

# Social determinants of alcohol use among drivers in Calabar

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## ABSTRACT

**Objective:** Hazardous use of alcohol is a public health problem which accounts for 4.0% of global disease burden. Although the prevalence of alcohol use among drivers of commercial vehicles in Nigeria has been documented, not much is known about its social determinants. This study was, therefore, aimed at assessing the social determinants of alcohol use among drivers of commercial vehicles in Calabar. **Materials and Methods:** A cross-sectional descriptive study was conducted among 360 male commercial drivers. A semistructured questionnaire, which included the World Health Organization Alcohol Use Disorders Identification Test, was administered at interview. Binary and multinomial logistic regression analyses were used to identify social determinants of *any* and *hazardous* alcohol use. **Results:** Determinants of any alcohol use (binary logistic) were history of use by parents (adjusted odds ratios (AOR)=2.7; 95% CI=1.1–6.3), friends (AOR=3.2; 95% CI=1.3–7.8) and ready availability (AOR=4.1; 95% CI=1.9–8.8) while determinants of hazardous use (multinomial logistic) were history of use by parents (AOR=5.8; 95% CI=2.0–16.9), siblings (AOR=7.0; 95% CI=2.6–16.9), friends (AOR=6.6; 95% CI=1.8–24.4), hostile upbringing environment (AOR=3.8; 95% CI=1.3–11.1), use of other drugs (AOR=55.6, 95% CI=14.5–200), and respondents who had fathers with a maximum of primary or no formal education (AOR=4.6; 95% CI=1.8–11.8). **Conclusion:** Alcohol use was associated with family use, friends' use, and use of other drugs. Multiple health education interventions are needed to tackle these challenges.

**Key words:** Alcohol use, alcohol use disorders identification test, commercial vehicle drivers

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## INTRODUCTION

Hazardous use of alcohol is a public health problem which accounts for 4.0% of global disease burden.<sup>1</sup> The industrialization of production and promotion of alcohol use has increased both local and global consumption and its attendant health and social consequences.

Fekjaer enumerated some of the social problems associated with alcohol use and alcoholism as accidents such as motor vehicle crashes and trauma resulting in disability and/or spouse abuse, fire and burns, poverty, under nutrition and malnutrition, unemployment, family divorce, social conflicts, social maladjustment, reduced productivity,

criminal behavior, and decreased sexual arousal in both sexes.<sup>2</sup>

When a person drinks heavily, it is usually for social reasons, and this drinking habit may be influenced by the type of job the person does. Some occupational groups have far greater alcohol use rates than others, and the high risk of such an occupation is probably due to factors such as the availability of alcohol during working hours, strong pressure from workmates, and freedom from supervision.<sup>3</sup>

Studies have investigated the social and demographic attributes that could predict alcohol use. However, the literature has been inconsistent and the influence of these social determinants may be culture and group specific. Alcohol use by close relatives such as parents, siblings, and friends has been found to predict respondent's alcohol use.<sup>4,5</sup> Piko and Fitzpatrick.<sup>6</sup> found that religiosity was a protective factor among adolescents in Hungary. In contrast, religiosity was predictive of alcohol use among Buddhists in Thai.<sup>7</sup> Visits to social clubs predicted alcohol use among Danish men<sup>8</sup> but was protective among adolescents in Hungary.<sup>6</sup> Use of other substances, e.g. smoking<sup>9,10</sup>

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and respondents' low educational attainment,<sup>8,11,12</sup> was positively associated with alcohol use in a dose-response manner. Alcohol use has also been reported to decrease with age.<sup>13</sup> We are not aware of any study on social determinants of alcohol use in sub-Saharan African.

A World Health Organization (WHO) resolution adopted by the 58<sup>th</sup> World Health Assembly in 2005 called for a concerted effort at the global, regional, and country level to address the social determinants of harmful use of alcohol and reduce alcohol-related harm.<sup>2</sup> Notably, the federal road safety corps (FRSC) of Nigeria has initiated some actions aimed at control of alcohol use by drivers of commercial vehicles.<sup>14</sup> Although the prevalence of alcohol use among drivers of commercial vehicles in Nigeria has been documented, not much is known about its social determinants.<sup>15</sup> This study was, therefore, aimed at assessing the social determinants of alcohol use among drivers of commercial vehicles in Calabar, Nigeria.

## MATERIALS AND METHODS

Ethical approval for the conduct of this study was obtained from the joint Ethics Review Board of the University of Calabar and the University of Calabar teaching hospital (UCTH).

A cross-sectional descriptive study was conducted among 360 commercial drivers in Calabar, Nigeria in March, 2009. Minimum sample size of 337 calculated using the Leslie-Kish formula was required for the study using a prevalence of alcohol use of 67.5% obtained from a similar study in Ile-Ife.<sup>15</sup> Eighteen out of 32 clusters of motor parks in Calabar were selected by simple ballot and all drivers in the selected clusters were enrolled. An interviewer-administered, semistructured questionnaire, which included the WHO alcohol use disorders identification test (AUDIT, interview version), was used to collect data on socio-demographic characteristics of respondents and alcohol use. Informed verbal consent was obtained from each respondent before commencement of interview. Participants were offered free blood pressure check after interview and those who had elevated blood pressure ( $\geq 140/90$  mmHg) were referred to the department of community medicine, UCTH, for a second check.

The AUDIT is a widely used screening instrument to detect hazardous alcohol consumption. It has a high level of validity and reliability. Score of 8 or higher is considered a positive screen.<sup>16,17</sup> Ten questions from AUDIT scored frequency (item 1), quantity (item 2) of alcohol use, frequency of binge drinking (heavy episodic consumption) (item 3), and consequences (items 4–10) of alcohol consumption. All 10 items were given scores ranging from 0 through 4 in the generic tool, depending on the response.<sup>16</sup> A composite score was generated from the 10 items according to the guideline, and a respondent scoring 8 or higher was identified as a hazardous alcohol

user. Alcohol users who scored below 8 were identified as harmless users.

Data were entered, cleaned, and analyzed using Statistical Package for Social Sciences (SPSS) version 14.0. Exploration of determinants of any alcohol use was done in three stages. Firstly, a bivariate analysis using the chi-squared test or independent student *t*-test (depending on data type) was used to select variables that were significantly associated with alcohol use at an alpha-level of 5%. Selected variables were entered into binary logistic regression analysis using the default (enter) method in the SPSS software. This method entered all variables into the model at the same step. Determinants that were independently associated with any alcohol use were identified and their adjusted odds ratios (AOR) reported.

Factors that were significantly associated with any alcohol use at bivariate (Chi-squared) analysis were also entered into multinomial logistic regression. The dependent variable (alcohol use) consisted of nonusers, harmless users, and hazardous users. The reference group in the model is the nonusers category.

## RESULT

The mean age of respondents was  $38.5 \pm 9.5$  years. All were male. Table 1 shows the sociodemographic characteristics of respondents.

A high proportion (84.4%) of the drivers were alcohol users. Majority (56.7%) were harmless users, 23.3% were

**Table 1: Socio-demographic characteristics of respondents**

Characteristics	Frequency N=360	Percentage
Age groups (years)		
20–29	68	18.9
30–39	124	34.4
40–49	120	33.3
$\geq 50$	48	13.3
Tribe		
Yoruba	7	1.9
Hausa	8	2.2
Igbo	41	11.4
Efik	60	16.7
Ibibio	175	48.6
Others	69	19.2
Marital status		
Single	59	16.4
Married	281	78.1
Divorced/separated	4	1.1
Cohabiting	16	4.4
Educational attainment		
Primary or none	169	46.9
Secondary	163	45.3
Postsecondary	28	7.7

hazardous, while 20.0% were nonusers of alcohol. Factors associated with respondents' alcohol use at bivariate analysis included parent's use ( $\chi^2=13.48, P<0.001$ ), sibling's use ( $\chi^2=5.95, P=0.015$ ), friend's use ( $\chi^2=10.24, P=0.001$ ), ready availability ( $\chi^2=18.83, P<0.001$ ), family structure ( $\chi^2=7.78, P=0.005$ ), respondents' perception of conduciveness of upbringing ( $\chi^2=6.33, P=0.042$ ), mother's educational attainment ( $\chi^2=16.67, P<0.001$ ), father's educational attainment ( $\chi^2=11.12, P=0.011$ ), work-related stress level ( $\chi^2=24.44, P<0.001$ ), religiosity ( $t=-5.28, P<0.001$ ), social club membership ( $\chi^2=4.80, P=0.028$ ), other substance use ( $\chi^2=4.24, P=0.039$ ), respondent's educational attainment ( $\chi^2=9.37, P=0.009$ ), and respondent's age ( $\chi^2=8.19, P=0.042$ ).

The multivariate model of any alcohol use was able to predict correctly 87.1% of alcohol use. The full model was significantly reliable ( $\chi^2=15.962, df=7, P=0.025$ ). Predictor variables that were independently associated with any alcohol use were: parents' use (AOR=2.7, 95% CI=1.1-6.3), friends' use (AOR=3.2, 95% CI=1.3-7.8), ready availability (AOR=4.1, 95% CI=1.9-8.8), respondents whose fathers had a maximum of primary education (AOR=4.6, 95% CI=1.4-14.8), and not belonging to a social club (AOR=0.380, 95% CI=0.2-0.9). From the Wald statistics, the biggest independent contributor to the model is ready availability of alcohol [Table 2].

Table 3 shows the multinomial model predicting harmless and hazardous alcohol use. The model is significantly reliable ( $\chi^2=153.1, P<0.001$ ). The model is able to predict correctly 62.5% of hazardous alcohol use.

Factors that were independently associated with hazardous alcohol use included parent's use (AOR=5.8, 95% CI=2.0-16.9), sibling's use (AOR=7.0, 95% CI=2.6-16.9), friend's use (AOR=6.6, 95% CI=1.8-24.4), hostile upbringing (AOR=3.8, 95% CI=1.3-11.1), respondents with fathers

who had a maximum of primary or no formal education (AOR=4.6, 95% CI=1.8-11.8), use of other drugs (AOR=55.6, 95% CI=14.5-200), respondents younger than 50 years of age (AOR=28.6, 95% CI=5.7-142.9) [Table 3].

## DISCUSSION

This study has been able to identify some social determinants of alcohol use among drivers in Calabar. As it has been documented, various factors influence the initiation and use of alcohol. The use of alcohol by parents, siblings, and friends were significantly associated with alcohol use by respondents. These factors remained significantly associated with any and hazardous alcohol use even in the multivariate logistic models. The family and immediate social environment of a child provide the child with a background for behavioral development of both risky and healthy behaviors.<sup>4</sup> Family influences on children are powerful because they occur within the context of an important relationship early in life and continue over an extended period.<sup>18</sup> A similar study done among twins in their adolescent and early adulthood in Netherlands reported that drinking habits of parents showed a small but persistent positive association with participants' alcohol use. Alcohol use of the cotwin was also found to be strongly related to alcohol use of the participants. Friends' alcohol use also showed a high association with regular drinking by participants.<sup>5</sup> Close social contacts of drivers were, therefore, likely to be a strong influence on their behavior. Hung and associates also demonstrated similar findings; they found that having both parents who used alcohol was an important predictor of participants' alcohol use.<sup>4</sup> Although this study used the influence of any parent's use (i.e., either the father, mother, or both), some other studies have found that father's alcohol use, and mother's alcohol use have different influential effects on their offspring's drinking behavior.<sup>19,20</sup>

**Table 2: Binary logistic regression model of any alcohol use**

Predictor variable	Wald	P value	AOR	95% CI for AOR	
				Lower	Upper
Parents' use					
Yes	4.861	0.027	2.651	1.114	6.306
No*					
Friends' use					
Yes	6.759	0.009	3.223	1.334	7.79
No*					
Ready availability					
Yes	12.527	<0.001	4.062	1.869	8.828
No*					
Father's education					
Primary/none	6.503	0.011	4.584	1.422	14.772
Postprimary*					
Belong to a social club					
Yes	4.707	0.03	0.38	0.158	0.911
No*					

\*reference category; AOR – Adjusted odds ratio

**Table 3: Multinomial logistic model of hazardous alcohol use**

Manner of alcohol use*	Predictor variable**	Wald	P value	AOR	95% CI for AOR	
					Lower	Upper
Harmless use	Intercept	22.451	0.000			
	Parent's use	2.779	0.096	1.8	0.9	3.4
	Sibling's use	2.807	0.094	1.7	0.9	3.3
	Friend's use	0.002	0.964	1.0	0.5	2.1
	Ready availability	1.659	0.198	1.6	0.8	3.2
	Harsh upbringing	0.004	0.949	1.0	0.4	2.7
	Father's education	4.939	0.026	2.3	1.1	5.0
	Use of other drugs	10.019	0.002	6.4	2.0	20.4
	Respondent's age	8.059	0.005	3.3	1.4	7.5
Hazardous use	Intercept	64.404	0.000			
	Parent's use	10.677	0.001	5.8	2.0	16.9
	Sibling's use	14.511	0.000	7.0	2.6	16.9
	Friend's use	8.178	0.004	6.6	1.8	24.4
	Ready availability	0.072	0.789	1.1	0.4	3.1
	Hostile upbringing	5.956	0.015	3.8	1.3	11.1
	Father's education	10.227	0.001	4.6	1.8	11.8
	Use of other drugs	34.263	0.000	55.6	14.5	200
	Respondent's age	16.751	0.000	28.6	5.7	142.9

\*Reference category is nonuse; \*\*Father's education; primary or none compared to post-primary; respondent's age; Younger than 50 years of age compared to 50 years and above; Others; YES compared to NO; AOR – Adjusted odds ratios

Ready availability of and access to alcoholic beverages has been documented in studies as among the most important determinants of alcohol use and binge drinking.<sup>21</sup> This study supports this; ready availability of alcoholic drinks at the motor parks and vicinity of residence was found to be associated with alcohol use. This factor remained significant in the logistic model for any alcohol use pointing to its strong influence.

This study showed the relationship between alcohol use and the organization of the family/perception of the participants about the conduciveness of their upbringing. Participants from monogamous families were shown to be more likely to use alcohol than other family types. However, this may be a confounding factor as it did not remain significant in the multivariate model. Less parental support and family conflicts could be more important predictors of alcohol use than the structure of the family as has been demonstrated in other studies.<sup>18</sup> Again this hypothesis is supported by the fact that participants' perception of their upbringing as hostile in this study was significantly associated with both forms of alcohol use, the relationship remaining significant in the multivariate model for hazardous alcohol use.

Parents' educational attainment predicted alcohol use among drivers in this study. Having a parent with postprimary education was protective of alcohol use. Having a father who had only primary or no formal education was significantly associated with both hazardous and any alcohol use. A similar finding was reported by Singhammer and Mittelmark, although only mother's educational attainment was used in their study.<sup>22</sup> This association was significant in the logistic model of

hazardous and any alcohol use, and may have an indirect path relating to social status since educational attainment and social status have been shown to be highly correlated.<sup>23</sup>

Participants who considered their work to be stressful were less likely to use alcohol. Stress was not significantly associated with the hazardous use and was statistically insignificant in the logistic model of any alcohol use. It could be that those who considered their work to be stressful had less time for leisure and so would not be able to participate in most social activities. Kjeerheim and colleagues,<sup>24</sup> in a study among employees of the restaurant business in Norway, found no significant association between work stress and alcohol use. It was suggested that coping resources were the mediating variable between work stress and alcohol use. However, Lindquist and coworkers<sup>25</sup> reported a significant correlation between work stress and alcohol use in a study done among office workers in Australia, although this correlation was weak (r=0.11). Studies in Africa (if any) were, conversely, not accessible for comparisons.

Religiosity was found to be significantly higher among nonalcohol users than the alcohol user as depicted by their attendance at religious activities in this study. Piko and Fitzpatrick<sup>6</sup> in a study among adolescents in Hungary reported that religiosity was a protective factor against alcohol use. However, there may be a varying influence of the type of religion on alcohol use as another study done among the Buddhist in Thai reported a contrary view.<sup>7</sup> Furthermore, Perkins documented the influence of various religion and denominations on alcohol use.<sup>26</sup> It has been suggested that religion may serve as a tool of family cohesion and in religious families, parents may use higher



levels of monitoring for their children, which in turn, are often found to be related to lower levels of substance use.<sup>6</sup>

Membership of a social club was found to be protective of any alcohol use even in the multivariate model. However, the number of social clubs attended by participants was a positive predictor of hazardous alcohol use. This implies that alcohol abuse, just like any other substance abuse, may be reinforced by intense permissible social interaction. Osler and coworkers, in a 32-year follow-up study of Danish men, reported a positive relationship between the participants' visits to social clubs and alcohol abuse.<sup>8</sup> Contrary to this, Piko and Fitzpatrick<sup>6</sup> found social club membership to be protective of alcohol abuse. Variations in these reports may be due to differences in the group of participants because our study and Osler's were carried out among adult men and both studies supports social club membership as a determinant of abuse/hazardous use of alcohol. The Piko and Fitzpatrick study was done among adolescents.<sup>6</sup>

This study further reveals the strong association between alcohol use and other substance use. Both forms of alcohol use were significantly associated with other substance use. Use of other substance was the strongest contributor to the logistic model of hazardous alcohol use. The strong correlation between alcohol and other substance use had long been documented by research. Behaviors involving alcohol and other substance use (e.g., cigarette smoking) often occur together, and both behaviors have the same etiological sources. Drobos found that people who took alcohol were more likely to smoke and vice versa; heavy smokers were also more likely to be heavy drinkers.<sup>9</sup> Similar findings were also documented by Victoir and colleagues.<sup>10</sup>

Having a postsecondary education conferred some level of protection against alcohol use. Although the result obtained in this study did not show a dose-response relationship in the value of the odds ratios corresponding to the levels of educational attainment as was reported by Osler and coworkers.<sup>8</sup> They found a progressive increase in the hazard ratio of alcohol use as the level of educational attainment decreased. Kestila and colleagues,<sup>11</sup> in a nationally representative study of young adults in Finland, reported a significant association between a low level of education and heavy alcohol use. In a similar study carried out in rural Asian populations, Bich and colleagues reported an association between alcohol use and failure to attend or complete primary education.<sup>12</sup> The evidence of association in our study is, however, weak as respondents' level of education was not an independent predictor of both forms of alcohol use.

Respondents who were 50 years and older were significantly less likely to use alcohol than the younger age groups. Respondents younger than 50 years old were

also more likely to use alcohol in a hazardous manner as shown in the multinomial logistic regression model [Table 3]. This finding is supported by similar reports by Lopez and coworkers, who found that a 10-year increase in age decreased the amount of alcohol ingested by approximately 22% and there was a significant decrease in those who were 60 years and older.<sup>13</sup> Hajema and Knibbe<sup>27</sup> showed that changes in the social role as one grows older (such as acquisition of marital and parental roles) were associated with changes in behavior. Younger age groups have also been shown to have the highest prevalence of drinking problems.<sup>28</sup>

In conclusion, our study furthers the understanding of alcohol use among drivers of commercial vehicles in a sub-Saharan African city. Alcohol use was associated with family-, peer-, and drug use-related factors. Successful interventions should be family focused and occur early in life. An integrated approach should be used in tackling substance abuse. Strong restrictions on the availability of alcoholic beverages at motor parks are likely to lead to significant reductions in heavy drinking among drivers.

This study has some limitations as the data relied entirely on reported alcohol use by respondents and is, therefore, subject to response and recall biases. Another limitation is that both exposure and outcome variables were measured at the same point in time. Thus, caution should be exercised in arriving at a conclusion of a causal relationship. This calls for stronger study designs that can reliably establish a causal relationship.

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