RESEARCH ARTICLE

Editorial Process: Submission:01/21/2018 Acceptance:04/06/2018

Risk Factors Associated with Frequent Alcohol Binge Drinking among Jamaicans: Does Gender Matter?

Wendel D Abel[1], Steve Weaver[2], Tana Ricketts Roomes[1], Chinwendu F Agu[2], Patrice Whitehorne Smith[1], Daniel C Oshi[1], Joy Harrison[1], Kristen Smith[1], Gabrielle Mitchell[1], Ashley Belinfante[1], Tania Rae[2], Sarah N Oshi[3]*

Abstract

Objective: Alcohol is one of the most commonly consumed substances in Jamaica, despite the many health problems associated with excessive alcohol use. The aim of this study was to identify potential risk factors for alcohol binge drinking among Jamaicans, and determine if there were significant gender differences in the associations between identified risk factors and frequent binge drinking. **Methods:** Data collected from the 2016 National Household Survey Jamaica were analysed. Descriptive and inferential statistics were computed using SPSS. Binary logistic regression analysis was used to determine factors associated with frequent binge drinking. **Results:** The total number of respondents was 4623. Females were 2,535 (54.8%) compared to males 2088 (45.2%). In bivariate analysis, there was a significant association between age and frequent binge drinking among males (X^2 = 11.11, p =0.004), but not among females (X^2 = 2.03, p = 0.36). Similarly, there was a significant association between employment and frequent binge drinking for males but not for females (X^2= 12.85, p= 0.002; X^2= 2.49, p= 0.29 respectively). In multivariate analysis, age 12- 17 years was significantly, inversely associated with frequent binge drinking in the crude logit model but not in the adjusted logit model (crude odds ratio [COR] 0.21, 95%CI= 0.6- 0.66; adjusted odds ratio [AOR] = 0.51, 95%CI= 0.12- 2.13 respectively). Employment was significantly, positively associated with frequent binge drinking in the adjusted logit model (employed: AOR= 3.63, 95% CI= 1.05- 12.59) among males. Among females, age showed no significant association with frequent binge drinking. Only having primary/ lower education was significantly, positively associated with frequent binge drinking among females (AOR= 5.17, 95%CI= 1.36- 19.65). **Conclusion:** Risk factors for frequent binge drinking differed by gender; being employed was a risk factor for males while having primary (or lower) education was a risk factor for females.

Keywords: Risk factors- gender- binge drinking- excessive alcohol use- Jamaicans

Asian Pac J Cancer Prev, **19**, Alcohol and Tobacco Use in the Caribbean Suppl, 39-44

Introduction

Alcohol is one of the most commonly consumed substances in the world, and excessive alcohol consumption, including binge drinking, poses a global health challenge (Reisdofer et al., 2012; World Health Organization [WHO], 2014; Zavos et al., 2015; Lasebikan et al., 2016; Osaki et al., 2016). The World Health Organization estimates that 6.2 litres of pure alcohol were consumed per person 15 years and above per day in 2010 (WHO, 2014). Alcohol is easily accessible, being licit in many countries of the world (Dent et al., 2005). In the World Health Organization American Region, 70.7% and 52.8% of the males and females respectively, aged 15 years and above, were current alcohol drinkers in 2010 (WHO, 2014). In the United States, alcohol use and alcohol use disorder is high, with prevalence rates of lifetime use and alcohol use disorder (AUD) of 86.1% and 6.2 % respectively among adults 18 years and older years (Substance Abuse and Mental Health Services Administration [SAMHSA], 2015a; SAMHSA, 2015b).

In Jamaica, estimated alcohol per capita consumption was 4.9 litres for both males and females, 7.1 litres for and 2.8 litres for females in 2013 (WHO, 2014). Alcohol per capita consumption is defined as the per capita amount of alcohol consumed in litres of pure alcohol in a given population (WHO, 2014). Alcohol consumption is not only an issue with the adult population, but also widely consumed by adolescents and youth (WHO, 2014; Francis et al., 2015). Alcohol is associated with many social problems, including acting as a gateway drug to illicit drugs, violence, road traffic accidents, intentional and unintentional injuries (Johnson et al., 2009; Zaleski et al., 2010; Kirby and Barry, 2012). It is also associated with

*[1]Department of Community Health and Psychiatry, Faculty of Medical Sciences, [2]School of Nursing, Faculty of Medical Sciences, The University of the West Indies, Mona, [3]Department of General Studies and Behavioural Sciences, University of the Commonwealth Caribbean, Kingston, Jamaica. *For Correspondence: sknaks26@yahoo.com*

several medical conditions worldwide, including cancers, cardiovascular diseases, cognitive impairment (WHO, 2009; Schutze et al., 2011; Ferrari et al., 2014; WHO, 2014). In spite of these known social, behavioural and medical problems associated with excessive alcohol use, large proportions of people still drink it. Understanding why people drink alcohol to the varying extent they do has preoccupied researchers as they search for socio-demographic and other factors that reinforce or mitigate alcohol drinking behaviour.

Available evidence suggests that gender influences alcohol consumption, with males having higher risks of engaging in alcohol drinking and excessive alcohol drinking than females (Wilsnack et al., 2009; WHO, 2014). Furthermore, among many other socio-demographic factors being male, single, young and being light-skinned black were also associated with development of alcohol use disorders (Reisdofer, 2012). Religion has also been reported as a determinant of alcohol use. Michalak et al., (2007) and Drabble et al., (2016) reported that Christianity was a protective factor against excessive alcohol use. Married people were less likely to be involved in heavy alcohol drinking compared to single or divorced respondents (Power et al., 1999; Prescott and Kendler, 2001). However, most of these studies were done outside of Jamaica, where presently, there is dearth of studies that explore factors associated with excessive alcohol use, including binge drinking. This study therefore sought to determine the risk factors associated with frequent binge drinking, and assess if there were significant gender differences in the associations between identified risk factors and binge drinking.

Materials and Methods

The authors carried out an analysis of data collected in a descriptive, cross sectional, national survey in Jamaica, called the Household Survey, which was conducted in 2016. Standardized, pre-tested and validated questionnaire was administered on 4,623 randomly selected individuals, aged 12 to 65 years. Details of the survey design, sample size computation, data collection and survey coordination/ implementation have been published elsewhere (Younger-Coleman et al., 2017).

Independent Variables

The independent variables were age, gender, marital status, religion, locality/ residence, education, employment. Age was transformed from continuous variable into a categorical variable, with the age groups as follows: 12- 17 years, 18- 25 years, 26 years and older. Gender was assessed as: 1= male, 2 = female. Marital status had seven response options (single, married, divorced, separated, living together/ common law, widow/ widower, no response). To get enough figures to allow for adjusted logit modelling, the variable was transformed (re-coded) into three: 1 = single, 2= married/ common law, 3= divorced/ separated. Religion was assessed with the question: "What religion or belief do you identify with?" There were 26 response options, which were re-coded into four: 1= Christian, 2= Rastafarian, 3= Non-Christian, 4= No stated. Locality was assessed by asking respondents to indicate their parish of residence because parishes are either rural or urban in the country. Rural parishes were coded as 1 and urban parishes as 2. Education was assessed with the question: "What is the highest educational level that you have achieved?" There were 10 response options, which were re-coded into three: 1= primary/ lower level, 2= secondary level, 3= post-secondary level. Employment was assessed with the question "What is your work status now?' The seven response options were working/ self-employed, working and studying, unemployed, student (not working), housewife, not working (retired; of independent means), not working (other, specify). These were re-coded into three: 1 = employed, 2= unemployed, 3= students (not working).

Dependent Variable

The key dependent variable was frequent alcohol binge drinking. It was assessed as "How often do you have 6 or more drinks on one occasion?" The response options were: 0 = never, 1= less than monthly, 3= monthly, 4= daily/ almost daily. These were re-coded as: 1= infrequent, 2 frequent. Thus, frequent binge drinking was defined in this study as taking six (6) or more drinks on one occasion daily/ almost daily or weekly.

Data Analysis

Statistical analysis included calculation of frequencies and percentages for categorical variables, and determination of inter-group differences using Pearson's Chi Square. Significance level was set at $p < 0.05$. In multivariate analysis, binary logistic regression modelling was used to determine the risk factors associated with frequent binge drinking. Crude odds ratios (COR) and adjusted odds ratios (AOR) were reported. Analyses were done using PSPP software (GNU Project).

Ethical considerations

The Household Survey 2016 received ethical approval from the Ministry of National Security, Jamaica. Full details of ethical procedures have been published elsewhere (Younger-Coleman et al., 2017).

Results

The total number of respondents was 4,623. Females were 2,535 (54.8%) compared to males 2,088 (45.2%). Three thousand, two hundred and twenty-four respondents 3,224 (69.0%) were in the 26 years and older age group. Single respondents were 3,120 (67.5%) compared to 1,386 (30.0%) who were married or belonged to common law relationships. Christians constituted 3,737 (80.8%) compared to 808 (17.5%) who indicated that they did not belong to any religion. Majority of respondents, 2,709 (58.6%) lived in the rural area. Majority of respondents had completed secondary school education, 3492(75.5%). Students constituted 650 (14.1%). (Not shown in tables)

Table 1 shows the associations between alcohol binge drinking and socio demographic characteristics of respondents, stratified by gender. Fifty (16.6%) of male respondents aged between 18 and 25 years indicated that

Table 1. Frequent Alcohol Binge Drinking by Socio-demographic Characteristics of Respondents, Stratified by Gender, Jamaica, 2016

	Males		Females	
	n (%)	X^2 (p value)	n (%)	X^2 (p value)
Age		11.11 (0.004)		2.03 (0.36)
12 to 17 yr	3 (3.0)		1 (1.5)	
18 to 25 yr	50 (16.6)		11 (4.7)	
≥ 26 yr	138 (13.2)		41 (5.4)	
Marital status		2.57 (0.28)		1.19 (0.55)
Single	141 (14.1)		37 (5.3)	
Married/common law	46 (11.1)		16 (4.7)	
Divorced/separated	4 (10.3)		0 (0.0)	
Religion		3.15 (0.37)		1.67 (0.64)
Christian	121 (12.1)		44 (4.7)	
Rastafarian	9 (16.7)		0 (0.0)	
Non-Christian	0 (0.0)		0 (0.0)	
Not Stated	61 (15.1)		9 (7.2)	
Locality/ residence		3.15 (0.37		1.67 (0.64)
Rural	112 (12.5)		27 (4.5)	
Urban	79 (13.9)		26 (5.6)	
Education		1.27 (0.53)		5.53 (0.06)
Primary/lower	29 (14.6)		6 (9.8)	
Secondary	141 (12.6)		43 (5.2)	
Post-secondary	21 (15.3)		4 (2.4)	
Employment		12.85 (0.002)		2.49 (0.29)
Employed	138 (13.4)		32 (5.5)	
Unemployed	49 (16.0)		19 (4.9)	
Student	4 (3.3)		2 (1.9)	

n, number; X^2, Pearson's Chi Square

they experienced frequent binge drinking compared to 138 (13.2%) of males 26 years or older. In contrast, 11(4.7%) of females aged 18-25 opined that they experienced frequent binge drinking compared to 41 (5.4%) of older females. There was a significant association between age and frequent binge drinking among male respondents ($X^2 = 11.11$, $p = 0.004$) but not among females ($X^2 = 2.03$, $p = 0.00$). Similarly, there was a significant association between employment status and frequent binge drinking among male respondents ($X^2 = 12.85$, $p = 0.002$) but not among female respondents ($X^2 = 2.49$, $p = 0.29$). On the other hand, 9.8% of females with primary education experienced frequent alcohol binge drinking compared to 2.4% of women with post-secondary education. There was no significant association between educational status and frequent binge drinking among males ($X^2 = 1.27$, $p = 0.53$) and females ($X^2 = 5.53$, $p = 0.06$). There was a significant association between employment and frequent alcohol binge drinking for males ($X^2 = 12.85$, $p = 0.002$) but not for females ($X^2 = 2.49$, $p = 0.29$).

Table 2 portrays the multivariate logistic regression analysis of factors associated with frequent alcohol binge drinking among male respondents. Male respondents 12- 17 years were significantly less likely to experience frequent binge drinking compared to older males in the unadjusted logit model (COR= 0.21, 95% CI= 0.6- 0.66) but not in the adjusted logit model (AOR 0.51, 95% CI= 0.12- 2.13). Employed males were significantly more likely to engage in frequent binge drinking compared to students (who were not working) (COR= 4.60, 95% CI= 1.67- 12.65; AOR= 3.63, 95%CI= 1.05- 12.59).

Table 3 displays the multivariate logistic regression analysis of factors associated with frequent alcohol binge drinking among females in Jamaica. Age, marital status, locality/ residence and employment status had no significant association with frequent binge drinking among the females.

On the contrary, females who had primary or lower level education were 5.18 times as likely to indulge in frequent binge drinking compared to females who had post-secondary education (AOR= 5.18, 95%CI= 1.36- 19.65).

Discussion

In this study, there was a significant difference in frequent binge drinking among male respondents from the different age groups ($X^2 = 11.11$, $p = 0.0004$). This finding differs from previous studies which documented that binge drinking was associated with young males

Table 2. Multivariate Logistic Regression Analysis of Factors Associated with Frequent Alcohol Binge Drinking among Males in Jamaica, 2016

Variable	n (%)	COR (95% CI)	AOR (95%CI)
Age			
12- 17 year	3 (3.0)	0.21 (0.6- 0.66)	0.51 (0.12- 2.13)
18- 25 years	50 (16.0)	1.25 (0.88- 1.78)	1.26 (0.85- 1.88)
26 years/ older	138 (13.2)	1	1
Marital status			
Single	141 (14.1)	1.43 (0.50- 4.09)	1.59 (0.55- 4.61)
Married/ common law	46 (11.1)	1.09 (0.37- 3.21)	1.15 (0.39- 3.41)
Divorced/ separated	4 (0.3)	1	1
Religion			
Christian	121 (12.1)	0.77 (0.55- 1.07)	0.84 (0.60- 1.18)
Rastafarian	9 (16.7)	1.12 (0.52- 2.41)	1.11 (0.51- 2.40)
Non-Christian	0 (.00)	-	-
Not stated	61 (15.1)	1	1
Locality/residence			
Rural	112 (12.5)	0.89 (0.65- 1.21)	0.91 (0.66- 1.25)
Urban	79 (13.9)	1	1
Education			
Primary/ lower	29 (14.6)	0.95 (0.52- 1.74)	0.88 (0.47- 1.66)
Secondary	141 (12.6)	0.80 (0.48- 1.31)	0.74 (0.44- 1.23)
Post-secondary	21 (15.3)	1	1
Employment			
Employed	138 (13.4)	4.60 (1.67- 12.65)	3.63 (1.05- 12.59)
Unemployed	49 (16.0)	5.67 (2:00- 16.08)	3.97 (1.15- 13.69)
Student	4 (3.3)	1	1

n, number; COR, crude odds ratio; AOR, adjusted odds ratio; yr, year

Table 3. Multivariate Logistic Regression Analysis of Factors Associated with Frequent Alcohol Binge Drinking among Females in Jamaica, 2016

Variable	n (%)	COR (95% CI)	AOR (95%CI)
Age (Years)			
12- 17 yr	1 (1.5)	0.26 (0.04- 1.95)	0.40 (0.04- 4.36)
18- 25 yr	11 (4.7)	0.88 (0.44- 1.74)	0.95 (0.46- 1.96)
≥ 26 yr	41 (5.4)	1	1
Marital Status			
Single	37 (5.3)	-	-
Married/ common law	16 (4.7)	-	-
Divorced/ separated	0 (0)	1	1
Religion			
Christian	44 (4.7)	0.64 (0.30- 1.33)	0.63 (0.30- 1.36)
Rastafarian	0 (0)	-	-
Non-Christian	0 (0)	-	-
Not stated	9 (7.2)	1	1
Locality/residence			
Rural	27 (4.5)	0.79 (0.45- 1.37)	0.75 (0.42- 1.32)
Urban	26 (5.6)	1	1
Education Level			
Primary/ lower	6 (9.8)	4.50 (1.22- 16.53)	5.18 (1.36- 19.65)
Secondary	43 (5.2)	2.25 (0.80- 6.35)	2.47 (0.86- 7.08)
Post-secondary	4 (2.4)	1	1
Employment			
Employed	32 (5.5)	3.02 (0.71- 12.81)	2.12 (0.37- 12.29
Unemployed	19 (4.9)	2.68 (0.61- 11.70)	1.69 (0.30- 9.64)
Student	2 (1.9)	1	

n, number; COR, crude odds ratio; AOR, adjusted odds ratio; yr, year

(Reisdofer et al., 2012; WHO, 2014; Osaki et al., 2016). In the adjusted logit model, age had no significant association with frequent binge drinking for either males or females. This finding differs with findings from Nigeria (Lasebikan et al., 2016), Japan (Osaki et al., 2016), Brazil (Reisdofer et al., 2012), which indicate that younger age groups tend to engage more in binge drinking than older persons.

Among a Nigerian sample, Lasebikan et al., (2016) reported the risk factors to include unemployment, low socio-economic status and male gender. In this study, however, male respondents but not females, whether employed or unemployed, were more likely to be involved in binge drinking compared to students (non-working), indicating that employment is not a determinant of binge drinkers among Jamaica males. Alcohol use seems to be a component of the culture as it is used in festivals and ceremonies, as well as in ordinary everyday life. While employed males will have money to spend on alcohol, unemployed ones may have more time to spend drinking, and feelings of sadness and frustration associated with unemployment may further drive them into binge drinking, thus creating a vicious cycle.

In this study, marital status was not significantly associated with frequent binge drinking. This finding is at variance with other findings, which revealed significant associations between marital status and excessive alcohol use, with being married reducing the risks of excessive alcohol drinking compared to being single or divorced (Power et al., 1999; Prescott and Kendler, 2001; Lasebikan et al., 2016).

This study found no significant association between religion and binge drinking. In Jamaica, the vast majority of the population identifies with the Christian religion, but would refer to themselves as non-practising Christians. It is not known why their affiliation with Christianity has no significant association with binge drinking. However, this finding is at variance with studies in other countries, which report a significant association between religion and binge drinking, with Christianity being a protective factor against alcohol excessive use (Michalak et al., 2007; Drabble et al., 2016).

In this study, lower educational status, for females, was significantly associated with frequent binge drinking. This is consistent with studies elsewhere that found lower educational status to be a risk factor for alcohol use/ excessive alcohol use (Lasebikan et al., 2016).

In conclusion, the risk factor for frequent binge drinking among male respondents was being employed, while the risk factor for binge drinking among females was having primary or lower level education. This suggests that risk factors for frequent binge drinking in the Jamaican population differs by gender.

References

Dent CW, Grube JW, Biglan A (2005). Community level alcohol availability and enforcement of possession laws as predictors of youth drinking. *Prev Med*, **40**, 355-62.

Drabble L, Trocki KF, Klinger JL (2016). Religiosity as a protective factor for hazardous drinking and drug use among sexual minority and heterosexual women: Findings from the National Alcohol Survey. *Drug Alcohol Depend*, **161**, 127-34.

Ferrari P, Licaj I, Muller DC, et al (2014). Lifetime alcohol use and overall and cause-specific mortality in the European prospective investigation into cancer and nutrition (EPIC) study. *BMJ Open*, **4**, e005245.

Francis JM, Weiss HA, Mshana G, et al (2015). The epidemiology of alcohol use and alcohol use disorders among young people in Northern Tanzania. *PLoS One*, **10**, e0140041.

Johnson LD, O'Malley PM, Bachman JG, Schlunberg JE (2009). Monitoring the future national survey on drug use, 1975-2008. volume 1: Secondary schools students. Bethesda, Maryland: National institute on drug abuse, p 36.

Kirby T, Barry AE (2012). Alcohol as a gateway drug: a study of US 12th graders. *J Sch Health*, **82**, 371-9.

Lasebikan VO, Ola BA (2016). Prevalence and correlates of alcohol use among a sample of nigerian semirural community dwellers in Nigeria. *J Addict Med*, ID 2831594. DOI: http://dx.doi.org/10.1155/2016/2831594.

Michalak L, Trocki K, Bond J (2007). Religion and alcohol in the U.S. National Alcohol Survey: How important is religion for abstention and drinking?. *Drug Alcohol Depend*, **87**, 268-80.

Osaki Y, Kinjo A, Higuchi S, et al (2016). Prevalence and trends in alcohol dependence and alcohol use disorders in Japanese adults; results from periodical nationwide surveys. *Alcohol Alcohol*, **51**, 465–73.

Prescott CA, Kendler KS (2001). Associations between marital status and alcohol consumption in a longitudinal study of female twins. *J Stud Alcohol*, **62**, 589-604

Power C, Rodgers B, Hope S (1999). Heavy alcohol consumption and marital status: disentangling the relationship in a national study of young adults. *Addiction*, **94**, 1477-87.

Reisdorfer E, Büchele F, Pires ROM, Boing AF (2012). Prevalence and associated factors with alcohol use disorders among adults: a population-based study in southern Brazil. *Rev Bras Epidemiol*, **15**, 582-94.

Schütze M, Boeing H, Pischon T, et al (2011). Alcohol attributable burden of incidence of cancer in eight European countries based on results from prospective cohort study. *BMJ*, **7**, 342:d1584.

Substance Abuse and Mental Health Services Administration (SAMHSA) (2015a). National survey on drug use and health (NSDUH). Table 2.41B-Alcohol use in lifetime, Past year, and past month among persons aged 12 or older, by demographic characteristics: Percentages, 2014 and 2015. Available at: https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015.htm#tab2-41b (Accessed on 22 September 2017).

Substance Abuse and Mental Health Services Administration (SAMHSA) (2015b). National survey on drug use and health (NSDUH). Table 5.6A-Substance use disorder in past year among persons aged 18 or older, by demographic characteristics: Numbers in thousands, 2014 and 2015. Available at https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015.htm#tab5-6a (Accessed on 22 September 2017).

Wilsnack RW, Wilsnack SC, Kristjanson AF, Vogeltanz-Holm ND, Gmel G (2009). Gender and alcohol consumption: patterns from the multinational genacis project. *Addiction*, **104**, 1487–1500.

World Health Organisation (2009). Alcohol and injuries: Emergency department studies in an international perspective. Geneva: World Health Organization.

World Health Organization (2014). Global status report on alcohol and health – 2014. Geneva: World Health

Organization.
Younger-Coleman N, Cumberbatch C, Campbell J, et al (2017). Jamaica national drug use prevalence survey 2016 – technical report for the OAS/CICAD and NCDA. Kingston, Jamaica: AOS/ CICAD.
Zaleski M, Pinsky I, Laranjeira R, Ramisetty-Mikler S, Caetano R (2010). Intimate partner violence and alcohol consumption. *Rev Saude Publica*, **44**, 53–9.
Zavos HMS, Siribaddana S, Ball HA, et al (2015). The prevalence and correlates of alcohol use and alcohol use disorders: a population based study in Colombo, Sri Lanka. *BMC Psychiatry*, **15**, 158.