Research Article

Alcohol Consumption in Cameroonian Households and Risk of Occurrence of High Blood Pressure

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Abstract

The consumption of alcoholic beverages by the Cameroonian population is a reality. This consumption takes on the appearance of a pathological attraction towards psychoactive products with consequences on the social, economic, family and health levels. Several determinants underlie this state of affairs. The main objective of the study is to describe the phenomenon of alcohol consumption by the Cameroonian populations, knowing the relationship between chronic use of psychoactive products and the risk linked to high blood pressure (HBP). In order to achieve this objective, a cross-sectional survey with a descriptive aim among five hundred (500) households in the Central Region of Cameroon was conducted. A probabilistic technique called simple randomness was used. The number of households to be surveyed was determined indirectly using the Cochran's formula involving HBP prevalence among Cameroonian population. Data collection in face-to-face mode using a physical questionnaire took place from July 1st to August 31st 2023, after obtaining ethical clearance from the regional committee for the center and an administrative authorization for data collection. To analyze the data, SPSS version 25.0, and Excel was used. To test the Normality and reliability of data, the Chi-square test was used for data with a qualitative value and that of Kolmogorov–Smirnov for data with a quantitative value. The study results show daily consumption of large quantities of adulterated home-made alcohol among people with low levels of education.
Keywords: Alcohol Consumption, Households, High Blood Pressure.

Background

Hypertensive pathology will represent in the centuries to come, one of the greatest threats in poor, middle-income or developing countries. The repercussions of such a threat will be visible on the economic, health, individual and collective well-being levels, as well as on the quality of life. The major risk for these countries will be the worsening of the incidence of poverty. These countries need to continuously establish, develop, and strengthen relevant policies of fighting against this upcoming sanitary crisis. Considering recent epidemiological and demographic data, several developing countries like Cameroon are experiencing, at varying intensities, the dual phenomenon of epidemiological and demographic transition. These life transitions are under the influence of a triadic model whose main poles represent modernization, globalization and urbanization. Chronic non-communicable diseases (NCDs) such as HBP are the consequence of these life transitions and others factors related to genetic inheritance. The prevalence of high blood pressure in Cameroon is one of the highest in sub-Saharan African countries. Despite the absence of recent studies, it is estimated at 35% according to the Cameroon Heart Foundation, while it was around 29.7% in 2015 [1]. Several factors including excessive alcohol consumption can explain the situation, even if this association has not been evidenced in all studies carried out all over the world. In various studies, alcohol appeared as a significant main effect in most of the multiple linear regression analyses for men and women [2]. There is clearly a link between this psychoactive substance and chronic fluctuations in blood pressure levels that is the reason why hypertensive patients must receive a detailed alcohol history to

suggest that they reduce their alcohol consumption if it proves excessive [3]. A positive association between alcohol consumption and hypertension was found in Ghana [4], others studies evidenced this association in Cameroon [5], also in Zambia [6]. In the situation of increasing prevalence of arterial hypertension in Cameroon, several factors are involved. But in the present article we describe the aspects related to alcohol consumption.

Methods
Choice of the Site for Data Collection
This study was carried out in the Central Region of Cameroon. This choice is justified by the fact that (i) it is the most populated region of the country, with average 1,669,303 inhabitants. It houses approximately 18.67% of the Cameroon population coming in the first position of all the region of the country; (ii) as an administrative center; it experiences significant movements of populations in search of work opportunities. Given the fact that the central region host to the economic capital of Cameroon, Yaoundé, it welcomes all the socio-cultural sensitivities of the country; (iii) it is the region with the largest number of households and probably the highest number of person living with HBP (PLHBP) in the absence of new data on the general population census.

Participants and Type of Study
To achieve our objective, a cross-sectional descriptive survey was carried out among five hundred (500) households of the region. The study population consisted of households hosting at least one person living with high blood pressure (PLHBP). We chose households of PLHBP instead of households in the region because of the lack of recent data on this information. The last general population census took place in 2005 and the results published in 2010. Another reason for the choice of household heads as the population of our study is that the latter represents the household, he then defines the general policy, is responsible for finding the resources necessary for the functioning of the household, thinks about its progress and future, he makes decisions that impact the household. Its economic situation significantly affects the living conditions of all the people who live under its roof. However, the PLHBP were identified in health facilities in the region, then it was easy for us to find their homes by a simple random selection.

Bias Control
We are aware of the fact that our approach may raise problems of selection bias and generalization of results. What should be remembered is the fact that exposure to economic stress affects all populations of Cameroon regardless of the region with regard to the form of the state (hyper-centralized), which defines economic policies and provides political orientations. The trickle-down of wealth and economic benefits occurs in the same way. Cameroonian populations move and live in the same context, sharing similar existential realities. Regarding the data collection, the period from July to August 2023, households chosen randomly and that agreed to participate to the survey has been investigated. Conversely, households whose consent was not obtained were put aside. For bias control, in other to be selected as a data collection agent, the candidate had to have experience of at least two participations in data collection activities in doctoral projects and/or surveys of national and/or regional scope; be a professional in the field of health or statistics with a minimum level of study equivalent to a Baccalaureate. The investigators then received one day of training with ourselves and two other public health experts. This training was to review data collection strategy and the field investigation procedure. Data were collected using a structured questionnaire addressed to the head of household of the PLHBP. The information sought was the socio-demographic characteristics (age, gender, marital status, household size) of the heads of households, professional occupation, monthly household income, sector of activity of the head of household and the different sources of income and additional income.

Sampling Technic
In order to guarantee the validity and reliability of our survey, a probabilistic technique has been used. We opted for an indirect sample. The selected heads of households had to host at least one PLHBP. It is therefore from the PLHBP identified in the health facilities that the heads of household were selected. However, the number of PVHTA was determined using the Cochran's formula : $n'=\Sigma^2 pQ/i^2$ [7]. Where 'n' represents the number of PLHBP (respectively number of households) to be surveyed; Σ: confidence threshold according to the reduced centered normal distribution (for a confidence threshold of 95%, Σ = 1.96); p: prevalence of hypertension in Cameroon, Q: 1-P and i desired precision (5%). Thus, our sample makes it possible to extrapolate the results with a 5% risk of being wrong by plus or minus 2%. After obtaining the number of PLHBP registered in the 1626 health facilities spread over thirty-two health districts of the central region, we carried out a simple random selection of households. Then, we interviewed a variable number of

households in each health district, depending on the proportion of PLHBP recorded in these health facilities selected randomly. Finally, to achieve our objectives, we surveyed five hundred (500) households, which thus constitute the size of our sample.

Data Collection Procedure
The data collection procedure concerns administrative and ethical issues**.** Our investigation took place in two stages. During the preparatory (step that corresponds of first stage), we recruited and trained fifteen (15) data collection agents on the methods of administering a questionnaire in a **«face to face»** and telephone call mode. After this training, a selection test was organized, after which five (05) data collection agents have been selected. The study was approved by the Regional Ethics Committee of the Human Health Research Center of the Ministry of Public Health of Cameroon (CE Approval No. 00535/CRERSHC/2023 signed on July 24, 2023), by all participating households and administrative authorization of the Regional delegation for public health of the center.

Before administering the data collection, our questionnaire was pre-tested in two phases: (i) it was submitted to our supervisor and our biostatistician for a critical analysis of content and form (ii) then to fifty heads of households, in order to adapt the language level to the context of the respondents. Questions were related to socio-demographic characteristics, origin of alcohol consumed, reason of consumption…etc.

The Southern Cameroon region served as the setting for this pilot study. Once in the field (second stage), each interviewer stated their identity, presented the data collection authorizations, the information notices. After obtaining the consent of the respondent, the administration of the questionnaire began immediately in «face to face» mode and lasted approximately 30 to 45 minutes. After then we proceeded for the validation of data by reviewing all the indicators. Questionnaire with missing data and outliers were left aside.

Statistical Methods
The purpose of our data analysis was not to emphase on statistical associations among variables, but to highlight the exposure factors. Firstly, the results were presented either in the form of graphs, frequencies or percentages. These graphs and tables present the categories of variables and the corresponding numerical data, characteristics of their distributions for both quantitative and qualitative data. This was done using the Microsoft Office 2016, EXCEL program.

Normality and Reliability Tests
The Chi-square test was used for data with a qualitative value and that of Kolmogorov–Smirnov for data with a quantitative value.

Descriptive Analytics
Descriptive analysis made it possible to synthesize and prioritize the data and detect the characteristic parameters of each data variation. It also makes it possible to check whether the variations are due to chance, to the collection tools or whether these variations are significant and to compare the variation and significance thresholds to better assess the results obtained. This analysis was possible thanks to the XLSTAT 2016 software.

Results
The socio-demographic characteristics of the heads of households made it possible to judge the age at which exposure to economic stress began, as well as employment issues and work force. Several scientific studies have highlighted the existence of a positive association between certain socio-demographic characteristics (age, gender, marital status) and the risk of developing high blood pressure. The results of our research aim to expose the existence of exposure with regard to general living conditions in households. Regarding the characteristics of the heads of households (HH) interviewed (Table 1), we observed that the median age of heads of household (HH) was 47.37 (±11.20) years. The age of these HH was between 19 and 75 years old, divided into seven classes of equal amplitude. 1.80% of them were already head of households at 19 years old. HH aged between 35 and 43 were the most numerous, with a proportion of 28.8%.

Regarding the gender of HH (Table 2), our respondents were made up of 275 women (55.00%) and 225 men (45.00%), with a femininity ratio (female/male) of 1.22. These households are led mainly by married/free union parents (53%), single-parent families (13%), predominantly female, where the woman assumes sovereign functions and participates in the survival of the members. For the level of instruction, 33.00% of our HH arrived the secondary school, while 30.80% of them did not attend this level.

Table 1. Central tendency and dispersion parameters.

Characteristics	N = 500
Age group	
19-27	9 (1.80%)
27-35	50 (10.00%)
35-43	144 (28.80%)
43-51	120 (24.00%)
51-59	71 (14.20%)
59-67	95 (19.00%)
67-75	11 (2.20%)
Minimum	19 years
Maximum	75 years
Average age	47.37 years
Standard deviation	11.20

Table 2. Characteristics of households interviewed.

Characteristics	N = 500
Gender	
Male	225 (45.00%)
Female	275 (55.00%)
Matrimonial status	
Married/free union	265 (53.00%)
Single	65(13.00%)
Widower	35 (7.00%)
Undeclared	135 (27.00%)
Residence location	
Rural	215 (43.00%)
Peri-urban	195 (39.00%)
Urban	90 (18.00%)
Educational level	
No level	25 (5.00%)
Primary	154 (30.80%)
Secondary	165 (33.00%)
University	156 (31.20%)

Concerning alcohol consumption (Figure 1), we noted a high daily consumption of artisanal whiskey among female heads of household, compared to men. Conversely, the consumption of beers, white wine and red wine as well as modern whiskey is more important among men compared to women.
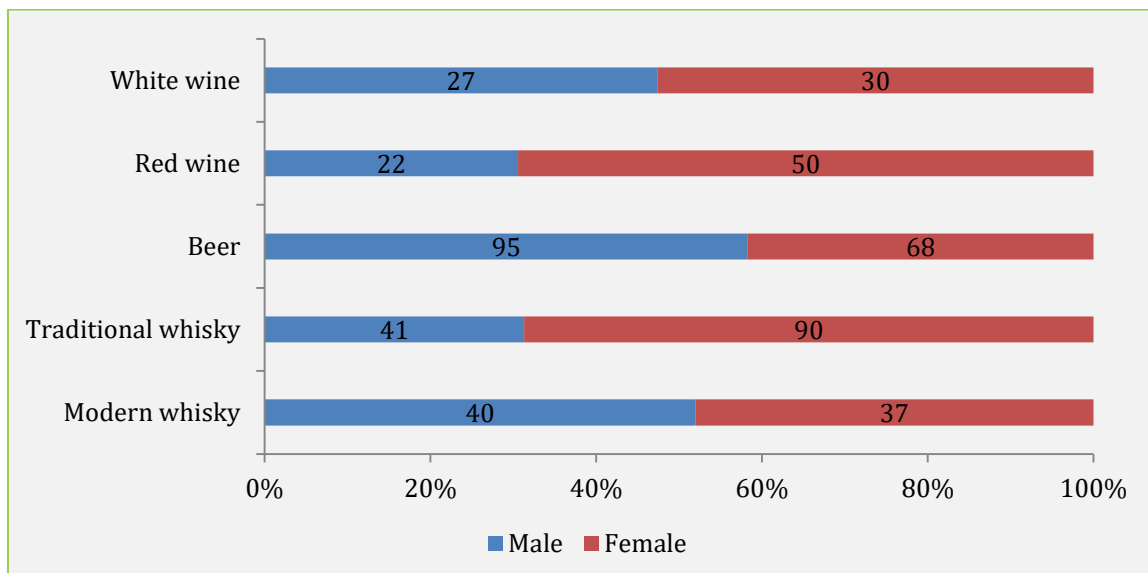

Figure 1. Type of daily alcohol consumed in each households per gender.

By carrying out a more in-depth analysis according to the level of education, we note that heads of households without education, as well as those with a primary education level, mainly prefer to consume traditionally made whiskey. Conversely, from secondary and university level, heads of households show their preference for beer, red wine and modernly made whisky (Figure 2).

Figure 2. Daily alcohol consumed in households and level of education.

The Figure 3 shows the number of gram of alcohol consumed daily. According to these data, daily consumption in grams of alcohol was assessed by the heads of households. We were thus able to note a high daily consumption of traditional whiskey of up to 40 grams among people with primary school education while people not in school could consume up to 20 grams. As education level increases, we notice a preference for large quantities of beer and small quantities of red wine (Figure 3).
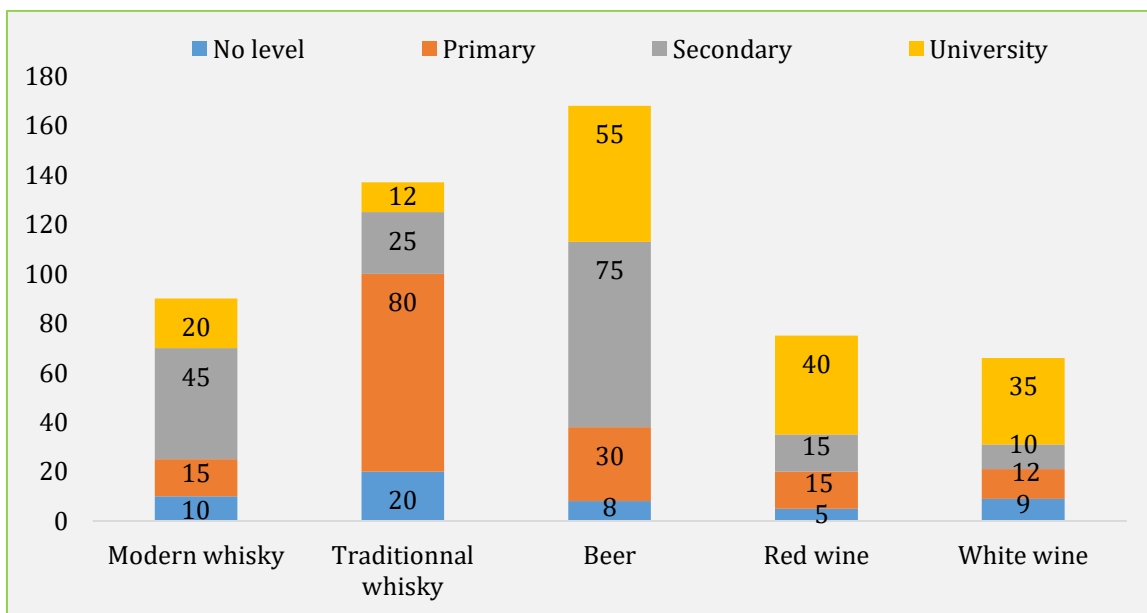

Figure 3. Number of grams of alcohol consumed per day depending on level of study.

Discussion
The association between the quantities of alcohol consumed and chronic fluctuations in blood pressure levels has been highlighted in several studies. Our objective was to describe the phenomenon within Cameroonian society. According to a study carried out the regular consumption of alcohol elevates blood pressure, with global estimates that the attributable risk for hypertensive disease from alcohol is 16%. The increase in blood pressure is approximately 1 mmHg for each 10 g alcohol consumed and is largely

reversible within 2–4 weeks of abstinence or a substantial reduction in alcohol intake. This increase in blood pressure occurs irrespective of the type of alcoholic beverage [8].

In Cameroon, we noted consumption above 20 grams daily. Others studies evidenced a significant and independent relation of heavy alcohol intake (300 ml/week) to blood pressure is seen in both men and women and for younger and older men [9]. Acute alcohol consumption has a biphasic effect on blood pressure. It promotes a BP-lowering effect in the first hours after intake and an increase thereafter. Men and women who consume moderate-to-high amounts of alcohol (more than two drinks for men and one drink for women) are at higher risk of developing hypertension. Black individuals who drink alcoholic beverages have a higher risk than Asians and Caucasians of developing hypertension [10].

Conclusions
There are several varieties of alcohol on the Cameroonian market. Heavy consumption of locally produced alcohol constitutes a danger for the populations who consume it. The manufacture of this type of alcohol does not obey to any known and established standards. In the composition of this artisanal alcohol, it is difficult to estimate the alcohol content, as well as its different elementary constituents. This situation makes it particularly dangerous for human health. Data on the substances that are included in the composition of this alcohol are not always available, even less on the degree. There is risky consumption of alcohol in Cameroon. This consumption is likely to explain the increase in the prevalence of high blood pressure.

Recommendations
✓ Adopt a law that regulates alcohol consumption within Cameroonian society.
✓ Popularize and ensure effective communication around alcohol consumption in young people.
✓ Develop a computerized approach to monitoring daily consumption of alcoholic beverages.

Lessons Learned
At the end of studies, there are always something to learn. In this chapter of lessons, we retained that:
✓ The population knowledges about the relationship between alcohol and HBP are poor.
✓ There is no relevant communication about the alcohol consumption and HBP among the population.
✓ There is a heavy consumption of traditional alcohol in Cameroon.

Declarations
Author Contributions: JNA, DT, AOA: Concept and design of the study, prepared first draft of manuscript; JNA, UD, BB: Reviewed the literature, and manuscript preparation; JNA, DT: Concept, coordination, statistical analysis, and interpretation, interpreted the results; BB, AOA, UD: Revision of the manuscript.
Conflict of Interest: The authors declare no conflict of interest.
Consent to Publish: The authors agree to publish the paper in International Journal of Recent Innovations in Academic Research.
Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.
Institutional Review Board Statement: The study was approved by the Regional Ethics Committee of the Human Health Research Center of the Ministry of Public Health of Cameroon (CE Approval No. 00535/CRERSHC/2023 signed on July 24, 2023), by all participating households and administrative authorization of the regional delegation for public health of the center.
Informed Consent Statement: Informed consent was obtained from all subjects involved in this study.
Research Content: The research content of manuscript is original and has not been published elsewhere.

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