RESEARCH ARTICLE

Investigating the Role of Alcohol in Behavioural Problems at School among Secondary School Students in Barbados

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Abstract

Background: The prevalence of alcohol use is quite high in the Caribbean region, and specifically, in Barbados. Alcohol use has been documented to negatively affect the way students behave within and outside school. This study set out to examine the role alcohol plays in students' behavioural problems at school. **Methods:** An analysis of cross-sectional data collected during the National Secondary Schools Survey was done. Mean (and standard deviation), frequencies and percentages were computed, and differences in proportions among the groups were assessed using Pearson's Chi Square. Multivariate analysis using binary logistic regression was done to determine the association between explanatory variables and outcome variables. **Results:** In bivariate analysis, behavioural problems at school were significantly associated with age (p= 0.001), grade (p= 0.000), sense of belonging at school (p= 0.000), relationship with teachers (p= 0.000), and past month alcohol use (p= 0.007). In multivariate analysis, students' having frequent behavioural problems at school was significantly associated with neither past year nor past month alcohol use (AOR= 1.13, 95% CI= 0.91- 1.40, AOR= 1.02, 95% CI= 0.83- 1.24 respectively). Significant inverse associations were found between students' behavioural problems and age (11- 14 years: AOR= 0.53, 95% CI= 0.33- 0.84; AOR= 0.51, 95% CI= 0.32- 0.82 for models 1 and 2 respectively), and relationship with teachers (very good: AOR= 0.10, 95% CI= 0.07- 0.16; AOR= 0.13, 95% CI= 0.09- 0.20 for models 1 and 2 respectively). **Conclusion:** Neither past year nor past month alcohol consumption by students was associated with frequent behavioural problems at school. Students who were younger than 17 years, and who had a relationship with their teachers that was not very bad were significantly less likely to engage in frequent behavioural problems.

Keywords: Alcohol use- alcohol consumption- behavioural problems- secondary schools- students- Barbados

Introduction

High prevalence of alcohol consumption among secondary school students is a public health challenge in the Caribbean region. There are variations across the island nations but the overall prevalence remains high, at 68.9% for the entire Caribbean (Organization of American States/ Inter-American Drug Abuse Control Commission [OAS/ CICAD], 2010). Atkinson et al., (2015) reported a lifetime prevalence of 64%, past year prevalence of 44% and past month prevalence of 33.6%, among secondary school students in Jamaica, making alcohol the most commonly used substance among the sociodemographic group. In Guyana, lifetime prevalence in 2013 was 52.2%, (Guyana Drug Information Network [GUYANADIN], 2014), a lower rate than that of Jamaica. Barbados had the sixth highest lifetime prevalence of alcohol consumption among

secondary school students (75.6%), with equally high past year prevalence (54.73%) and past month prevalence (34.57%) (OAS/ CICAD, 2010).

Diverse factors have been reported be associated with alcohol drinking among young persons in secondary schools. These include having more pocket money at school, living with parents who drink alcohol, affiliation with Christianity, perception of alcohol as a refreshing drink or as possessing anti-depressant effect (Dagnan et al., 2014), poverty, lack of parental connectedness and use of other substances (cigarettes and illicit drug use) (Pengpid and Peltzer, 2012). Gender and age have also been reported as risk factor (Agu et al., 2013; Alex-Hart et al., 2015; Eze et al., 2017). A review study found that, among Nigerian students, factors associated with alcohol consumption were the desire to stay awake and study in the night, drinking to forget one's problems, alleviation of

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anxiety, and celebration of festivals (Dumbili, 2015). Low cost of alcohol, broken families, and peer pressure were reported as determinants of alcohol consumption among students in Kenya (Munyua et al., 2014).

Excessive alcohol consumption has been causally associated with many health conditions, including cancer of various sites (Shield et al., 2016; Connor, 2017), cardiovascular diseases (Bell et al., 2017), and liver diseases (Bruha et al., 2012; Gao and Bataller). Among adolescents and youth in secondary schools, several social and behavioural problems have been attributed to alcohol such as truancy, poor academic grades, fatigue, unruly behaviour and relationships problems (Alex-Hart et al., 2015), fighting and psychosocial distress including loneliness, sadness, anxiety, suicidal plan/ behaviour (Pengpid and Peltzer, 2012; Heron et al., 2017), anxiety, worrying and clinically significant depressive symptoms (Fleming et al., 2014; Johannessen et al., 2017). Significant positive associations have also been found between alcohol consumption and disinhibited behaviour, and susceptibility to peer pressure (Wong et al., 1997).

Materials and Methods

Methodology

This is a descriptive, cross sectional, study based on data collected from a nationally representative sample randomly drawn from secondary school students in 2013 in Barbados. The survey (National Secondary Schools Survey) was conducted by the National Council on Substance Abuse (NCSA) in collaboration with the Inter-American Drug Abuse Control Commission (CICAD). Stratified, two-stage sampling procedure was used. In the first stage, 15 public and 3 private secondary schools were randomly selected from all the schools in the country. The second stage involved random selection of respondents from 8th, 10th, 11th and 12th grades (i.e. 2nd, 4th, 5th and 6th forms). The questionnaires were self-administered.

Independent Variables

The key independent variables were: (i) Past year alcohol use, assessed with the question, "Have you drunk any alcoholic beverages over the past 12 months? (ii) Past month alcohol use, assessed with the question, "Have you drunk alcoholic beverages over the past 30 days? The response options for each of the question items were 1= yes, 2= no. Covariates consisted of variables on sociodemographic factors and school-related factors. Sociodemographic factors were age (continuous variable), gender (response options: 1= male, 2= females), grade (response options: 1= 8th grade, 2= 10th grade, 3= 11th grade, 4= 12th grade), and type of school (response options: 1= public, 2= private). School-related factors were (i) sense of belonging at school and (ii) students' relationship with teachers. Sense of belonging was assessed with the question, "Speaking generally, would you say that you feel a sense of belonging at school?" The response options were: 1= yes, 2= no. Relationship with teachers was assessed with the question: "How would you describe the relationship you generally have with your teachers at school?" The response options were: 1= very good, 2= good, 3= average, 4= bad, 5= very bad. Age, a continuous variable, was recoded into a categorical variable, thus generating a second variable on age. The age groups generated were: 1= 11- 14 years, 2= 15- 16 years, and 3= 17 years/ older.

Dependent Variables

The dependent variable was behavioural problems at school. This was assessed with the question: "Have you ever had behavioural and disciplinary problems during your school years? (e.g. detentions, suspensions, being sent to the headmaster/ mistress or corporal punishment). The response options were 1= never, 2= once, 3= a few times, 4= often. These were re-coded into two: 1= seldom (formerly never, once, a few times), and 2= frequent (formerly often).

Data Analysis

Descriptive analysis was done to generate the mean and standard deviation for the continuous variable (age), and frequencies and percentages for categorical variables. In bivariate analysis, differences in proportions among the groups were determined using Pearson's Chi Square test. Level of significance was set at $p < 0.05$. Binary logistic regression modelling was done in the multivariate analysis. Two models were generated. Model 1 was used to assess for association of frequent behavioural problems with past year alcohol use while controlling for the covariates. In model 2, the association of frequent behavioural problems with past month alcohol use while controlling for covariates was assessed. The two models also assessed the association of the covariates with frequent behavioural problems when the key variable and other covariates were adjusted for. All analysis were done using SPSS version 20.0 (IBM Corp., Armonk, New York).

Ethical Considerations

The objective of the survey was explained to potential respondents. All potential identifiers were removed from the questionnaires, and respondents were advised not to write any personal information. Responses were kept absolutely confidential, and only researchers have access to them. Informed consent was obtained from the parents of the students. Students were also asked to give assent if they wished to take part in the survey. At the national level, approval was received from the Ministry of Education while approval was obtained from the principals at the school level.

Results

The mean age of the students was 14.0 years (standard deviation [SD]= 3.7), with minimum and maximum age of 11 years and 21 years respectively. Students in the age group of 15- 16 years constituted the highest proportion 3,292 (38.6%). Females comprised 56.2% (4,801) of the respondents. Almost all the students were in public schools 99.5% (8,492). (Not shown in Tables)

Behavioural problems at school by students' sociodemographic characteristics, school-related factors

Table 1. Behavioural Problems at School by Sociodemographic Characteristics, School Factors and Alcohol Consumption, among Secondary School Students in Barbados, 2013

Variables	Behavioural Problems		Total	X^2 (p value)
	Seldom n (%)	Frequent n (%)		
Age				14.61 (0.001)
11- 14 yr	2,989 (93.0)	226 (7.0)	3,215	
15- 16 yr	2,973 (90.9)	297 (9.1)	3,270	
≥ 17 yr	1,363 (93.7)	92 (6.3)	1,455	
Gender				1.90 (0.176)
Male	3,064 (91.8)	274 (8.2)	3,338	
Female	4,419 (92.6)	352 (7.4)	4,771	
Grade				48.41 (0.000)
8th grade	1,772 (92.5)	144 (7.5)	1,916	
10th grade	2,138 (91.7)	193 (8.3)	2,331	
11th grade	2,205 (90.3)	236 (9.7)	2,441	
12th grade	1,404 (96.4)	53 (3.6)	1,457	
Type of school				0.25 (0.618)
Public	7,482 (92.3)	622 (7.7)	8,104	
Private	37 (90.2)	4 (9.8)	41	
Sense of belonging at school				14.43 (0.000)
Yes	5,332 (93.4)	378 (6.6)	5,710	
No	1,986 (90.9)	199 (9.1)	2,185	
Relationship with teachers				541.37 (0.000)
Very good	1,111 (95.4)	54 (4.6)	1,165	
Good	2,417 (97.3)	66 (2.7)	2,483	
Average	3,382 (91.4)	318 (8.6)	3,700	
Bad	236 (81.9)	52 (18.1)	288	
Very bad	243 (65.0)	131 (35.0)	374	
Past year alcohol use				2.05 (0.152)
Yes	4,213 (90.8)	429 (9.2)	4,642	
No	1,558 (91.9)	137 (8.1)	1,695	
Past month alcohol use				7.26 (0.007)
Yes	2,514 (89.9)	281 (10.1)	2,795	
No	2,826 (92.0)	247 (8.0)	3,073	

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

and alcohol use are shown in Table 1. Chi Square analyses indicated significant associations of behavioural problems at school with age (p= 0.001), grade (p= 0.000), sense of belonging at school (p= 0.000), relationship with teachers (p= 0.000), and past month alcohol use (p= 0.007). Conversely, no significant associations were seen for gender (p= 0.176), type of school (p= 0.618), and past year alcohol use (p= 0.152).

Results of multivariate logistic regression models (logit models) are depicted in Table 2. In logit model 1, after adjusting for sociodemographic factors and school factors, students who drank alcohol over the past year had higher risk of frequent behavioural problems than students who did not drink alcohol in the past year. This association was, however, not statistically significant (AOR= 1.13, 95% CI= 0.91- 1.40). In model 2, after controlling for the covariates, students who drank alcohol over the past month had slightly higher risk of experiencing frequent

behavioural problems compared to students who did not drink alcohol over the past month. Again, this association was not statistically significant (AOR= 1.02, 95% CI= 0.83- 1.24).

Some of the covariates, on the other hand, showed significant associations with frequent behavioural problems at school. After controlling for other factors, students in the age groups 11- 14 years, and 15-16 years had significantly lower risk of frequent behavioural problems compared to students aged 17 years and older in both models 1 and 2. Counterintuitively, students' grade showed significant positive association with frequent behavioural problems. Students' relationship with their teachers was significantly inversely associated with frequent behavioural problems. Students who had very good relationship with their teachers were 90 times (model 1) and 87 times (model 2) less likely to be involved in frequent behavioural problems compared to

Table 2. Factors Associated with Frequent Behavioural Problems among Secondary School Students in Barbados, 2013

Variables	Frequent Behavioural problem, n (%)	Total	Model 1[a] AOR (95%CI)	Model 2[b] AOR (95%CI)
Age				
11- 14 yr	226 (7.0)	3,215	0.53 (0.33- 0.84)	0.51 (0.32- 0.83)
15- 16 yr	297 (9.1)	3,270	0.66 (0.47- 0.93)	0.66 (0.47- 0.93)
≥ 17 yr	92 (6.3)	1,455	1 (Reference)	1 (Reference)
Gender				
Male	274 (8.2)	3,338	0.91 (0.75- 1.11)	0.92 (0.75- 1.12)
Female	352 (7.4)	4,771	1 (Reference)	1 (Reference)
Grade				
8th grade	144 (7.5)	1,916	3.88 (2.18- 6.92)	3.28 (1.84- 5.85)
10th grade	193 (8.3)	2,331	2.77 (1.72- 4.47)	2.65 (1.64- 4.28)
11th grade	236 (9.7)	2,441	3.142(2.30- 5.10)	3.09 (2.08- 4.60)
12th grade	53 (3.6)	1,457	1 (Reference)	1 (Reference)
Type of school				
Public	622 (7.7)	8,104	1.07 (0.29- 3.83)	1.09 (0.28- 4.22)
Private	4 (9.8)	41	1 (Reference)	1 (Reference)
Sense of belonging at school				
Yes	378 (6.6)	5,710	1.13 (0.91- 1.40)	1.10 (0.89- 1.37)
No	199 (9.1)	2,185	1 (Reference)	1 (Reference)
Relationship with teachers				
Very good	54 (4.6)	1,165	0.10 (0.07- 0.16)	0.13 (0.09- 0.20)
Good	66 (2.7)	2,483	0.07 (0.05- 0.10)	0.09 (0.06- 0.13)
Average	318 (8.6)	3,700	0.18 (0.14- 0.25)	0.23 (0.17- 0.31)
Bad	52 (18.1)	288	0.43 (0.28- 0.66)	0.48 (0.31- 0.73)
Very bad	131 (35.0)	374	1 (Reference)	1 (Reference)
Past year alcohol use				
Yes	429 (9.2)	4,642	1.13 (0.91- 1.40)	-
No	137 (8.1)	1,695	1 (Reference)	-
Past month alcohol use				
Yes	281 (10.1)	2,795	-	1.02 (0.83- 1.24)
No	247 (8.0)	3,073	-	1 (Reference)

n, number; X[2], Pearson's Chi Square; yr, year; [a]Model 1, Logit model for past year alcohol use; [b]Model 2, Logit model for past month alcohol use

students who had very bad relationship with their teachers (AOR= 0.10, 95%CI= 0.07- 0.16; AOR= 0.13, 95%CI= 0.09- 0.20 for models 1 and 2 respectively). Results were similar for students who had good, average and bad relationship with teachers as they were all significantly less likely to be involved in frequent behavioural problems compared to students who had very bad relationship with teachers. Gender, type of school and sense of belonging at school were not significantly associated with frequent behavioural problems at school (Table 3).

Discussion

Among the secondary school students in our study sample, those with history of alcohol use over the past year had higher odds of frequent behavioural problems at school than students who did not drink alcohol over the past year. This was not statistically significant, indicating a non-significant association between past year alcohol use and frequent behavioural problems at school among the students. This non-significant association was observed in both bivariate and multivariate analysis. Although a significant association was observed between past month alcohol use and frequent behavioural problems at school in the bivariate analysis, the association was not significant in the adjusted logistic regression models.

This finding is discordant with those of Alex-Hart et al., (2015) who reported that alcohol use was significantly associated with truancy, unruly behaviour, and relationship problems at school. The findings also differ from those of Pengpid and Peltzer (2012) who found alcohol use to be significantly associated with students' involvement in fighting, and psychosocial distress. In Jamaica, Heron et al., (2017) observed that students who drank alcohol were significantly more likely to be involved in suicidal ideation/ behaviour, a finding that is at variance with the

finding in this present study. The findings in this present study also differs from those of Fleming et al., (2014) and Johannnessen et al., (2017) who reported clinically significant depressive symptoms among students who drank alcohol. The findings are also not in consonance with those of Wong et al., (1997) who found that students who drank alcohol manifested disinhibited behaviour and susceptibility to peer pressure.

The differences in the results of the studies may be explained by the pattern of alcohol use in the different contexts. Although past year alcohol use generally refers to chronic use, the concept does not capture the exact pattern/ frequency of use. Thus, an individual who took alcohol over the past year becomes a past year user irrespective of the number of times/ frequency. Dumbili (2015) reported that students might drink alcohol during festivities, in Nigeria. But is it not known whether this was the case in Barbados. However, it could be surmised that if students drank mainly during festivities (e.g. Christmas, Easter), most of which occur during academic holidays, it might not have a significant influence on their behaviour at school.

Analyses assessing the association between the covariates and frequent behavioural problems revealed that age was a predictor of frequent behavioural problems, with students who were younger (11- 14 years and 15 -16 years) having significantly lower risk of behavioural problems than students aged 17 years and older. This is not surprising as the younger students might be more inclined to avoid behavioural problems, and stay out of trouble. But then, grade appeared to increase the odds of frequent behavioural problems at school. This finding is counter-intuitive because, ordinarily, the junior students would be expected to be averse to behavioural problems, and to stay out of trouble compared to the older students (17 years/ older). These findings indicate the behavioural patterns and determinants among secondary school students (in Barbados, and elsewhere) are complex, and multifarious.

The findings in this study indicate that the quality of students' relationship with teachers is a very strong predictor of behavioural problems. This is consistent with findings by Roorda et al., (2011), and Murray-Harvey and Slee (2007) who also found students' relationship with teachers to be associated with students' behaviour at school. Students spend a good amount of their day time at school interacting with teachers in various ways. Indeed, teachers exert a lot of influence on students, sometimes, even more influence than the parents (Murray-Harvey and Slee, 2007). The findings in this study indicated that students' sense of belonging at school was not significantly associated with their involvement in frequent behavioural problems. This is contrary to the finding by Murray-Harvey and Slee (2007), who reported an association between sense of belonging at school and students' behavioural problems at school.

The strength of this study lies in using a nationally representative sample data to examine the association between students' alcohol use and their behavioural problems at school in a nation where evidence on this is lacking. The weakness of the study is that it is based on data collected through a cross sectional survey. Consequently, the study is prone to biases related to cross sectional surveys such as recall bias and social desirability bias.

In conclusion, past year and past month alcohol use by students in this study did not lower or increase their likelihood of experiencing frequent behavioural problems. Age and students' relationship with teachers were independent predictors of students' frequent behavioural problems. Being younger than 17 years, and having a relationship better than very bad were significantly associated with lower odds of frequent behavioural problems.

Acknowledgements

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