



Assessment of Alcohol Use Control Programs in Secondary Schools in Lofa County, Liberia

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Introduction: As one of the leading risk factors for disease burdens in the modern era, alcohol consumption exacerbates health-related repercussions with likely threatening 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 help reduce in-school-youths' drinking. However, no study has credibly investigated the disparity in the prevalence 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. The study was done in Lofa County among students under age 14 to age 29 years. MS Excel 2016 (Office 365) was used for a two-proportion z-test analysis between two population proportions of alcohol users (public and private school students), while IBM 21.0 SPSS was used to perform chi-square tests of independence to test the association between categorical variables.

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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 (X^2) 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: Several factors, as well as sociodemographic characteristics, limited knowledge of alcohol use policy, and students' proximity to family members who are distillers and vintners, especially in public schools, influence the high rate of alcohol use among students. Therefore, 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, student alcohol consumption; in-school youth; secondary schools; 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 forbid 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 [4,5]. When used disparagingly, alcohol explicitly or incidentally triggers more than 200 different health conditions, contributing to the increased global death rate, approximately 5.3% annually [3], and presumably 8% of disability-adjusted life years (DALYs) among youth aged 10-24 [6,7].

Globally, alcohol consumption is highly prevalent, with many societies struggling with teenage and young adulthood drinking issues [8,9], 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 [10], with other erratic disease outcomes ranging from acute to chronic,

including brain damage, liver disease, heart disease, and high blood pressure [11,12].

Among the different alcohol use populations, adolescents' bear surpassing risks of alcohol use [13] and suffer from mental health problems and disorders more than adults [3]. Besides, alcohol use probably breed illicit substance use among youngsters [2,3,14]; it incites grave anxiety, including heavy episodic drinking (HED), bullying, drunk driving, risky sexual behaviors, and many other social and economic issues [1, 15]. Alcohol-violence connection is highly debatable; however, alcohol consumption influences fluctuations in brain functions leading to ill-temper and impropriety. It amplifies malicious behaviors and positions young people as victims or culprits of violence; it sparks intended and accidental injuries like road traffic motor accidents [16,17]. 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 [18].

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 social benefits of

drinking outweigh the alcohol-related risks. This fact is consistent with several reports [19,20].

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 [21] and health [2]. Several factors might influence drinking behavior; however, students are more likely to use alcohol to withstand social anxiety and public speaking [20,22].

Varied barriers, 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) [23]. 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 education for alcohol use prevention represents an immediate prospect to avert and lessen alcohol use among youth [24]. Despite these programs, communities across Liberia are rife with student drinking and indiscipline reports. School-based interventions are most effective when delivered as a primary prevention program [25]; with the most dynamic effects found in youth who have not hitherto begun to experiment with alcohol [26].

Moreover, 51% of alcohol users among secondary school students in Liberia are public school students [27]. 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 [27]. 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 (< 14 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 subclassed according to the grade level of the respondents. To have both boys and girls at all levels in the schools represented the 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 [27]. 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". 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 [28].

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 before the time of the survey was considered a non-alcohol user; therefore, such a participant was not in the prevalence count. However, any participant consuming alcohol in the preceding one month was considered a user of alcohol [29].

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 [30,31].

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 (χ^2) 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. RESULTS

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 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 (Fig. 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 Fig. 1).

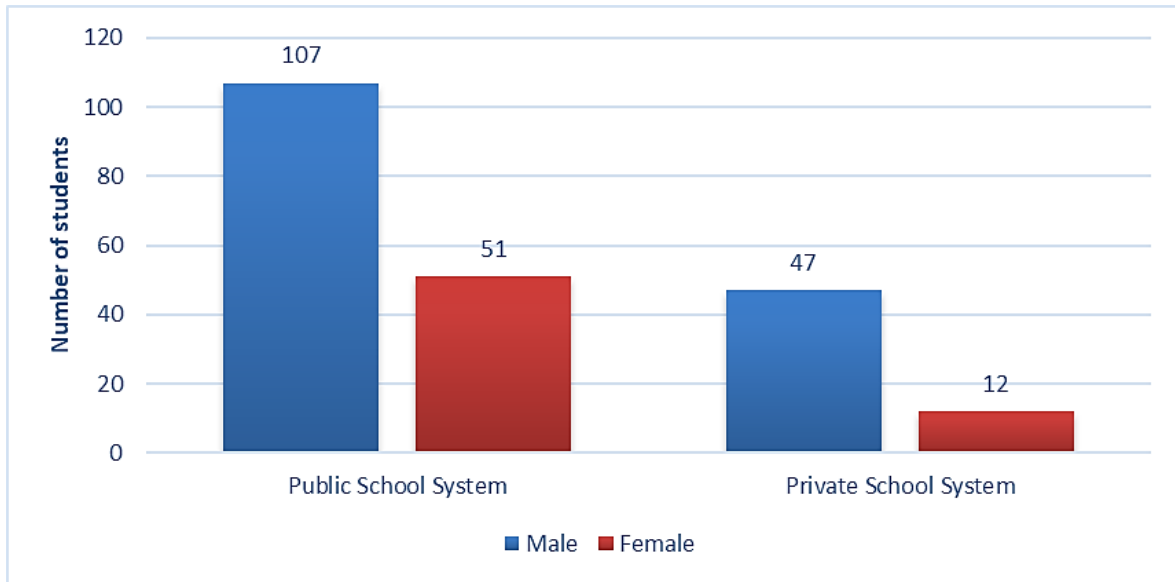


Fig. 1. Alcohol user per gender

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	
	Percentage	Total	Percentage	Total
Age Category				
< 14	12	27	16	28
14 – 17	29	63	20	36
18 – 21	25	54	27	48
22 – 25	26	58	24	43
26 - 29	8	18	14	25
Gender				
Male	64	141	58	105
Female	36	79	42	75
Class level				
7 th	13	29	13	23
8 th	13	29	13	24
9 th	21	46	18	33
10 th	23	51	23	42
11 th	20	43	21	21
12 th	10	22	21	37
Member of Anti-drug Club				
Yes	53	116	49	88
No	47	104	51	92
With whom do you live?				
Self	23	51	14	25
Parents (Mum & Dad)	39	85	55	100
Single Mum	24	53	15	27
Single Dad	7	15	10	18
Others	7	16	6	10

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 (Fig. 2).

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 ($H_0: P_1 - P_2$

=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 $\alpha = 0.05$ level, there is sufficient evidence to conclude a statistically significant difference in alcohol consumption between the two populations – public and private school students, with $P < 0.001$. Therefore, the null hypothesis was rejected.

3.4 Factors Associated with Alcohol Use

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 [32,33]. It should also be noted that participants in the age range of 14 to 17 years were the dominant users of alcohol in public schools, while 18 to 21 years in private schools were the dominant users of alcohol. However, in private schools, there is a significant association between alcohol use and "age group," "gender," and "grade levels." Participants in the age range of 18 to 29 years were more likely to use alcohol than participants below the age of 18 years ($X^2 = 32.9$ [95% CI] $p=0.000$), while male students were more likely to consume alcohol than female students ($X^2 = 16.43$ [95% CI]. Students in grades 9, 10, and 11 were more likely to use alcohol than those in grades 12, 8, and 7 ($X^2 = 22.9$ [95% CI] $p=0.000$).

With the help of a chi-square (X^2) 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," "gender," and "grade levels." Participants in the age range of 18 to 21, 22 to 25, and 26 to 29 years were more likely to use alcohol than participants below the age of 14 and 14 to 17 years ($X^2 = 32.9$ [95% CI] $p=0.000$), while male students were more likely to consume alcohol than female students ($X^2 = 16.43$ [95% CI]. Students in grades 9, 10, and 11 were more likely to use alcohol than those in grades 12, 8, and 7 ($X^2 = 22.9$ [95% CI] $p=0.000$).

Table 2. Factors associated with alcohol use among public and private schools students

Variables	Public School		X ²	p-value	Private School		X ²	p-value
	Alcohol Use				Alcohol Use			
	Yes	No			Yes	No		
Age group (years)								
< 14	22	5	4.00	0.406	2	26	32.79	0.000
14 - 17	48	15			4	32		
18 - 21	39	15			17	31		
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	5.80	0.073	0	23	22.95	0.000
8 th	23	6			3	21		
9 th	37	9			13	20		
10 th	32	19			16	26		
11 th	28	15			19	18		
12 th	16	6			8	13		
Member of school-based anti-drug club								
Yes	11	2	1.12	0.290	47	98	0.83	0.045
No	147	60			12	23		
Student's guardian								
Self	28	23	31.1	0.000	16	9	24.37	0.000
Parents (mum & dad)	52	33	5		19	81		
Single mum	51	2			10	17		
Single dad	13	2			8	10		
Others	14	2			6	4		
Age of parent/guardian (years)								
≤ 30	1	7	30.8	0.000	0	10	89.63	0.000
31 - 40	30	23	8		2	30		
41 - 50	76	27			18	48		
51 - 60	17	2			9	32		
61 – 70	12	2			12	1		
>70	22	1			18	0		
Knowledge about school policy on alcohol use								
Yes	45	58	75.7	0.000	56	112	0.35	0.552
No	113	4	1		3	9		
Knowledge about risks associated with drinking								
Yes	37	46	48.8	0.000	50	118	10.40	0.001
No	121	16	6		9	3		

On the other hand, public schools had fewer memberships (93%) than private schools (20%) to school-based anti-drug clubs; participants who had no membership in school-based anti-drug clubs were more likely to consume alcohol than those who had a membership in school-based anti-drug clubs. In public schools, students living with "both parents (mom & dad)" and "single mom" were more likely to use alcohol than those living "on their own," "single dad," and "others" ($X^2 = 31.2$ [95% CI] $p=0.000$), while in public

schools, students living with "both parents (mom & dad)" and "on their own" were more likely to use alcohol than the rest ($X^2 = 24.4$ [95% CI] $p=0.000$). Also, 72% of alcohol users in public schools and 5.1% of alcohol users in private schools had no knowledge of school policy on alcohol use in their schools. Similarly, 77% of alcohol users in public schools and 15.3% of alcohol users in private schools did not know alcohol use-associated risks.

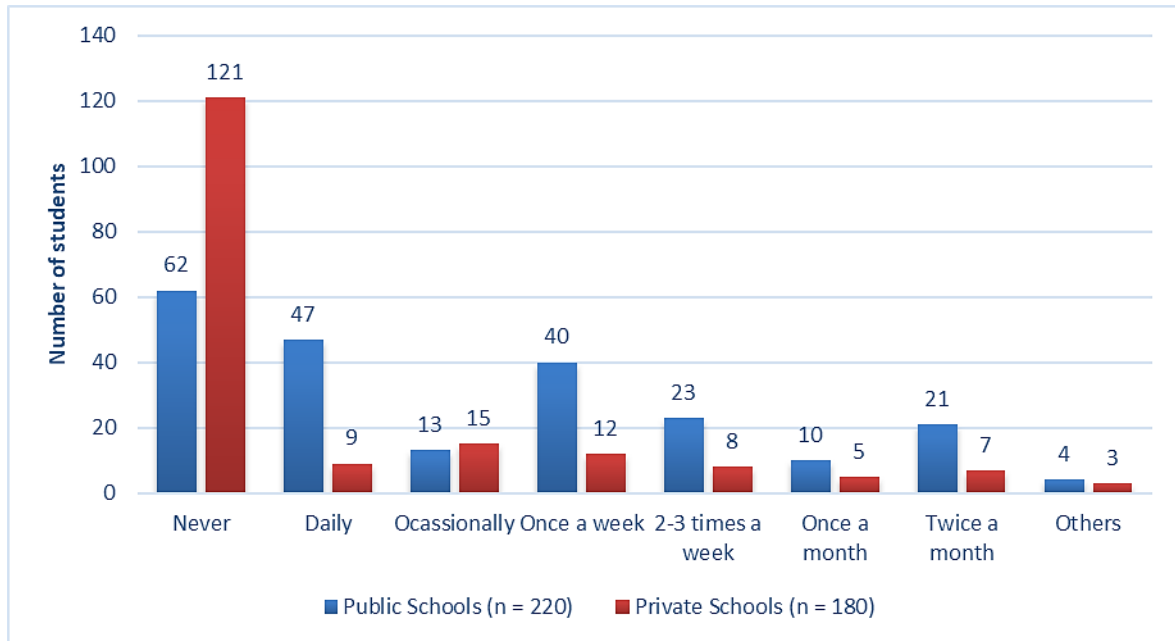


Fig. 2. Drinking frequency

Table 3. Z-test to compare two proportion

	Public School Sample	Private School Sample	Difference
Sample proportion	0.718	0.328	
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 -
z - value	7.8		0.4881
p - value	<0.0001		
Interpretation	Statistically significant, reject null hypothesis that sample proportions are equal		

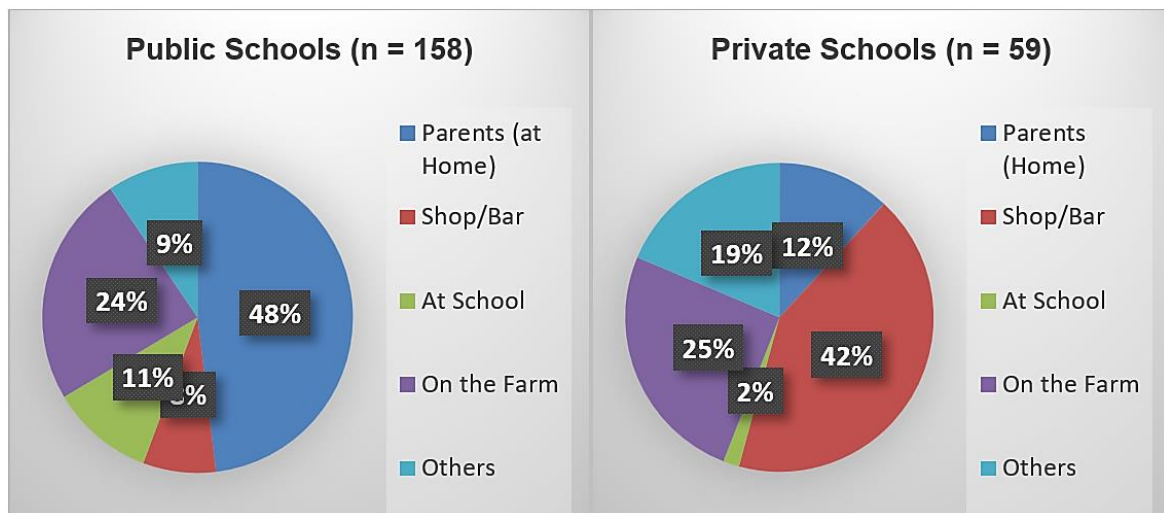


Fig. 3. Proportion of students per place of first time drinking

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 [27, 29, and 30].

The need for more efficient school-based alcohol use and control programs in Liberian schools has become more relevant, especially as many secondary school students are being 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 [31], (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.

This study confirmed 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 concur that private schools reliably implemented the alcohol use control policy to reduce alcohol consumption among students. Students' drinking varies extensively between public and private schools. This variation was affected by several factors, including sociodemographics, such as age, gender, and class level; students' knowledge about school policy on alcohol and alcohol use-associated risks. In all schools, males, as compared to females, were likely the leading users of alcohol. One influencing factor responsible for this gender disparity regarding drinking is that alcohol use is culturally considered a male-dominated activity in Liberia.

5. 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.

6. CONCLUSION

This research, which emerged from an opinion that alcohol use among youths in Liberia is high, has established a better insight into the scope and extent to which school-based programs prevent and reduce alcohol use among in-school youth in Liberia. The study has examined the issue of alcohol use prevalence among secondary school students in public and private schools in Lofa County. As per the findings, the high rate of alcohol use among students in public schools compared to their mates in private schools is a cause for concern. Inadequate knowledge about alcohol use policy and risks associated with drinking, students' proximity to parents who were distillers and vintners, and the

poor socioeconomic position of students' parents were factors identified to be significantly linked to the high rate of drinking in the public schools; whereas, religious prohibitions, adequate knowledge about school policy on alcohol use and risks associated with drinking, students' proximity to religious parents with improved socioeconomic positions were factors identified to be associated with the decreased alcohol use among private school students. Thus, with such results, it can be concluded that the alcohol use control programs in privately owned schools are more effective than in publicly owned schools.

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CONSENT

Respondents' written consent has been collected and preserved by the author in compliance with international or university standards.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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