Original Research Article

Assessment of Alcohol Use Control Programs in Public and Private Secondary Schools in Lofa County, Liberia: Cross-sectional Study

ABSTRACT

Introduction: As one of the leading risk factors for disease burdens in the modern era, alcohol consumption exacerbates health-related repercussions with likely menacing influences on morbidity and mortality. Alcohol use in Liberia is a relic that hems in the anthropological and sociological perspectives on the economy, culture, and society. Students drinking has plagued several learning institutions across the country. Hence, some private and public institutions established school-based alcohol use control programs to pare in-school-youths' drinking. However, no study has credibly investigated the disparity in the pervasiveness of drinking between public and private school students. This study aimed to examine and compare the alcohol use prevalence between public and private secondary school students in Liberia.

Methods: A quantitative method using a self-administered questionnaire to explore and interpret the prevalence of alcohol use between two independent populations, public (220) and private (180) secondary school students, was adopted. Data were analyzed using SPSS for Windows, Version 21.0 (IBM Corp., Armonk, NY.

Results: Drinking was a common phenomenon among students; however, the prevalence was significantly higher in public schools (71.8%) compared to private schools (32.8%). In a chi-square (X2) test for independence in an eventuality table, there is a non-significant association between alcohol use and "age group (p=0.406)," "gender (p=0.073)," and "grade levels (p=0.073) in public schools. However, in private schools, there is a significant association between alcohol use and "age group (p=0.000)," "gender (p=0.000)," and "grade levels (p=0.000).

Conclusions: A comprehensive intervention strategy that encompasses students' social environment, including the community, school, and family, is needed to reduce and prevent students' drinking in Liberia.

Keywords: School-based Alcohol Use Control Program, Prevalence, Public and Private Schools, Student Alcohol Consumption, Liberia, Lofa County

1. INTRODUCTION

Alcohol is a frequently used psychoactive drug of choice around the world. It serves contrasting purposes, including traditional, social incentives, and sacred observance in different regions. For most users, the social and pleasurable benefits of alcohol are the

probable reasons for drinking. However, drinking alcohol constitutes socioeconomic and public health concerns as it is a causal determinant of many diseases and injury burdens with agonizing results on individuals, families, and societies [1, 2, 3]

Most noble communities coil socioeconomic and health-related consequences of alcohol consumption in social norms and moral principles. Some accede to cautious drinking, while others censor alcohol use, yet most alcohol users disregard these standards and policies; and engage in disruptive drinking. Hence, the repercussions include increased vehicle and disease-related fatalities, domestic violence, crime, and sexual malpractices, which sometimes lead to undesirable pregnancy and sexually transmittable infections, including HIV/AIDS [4]. When used disparagingly, alcohol explicitly or incidentally triggers more than 200 different health conditions [5],contributing to the increased global death rate, approximately 5.3% annually [6, 7], and presumably 8% of disability-adjusted life years (DALYs) among youth aged 10-24 [8, 9].

Globally, alcohol consumption is highly pervasive, with many societies struggling with teenage and young adulthood drinking issues [10],as more than 26.5% of the global population; aged 15–19 drink alcohol [3].Several empirical investigations illustrate that most alcohol users end up with problematic drinking [11], with other mutable disease outcomes ranging from acute to chronic, including brain damage, liver disease, heart disease, and high blood pressure [2].
Among the different alcohol use populations, adolescents' bear surpassing risks of alcohol use [8] and suffer from mental health problems and disorders more than adults [12]. Besides, alcohol use plausibly breed illicit substance use among youngsters [9]; it incites grave disquiet, including heavy episodic drinking (HED), bullying, drunk driving, risky sexual behaviors, and many other social and economic issues [10]. Alcohol-violence connection is highly debatable; however, alcohol consumption influences fluctuations in brain functions leading to ill-temper and impropriety [13]. It amplifies malicious behaviors and positions young people as victims or culprits of violence [8, 14]; it sparks intended and accidental injuries like road traffic motor accidents [15, 16].More worrying about drinking among adolescents now is the involvement of students in different regions of the world. In the African region, more studies on alcohol and youngsters have focused on students, with nearly all reporting an exponential increase in the inappropriate routine use of alcohol among students [3, 17].

Prior to the inception of the 14 years of civil conflict in Liberia, most communities culturally believed that drinking alcohol was for mature adults. Drinking was a rare adventure among youths, especially students, except for major celebrations, including Christmas, Independence Day celebrations, and traditional bush schools (Poro and Sande) graduation. Societal standards by then vilified any adolescent engaged in alcohol use. However, since the elapsed of the war, youth drinking in Liberia has plagued many communities, including learning institutions. For most of those involved, the pleasurable benefits of drinking outweigh the alcohol-related risks. This fact is consistent with Brandao's reports [18].

Alcohol use practice among youngsters in Liberia has had an array of damaging results ranging from economic, physical, moral, accidents, and even death. These results impact young people in many ways, with consequential adverse effects on academic performance [19] and health [2]. Several factors might influence drinking behavior; however, students are more likely to use alcohol to withstand social anxiety and public speaking [20].

Varied snags, including psychological factors, are linked to low grades; on the other hand, drinking affects academic performance in school [21]. As Liberia grapples with a fragile educational system, academic regression among students remains high nationwide, with

recurrent mass failure among secondary students in the West African Senior School Certificate Examination (WASSCE) [22]. It is a known fact that some private and public schools across Liberia have established school-based alcohol prevention programs to prevent and control student alcohol consumption. School-based involvement programs represent an immediate prospect to avert and lessen alcohol use among youth [23]. Despite these programs, communities across Liberia are rife with student drinking and indiscipline reports [24, 25]. School-based interventions are most efficacious when delivered as a primary prevention program [26]; with the most dynamic effects found in youth who have not hitherto begun to experiment with alcohol [27].

Moreover, 51% of alcohol users among secondary school students in Liberia are public school students [25]. However, no study has credibly explored the prevalence and effectiveness of alcohol use control programs, whereas there is an increased bedlam among students who drink [28]. This study aimed to understand the difference in the prevalence of alcohol use between the two school systems (public and private) so that one may ratiocinate and reliably infer the ability of school-based programs to curb alcohol use among in-school youths in Liberia.

2. METHODOLOGY

2.1. Study Design and Population

The study adopted a cross-sectional research design to collect data from secondary school student's ages (10 to 29 years) in five schools in the Voinjama and Foyah districts of Lofa County, Liberia.Logical convenience and whereas these districts equally represented the entire county regarding the question under study inspired acquiescence for their selection. As for the selection of schools, the study favored a non-probability sampling design where participants are nominated based on their convenient accessibility and proximity to the researcher; thus, schools in the Voinjama and Foya districts were easily accessible and convenient for the study. Besides, the schools in these regions were equitably illustrative of the respective county about the question under investigation.

Five secondary schools from the two districts, Foyah (n = 2 public schools) and Voinjama (n = 3; 1 public and 2 private schools) were randomly selected for the study. The selected public schools were Voinjama Multilateral High School (VMHS), Foyah Central High School (FCHS), and Tamba Taylor Public School (TTPS). The private schools were Voinjama Free Pentecostal Mission High School (VFPMHS) and Voinjama St. Joseph Catholic Mission High School (VSJCMHS). The author employed a stratified sampling procedure to separate the study participants into homogeneous subclasses (strata) and drew a random sample from each stratum for data acquisition.

Each of the five selected schools was sub-classed according to the grade level of the respondents. To have both boys and girls at all levels in the schools represented, t~~. T~~he author used a Grade Level Stratification (GLS) for gender. The levels were 7th, 8th, 9th, 10th, 11th, and 12th grades. Depending on the class size (i.e., number of students per class), a sample between 10 and 25 respondents was selected randomly from each grade level.

The sample size determination was based on a previously reported alcohol consumption prevalence of 50% among high school students [20]. The research recruited participants from two independent populations (public and private school students). The required sample size was calculated using the Daniel formula, *"WITHOUT finite population correction"* [29].

The study collected survey data from 400 respondents, public schools (n=220) and private schools (n=180), to determine the prevalence of alcohol consumption among secondary students.

2.2. Data Collection

In Lofa County, debates on alcohol use among adolescents, especially girls, are culturally reprehensible. Therefore, the data collection tool was an anonymous self-administered questionnaire. The questions were closed-format questions with optional answers. The questionnaire consisted of five parts, including socio-demographic characteristics, alcohol accessibility, perception of alcohol use policies and programs, knowledge about alcohol use-associated risks, and pre-disposition to alcohol use-related risks.
Additionally, two data collectors were recruited and trained to assist the author. During data collection, one of the data collectors briefed the respondents on the questionnaire. The venue selected to fill up the inquiry was the classroom.

2.3. Measurement of variables

The study variables were assumed principally using the Global School-based Student Health Survey (GSHS). The GSHS is a self-administered questionnaire used to provide data on health behaviors and protective factors among students worldwide [30].

2.3.1. Dependent Variables

The dependent variable was alcohol use. This variable was recorded and analyzed as a discrete variable. A respondent who had ever tried alcohol use at least once and had stopped ~~prior to~~before the time of the survey was considered a non-alcohol user; therefore, such a participant was not in the prevalence count. However, anyone who was currently using alcohol during the time of the study was considered a user of alcohol.

Comment [m1]: How do you specify the word currently? Is it for the past 1 month or 3 months or something else?

2.3.2. Independent Variables

Aside from the dependent variable, all other variables, including social demographic variables, were considered independent variables. They were categorically arranged and analyzed as binary, nominal, or ordinal variables.

2.3.3. Socio-demographic variables

Age, gender, grade level, club affiliation, and type of familial guidance were accumulated using standard survey items.

2.4. Data Analysis

A test for the difference between public and private secondary school student's samples regarding alcohol use prevalence and the relationship between explanatory variables was done using a chi-square (x2) test for categorical analysis. Additionally, a z-test~~)~~ to compare and make inferences regarding the prevalence of alcohol use between private and public secondary schools. A logistic regression was applied to determine the relation between such factors as risk awareness, exposure, and alcohol-influenced-related sex. A p-value ≤ 0.05 was considered to be statistically significant.

3. RESULT

3.1. Sociodemographic Characteristics

The sociodemographic characteristics of the study participants were nearly similar. In the two school systems, 400 students completed the survey questionnaires, with males comparably the dominant participants over females. In the public schools (n = 220; 64% male), whereas in the private schools (n = 180; 58% male). The age of the participants ranged between 10 and 29 years. The most frequent age of participants in the public schools was 22 to 25 years, whereas in the private schools was 18 to 21. The median age was independently 19.0 and 19.7 years in the public and private schools. A bulk of the respondents in the public schools (70.8%, 220) compared to private schools (32.8%, 180) confirmed using alcohol at least once. Table 1 below presents summary of the sociodemographic characteristics of the study participants. Proportionally, male students compared to their counterparts (female students) were the dominant alcohol users in all schools (figure 1).

3.2. Accessibility of alcohol and age at first time drinking

Students who drank in both public and private schools reported having easy access to alcohol from multiple social and commercial sources, including farms (48.9%; 33.9%), homes (20%; 24.1%), shops (6.7%; 11.6%), schools (5.0%; 4.5%), and other sources (8.3%;10.7%) for public and private school students, respectively. In both school systems, male students were more likely to use alcohol compared to their female counterparts Figure 1).

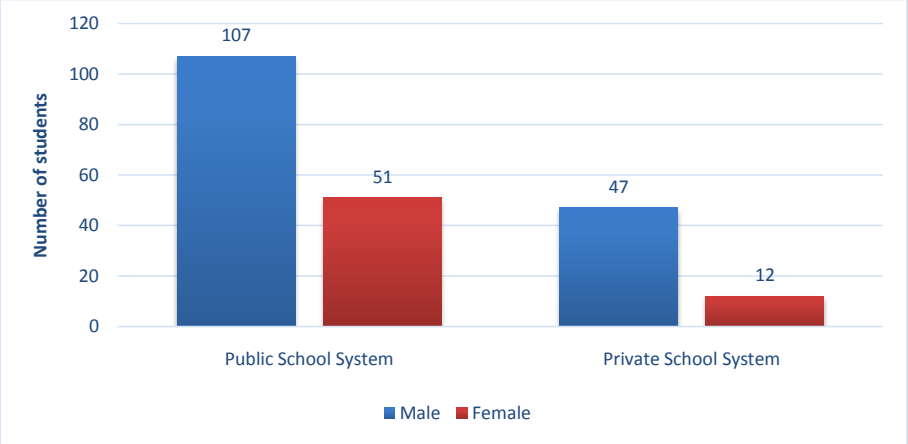

Figure 1: Alcohol user per gender

3.2.1. Age at first time drinking

On the whole, in the two school systems, the majority of students who confirmed drinking alcohol at least once did so at the age range of 14 - 17 years (57.8%; 49.1%) and 10 -13 years (23.3%; 22.3%) proportionally for public and private schools.

3.2.2. Social and commercial sources of alcohol for first time user

Students who drank in both public and private schools reported having easy access to alcohol from multiple social and commercial sources, including farms (48.9%; 33.9%), homes (20%; 24.1%), shops (6.7%; 11.6%), schools (5.0%; 4.5%), and other sources (8.3%;10.7%) for public and private school students, respectively.

3.2.3. Reasons for drinking

Students who drank in both public and private schools reported several influencing factors or reasons for drinking. Peer pressure was the common reason for drinking alcohol (39.2%; 45.8%), followed by 'It makes me smart' (19.0%; 22.0%) of public and private school students, respectively. Also, some students thought that alcohol helped make students brainy, active, and relaxed.

3.2.4. Drinking frequency

Current drinkers among the students consume alcohol at different frequency. Some drink occasionally, whereas others drink daily (Figure 2).

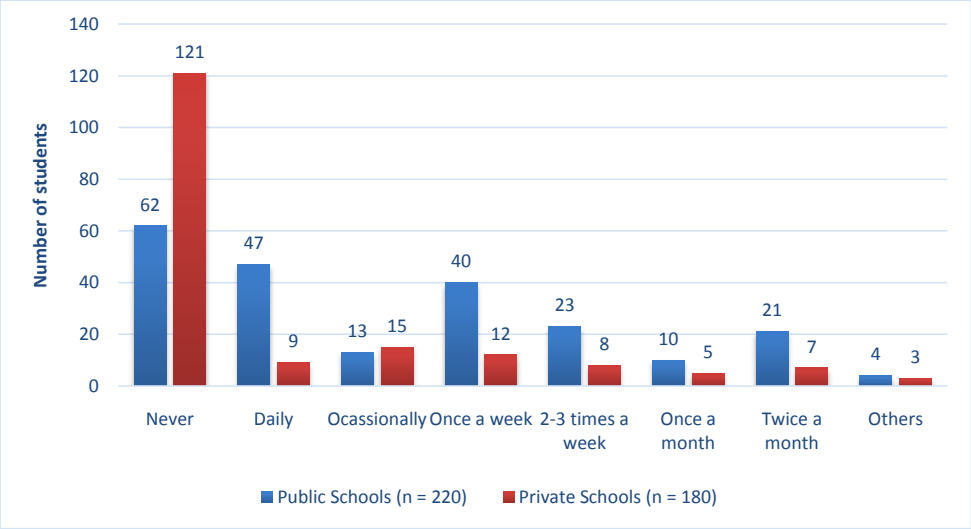

Figure 2: Drinking Frequency

3.2.5. Awareness of school-based alcohol use control and prevention program

The study found that among the overall respondents (n = 400), 97% of private school students, compared to 87% of public school students, were aware of school-based alcohol use control and prevention programs.

3.3. Difference in alcohol use prevalence between public and private schools

Using SPSS for Windows, Version 21.0 (IBM Corp., Armonk, NY), the study performed a z-test for hypothesis statistical testing for two population proportions under the hypothesized assumption that the null hypothesis (H0: P1 – P2 =0) is realistic. The study reported responses from 400 students who responded to the question: "Do you currently drink alcohol?" In the public schools (n=220) and private schools (n=180), 158 and 59 students reported yes, respectively. At a 95% confidence interval, where α = 0.05 level, concerning alcohol use, there is sufficient evidence to conclude a statistically significant difference between the two populations – public and private school students, with P<0.001. ~~We, t~~Therefore, ~~reject~~ the null hypothesis was rejected.

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Table 1: Participants Social-demographic characteristics

Factors	Public Schools (N=220)	Private Schools (N=180)
Age		
Mean	19.1	19.5
Standard deviation	4.6	5.6
Range	20.0	20.0
	Frequency (%)	**Frequency (%)**
Age Category		
10 – 13	27 (12)	28 (16)
14 – 17	63 (29)	36 (20)
18 – 21	54 (25)	48 (27)
22 – 25	58 (26)	43 (24)
26 - 29	18 (8)	25 (14)
Gender		
Male	141 (64)	105 (58)
Female	79 (36)	75 (42)
Class level		
7th	29 (13)	23 (13)
8th	29 (13)	24 (13)
9th	46 (21)	33 (18)
10th	51 (23)	42 (23)
11th	43 (20)	37 (21)
12th	22 (10)	21 (12)
Member of Anti-drug Club		
Yes	116 (53)	88 (49)
No	104 (47)	92 (51)
With whom do you live?		
Self	51 (23)	25 (14)
Parents (Mum & Dad)	85 (39)	100 (55)
Single Mum	53 (24)	27 (15)
Single Dad	15 (7)	18 (10)

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Others			16 (7)			10 (6)		

Table 2: Factors Associated with Alcohol Use among Students in the Public and Private Schools

Variables	Public School				Private School			
	Alcohol Use				Alcohol Use			
	Yes	No	X^2	p-value	Yes	No	X^2	p-value
Agegroup (years)								
10 - 13	22	5			2	26		
14 - 17	48	15			4	32		
18 - 21	39	15	4.00	0.406	17	31	32.79	**0.000**
22 - 25	38	20			19	24		
26 - 29	11	7			17	8		
Gender								
Male	107	34	3.20	0.073	47	58	16.43	**0.000**
Female	51	28			12	63		
Grade level								
7^{th}	22	7			0	23		
8^{th}	23	6			3	21		
9^{th}	37	9			13	20		
10^{th}	32	19	5.80	0.073	16	26	22.95	**0.000**
11^{th}	28	15			19	18		
12th	16	6			8	13		
Member of school-based anti-drug club								
Yes	11	2	1.12	0.290	72	44	11.52	**0.00**
No	147	60			86	18		
Student's guardian								
Self	28	23			16	9		
Parents (mum & dad)	52	33			19	81		
Single mum	51	2	31.15	**0.000**	10	17	24.37	**0.00**
Single dad	13	2			8	10		
Others	14	2			6	4		
Age of parent/guardian (years)								
30 and below	1	7			0	10		
31 - 40	30	23			2	30		
41 - 50	76	27			18	48		
51 - 60	17	2	30.88	**0.000**	9	32	89.63	**0.00**
61 - 70	12	2			12	1		
Above70	22	1			18	0		
Knowledge about school policy on alcohol use								
Yes	113	58	12.48	**0.000**	56	112	0.35	0.55
No	45	4			3	9		

Knowledge about risks associated with drinking								
Yes	37	46	48.86	**0.000**	50	118	10.40	**0.00**
No	121	16			9	3		

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4. DISCUSSION

The research question for this study had arisen from different academic writings explored before the survey, which expounded on the historical development and pattern of alcohol consumption among students in Liberia. The study sought to examine school-based alcohol use control and prevention programs in secondary schools by comparing and substantiating the prevalence of alcohol use between public and private school students in Liberia. The subjects recruited for the study were secondary school students aged 10 to 29 years. The reported findings epitomize a soaring onus of alcohol use among high school students in Liberia, with a wide-ranging steady accretion in prevalence, which is consistent with other studies in West Africa [25, 31, and 32].

The need for effective and efficient school-based alcohol use and control programs in Liberian schools has become more pertinent, particularly as many students in secondary schools get exposed to drinking day in and day out. The prevalence of drinking among students recorded in this study is nearly two times higher in public schools (71.8%) than in private schools (32.8%). Given that there are school-based alcohol use control programs in both public and private schools, the intellectual reasoning behind the discrepancy in the prevalence of students drinking between public and private schools is apparently subtle (and far beyond the scope of this study). Family history, culture, religious prohibitions, the social order in the schools, and the socioeconomic position of students' parents, among many, could be some indiscernible acumens associated with the towering drinking prevalence in public secondary schools.

The study established that most parents of public school students were distillers and vintners of locally-made liquor and wine. Consequently, public school students living with their parents had more exposure to alcohol than their counterparts in private schools. While teenagers with proximity to family members with a history of alcohol risk engaging in drinking [33, 34, 35], (48% and 24%) of alcohol users (public school students) expressed accessing alcohol through their parents at home and on the farm, respectively. Alternatively, most parents of private school students were religious, whereas most of these religions prohibit drinking; hence, private school students had limited alcohol exposure through their parents. Thus, the majority of private school students (42%) likely access alcohol from shops/bars.

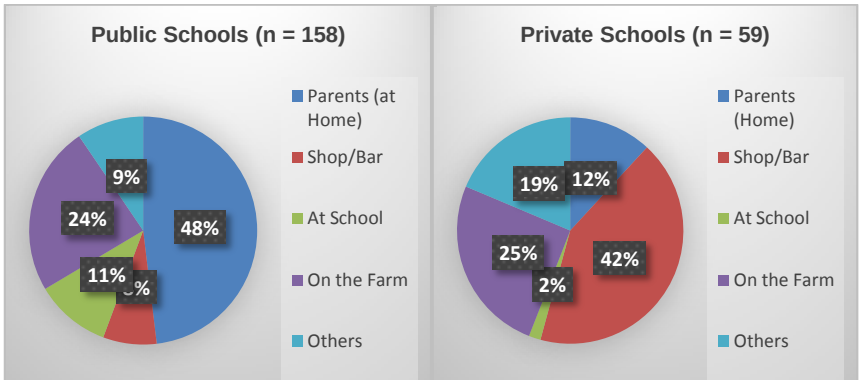

Figure 3: Proportion of students per place of first time drinking

Under the assumption that the null hypothesis (H: P1 – P2 =0) is true, a test statistic, where the sample proportion ($\hat{p}$) was computed to determine whether the difference between the two population proportions and the hypothesized claim is significant. At a 95% confidence interval, it was assumed that the null hypothesis was correct. However, there is sufficient evidence of a statistically significant difference between alcohol users in public and private secondary school students, respectively, with p<0.0001. We, therefore, reject the null hypothesis.

Comment [m4]: Since it is exactly the same as that written in the result section, it could be omit to avoid repetition.

Table 3: Z-test to compare two proportion

Inputs			
	Public School Sample	**Private School Sample**	**Difference**
Sample proportion	0.718	0.328	
Sample size	220	180	
Significance level	0.05		
1- or 2-tailed test	2-tailed		
Results			
Sample proportion	0.718	0.328	0.39
95% CI (asymptotic)	0.6585 - 0.7775	0.2594 - 0.3966	0.2919 - 0.4881
z – value	7.8		
p - value	<0.0001		
Interpretation	Statistically significant, reject null hypothesis that sample proportions are equal		

Comment [m5]: This should be added in the result section rather than in discussion. Its significance could be iterated here instead.

This study circumstantiated that students' sentiments about existing alcohol use control policies and programs in various schools differ in the implementation procedures. The majority of public school students viewed the alcohol use control policy in their schools as weakly enforced. Regardless, their mates acquiesced that private schools reliably implemented the alcohol use control policy to reduce alcohol consumption among students.
The drinking frequency was relatively higher among males than females in both school systems. This sequence of gender disproportion regarding alcohol use among teenagers has been observed in a prior study [36]. It should be noted also that the age group 14 to 17 years was the dominant user of alcohol in public schools, while 18 to 21 years in private schools was the dominant user of alcohol.
With the help of a chi-square (X2) test for independence in an eventuality table, the study discovered that there is a non-significant association between alcohol use and "age group (p=0.406)," "gender (p=0.073)," and "grade levels (p=0.073) in public schools. However, in private schools, there is a significant association between alcohol use and "age group (p=0.000)," "gender (p=0.000)," and "grade levels (p=0.000).

Comment [m6]: If possible, describe the possibilities for it being significant here since it is missing and only result has been given attention.

LIMITATIONS

This study relied on statements given by students indiscriminately selected from five (three public and two private) sample schools. Considering the number of schools and student size in the country, the sample schools and study sample size might not have been a fair representation of the general population from which one can conclude reasoning.

Participants might have given biased responses because alcohol use is a delicate issue in Liberia. Given these factors, it is essential to note that the study findings are dependable; however, the generalizability and transferability depend solely on personal judgment.

Comment [m7]: Recall bias regarding the pattern of alcohol use could be added too.

5. CONCLUSION

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CONSENT

Comment [m9]: Ethical considerations are to be added. Things like approval from concerned authorities, confidentiality, etc.

The author declares that written informed consents were obtained from all participants.

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