



SOCIO-DEMOGRAPHIC CHARACTERISTICS AND KNOWLEDGE OF ALCOHOL USE BY UNDERGRADUATE MEDICAL STUDENTS IN UNIVERSITY OF LAGOS, NIGERIAⁱ

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Abstract:

Alcohol consumption and abuse among adolescents and young adults have been recognized as significant risk behaviors, increasing the likelihood of health problems, drunk driving, aggression, crimes, unsafe sexual activity, and accidents. The present study is to investigate the socio-demographic characteristics and the knowledge of alcohol use by undergraduate medical students of the University of Lagos, Nigeria. A descriptive cross-sectional study was conducted amongst undergraduate medical students at the College of Medicine, University of Lagos, Lagos, Nigeria, who voluntarily participated in the study and were recruited using a stratified random sampling method after ethical approval and informed consent were obtained. These students were recruited from the second (200 level) to the sixth (600 level) year in the medical programme. Three hundred and fifty carefully structured questionnaires were self-administered and include questions on sociodemographic characteristics and the knowledge of alcohol use by undergraduate medical students. Data analysis of the questionnaires completed by the participants was carried out using appropriate descriptive statistics, Chi-square, and Statistical Package for the Social Sciences (SPSS, v.27.0). Data of the present study indicate that there were statistically significant associations between the level or year of study ($p=0.001$), course of study ($p=0.025$), hall

ⁱ LES CARACTÈRES SOCIO-DÉMOGRAPHIQUES ET LA CONNAISSANCE DES RISQUES D'ALCOOLISME PARMI LES ÉTUDIANTS EN MÉDECIN DE L'UNIVERSITÉ DE LAGOS, NIGERIA

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of residence ($p=0.003$), ethnic groups ($p=0.001$), monthly allowance ($p=0.001$) and alcohol consumption ($p<0.05$), while no significant associations existed in the age, gender, religion, marital status and employment status of the medical students ($p>0.05$). These results suggest that interventions aimed at reducing alcohol consumption among the undergraduate medical students' population should take into account these socio-demographic factors. Alcohol use by these medical students requires preventive measures, screening, counselling, and health care services, to safeguard the health profession and the general populace.

Keywords: socio-demographic characteristics, knowledge, alcohol use, medical students, Nigeria

Résumé :

La consommation d'alcool et l'abus d'alcool parmi les adolescents et jeunes adultes sont reconnus comme des risques qui touchent aux comportements humains ; à savoir : aux niveaux de santé, d'alcoolisme au volant, d'agression, des crimes, d'acte sexuel sans préservatif, et des accidents. Cette étude est une enquête des caractères socio-démographiques et la connaissance de risque d'alcoolisme parmi les étudiants en médecine de l'université de Lagos, Nigeria ; et c'est mené par consentement avec des sujets recrutés en faisant usage d'échantillonnage stratifié suivant un tirage au sort. Parmi ces sujets sont d'étudiants en deuxième, troisième, quatrième, cinquième et sixième année. Il y a eu trois cent cinquante copies de questionnaire bien structuré soumis aux sujets de façon personnelle et libre pour recueillir des réponses qui portent sur leur connaissance des risques d'alcoolisme et compte tenu de leur stratification démographique. Ensuite, il y a eu une analyse des données à partir des réponses fournies faisant usage de chi-carré, et SPSS version 27.0. Les résultats indiquent qu'il y a un lien étroit très significatif entre l'année d'étude ($p=0.0001$), la discipline médicale ($p=0.0025$), foyer de résidence ($p=0.003$), groupe ethnique ($p=0.0001$), l'argent de poche disponible à l'étudiant ($p=0.0001$) et consommation d'alcool ($p=0.003$). Or, aucun lien étroit significatif n'existe entre l'alcoolisme et l'âge des sujets, genre, religion, état civil et le travail engagé par ces sujets. Ainsi, ces résultats proposent des interventions qui doivent viser la réduction de consommation d'alcool parmi les étudiants en médecine en tenant compte de ces facteurs socio-démographiques. Alors, des mesures préventives s'avèrent nécessaire par les moyens de dépistages, conseil, visite médicale, en vu de protéger la profession de santé et la population entière.

Mots-clés : caractères socio-démographiques, consommation et connaissance de risque d'alcoolisme, étudiants en médecine, Nigeria

1. Introduction

The use of psychoactive drugs, such as alcohol, has become a global concern and public health priority, with adverse effects on the intellectual, social, and economic development of undergraduate medical students and society (Johnson *et al.*, 2017; Jatau *et al.*, 2021). More than 200 illnesses, injuries, and other health concerns are associated with alcohol intake (Gignon *et al.*, 2015). Alcohol acts as a sedative and depressant for the central nervous system.

According to the World Health Organization (WHO), alcohol is the most dangerous carcinogen, with no amount of intake deemed safe. Alcohol is one of the most commonly used recreational substances in the world, with around 63% of all humans abusing it (Aresi *et al.*, 2016; WHO, 2022). Drinking alcohol raises the chance of developing mental and behavioral disorders, alcohol dependency, and non-communicable illnesses, such as liver cirrhosis, certain malignancies, and cardiovascular diseases (Gignon *et al.*, 2015; Ebuehi *et al.*, 1999; Ebuehi & Asonye, 2006).

According to the WHO, problematic alcohol use causes 3.3 million fatalities annually, with an estimated toll of substance abuse individuals producing drug use disorders in roughly 15.3 million people globally (Aresi *et al.*, 2016; WHO, 2022; Adeyemo *et al.*, 2011). According to studies, medical students use various medications to improve physical and cognitive performance (Ihezue, 1988; Jatau *et al.*, 2021). Previous researchers have found an alarming proportion of drug abuse among medical students (Johnson *et al.*, 2017; Jatau *et al.*, 2021).

A survey of medical students in Enugu, Nigeria's south-eastern region, found a lifetime prevalence rate of 56%. In 1986 and 1995, two-phase research among medical students in Nigeria reported a prevalence rate of 65% and 85%, respectively (Adeyemo *et al.*, 2011; Essien, 2010; Johnson *et al.*, 2017). Crime, cultism, armed robbery, assault, murder, family breakup and inadequate education, gang formation, and ritual killings are among the social problems related to substance misuse among students (Adekeye *et al.*, 2015; Ajayi & Somefun, 2020; Akande-Sholabi *et al.*, 2019).

It is therefore imperative to determine the socio-demographic characteristics and knowledge of alcohol use by undergraduate medical students of the College of Medicine, University of Lagos (CMUL), Nigeria. Medical students have a significant deal of responsibility and an enviable social standing. There is a paucity of information on the prevalence of alcohol consumption and the variables contributing among undergraduate medical students at the University of Lagos in Nigeria. The findings from this study will be useful to generate national data on alcohol usage and abuse, and related determinants to aid public health policy design and implementation. Therefore, the present study investigated the socio demographic characteristics and knowledge of alcohol use by undergraduate medical students of the University of Lagos, Nigeria.

2. Materials and Methods

The study population or subjects used for the study were registered undergraduate medical students of the College of Medicine, University of Lagos, Idi-araba campus, Lagos, Nigeria, at the 200, 300, 400, 500, and 600 levels in the 2021/2022 academic session, who voluntarily participated in the study. A total of three hundred and fifty medical students from the second (200 level), third (300 level), fourth (400 level), fifth (500 level), and sixth (600 level) year of the College of Medicine, University of Lagos, Nigeria, were recruited into the study. The population of medical students studying medicine & surgery at CMUL in the 2021/2022 academic session, in the 200, 300, 400, 500, and 600 levels were 142, 97, 104, 92, and 117 respectively. The population of the medical students studying dentistry in the 2021/2022 academic session, in the 200, 300, 400, 500, and 600 levels was 41, 17, 10, 24, and 28 respectively. The population of medical students studying medicine & surgery and dentistry in the College from 200 to 600 levels in the 2021/2022 session was 672 (CMUL, 2023).

The research project was a descriptive cross-sectional study using self-administered questionnaires. It was a study in a well-defined population-based sample of young adults (undergraduate medical students) in the College of Medicine, University of Lagos, Nigeria. The medical students comprise medical and dental students from 200 to 600 levels in the 2021/2022 academic session. The study enrolled three hundred and fifty (350) medical students from their preclinical (200-300 levels) and clinical (400-600 levels) years of the program.

The medical students of the 200, 300, 400, 500, and 600 levels were informed about the objectives of the study and invited to voluntarily participate, anonymously and with secrecy concerning the identification of those who accepted to be part of it. Each participant was required to give a written informed consent. Stratified random sampling by balloting method was used to recruit the students for participation in the study. Three hundred and fifty (350) medical students from the 200, 300, 400, 500, and 600 levels received self-administered questionnaires consisting of 82 questions. These students who participated in the study, are involved in structured lectures and clinical sessions delivered at the College of Medicine, University of Lagos / Lagos University Teaching Hospital (LUTH).

The necessary information pertaining to the study and information regarding participation were given to the students at each of these sessions and thereafter were free to choose to participate or not. It was fully anonymous and no incentive was provided. The students were distributed the questionnaire, immediately before clinical sessions/lectures were delivered by the lecturers in the classes for the different medical students in their respective years.

The students were allowed to complete the questionnaires distributed individually at their own pace, before collection. Completed questionnaires were collected using trained two research assistants and kept safe for data analyses by the researcher. Reviewing responses, results, and data captured in the questionnaires were

deemed suitable for data collection as part of this study. This study was conducted between March 1, 2023 and July 31, 2023.

The sample size of the participants to be recruited was calculated using Cochran's formula for determining sample size in a cross-sectional study (Cochran *et al.*, 1977). The study participants, who are medical students in CMUL were recruited based on their voluntary participation and consent, subject to satisfying the inclusion criteria of studying in CMUL. The stratified random sampling technique by balloting was used in the selection of respondents in each of the stratified levels of medical students as shown in Table 3.1. This was done to include subjects from every subgroup, ensuring that it reflects the diversity of the population of the medical students in the college for the 2021/2022 session, which totaled 672.

Using Cochran's formula, the sample size for the study was calculated as 350, without the inclusion of any attrition and when the population is less than 10,000. The use of envelopes was adopted and distributed to all the respondents at each level. Any of the respondents that picked the envelope enclosed with a marked sign (X) was sampled for the study, from respective levels to conform to their stratified sample sizes. For instance, the stratified sample sizes for the 200, 300, 400, 500 and 600 levels were 95, 59, 59, 61 and 76 respectively, as presented in Table 3.1.

Table 3.1: Stratified sampling representation of the medical students used for the study

Level of Medical Students	Medical Student's Population	Stratified Representation Index	Stratified Sample Size
200	183	$183/672 \times 350$	95
300	114	$114/672 \times 350$	59
400	114	$114/672 \times 350$	59
500	116	$116/672 \times 350$	61
600	145	$145/672 \times 350$	76
Total	672		350

The objectives of the study and questionnaires were explained to the medical students before their lectures were delivered in the lecture theatres/halls. The voluntary participants signed the informed consent and were administered the questionnaires.

Participants' eligibility for the study included age, studentship, and willingness to take part in the study. The participants were registered undergraduates of the CMUL, Idi-araba campus, studying medicine & surgery and dentistry, from the second year to the sixth year of their programs and within the age range of 16–30 years in the 2021/2022 academic session.

Students who were not studying these two courses in this institution were excluded from the study. The 100-level medical students who are taught and reside in Akoka main campus, different from the Idi-araba campus, of the University were excluded from the study. The (100 level) first-year students were excluded from the study in order to rule out possible other reasons or causes for drinking alcohol, which might be

specific to first-year students only, for example, adjusting to a new social environment or adapting to the academic load and responsibilities.

A structured self-administered questionnaire was designed and used for the study. The questionnaire consisted of five sections (tagged A, B, C, D & E) and with 82 questions. The questionnaire was used to extract information on socio-demographic characteristics, knowledge, attitude and practice, prevalence, and associated risk factors of alcohol use by undergraduate medical students of the University of Lagos, Nigeria.

The questionnaire consisted of open-ended and closed-question formats. It was pre-validated by administering it to 40 medical students to test for the prevalence and associated factors of alcohol use by undergraduate medical students of the University of Lagos, Nigeria, before using it for the study. These students were not part of the final study but were students in the college.

2.1 Data Analysis

Responses from the questionnaires were coded. The investigator captured and analyzed the data from the completed questionnaires using the appropriate statistical software system. Descriptive statistics, including frequencies and percentages for the categorical variables were calculated. Descriptive statistical analysis was used on responses to closed-ended questions and qualitative analysis was used on responses to open-ended questions. Quantitative variables were expressed as the mean and standard deviation or as percentages.

Statistical analysis was performed using the Statistical Package for the Social Sciences (version 25.0, SPSS) or Epi Info software version 7.2.2.6 (Cochran *et al.*, 1977). The comparison of the means was done by Student's t-test and the proportions were evaluated using the Chi-square test. Differences were considered significant for values of $p < 0.05$.

2.2 Ethical Consideration

Ethical Approvals to conduct this research were obtained from the Health Research Ethical Committee of Lagos University Teaching Hospital (LUTH) (ADM/DSCST/HREC/APP/5661), and the College of Medicine (CMUL) (CMUL/HREC/03/23/1158) after submitting the proposals. Participants received information leaflets and the researcher explained the objectives of the study to them. Confidentiality was assured as no identifying data were recorded. The participants duly completed the informed consent form before questionnaires were distributed to them for completion during a scheduled contact session.

3. Results

The results of the socio-demographic data of the respondents-1 from the study are presented in Table 1.

Table 1: Socio-demographic characteristics of the respondents

Variable	Frequency (n=350)	Percentage (%)
Age in years		
18-21	109	31.1
22-24	105	30.0
25-29	136	38.9
Level of respondents		
200 level	95	27.1
300 level	59	16.9
400 level	59	16.9
500 level	61	17.4
600 level	76	21.7
Gender		
Male	202	57.7
Female	148	42.3
Marital status		
Single	331	94.6
Married	19	5.4
Religion		
Christianity	251	71.7
Islam	95	27.1
Traditional	2	.6
Others	2	.6
Highest level of education		
Secondary	203	58.0
Post-Secondary	147	42.0
Employment status		
Unemployed	259	74.0
Self-employed	83	23.7
Employed	8	2.3

The age brackets of the respondents were as follows; 18-21years (31.1%), 22-24years (30.0%), and 25-29years (38.9%). The mean age of the respondents was 23.46±1.58 years. Most of the respondents were in the 200 level (27.1%), followed by 600 level (21.7%), 500 level (17.4%), lastly 300 level (16.9%) and 400 level (16.9%). The percentage of enrolment of students in the 200 and 600 levels was significantly ($p<0.05$) higher than in the 300, 400, and 500 levels students in the College. The percentage of enrolment of students at the 300, 400, and 500 levels was the lowest, compared to the students at the 200 and 600 levels (Table 1).

The male respondents constituted 57.7%, while the females were 42.3%. The single respondents were 94.6%, while married was 5.4%. The participant's religions were Christianity, 71.7%, Islam, 27.1%, traditional, 0.6%, and while others were 0.6%. The level of education of the respondents comprises secondary, 58.0%, and post-secondary, 42.0%. The unemployed respondents were 74.0%, self-employed were 23.7% and those employed were 2.3% (Table 1).

Table 2: Socio-demographic characteristics of the respondents

Variable	Frequency (n=350)	Percentage (%)
Course of Study		
MBBS	251	71.7
BDS	99	28.3
Hall of residence		
Yes	264	75.4
No	86	24.6
Ethnic group		
Yoruba	207	59.1
Igbo	86	24.6
Hausa	33	9.4
Others	24	6.9
Monthly allowance, in Naira (#)		
Less than 10,000	46	13.1
10,000-20,000	95	27.1
20,000-30,000	91	26.0
30,000-50,000	84	24.0
Above 50,000	34	9.7
Age as start of drinking alcohol		
0-5 years	7	2.0
6-10 years	4	1.1
11-15 years	15	4.3
16-20 years	59	16.9
21-25 years	27	7.7
Reside in the university hostel/outside hostel		
University hostel	207	59.1
Private hostel	65	18.6
Family house/Apartment	62	17.7
No response	16	4.6
Where often drink alcohol		
Hostel	33	9.4
Classroom	33	9.4
Eatery/Canteen	21	6.0
Family residence	30	8.6
Others	17	4.9
No response	216	61.7

The results of the socio-demographic characteristics of the respondents from the study are presented in Table 2. All the respondents for the study were medical students (100.0%) who studying medicine and dentistry in the 2021/2022 academic session at the University of Lagos, Nigeria. The students studying medicine & surgery (MBBS) were 71.7%, while those studying dentistry (BDS) degrees were 28.3%. The respondents staying within the University halls of residence were 75.4%, while those not staying within were 24.6% (Table 2).

The ethnic groups of the respondents were as follows; 'Yoruba', 59.1%, 'Igbo', 24.6%, 'Hausa', 9.4%, and others were 6.9%. The monthly allowances of the respondents were less than N10,000, N10,000-N20,000, N20,000-N30,000, and N30,000-N50,000, respectively followed by 13.1, 27.1, 26.0, 24.0, and 9.7%. The age the respondents that started drinking alcohol were 0-5 (2.0%), 6-10 (1.1%), 11-15 (4.3%), 16-20 (16.9%) and 21-25 years (7.7%), while 68.0% did not respond.

The respondents (8.9%) reported body massage could be used to treat alcohol abuse, 42.6% did not, 24.9% did not know and 23.7% did not respond. The respondents (59.1%) resided in the university hall of residence, 18.6% resided in private hostels, 17.7% stayed in family houses and 4.6% did not respond. The respondents (9.4%) indicated the hostel as the place where they drank alcohol, 9.4% used the eatery/canteen, 6.0% used the family residence, 8.6% used other locations and 4.6% did not respond (Table 2).

The results of the knowledge of alcohol use and soft drinks, palm wine, beer, whiskey/spirit/liquor by the respondents from the study are presented in Table 3. The respondents (55.1%) knew about alcoholic drinks, while 19.7% did not know and 25.1% did not respond. The respondents who knew about types of alcohol, such as soft drinks were 14.0%, fruit juice was 8.9%, palm wine was 16.6%, beer was 12.0 and whiskey/spirit/liquor was 12.0%. The respondents' preferred alcoholic drinks were in this descending order: Trophy (7.7%), others (6.9%), Heineken (5.4%), star (4.0%) Guinness (2.9%), and Guilder (1.4%).

The respondents' preferred local variety liquor/spirits were in this descending order, Seaman (6.0%), Action Bitter (4.3%), others (3.1%), Chelsea (2.9%), Black Wood (2.3%), and Black Horse (2.0%). The respondents understood the classification of alcohol as follows; drug (38.0%), relaxant (26.9%), depressant (13.4%), and pain reliever (1.4%), while those that did not respond were 20.3%. The respondents (64.2%) reported that alcohol was harmful, 10.0% stated that it was not harmful, while 13.1% did not know and 11.4% did not respond (Table 3).

Table 3: Knowledge of alcohol use and soft drinks,
palm wine, beer, whiskey/spirit/liquor by the respondents

Variable	Frequency (n=350)	Percentage (%)
Know about alcohol drinks		
Yes	193	55.1
No	69	19.7
Don't know	88	25.1
Type of alcohol		
Soft drink	49	14.0
Fruit juice	31	8.9
Palm wine	58	16.6
Beer	42	12.0
Whiskey/spirit/liquor	42	12.0
Preferred alcoholic drink		
Trophy	27	7.7
Star	14	4.0
Guinness	10	2.9
Guilder	5	1.4
Heineken	19	5.4
Others	24	6.9
Preferred local variety liquor/spirit		
Seaman	21	6.0
Black Wood	8	2.3
Black horse	7	2.0
Chelsea	10	2.9
Action Bitter	15	4.3
Others	11	3.1
No response	278	79.4
Classification of alcohol		
Drug	133	38.0
Depressant	47	13.4
Relaxant	94	26.9
Pain reliever	5	1.4
No response	71	20.3
Do you think alcohol has a harmful effect		
Yes	229	65.4
No	35	10.0
Don't know	46	13.1
No response	40	11.4

The results of the knowledge of whether alcohol use affects the body, balance, memory loss, liver damage, hypertension, infertility, depression, and obesity by the respondents from the study are presented in Table 4. 55.7% of the respondents reported that alcohol affected all body organs, 15.7% stated that it did not, while 22.0% did not know and 6.6% did not respond.

Table 4: Knowledge of whether alcohol use affects the body, balance, memory loss, liver damage, hypertension, infertility, depression and obesity by the respondents

Variable	Frequency (n=350)	Percentage (%)
Does alcohol affect all body organs		
Yes	195	55.7
No	55	15.7
Don't know	77	22.0
No response	23	6.6
Body part affected by alcohol		
Body balance	217	62.0
Memory loss	212	60.6
Liver damage	247	70.6
Hypertension	196	56.0
Infertility	150	42.9
Major depression	175	50.0
Obesity	183	52.3
Erectile dysfunction	160	45.7
Improper sexual behaviors	175	50.0
Aware of the percentage of alcohol in each brand you drink		
Yes	91	26.0
No	133	38.0
Don't know	90	25.7
No response	36	10.3
Heard about alcohol abuse		
Yes	264	75.4
No	42	12.0
Don't know	35	10.0
No response	9	2.6
Drinking 5-10 bottles per day is alcohol abuse		
Yes	203	58.0
No	24	6.9
Don't know	46	13.1
No response	77	22.0
Drinking alone or in secret		
Yes	71	20.3
No	130	37.1
Don't know	68	19.4
No response	81	23.1
Getting drunk intentionally		
Yes	183	52.3
No	54	15.4
Don't know	43	12.3
No response	70	20.0
Think alcohol abuse can be treated		
Yes	237	67.7
No	23	6.6
Don't know	60	17.1
No response	30	8.6

62.0% of the respondents stated that body balance was affected as a result of alcohol use, 60.6% reported memory loss, 70.61% of the respondents reported there was liver damage, other respondents (56.0%, 42.9%, 50.0%, 52.3%, 45.7%, and 50.0%) reported that it could cause hypertension, infertility, major depression, obesity, erectile dysfunction, and improper sexual behaviors respectively.

The respondents (26.0%) were aware of the percentage of alcohol in each brand, 38.0% were not, 25.7% did not know and 10.3% did not respond. The respondents (75.4%) reported they had heard about alcohol abuse, 12.0% reported they had not, 10.0% did not know and 2.6% did not respond. The respondents (58.0%) reported drinking 5-10 bottles per day, 6.9% did not, 13.1% did not know and 22.0% did not respond.

The respondents (20.3%) reported drinking alone or in secret, 37.1% did not, 19.4% did not know and 23.1% did not respond. The respondents (52.3%) reported getting drunk intentionally, 15.4% did not, 12.3% did not know and 20.0% did not respond. The respondents (67.7%) reported alcohol abuse could be treated, 6.6% did not, 17.1% did not know and 8.6% did not respond (Table 4).

Table 5: Knowledge of the treatment of alcohol use and abuse by the respondents

Variable	Frequency (n=350)	Percentage (%)
Use of drugs		
Yes	83	23.7
No	121	34.6
Don't know	81	23.2
No response	65	18.6
Rehabilitation		
Yes	239	68.3
No	24	6.9
Don't know	38	10.9
No response	49	14.0
Use of herbal products		
Yes	33	9.4
No	138	39.4
Don't know	97	27.7
No response	82	23.4
Body massage		
Yes	31	8.9
No	149	42.6
Don't know	87	24.9
No response	83	23.7

The results of the knowledge of the treatment of alcohol use and abuse by the respondents from the study are presented in Table 5. The respondents (23.7%) reported drugs could be used to treat alcohol abuse, 34.6% did not, 23.2% did not know and 18.6% did not respond. The respondents (68.3%) reported rehabilitation could be used to treat alcohol abuse, 6.9% did not, 10.9% did not know and 14.0% did not respond. The respondents (9.4%) reported that herbal products could be used to treat alcohol abuse, 39.4% did not,

27.7% did not know and 23.7% did not respond. The respondents (8.9%) reported body massage could be used to treat alcohol abuse, 42.6% did not, and 24.9% did not know and did not respond (Table 5).

Table 6: Knowledge of alcohol use with other substances by the respondents

Variable	Frequency (n=350)	Percentage (%)
Think the cost of alcoholic drinks is expensive		
Yes	102	29.1
No	106	30.3
Don't know	132	37.7
No response	10	2.9
Alcoholic drinks accessible or available to buy		
Yes	188	53.7
No	33	9.4
Don't know	95	27.1
No response	34	9.7
Alcoholic drinks sale banned on your campus		
Yes	73	20.9
No	115	32.9
Don't know	151	43.1
No response	11	3.1
Where get or buy alcoholic drinks from		
University shops/Supermarkets	29	8.3
Outside of the University	95	27.1
Others	13	3.7
No response	213	60.9

The results of the knowledge of alcohol use with other substances by the respondents from the study are presented in Table 6. The respondents (29.1%) reported that the cost of alcoholic drinks was expensive, 30.3% did not, 37.7% did not know and 2.9% did not respond.

The respondents (53.7%) reported that alcoholic drinks were accessible or available to be bought, 9.4% did not, 27.1% stated did not know and 9.7% did not respond. The respondents (20.9%) reported that the sale of alcoholic drinks was banned on campus, 32.9% did not, 43.1% did not know and 3.1% did not respond.

The respondents (8.3%) reported they bought alcoholic drinks from university shops /supermarkets, 27.1% bought them from outside of the university, 3.7% reported they got them from other sources and 60.9% did not respond (Table 6).

Table 7: Association between socio-demographic characteristics and alcohol consumption of the respondents

Variable	Drink alcohol and use other substances		χ ²	p-value
	Yes (n=29)	No (n=321)		
Level of respondents				
200 level	6(6.3)	89(93.7)	19.125	0.001*
300 level	7(11.9)	52(88.1)		
400 level	2(3.4)	57(96.6)		
500 level	0(0.0)	61(100.0)		
600 level	14(18.4)	62(81.6)		
Gender				
Male	17(8.4)	185(91.6)	0.011	0.918
Female	12(8.1)	136(91.9)		
Age in years (as at last birthday)				
18-21	10(9.2)	99(90.8)	0.280	0.869
22-24	9(8.6)	96(91.4)		
25-29	10(7.4)	126(92.6)		
Marital status				
Single	29(8.8)	302(91.2)	1.815	0.178
Married	0(0.0)	19(100.0)		
Religion				
Christianity	23(9.2)	228(90.8)	6.157	0.104
Islam	5(5.3)	90(94.7)		
Traditional	1(50.0)	1(50.0)		
Others	0(0.0)	2(100.0)		
Employment status				
Unemployed	23(8.9)	236(91.1)	4.374	0.112
Self-employed	4(4.8)	79(95.2)		
Employed	2(25.0)	6(75.0)		
Course of Study				
MBBS	26(10.4)	225(89.6)	5.017	0.025*
BDS	3(3.0)	96(97.0)		
Hall of residence				
Yes	20(7.6)	244(92.4)	11.386	0.003*
No	9(9.4)	77(90.6)		
Ethnic group				
Yoruba	16(7.7)	191(92.3)	22.042	0.001*
Igbo	1(1.2)	85(98.8)		
Hausa	9(27.3)	24(72.7)		
Others	3(12.5)	21(87.5)		
Monthly allowance (N)				
Less than 10,000	17(37.0)	29(63.0)	58.417	0.001*
10,000-20,000	6(6.3)	89(93.7)		
20,000-30,000	2(2.2)	89(97.8)		
30,000-50,000	3(3.6)	81(96.4)		
Above 50,000	1(2.9)	33(97.1)		

* Significant p-value (p<0.05)

The results of the association between various socio-demographic factors and alcohol consumption among respondents are presented in Table 7. The first column listed the different socio-demographic variables that were considered in the study, including level of respondents, gender, age, marital status, religion, employment status, course of study, hall of residence, ethnic group, and monthly allowance. The second and third columns show the number and percentage of respondents who reported drinking alcohol and using other substances (Yes) or not (No) for each level of the socio-demographic variables.

The fourth and fifth columns show the results of Chi-square tests that were conducted to determine whether there was a statistically significant association between each socio-demographic variable and alcohol consumption. A p-value less than 0.05 indicated that there was a statistically significant association between the variable and alcohol consumption.

The prevalence of the level of respondents or year of study from 200, 300, 400, 500 and 600 levels' medical students who drank alcohol and use other substances were 6 (6.3%), 7 (11.9%), 2 (3.4%), 0 (0.0%) and 14 (18.4%), and while those who did not drink were 89 (93.7%), 52 (88.1%), 57 (96.6%), 61 (100.0%) and 62 (81.6%) respectively. The results of the study show that 29 out of 350 respondents (8.30%) reported drinking alcohol, while 321 out of 350 respondents (91.70%) reported not drinking alcohol.

However, the highest percentage of alcohol use occurred in the 600-level students, followed in a descending order by 300, 200, 400 to 500 levels. There was a statistically significant association between the level of respondents and alcohol consumption ($p = 0.001$), with higher levels of respondents being more likely to report drinking alcohol and using other substances (Table 7).

There were 17 (8.4%) male medical students and 12 (8.1%) female medical students who reported drinking alcohol. There were 185 (91.6%) male medical students and 136 (91.9%) female medical students who did not drink alcohol. More male students drank alcohol than female students. However, there was no statistically significant difference between alcohol use and gender, amongst the male and female medical students ($p=0.918$) (Table 7).

The number of medical students in age brackets, 18-21, 22-24, and 25-29 years, who drank alcohol were 10(9.2%), 9(8.6%), and 10 (7.40%) respectively, while those who did not drink alcohol were 99(90.8%), 96 (91.4%) and 126 (92.6%). There was no statistically significant difference between the alcohol consumption and age of the medical students ($p= 0.869$).

The marital status of the respondents shows that 29 (8.8%) were single, and drank alcohol, while none of the married students, 0 (0.0%) drank alcohol. There were 302 (91.2%) single medical students and 19 (100%) married medical students who did not drink alcohol. More single students drank alcohol compared to married students. There was no statistically significant difference between the alcohol drinking and marital status of the respondents ($p=0.178$).

There were 23 (9.2%) Christian students, 5 (5.3%) Muslim students, 1 (50.0%) traditionalist and other beliefs were none 0 (0.0%), who drink alcohol, while the Christian students 228 (90.8%), Muslim students 90 (94.7%), traditionalist 1 (50.0%) and other beliefs 2 (100.0%) did not drink alcohol. There was a higher percentage of the Christian students who drank alcohol compared to the Muslims, traditionalists and other beliefs. However, there was no statistically significant difference between the alcohol drinking and religion of the respondents ($p=0.104$) (Table 7).

There were 23 (8.9%) unemployed students, 4 (4.8%) self-employed and 2 (25.0%) employed who drink alcohol, while 236 (91.1%) unemployed, 79 (95.2%) self-employed and 6 (75.0%) employed students did not drink alcohol. There was a higher percentage of unemployed students who drank alcohol compared to the self-employed and employed students. However, there was no statistically significant difference between the alcohol drinking and employment status of the respondents ($p=0.112$).

There were 26 (10.4%) students studying medicine & surgery who drank alcohol and 3 (3.0%) students studying dentistry who drank alcohol. There were 225 (89.6%) students studying medicine & surgery who did not drink alcohol and 96 (97.0%) dentistry students who did not drink alcohol. However, there was a higher percentage of the medicine & surgery students who drank alcohol as compared to the dentistry students. There was a statistically significant difference between alcohol consumption and course of study ($p=0.025^*$).

There were 20 (7.6%) students who drank alcohol resided in the university hostel while 8 (9.4%) were not staying in the hostel. There were 244 (92.4%) of the students who stayed in the university hostel but did not drink alcohol, while 77 (90.6%) did not stay and did not drink alcohol. More students stayed outside of the university hostel who drank alcohol than those who stayed within the university hostel. There was a statistically significant difference between alcohol consumption and hall of residence ($p=0.003^*$).

There were 16 (7.7%) 'Yoruba', 1 (1.2%) 'Igbo', 9 (27.3) 'Hausa' and another ethnic group 3 (12.5%) medical students who drank alcohol, while 191 (92.3%) 'Yoruba', 85 (98.8%) 'Igbo', 24 (72.7%) 'Hausa' and another ethnic group 21 (87.5%) medical students did not drink alcohol and use other substances. However, the 'Hausa' students drank more alcohol compared to other ethnic groups studied. There was a statistically significant difference between alcohol consumption and ethnic group of respondents ($p=0.001^*$).

The respondents who received less than N10,000, N10,000-20,000, N20,000-30,000, N30,000-50,000 and above N50,000 who drank alcohol were 17 (37.0%), 6 (6.3%), 2 (2.2%), 3 (3.6%) and 1 (2.9%) respectively. The respondents who did not drink alcohol but received less than N10,000, N10,000-20,000, N20,000-30,000, N30,000-50,000 and above N50,000 were 29 (63.0%), 89 (93.7%), 89 (97.8%), 81 (96.4%) and 33 (97.1%) respectively. More students received less than N10,000 compared to other students who received more monthly allowances. There was a statistically significant difference between alcohol consumption and monthly allowances of respondents ($p=0.001^*$) (Table 7).

4. Discussion

Globally, alcohol consumption is a significant public health concern and it is one of the most important risk behaviors among university students (WHO, 2007; Hendler *et al.*, 2013). From the study, 65.9% of the medical students were studying medicine & surgery (MBBS), while 28.9% studied dentistry (BDS) and were mostly residing in the university's halls of residence (69.7%). The majority of the students were 'Yorubas' (57.3%), followed by 'Igbos' (28.7%), 'Hausas' (7.6%), and others (6.4%), suggesting that the dominant ethnic group among the students was the Yoruba, with the least group being the Hausa. It therefore follows that since the medical school studied is situated in the southwest of Nigeria, a dominantly Yoruba-speaking region (Adelola, 1998).

The majority of the students (27.1%) received a monthly allowance of N10,000-N20,000 and the least (9.9%) received less than N10,000. Alcohol consumption was generally lower in the Muslims than the Christian medical students, which agrees with previous reports (Adeyemo *et al.*, 2011; El Ansari *et al.*, 2011; Abu-Ras *et al.*, 2010) probably due to their religious belief since alcohol is prohibited by Muslim religion. The majority of the undergraduate medical students were single (94.3%) as compared with those married (5.7%), which suggests that the majority of the medical students were not married.

The results of the present study indicate that 8.30% of the medical students reported drinking alcohol, while 91.70% reported not drinking alcohol, although does not specify whether this proportion of students who drank alcohol was considered a health risk. There was a significant difference in alcohol use between the preclinical (200-300 level) and clinical (400-600 level) medical students ($p = 0.001$). The results show that the prevalence of alcohol consumption was higher among those who were at their 600 level (18.4%) compared to those who were at their 200 level (6.3%) 300 level (11.9%) or 400 level (3.4%) or 500 level (0.0%).

Medical students in their clinical years are exposed to different daily responsibilities and stressors in comparison to the preclinical years of studying. They were therefore included in this study for possible comparison of some factors associated with alcohol use. University life is a major developmental transition period commonly associated with addictive behaviors (such as alcohol consumption) that can be intensified by the college environment and may lead to dependency and abuse during college years. It is a rising problem, especially among young people, including medical students (WHO, 2007; Hendler *et al.*, 2013; Adams & Rans, 2013). The level of risk associated with alcohol consumption may vary depending on several factors, including the amount and frequency of alcohol consumption, as well as individual characteristics such as age, gender, overall health, and so on (de Menezes *et al.*, 2013; Adams & Rans, 2013).

There was a statistically significant association between the course of study and alcohol consumption ($p = 0.025$), with medical (MBBS) students (10.4%) being more likely to report drinking alcohol and using other substances than dental (BDS) students (3.0%). There was also a statistically significant association between halls of residence and

alcohol consumption ($p = 0.003$), with respondents who live in halls of residence within the university being less likely to report drinking alcohol and using other substances than those who do not. There was a statistically significant association between ethnic group and alcohol consumption ($p\text{-value} = 0.001$), with 'Yoruba' respondents being less likely to report drinking alcohol and using other substances than respondents from other ethnic groups.

Additionally, there was a significant difference between the monthly allowance of those who consumed alcohol compared to those who did not ($p=0.001$), with those who received the least (less than N10,000) drinking more than those who received a higher monthly allowance. This finding concurs with previous reports stating that poorer people drink alcohol more than richer people (89), to minimize their frustrations and stress, depression, and health challenges.

The majority of the students posited that alcohol consumption was harmful to health, and could result in memory loss, liver damage, hypertension, infertility, depression, and obesity. Previous studies (Hendler *et al.*, 2013; Santhakumar *et al.*, 2007) corroborated these findings. Some medical students (52.2%) reported getting drunk intentionally but stated that alcohol abuse can be treated using drugs and herbal products. The student reported that the places where they drank alcohol were in the eateries/canteens, hostels, family houses, and at parties or social gatherings. Some students consume other substances with alcohol, such as cigarette smoking, cocaine, or others, for different reasons, either to feel high or peer socialization and so on. The students reported that the cost of alcohol drinks was expensive, but accessible, although prohibited within the university premises.

The students reported that they never felt the need to cut down on their drinking and got annoyed when their drinking habits were criticized. The alcohol consumption rate of the students is relatively low, on a daily, weekly, and monthly basis. Some students stated that they often fail to do the right thing due to drinking, but are not remorseful and that their relatives, doctors, or friends are not concerned about their drinking habit. Some of the students were of the opinion that alcohol consumption can affect academic performance, which concurs with previous reports by the students who reported that taking alcoholic drinks affects their sexual activity and relationships with people. This observation is in agreement with previous reports (Venkataraman *et al.*, 2017; de Menezes *et al.*, 2013). Some of the students stated they had not been arrested or got into trouble due to alcohol drinking.

Significant differences in alcohol consumption by the medical students with respect to economic status or monthly allowance were observed. Previous studies on medical students have reported that about 80% to 90% of these students drink alcohol (80). Medical students consume more alcohol than non-students of the same age. However, alcohol consumption during the study may be for some people the beginning of addiction (Chukwu *et al.*, 2021; Adeloje *et al.*, 2019).

Globally, alcohol use is responsible for 320 deaths every hour, and the impact is greater among those in the younger age group (Sheehama *et al.*, 2022). Previous studies

corroborated these findings and reported that living with parents, religion, religiosity, and socio-economic status were associated with alcohol use by Nigerian students (Adeloye *et al.*, 2019; Sheehama *et al.*, 2022; Ajayi *et al.*, 2019). The main identified risk factors of hazardous/harmful drinking were the male gender and smoking cigarettes among medical students (Granville-Chapman *et al.*, 2021; Gajda *et al.*, 2021).

Unexpectedly, medical students may receive proper counseling less often than the general population, and be hesitant to seek help and formal consultation. Moreover, the knowledge about the negative health impact of alcohol may be at a low level even among medical students (Gajda *et al.*, 2021; Sheehama *et al.*, 2022). That is why the early identification of those at risk is so important.

There are several reasons why medical students may drink alcohol. These include: relieving stress, relaxation and socializing, relieving anxiety and depression, and a way to “blow off” steam or escape from problems in their personal lives. On a national level, medical students use alcohol at roughly double the rate of age-matched peers not in medical school. In some studies, large subgroups of medical students up to 70% reported consuming more than five drinks in one sitting (Granville-Chapman *et al.*, 2021; Gajda *et al.*, 2021; Sheehama *et al.*, 2022).

The results of the study show the association between socio-demographic characteristics and alcohol consumption of medical students. The results indicate that there was a significant association between the levels or years of study of the medical students, halls of residence, ethnic groups, monthly allowance, and alcohol consumption ($p < 0.05$). This means that these factors are significantly associated with alcohol consumption among medical students. The prevalence of alcohol consumption among the medical students was found to be higher among those who were in their 600 level (18.4%), those who did not reside in a hall of residence (9.4%), those who belonged to the ‘Hausa’ ethnic group (27.3%), and those who had a monthly allowance of less than N10,000 (37.0%).

Additionally, the gender, age, and marital status of the respondents were not significantly associated with alcohol consumption ($p > 0.05$). This means that these factors did not have a significant effect on alcohol consumption among the medical students. The study's findings supplement existing knowledge and provide paramount evidence on how to solve the problem of alcohol use among medical students, particularly in Nigerian universities, as well as to provide information for policy formulation and to identify factors that may be associated with alcohol use among these students.

Several interventions can be used to control alcohol use. WHO has launched the SAFER initiative, which stands for the 5 most cost-effective interventions to reduce alcohol-related harm (WHO, 2020). These interventions include strengthening restrictions on alcohol availability, advancing and enforcing drink-driving countermeasures, facilitating access to screening, brief interventions, and treatment, enforcing bans or comprehensive restrictions on alcohol advertising, sponsorship, and promotion, and raising prices on alcohol through excise taxes and pricing policies (Valdez *et al.*, 2007; Pitanupong *et al.*, 2017).

4.1 Limitations of the Study

The study was a self-administered questionnaire-based descriptive cross-sectional survey. Therefore, the responses of the respondents may or may not be accurate to some questions in the questionnaire. The researcher is only obliged to use the data as captured or reported by the respondents, which is a potential bias, apart from the selection bias in the recruitment protocol, while others could be in the confounding variables, measurement errors, and causality. The study is university-based, therefore the population may not be a true representation of other medical schools or the general public.

5. Conclusion

Data from the study indicate that there was a significant association between the levels or years of study of the medical students, halls of residence, ethnic groups, monthly allowance, and alcohol consumption ($p < 0.05$). This means that these factors are significantly associated with alcohol consumption among the undergraduate medical students of the College of Medicine, University of Lagos, Nigeria. The results suggest that interventions aimed at reducing alcohol consumption among this population should consider these factors. They are generally consistent with other studies and legitimize the need for the implementation of permanent supervision (screening programs) in the field of alcohol use by students at medical universities. The study recommends the need to develop interventions that target the specific socio-demographic characteristics that were found to be significantly associated with alcohol consumption, such as the level of the respondents, hall of residence, ethnic group, and monthly allowance, especially as it relates to medical students.

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Declarations

Ethics approval (including appropriate approvals or waivers)

Ethical approvals to conduct this research were obtained from the Health Research Ethical Committee of Lagos University Teaching Hospital (LUTH) (ADM/DSCST/HREC/APP/5661). and the College of Medicine (CMUL) (CMUL/HREC/03/23/1158) after submitting the proposals.

Consent to Participate

Participants received information leaflets and the researcher explained the objectives of the study to them. Confidentiality was assured as no identifying data were recorded. The participants duly completed the informed consent form before questionnaires were distributed to them for completion during a scheduled contact session.

Consent for Publication (consent statement regarding publishing an individual's data or image)

Not applicable, as no image was used and questionnaires were filled anonymously.

Availability of Data and Material

The data presented in this study are available on reasonable request from the corresponding author. The data are not publicly available due to the data sensitivity and to protect the interests and privacy of the respondents.

Code Availability

Not applicable.

Funding Statement

Not applicable.

Authors' Contributions

Ebuehi, O. A. T. and Osibogun, A. conceived of the presented idea. Ebuehi O. A. T. carried out the investigation, provided resources, wrote the original draft manuscript preparation, developed the questionnaire, and performed statistical computations. Osibogun, A. supervised the research study, review, and editing. Both authors verified the methodology and reviewed the literature for the study.

Conflicts of Interest Statement

The authors declare no potential conflicts of interest concerning the research, authorship, and /or publication of this article.

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