on HIV prevention
 - HIV stigma (continuous)
 - Health care utilization including HIV testing
 - Health status including recent depression
 - Intergenerational relationships (>10 years age difference)
 - Lack of control in sexual relationships

Results

Table 1. Baseline Characteristics of Respondents, Botswana, 2004 (N=1268)

	Male n (%)	Female n (%)	P value
Age (mean ±SD)	28.5 (9.5)	29.1 (9.6)	0.27
Marital status (%)			
Married	105 (17)	136 (21)	
Living with partner	149 (24)	191 (29)	
Other	358 (59)	326 (50)	0.01
Education >=high school	335 (52)	349 (54)	0.57
Monthly household income >1000P or 200-250 USD	371 (61)	321 (50)	<0.01
Residence type (%)			
Urban	247 (40)	310 (47)	
Urban village	187 (30)	187 (28)	
Rural	179 (29)	157 (24)	0.03
Depressive symptoms (%)	190 (31)	175 (27)	0.01
Self-reported fair or poor health status (%)	191 (31)	179 (27)	0.13
Ever tested for HIV (%)	269 (44)	335 (52)	0.01
Heavy alcohol use (%)	188 (31)	113 (17)	<0.01
HIV-stigma (mean ±SD)	2.0 (2.1)	1.7 (1.8)	<0.01
Correct HIV prevention knowledge	545 (89)	533 (82)	<0.01
Inconsistent condom use over the past month with a non-primary partner	63 (11)	69 (11)	0.90
Multiple partners over the past 12 months	245 (40)	164 (25)	<0.01
Selling sex for money or resources	8 (1)	45 (7)	<0.01
Paying for sex with money or resources	79 (13)	16 (2)	<0.01
Intergenerational sex	90 (15)	122 (19)	0.06
Lack of control in sexual relations	9 (1)	159 (24)	<0.01

Table 2. Adjusted Correlates of Heavy Drinking*

	OR	95% CI
Intergenerational sex	2.7	2.0-3.8
Male gender	2.3	1.7-3.0
Living with sexual partner (baseline single)	2.0	1.5-2.8
Rural (compared to urban)	1.5	1.1-2.1
Married (baseline single)	1.4	1.0-2.0
Education >HS	1.4	1.0-1.8
HIV stigma	1.1	1.0-1.2

*Note: Results presented are not stratified by gender as results were very similar between men and women

Table 3. Adjusted Correlates of Unprotected Sex with Non-monogamous Partner

	Female (OR, 95%CI)	Male (OR, 95% CI)
Intergenerational sex	3.3 (1.9-5.8)	2.8 (1.5-5.2)
Heavy drinking	3.1 (1.7-5.6)	3.4 (1.9-6.2)

Table 4. Adjusted Correlates of Having Multiple Partners

	Female (OR, 95%CI)	Male (OR, 95% CI)
Heavy drinking	3.6 (2.3-5.6)	2.4 (1.6-3.6)
Intergenerational sex	2.3 (1.5-3.7)	5.4 (3.1-9.3)
Tested for HIV	-	0.6 (0.4-0.9)
HIV stigma	-	1.1 (1.1-1.3)
Lack of control with sex	2.3(1.5-3.5)	6.3(1.2-34)

Table 5. Adjusted Correlates of Sex Exchange

	Female: Selling Sex (OR, 95%CI)	Male: Paying for Sex (OR, 95% CI)
Heavy drinking	5.9 (2.6-13.4)	3.9 (2.2-7.0)
Rural (compared to urban)	2.8 (1.1-6.8)	-
Lack of control with sex	2.5 (1.2-5.4)	-
Intergenerational sex	2.3 (1.5-3.7)	4.8 (2.7-8.4)
HIV stigma	1.4 (1.2-1.7)	-
Income	-	2.1 (1.1-3.9)

Limitations

- Cross-sectional survey design limits causal inference
- Limitations in generalizability to remote areas in Botswana or neighboring countries
- Measures on alcohol use did not address either alcohol dependence or impairment in social function

Conclusions

- High prevalence of alcohol consumption in both rural and urban areas
- Strong and consistent relationship between heavy drinking and multiple high risk sexual behaviors among both men and women in Botswana
- Intergenerational sex also strongly associated with all risky sex variables and with heavy drinking for both men and women
- Study highlights importance of integrating policies about alcohol abuse in HIV prevention efforts in Botswana and elsewhere

