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Current Attitudes, Behavior and Cardiovascular Impact of Choice Alcoholic Beverages and Herbs Among Commercial Automobile Drivers in Ibadan, Nigeria

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Abstract

Alcohol consumption is a major health-risk behavior linked to non-communicable diseases, while herbal beverage use is rising globally. Data on co-consumption of alcohol and herbal drinks among high-risk occupational groups in sub-Saharan Africa are limited. This study examined the prevalence, attitudes, behaviors, and cardiovascular risk associated with alcohol and herbal beverage consumption among commercial automobile drivers in Ibadan, Nigeria. A mixed cross-sectional study with a convergent parallel design was conducted among commercial drivers across local government areas in Ibadan. Quantitative data were collected using structured questionnaires and measurements of blood pressure, pulse rate, and body mass index. Qualitative data were obtained through key informant interviews. Data were analyzed using SPSS v25 and R v4.4.2, with chi-square, t-tests, and ANOVA at $p < 0.05$. Point prevalence of alcohol consumption was below average. Alcohol consumption was significantly associated with hypertension, while herbal use showed no significant cardiovascular associations. Elevated blood pressure was common, with only 21.9% reporting recent screening. Age, marital status, family structure, and education significantly influenced attitudes and behaviors toward alcohol use. Key informants noted widespread herbal use but limited awareness of health risks. Alcohol consumption is moderately prevalent and associated with hypertension, while herbal beverage use is widespread but unrelated to cardiovascular outcomes. High undiagnosed hypertension emphasize the need for targeted screening, education, and regulation among commercial drivers.

Keywords: *Alcohol, Cardiovascular Risk, Commercial Drivers, Herbal Beverages, Nigeria.*

Introduction

Background

The health of a population can be assessed by the burden of prevalent diseases that include non-communicable, communicable diseases and or injuries [15]. In earlier centuries, diseases were thought to be a consequence of 'bad' genes only. However, irrespective of the category of disease, it has now been established that a defect in the genetic make-up of an individual is not the only reason for the downwards turn of health and well-being. Many diseases develop from an interaction between the genes and the environment (Figure 1). A recent document by the World Health Organization was able to affirm that the health of individual and communities is dependent on the combination of many factors. [20].

One of the environmental factors, a health-related behavior, that has been studied extensively across different populations is the consumption of alcoholic beverages. It has been associated with the risk of developing several non-communicable diseases [19]. According to Spring et al., five categories of health-risk behaviors have been identified which are detrimental actions that heighten the odds of

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illness or may impede recovery, and the consumption of alcoholic beverages belongs to the fourth category, which is also inclusive of abuse of illicit substances [16].

The prevalence of alcohol consumption varies widely across populations. Globally, the prevalence is estimated to be 7% (19); in Nigeria, it is about 34.3% (2) and about 5.1% of American adults (16). Most available data have reported the prevalence of harmful alcohol use or consumption, and this implies that the crude prevalence of alcohol consumption may be significantly higher than the known statistics. Overall, alcohol use remains a leading risk factor for disease burden worldwide, accounting for nearly 10% of global deaths among populations aged 15–49 years and poses dire ramifications for future population health in the absence of policy action today [10]. Further to this is the epidemiological pattern noted among alcoholic beverage consumers that has been termed the Alcohol Harm Paradox. The alcohol harm paradox (AHP) indicates that disadvantaged groups suffer, that is, individuals of lower socioeconomic status, from higher rates of alcohol-related harm compared with advantaged groups despite reporting similar or lower levels of consumption on average [6]. There were many other explanations for the AHP proposed in the literature despite being maily hypothetical. This included individual-level mechanisms (e.g. biological or psychological), contextual factors (e.g. place-based factors), the lived experience of disadvantage and upstream structural factors (e.g. the economy and politics).

The consumption of beverages varies according to geographical location and some other sociodemographic factors globally. This does not exclude alcoholic and, more recently, herbal-based beverages. There is almost no study describing the epidemiology of this practice of consuming alcoholic and herbal drinks, either singly or combined.

This thesis, therefore, aims to study the epidemiology of alcoholic and herbal-based beverage consumption among commercial automobile drivers in Ibadan. The study intends to provide robust data on this health determinant and equip the public health system with the tools needed for any necessary intervention.

The suboptimal systems to monitor and evaluate the impact of food and drink consumption on health in developing countries like Nigeria pose some critical challenges:

There is a grossly unregulated food and drink market in developing countries such as Nigeria. This makes it difficult to ascertain the variants of alcohol- and herbal-based beverages available for consumption by the population. There are concerns surrounding the quality of alcohol- and herbal-based beverages consumed by the population due to occasional reports suggestive of inconsistencies in the quality of beverages made available in the market. Existing studies suggest that age, gender, and social support play a role in substance use among drivers, but more research is needed on how these factors specifically affect cardiovascular health. For instance, the proportion of female commercial drivers who drink alcohol has not been investigated especially because of the recent increased participation of women in commercial driving within Ibadan metropolis.

While studies exist on alcohol and herbal consumption separately, there is little research on their combined cardiovascular impact among commercial drivers in Ibadan. This gap can also be attributed to multiple factors, including the absence of specific beverage safety regulations, widespread preference for herbal medicines, and inadequate standards for dosage and quality control. The incidence of non-medicinal use of herbs particularly would need to be investigated because these population is often associated with poor health seeking behaviour [5] and yet consume herbs supposedly for health reasons. This suggests there may be other factors responsible for

supposedly increased consumption individually and together.

The prevalence of cardiovascular diseases among commercial drivers in Ibadan would need to be updated. Most studies focus on immediate health risks of consuming herbs, but there is limited data on the long-term cardiovascular consequences of alcohol and herbal consumption among drivers. The care gap such as in the study by Barnes, can also be identified and then, specific regulatory and policy gaps would be identified and improved upon.

This study aimed to study the epidemiology of alcoholic and herbal-based beverage consumption among commercial automobile drivers in Ibadan, the associated attitudes and behaviors, and the potential health-related risks. Specific objectives were to:

1. To estimate the prevalence of consumption of alcoholic and herbal beverages among commercial automobile drivers in Ibadan.
2. To show an epidemiological map that estimates the burden of consumption of alcoholic and herbal beverages across the Ibadan metropolis.
3. To examine the attitude and behavior of commercial automobile drivers in Ibadan to their health.
4. To identify the factors that may be associated with the current attitude and behavior to health among commercial automobile drivers in Ibadan.

Materials and Methods

This study utilized the mixed cross-sectional approach with a convergent parallel design to achieve its objectives. This was done by the use of standardized questionnaires and tools to obtain quantitative and qualitative data. For the quantitative data, a structured and validated questionnaire was interviewer-administered after obtaining consent for quantifiable responses of respondents. For the qualitative data, designated participants were selected for the Key Informant Interview for in-depth responses and expert answers. The standard guideline for reporting a cross-sectional study-the "Strengthening the Reporting of Observational Studies in Epidemiology" (STROBE) was adhered to. This study was undertaken across the Ibadan metropolis, Oyo State. Ibadan is the third largest metropolitan area in Nigeria after Lagos and Kano, with a population of 3.5 million. It is the capital city of Oyo state, situated in the southwest geopolitical zone of Nigeria [7]. The city of Ibadan is made up of eleven (11) local government areas (LGAs), five (5) of which constitute the urban local governments, while the remaining six (6) form the peri-urban or rural local governments [17]. All the eleven local government areas within the Ibadan metropolis were utilized for this research. The sampling technique was a stratified random sampling, whereby the sample was grouped into: Commercial bus drivers, Commercial cab drivers, Commercial tricycle drivers and Commercial motorcycle riders.

The sample size obtained was calculated using the Cochran's formula

$$n = \frac{(Z^2 * p * (1-p))}{e^2}$$

Where:

n = sample size

Z = Z value (e.g., 1.96 for 95% confidence level)

p = estimated proportion of the population (if unknown, 0.5 is often used)

e = margin of error (as a decimal, e.g., 0.05 for ±5%)

According to a study (Lasebikan et al., 2018), the prevalence of current drinkers is 88. 9%, that is p = 0.889.

Substituting the formula:

$$n = \frac{(1.96^2 * 0.889 * (1-0.889))}{0.05^2}$$

n = approximately 152 to achieve 95% confidence level and margin of error.

Accounting for an attrition rate of 10%,

n ≈ approximately 169 participants

Approximately 170 participants were sampled in each local government area within the Ibadan metropolis.

One key informant from each of the local government was also selected and interview in each local government area.

This study utilized the mixed cross-sectional approach to achieve its objectives.

For the quantitative data, the stratified random method of probability-based sampling was adopted to ensure representation among commercial drivers.

The qualitative data was obtained using purposive sampling to identify individuals who provide deeper insights into behaviours and experiences.

Descriptive analyses summarized:

1. Social demographics.
2. Occupational demographics.
3. Attitude towards alcohol and herbs.
4. Behavior towards alcohol and herbs.
5. Types of alcoholic beverages consumed.
6. Reasons for alcohol consumption.
7. Herbal consumption.
8. Cardiovascular health status.

Measures included frequencies and percentages.

1. Association of cardiovascular events and alcohol use.
2. Association of cardiovascular events with herbal use.
3. Relationship between alcohol and other cardiovascular measures.
4. Relationship between herbal drinks and other cardiovascular measures.

Significance was determined at $\mathbf{p < 0.05}$.

Semi-structured KIIs

1. Common health concerns
2. Prevalence of alcohol and herbal usage among commercial drivers.
3. Type of alcoholic beverages and herbs consumed and possible effects.
4. Health issues associated with substance use.

Interviews lasted 45–60 minutes, conducted in English or local languages with translators where required. Audio recordings were transcribed verbatim.

Ethical Approval

This research involved direct interaction with human participants; hence, ethical approval was sought and obtained from the Oyo State Ethical Review Board prior commencement of the research. The transparency in research processes was maintained through clear documentation, ensuring that all methodological decisions are explicit and open to scrutiny. To protect data integrity and confidentiality, the primary database will be supported with regular backups and access controls.

Data Management and Quality Assurance

The study employed a structured questionnaire adapted from validated assessment tools with established reliability and validity. Face and content validity were confirmed through expert review and pilot testing. Reliability was assessed using test–retest and internal consistency methods among 200 commercial drivers outside the study area. The questionnaire was re-administered after one week, yielding a Cronbach's alpha of 0.82 for key scales, indicating good reliability. Pilot testing also informed refinement of ambiguous items, sequencing, and completion time, ensuring the instrument was robust and culturally appropriate before full deployment. Proper citation and attribution of sources was ensured, with secure storage of research materials and appropriate protection of sensitive information. This approach will guarantee the reliability and validity of the research findings. Standardized quality assessment tools were used as they are crucial for ensuring the reliability and validity of research findings. Adhering to established systematic review guidelines, such as those

provided by STROBE, ensures a comprehensive and transparent research process. Also, regular consultation with the thesis Supervisor/Guide was essential for maintaining methodological rigor and ensuring the research stayed on track through meetings for technical guidance, which were documented, ensuring accountability.

Results

Socio-Demographic Factors and Substance Use

A total of 1,713 respondents participated in the study. Table 1 shows that majority of the participants were male (99.5%). Over half of the respondents were aged 36–49 years (51.0%), followed by those aged 25–35 years (22.7%). The predominant religion practised was Islam (56.0%), while Christians constituted (42.4%). The majority were married (89.4%) with 60.1% living in nuclear monogamous families, Secondary education (74.6%) was the most common level of education completed, with smaller proportions having primary (19.3%) or tertiary education (6.0%).

Table 1. Demographic Characteristics of the Commercial Automobile Drivers within Ibadan

Characteristics	Number	Percentage (%)
Sex		
Male	1705	99.5
Female	8	0.5
Age group		
18 - 24 years	32	1.9
25 - 35 years	389	23
36 - 49 years	873	51
50 - 64 years	363	21
≥ 65 years	56	3.3
Religion		
African traditional	26	1.5
Christianity	727	42
Islam	959	56
Others	1	0.1
Marital Status		
Divorced	29	1.7
Married	1532	89
Single	139	8.1
Widow/Widower	13	0.8
Family Structure		
Extended	63	3.7
Nuclear – Monogamy	1030	60
Nuclear – Polygamy	620	36
Level of Education		
Nil education	1	0.1

Primary	331	19
Secondary	1278	75
Tertiary	103	6

As presented in Table 2, the majority of respondents were motorcycle riders (37.6%), followed by tricycle riders (28.0%) and cab drivers (24.2%). Nearly half of the respondents had between 5 and 10 years of occupational experience (44.7%), while 40.2% had worked for 11–20 years. Most recorded working hours were between 9 and 16 hours per day (96.3%) and six to seven days per week (96.2%). With respect to income, the largest proportion earned between ₦50,000 and ₦74,000 per week (35.9%).

Table 2. Occupational Demographics of Commercial Automobile Drivers in Ibadan

Occupational demographics	**Number**	**Percentage (%)**
Occupation		
Bus driver	175	10.2
Cab driver	415	24.2
Motorcycle rider	644	37.6
Tricycle rider	479	28
Occupational experience		
< 5 years	141	8.2
5 - 10 years	766	44.7
11 - 20 years	689	40.2
> 20 years	117	6.8
Work hours/day		
< 8 hours	39	2.3
9 - 16 hours	1649	96.3
> 16 hours	25	1.5
Work days/week		
1 - 3 days	3	2
4 - 5 days	62	3.6
6 - 7 days	1648	96.2
Estimate income/week (Naira)		
10,000 - 24,000	135	7.9
25,000 - 49,000	590	34.4
50,000 - 74,000	615	35.9
75,000 - 100,000	319	18.6
> 100,000	54	3.2

Overall, respondents demonstrated high awareness of the health, social, and behavioral risks associated with alcohol consumption. The majority disagreed with permissive views towards underage drinking and heavy episodic drinking for both men and women. Less dominant views on the perceived social and emotional benefits of alcohol, such as relaxation and enjoyment at social gatherings were recorded. Most participants agreed that alcohol use is linked to negative outcomes, including unprotected sex, long-term health problems, addiction, impaired physical,

athletic, and career performance, road traffic accidents, and drink-driving arrests.

The findings indicate varied motivations for alcohol and herb-based drink consumption among respondents. While most participants disagreed with routinely mixing herbs with alcohol or drinking out of boredom, a substantial proportion reported frequent use of herb-based drinks, largely driven by perceived health benefits. Emotional states such as stress and exposure to unpleasant events were commonly reported triggers for drinking, whereas anxiety, irritability, and desperation were less frequently endorsed.

Analysis of the types of alcoholic beverages consumed revealed that gin accounted for the highest proportion of intake, representing approximately 48.3% of reported consumption as shown in figure 1. Beer followed closely, constituting about 41.1%. In contrast, red wine and whisky were consumed far less frequently, accounting for approximately 6.6% and 4.0% of total alcohol consumption, respectively. Overall, gin and beer together comprised nearly 90% of all reported alcoholic beverage consumption, indicating a marked preference for these beverages among the study population.

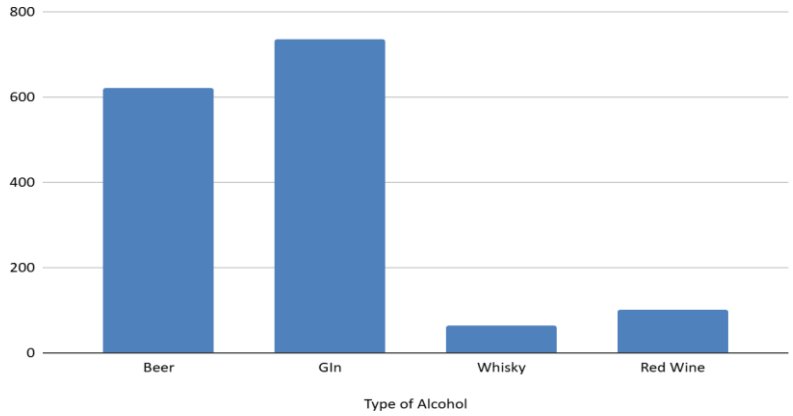

Figure 1. Common Types of Alcohol Consumed by Commercial Automobile Drivers in Ibadan

The high prevalence of water-based herbal consumption (84.1%) suggests that this mode of preparation is the predominant form of herbal use among respondents, likely due to its perceived safety, cultural acceptability, affordability, and ease of preparation as shown in Table 3. In contrast, alcohol-based herbal consumption was reported by 40.8% of respondents, indicating that a substantial proportion of the population still utilizes alcohol as a solvent or carrier for herbal remedies, possibly due to beliefs about enhanced potency or preservation effects. Notably, 14.6% of respondents reported concurrent consumption of both water- and alcohol-based herbal preparations. This pattern of concurrent use may raise public health concerns, as it increases cumulative exposure to alcohol and may potentiate adverse health effects, particularly among individuals with existing cardiovascular risk factors such as hypertension and other cardiovascular problems.

Table 3. Prevalence of Herbal Consumption According to Method of Preparation

	Number	**Percentage(%)**
Water-based herbal consumption	1441	84.1
Alcohol-based herbal consumption	699	40.8
Concurrent intake of water- and alcohol-based consumption	250	14.6

Epidemiological Map Showing Prevalence of Consumption of Substance

The spatial distribution of alcohol consumption prevalence varied across the study area as shown in figure 2. Local Government Areas (LGAs) shown in blue recorded the highest prevalence, ranging from 48.5% to 54%, indicating that nearly half or more of the adult population in these areas consumed alcohol. LGAs classified in the yellow category exhibited a moderate prevalence of 42.9% to 48.5%, suggesting that approximately two in five respondents reported alcohol consumption. In contrast, LGAs shaded in red had the lowest prevalence, ranging from 37.4% to 42.9%, although this still represents over one-third of the population. Overall, alcohol consumption prevalence across the included LGAs ranged from 37.4% to 54%, demonstrating substantial geographic variation within the study area. These differences may reflect variations in urbanization, socioeconomic status, cultural norms, availability of alcohol outlets, and local drinking practices.

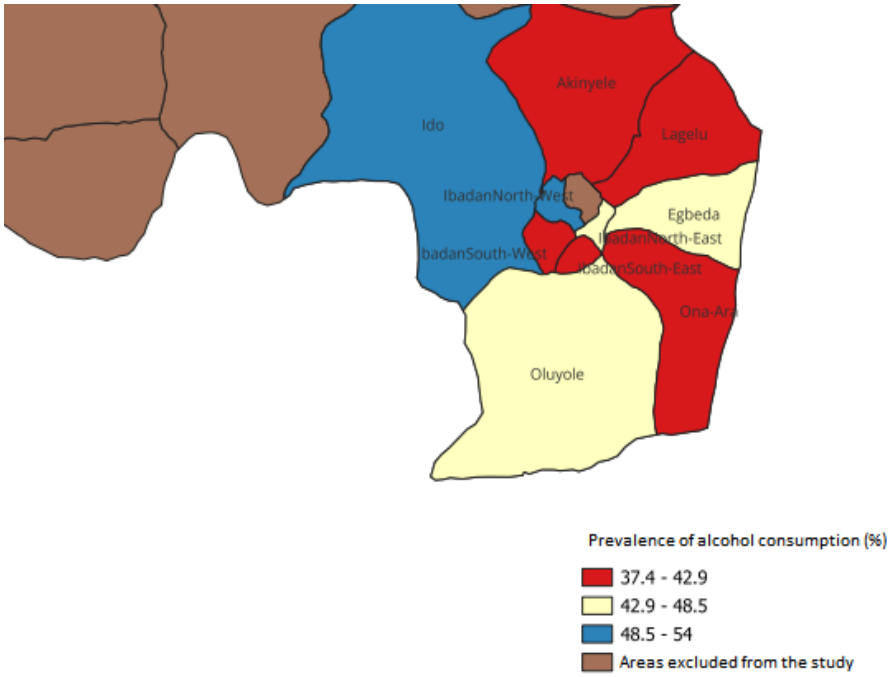

Figure 2. Point Prevalence of Alcohol Consumption Among Commercial Automobile Drivers According to LGAs

The prevalence of herbal consumption was generally high across the study area, with marked spatial variation among the Local Government Areas (LGAs) as shown in figure 3. LGAs shaded in blue recorded the highest prevalence, ranging from 88.2% to 93.7%, indicating that nearly nine out of ten respondents reported the use of herbal preparations. LGAs classified in the yellow category showed moderately high prevalence levels between 82.6% and 88.2%, suggesting widespread but comparatively lower use. In contrast, the lowest prevalence was observed in LGAs shaded in red, with values ranging from 77.1% to 82.6%, although herbal consumption still involved more than three-quarters of respondents in these areas. Overall, herbal consumption prevalence across the included LGAs ranged from 77.1% to 93.7%, demonstrating that the use of herbal remedies is highly prevalent throughout the study area.

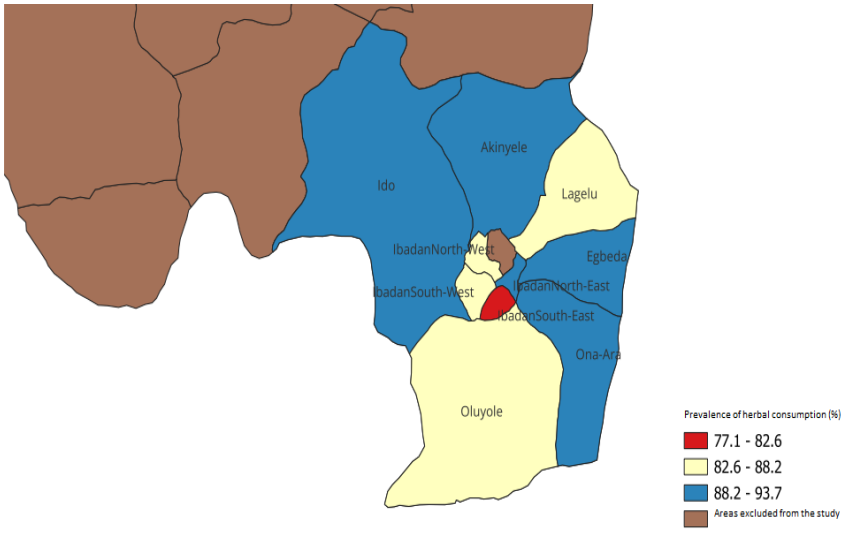

Figure 3. Prevalence of Herbal Consumption Among Commercial Automobile Drivers According to LGAs

The findings indicate high awareness of the adverse consequences of alcohol use among commercial automobile drivers, yet this knowledge coexists with permissive social norms and coping-related use. Over 97% of respondents agreed that heavy drinkers are more likely to be involved in serious road traffic accidents, and 91.9% recognized the increased likelihood of arrest for drunk driving. Similarly, large majorities acknowledged the long-term health effects of alcohol (87.8%), its neurotoxic effects (79.7%), and its role in worsening emotional disorders such as anxiety and depression (79.0%). Nearly all respondents (96.6%) agreed that regular heavy drinking leads to addiction and alcoholism. Despite this awareness, alcohol-positive social norms persisted: 75.1% perceived nondrinkers as "uptight" or "no fun," about 40% believed alcohol is necessary for social integration or enjoyable gatherings, and 37.5% felt there is something unusual about people who refuse to drink. Notably, personal attitudes were largely conservative, as 92.2% reported that alcohol use conflicted with their personal or religious beliefs, 69.8% preferred not to drink in most situations, and 86.8% intentionally limited alcohol intake to avoid dependence. A strong preference for herbal preparations over pure alcohol was observed, with 77.4% consuming herb-based drinks for perceived health benefits and over 75% (n = 1,297) reporting frequent use. Only 25.9% preferred mixing herbs with alcohol, suggesting predominant use of pre-mixed commercial herbal gins or traditional preparations. Substance use was largely driven by occupational stress and emotional factors: 57.4% drank when stressed, 42% to enhance motivation or stimulation, and 44.8% following unpleasant work-related events. Drinking also occurred in social (43.0%) and solitary contexts (33.6%), with availability influencing use (41.5%). These patterns highlight the coexistence of high-risk awareness, cultural acceptance of herbal remedies, and stress-related substance use among drivers.

Sex showed a statistically significant difference in positive attitude scores, with females recording higher mean scores than males (28.88 ± 8.51 vs. 21.34 ± 9.54; t = 2.228, p = 0.026). However, there was no significant difference between males and females in negative attitude scores (p = 0.584). Table 4 shows that age group was significantly associated with both positive and negative attitudes. A significant difference was observed in positive attitude scores across age categories (ANOVA = 4.532, p = 0.020). Marital status was significantly associated with both attitude dimensions. Positive attitude scores differed significantly across marital categories (ANOVA = 5.831, p = 0.020), with divorced

respondents reporting higher mean scores. Negative attitude scores also showed significant variation by marital status (ANOVA = 31.552, $p < 0.001$), with widows/widowers and divorced respondents having the highest mean negative attitude scores. A significant association was observed between family structure and both positive (ANOVA = 5.561, $p = 0.005$) and negative attitudes (ANOVA = 15.812, $p < 0.001$). Respondents from polygamous nuclear families had higher positive attitude scores, while negative attitude scores were higher among those from monogamous nuclear and extended family structures. Level of education was significantly associated with attitude scores. Positive attitude differed significantly by educational level (ANOVA = 3.452, $p = 0.033$), with respondents with tertiary education reporting higher mean scores.

Table 4. Comparison of Attitude Towards Alcohol Consumption with the Sociodemographic Factors of Commercial Automobile Drivers

	Positive Attitude			**Negative Attitude**		
	Mean±SD	**t/ANOVA**	**p-value**	**Mean±SD**	**t/ANOVA**	**p-value**
Sex						
Male	21.34±9.54	2.228	0.026	30.22±11.72	0.547	0.584
Female	28.88±8.51			32.50±14.89		
Age group (years)						
18-24	19.31±10.90a	4.532	0.02	25.94±12.70a	17.688	<0.001
25-35	21.02±8.60a			31.13±10.30a,b		
36-49	21.20±8.28a			31.84±9.38a,b,c		
50-64	21.04±11.32a			28.34±9.38a,d		
>65	29.82±15.56b			28.34±14.26e		
Religion						
ATR	23.69±8.60a	5.875	0.02	31.31±9.87a	2.146	0.898
Christianity	22.23±9.21a			30.23±11.59a		
Islam	20.65±9.75b			30.23±11.87a		
Marital status						
Single	20.40±11.48a	5.831	0.02	27.56±14.58a	31.552	<0.001
Married	21.44±9.44a			30.35±11.54a,b		
Widow/Widower	18.62±6.64b			36.00±5.46c		
Divorced	24.07±3.62b,c			34.31±1.83c		
Family structure						
Nuclear(Monogamy)	20.77±9.50a	5.561	0.005	31.39±11.95a	15.812	<0.001
Nuclear(Polygamy)	22.41±9.87b			28.21±11.66b		
Extended	21.21±9.55a,b			31.17±3.67a		
Level of education						
Primary	21.67±12.61a	3.452	0.033	26.95±16.17a	17.116	<0.001
Secondary	21.10±8.43a,b			31.40±9.75b		
Tertiary	23.92±10.91a			26.18±14.34a		

($P < 0.05$ is considered significant)

The statistical analysis reveals that age, family structure, and education level are the primary factors significantly influencing consumption behaviours as shown in Table 5. There is a highly significant difference in behaviour across age groups ($p = 0.004$).

Participants aged >65 years exhibit the highest mean behavioural score (40.79 ± 26.50), which is significantly higher than all other age categories. Consumption behaviour varies significantly based on family dynamics (p = 0.001). Drivers from Extended (29.24 ± 6.08) and Nuclear Polygamous (29.20 ± 15.21) families show higher behavioural scores than those in monogamous nuclear settings. The level of education plays a significant role in behaviour (p = 0.003). Participants with Tertiary education have a significantly higher mean behavioural score (32.70 ± 16.23) compared to those with primary or secondary education.

Table 5. Comparison of Behaviour Towards Alcohol Consumption with the Sociodemographic Factors of Commercial Automobile Drivers

	Behavior		
	Mean±SD	**t/ANOVA**	**p-value**
Sex			
Male	27.58±14.93	1.569	0.77
Female	35.86±15.30		
Age group (years)			
18-24	24.13±19.73a	3.958	0.004
25-35	27.35±13.39a		
36-49	26.99±12.34a		
50-64	27.68±18.09a		
>65	40.79±26.50b		
Religion			
ATR	28.31±15.43a	2.634	0.079
Christianity	28.53±14.33a		
Islam	26.87±15.31a		
Marital status			
Single	26.02±19.68a	2.57	0.066
Married	27.79±14.59a		
Widow/Widower	21.23±10.63a		
Divorced	28.62±3.20a		
Family structure			
Nuclear(Monogamy)	26.56±15.07a	7.837	0.001
Nuclear(Polygamy)	29.20±15.21b		
Extended	29.24±6.08b		
Level of education			
Primary	28.01±20.94a	5.947	0.003
Secondary	27.11±12.74a		
Tertiary	32.70±16.23b		

(P < 0.05 is considered)

Key Informant Interview

Most of the informants acknowledged that this occupation has been associated with several experiences that time would not permit to recount. Some however added that there were truly challenges but they have been able to surmount it one way or the other.

There was a mixed response on this among the respondents. While some opined there were no particular occupation-related health

concerns, some were quick to state the particular health concerns they have noticed. Most of the respondents who reported health concerns spoke with regards motorcycle users.

Most respondents did not acknowledge the prevalence of alcohol and herb consumption to be a menace among them. They rather reported individual reasons and preference for it.

Some of the respondents reported significant use of herbs for back pain and 'pile'. Again, most did not report the common variants of alcohol noted among them.

Discussion

The aim was to study the epidemiology of alcoholic and herbal-based beverage consumption among commercial automobile drivers in Ibadan, the associated attitudes and behaviours, and the potential health-related risks. Across Ibadan metropolis, ten of the eleven local government areas (LGAs) were involved in this study and they were: Akinyele, Egbeda, Ibadan North-East, Ibadan North-West, Ibadan South-East, Ibadan South-West, Ido, Lagelu, Oluyole, and Ona Ara. Ibadan North, being the eleventh LGA in the city was not included in the final selection for the study because it was the randomly selected location for the pilot study required to validate the tools needed for this study. Commercial automobile drivers recruited for this study were evenly distributed by total population in the LGAs, each having 170 – 174 respondents. A total of 1,713 respondents participated in the study. The number of respondents for the Key Informant Interview (KII) were also evenly distributed; one notable individual per LGA within the automobile park – either as the chairman or an executive within the park.

Socio-Demographic Factors and Substance Use

In this study, the respondents were mostly men (99.5%). This may not be a surprising demographic distribution as the transportation industry is often perceived as a male-dominated field. The predominance of the male gender in this profession may have been a significant factor on the current prevalence of alcohol and herbal drink consumption. The predominant age group of commercial automobile drivers in Ibadan from this study is 36 – 49 years. This is similar to findings from other major cities in the country: 40-49 years in Abuja, 15-55 years in Uyo, 20-49 years in Benin, mean age of 43.6 years in Lagos, and 43.3±5.2 years in Port-Harcourt.

Other sociodemographic variables particular to this study include most of the respondents are married (89.4%), in a nuclear monogamy setting (60.1%) and with secondary level of education (74.6%). This trend is similar to the findings from a study done within Ibadan five years earlier with 63% of them married and nearly 70% with secondary level of education [3].

Occupationally, our study suggests a slightly higher proportion of motorcycles as the predominant means of commercial transportation. Others include tricycles (also called *keke napep*), cabs as taxi (usually of the Nissan Micra brand) and then buses. A recent study in Oyo state has emphasized on the rise of commercial motorcycles as a means of transportation. Nearly half (44.7%) of those these commercial automobile drivers have been working for 5 – 10 years, working for about 9 – 16 hours per day, and for 4 -5 days per week. 35.9% of them earn 50,000 – 74,000 naira every week.

The two strongest and most significant factors associated with higher odds of alcohol consumption among commercial drivers are younger age (especially 18–24 years) and working very long hours (> 16 hours/day). Furthermore, the relationship with income appears U-shaped, with the highest odds of consumption found in the highest income bracket (>100,000 naira), but with the odds also higher in the high-income groups than the very low-income groups).

Unlike the alcohol model, work hours and occupation category had no statistically significant impact on herbal consumption. Whether a driver works <9 hours or >16 hours, it does not significantly change their likelihood of using herbs. There is no significant difference in herbal consumption between Tricycle, Bus, Cab, or Motorcycle drivers.

Knowledge, Attitudes and Practices

Attitude of refers to an internal, subjective feeling, belief, or opinion that may influence behavior [8]. The behavior of alcohol and herb consumption among commercial automobile drivers may be influenced by their attitudes hence was studied using the questionnaire developed by Laura Gaines [9]. The attitude items were summed up as either positive or negative attitude. A bivariate Pearson correlation affirmed a significant inverse relationship between the sum positive and negative attitude ($r = -0.801$, $P < 0.001$) and was worth evaluating.

Discussion by Objective

From this study, the current prevalence of alcohol consumption is 44.4% and its lifetime prevalence is 59.1%. This is lower than the prevalence of 67.2% observed in Ile-Ife [1], and 93.75% in Uyo [4]. This relatively significant difference may have been due to the variation in geographical cultural and socioeconomic factors. Also, it has been documented that Ibadan appears to have the lowest prevalence of harmful use of alcohol in Nigeria, while the highest prevalence was reported in Benin, Edo State. In Ibadan, Lasebikan found the prevalence of current alcohol drinkers to be 88.9%, and the prevalence of alcohol use disorder to be 39.5% [11]. This suggests a possibility of drastic reduction in the consumption of alcohol over the last decade. This possibility general reduction in alcohol intake has been reported by Adeloye in a recent systematic review [2].

Also noteworthy from this study is the fact that the most consumed alcohol type was gin. This practical surge in the consumption of gin among the respondents have been suggested to be due to the market strategy adopted by the gin making companies. The sub-Saharan Africa has been regarded as a target for market expansion by global alcohol producers [12]. Probably as part of the market expansion strategies, they now make gin available in very handy and cheap sachets. This is becoming a menace that has drawn the attention of the government. There is a plan to totally ban the production of alcohol in sachet by December 2025.

The most prevailing reasons for alcohol consumption among commercial automobile drivers in Ibadan are the need to feel relaxed especially after the day's work (46.5%) > the need for stimulation or motivation (42.4%) > in the moments of sadness (39.9%) > and in the moments of loneliness (33.6%). This finding is similar to that in Ile-Ife, a neighbouring town; where most respondents reported drinking after the day's work (74.5%), drinking in order to cope with frustration (33.6%), the need to boost morale (22.8%), among other reasons [1].

The consumption pattern of herbal drinks was also evaluated in the study. The current prevalence of herb consumption among commercial automobile drivers in Ibadan is 87.7%. This prevalence is similar to that reported by studies that 80% of the world population rely on traditional herbal medicine for primary health care [13; 18]. Apart from Ibadan South-East LGA, no other area in Ibadan had a prevalence less than 80%. This suggests a widespread use across board. Woo et.al. also added that there is a rising trend in the utilization of these herbal products globally.

Its consumption pattern presents a form of categorization, with the population of those consuming only water-based herbs being the highest (84.1%). 40.8% of the population consume alcohol-based herbal preparations and 14.6% of the respondents consume both types of common herbal preparations. Woo et. al.

however considered the commonly known branded herbs for their study, such as St. John's wort, Ginkgo biloba, Ginseng, Saw palmentto, Liquorice root, Echinacea, Kava, and Ma Huang [18]. Although less than half of the respondents consume alcohol-based herbs, and 14.6% consume both variants, this does not exclude the possibility of abuse. Studies have reported an emerging problem which is the abuse of herbal drugs. This is as a result of some intrinsic properties of the herbs exerting stimulating, psychedelic, sedative, euphoric and anticholinergic effects [14].

More than three-quarter of the respondents (77.7%) consume herbal preparations for health reasons. As revealed from the KII, the most common health complaints why herbal preparations are sought are back pain, pile and fever. Some of the respondents (30.4%) would actually prefer taking herbal medications to visiting a hospital for their health challenges. On further evaluation of why herbal preparations are favoured in this population, its use for multipurpose health prevention accounted for the most prevalent reason (23.9%). Other significant reasons were cost-effectiveness (12.4%), efficacy (11.6%) and its natural state (11.1%). From their study, Woo et. al. reported the use of herbal remedies primarily as dietary supplement for disease prevention due to the general belief that herbs are natural and intrinsically safe, and due to dissatisfaction with conventional medicine.

Attitude and Behavior to their Health

Health attitudes were significantly associated with substance-use behavior. A strong inverse correlation was observed between positive and negative health attitudes ($r = –0.801$; $p < 0.001$), indicating internal consistency of attitudinal constructs. Alcohol consumption was primarily motivated by psychosocial factors, including the need for relaxation after work (46.5%), stimulation or motivation (42.4%), sadness (39.9%), and loneliness (33.6%). Similar coping-driven drinking patterns have been reported among drivers in Ile-Ife, where 74.5% reported drinking after work [1]. Herbal beverage use was largely perceived as health-promoting, with 77.7% of respondents consuming herbs for health reasons, and 30.4% preferring herbal treatment over hospital care, reflecting strong confidence in traditional medicine.

Factors Associated with Attitude and Behaviors to Health

Multivariable analysis revealed that younger age (18–24 years) and working more than 16 hours per day were the strongest predictors of alcohol consumption. Income demonstrated a U-shaped relationship, with higher odds of alcohol use among both the highest income group (>₦100,000/week) and lower income groups, compared with middle-income drivers. Conversely, herbal beverage consumption was significantly associated with older age and lower-to-middle income levels (<₦75,000/week), while work hours and type of vehicle operated showed no statistically significant association. These findings suggest that alcohol use is more occupation-stress-related, whereas herbal use is more culturally and economically driven. Cultural preference alone accounted for 9.3% of reported reasons for herbal consumption.

Limitations of the study

This study evaluates the cardiovascular impact of consuming alcohol and herb-based beverages among commercial automobile drivers within Ibadan. Ibadan is a metropolitan city and findings from this study may not reflect the pattern in sub-urban areas within the state or geopolitical zone. In other words, despite the randomization, the selection of this sample population may have introduced a selection bias into this study. Further studies would have to be undertaken to ascertain the pattern of cardiovascular impact among commercial automobile drivers in sub-urban or rural areas

or among other professions within the Ibadan metropolis.

Also, the relationships established in this study between cardiovascular parameters and the consumption of selected beverages may not be causal as could not be ascertained in a cross sectional design utilized at this time. Further studies and in-depth analyses may be required to ascertain these findings.

Conclusion

This study provides important epidemiological evidence on the patterns, determinants, and health implications of alcohol and herbal-based beverage consumption among commercial automobile drivers in Ibadan, Nigeria. Alcohol use was moderately prevalent and was significantly associated with younger age and prolonged working hours, while herbal preparation use was highly prevalent and strongly influenced by income, age, and cultural preferences.

Conflict of Interest Statement

The author declare no conflict of interest. This study was conducted independently, and no author received financial or material incentives that could bias the outcomes of this research.

Ethical Approval Statement

Ethical approval was obtained from The Oyo State Ethical Review Board prior commencement of the research:

All participants provided informed consent, and confidentiality was strictly maintained.

Author Contributions

Adediran A.O: Conceptualization, methodology, data analysis, manuscript drafting, final approval.

Prof. Olaiya Abiodun: Technical guidance, conceptual oversight, editing, and academic supervision.

District and Facility Contributors: Field data collection, validation, and logistics support.

All authors reviewed and approved the final manuscript.

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