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Factors Influencing Cardiovascular Risk and Prevention Strategies among Patients Attending Selected District Hospitals in Douala, Cameroon

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Abstract *Cardiovascular diseases (CVD) remain the leading cause of death worldwide and are a major public health concern, particularly in low- and middle-income countries. The persistence of unhealthy lifestyles and inadequate preventive practices contributes significantly to the increase in the CVD burden. This study aimed to assess cardiovascular risk factors and prevention strategies among patients visiting the cardiology departments of Logbaba, Nylon, and Deido district hospitals in Douala, Cameroon. A quantitative cross-sectional descriptive study was conducted from January to June 2025 among 400 selected respondents in the target hospitals. The data were collected using a structured questionnaire and analyzed with Microsoft Excel, Epi Info and RStudio software. Frequencies and percentages were calculated and presented in tables and figures. Results revealed that 72% of respondents consumed alcohol, while 55% regularly consumed foods high in saturated fats and added sugars. In addition, 97% of participants reported high levels of stress. As for physical activity, 41% of the respondents were physically active only a few times a month. Unmodifiable risk factors were also predominant, with 73% of respondents having a family history of cardiovascular disease, with stroke being one of the most frequently reported condition. Although 77% of respondents consumed enough fruits and vegetables, and 88% took treatment for cardiovascular conditions, 51% had never received education or information on the prevention of cardiovascular disease from health professionals. The study highlights the urgent need to strengthen preventive education, promote healthy lifestyles, and improve screening for cardiovascular risks in health facilities.*

Keywords *Cardiovascular Risk Factors, Cameroon, Modifiable Factors, Non-Modifiable Factors, Prevention Strategies.*

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Introduction

Cardiovascular disease (CVD) is a condition affecting the heart and blood vessels and is one of the leading causes of morbidity and mortality worldwide. It includes coronary heart disease, stroke, heart failure, hypertension and other vascular disorders resulting primarily from atherosclerosis and circulatory dysfunction [1]. According to the World Health Organization (WHO), cardiovascular diseases are responsible for about 17.9 million deaths per year, nearly one-third of global mortality [2]. More than three-quarters of these deaths occur in low- and middle-income countries, where access to preventive health services and adequate care remains limited [3].

The burden of cardiovascular disease has increased dramatically in sub-Saharan Africa due to urbanization, demographic transition, sedentary lifestyles, and poor dietary habits [4]. In many developing countries, changing lifestyles characterized by decreased physical activity, excessive alcohol consumption, smoking, obesity and increased consumption of saturated fats, strongly contributed to the increase in cardiovascular risk factors [5]. These factors are often compounded by insufficient preventive education and limited access to quality health care.

In Cameroon, cardiovascular disease is a major public health problem and one of the leading causes of death from non-communicable diseases. Studies have shown that hypertension, diabetes, obesity, smoking, and stress are increasingly common among adults [6]. Rapid urbanization in cities like Douala has led to significant lifestyle changes that promote the emergence of cardiovascular risk factors. Moreover, socioeconomic insecurity and lack of awareness about preventive measures increase the vulnerability of populations to cardiovascular complications [7].

Cardiovascular risk factors can be classified as modifiable and non-modifiable. Modifiable factors include smoking, alcohol consumption, hypertension, obesity, diabetes, dyslipidemia, sedentary behaviour and unbalanced diet [8]. These factors can be prevented or controlled by lifestyle modification and appropriate medical interventions. Conversely, non-modifiable factors such as age, sex and family history cannot be modified but are important determinants of the development of cardiovascular disease [9].

Prevention strategies play a vital role in reducing the burden of cardiovascular disease. WHO recommendations stress the importance of a healthy diet, regular physical activity, reduced alcohol and tobacco consumption, regular monitoring of blood pressure and compliance with medical treatment [10]. However, despite these recommendations, many patients continue to adopt unhealthy lifestyles and show low adherence to preventive measures and treatments.

The increasing prevalence of cardiovascular diseases and the persistence of cardiovascular risk factors in the population motivated this study. Understanding the determinants of cardiovascular risk and identifying prevention practices among patients consulting in cardiology are essential to improve cardiovascular health in Cameroon.

The objective of this study was to evaluate cardiovascular risk factors and prevention strategies in patients visiting the cardiology departments of some district hospitals in Douala. More specifically, the study aimed to identify modifiable cardiovascular risk factors, determine non-modifiable cardiovascular risk factors and identify preventive measures adopted by patients attending cardiology units in targeted hospitals.

Methodology

Study Design

A quantitative cross-sectional descriptive study was conducted among patients consulting the cardiology departments of some district hospitals in Douala, Cameroon. This type of

study was chosen because it allowed for the evaluation of cardiovascular risk factors and prevention strategies among participants at a specific time.

Study Site

The study was carried out in three district hospitals in Douala, namely Logbaba District Hospital, Nylon District Hospital, and Deido District Hospital. These hospitals provide cardiology consultation and follow-up services to a large urban population in Douala.

Study Period

The study was conducted over a six-month period from January 2025 to June 2025.

Study Population

The study population consisted of patients consulting the cardiology services of the target hospitals during the study period.

Inclusion Criteria

1. Patients attending the cardiology units of the selected hospitals.
2. Patients who voluntarily accepted to participate in the study.
3. Patients who signed informed consent forms.

Exclusion Criteria

1. Severely ill patients unable to respond to the questionnaire.
2. Patients who refused to participate in the study.

Sample Size and Sampling Technique

Participants were recruited for a period of three months using a convenience sampling technique based on their availability and willingness to participate during hospital consultations.

Data Collection

Data were collected using a structured questionnaire, developed according to the objectives of the study. This questionnaire included sections on sociodemographic characteristics, modifiable cardiovascular risk factors, non-modifiable risk factors and prevention practices. A pre-test of the questionnaire was conducted before the start of the study to ensure clarity, relevance and reliability. The necessary changes were made following this pre-test.

Data Analysis

The data collected were entered into Microsoft Excel and analyzed using Epi Info and RStudio software. Descriptive statistics, including frequencies and percentages, were calculated and presented in tables and figures.

Ethical Considerations

Ethical principles were strictly observed throughout the study. The approval of the Ethics Committee of the University of Douala was obtained. The administrative clearance from the relevant hospital authorities was also obtained before the data collection started. Participation was voluntary and informed consent was obtained from all participants. Confidentiality and anonymity were ensured by excluding personal identifiers from the questionnaires and ensuring that the information collected would be used exclusively for scientific purposes.

Results

Sociodemographic Characteristics

The study involved 400 respondents recruited from the cardiology services of Logbaba District Hospital, Nylon District Hospital, and Deido District Hospitals in Douala. Figure 1 shows the distribution of respondents according to age group. The majority of respondents belonged to the age group of 46–60 years (38%), followed by respondents aged 31–45 years (26%). Participants aged above 60 years represented 24% of the study population, while those aged 18–30 years accounted for 12%.

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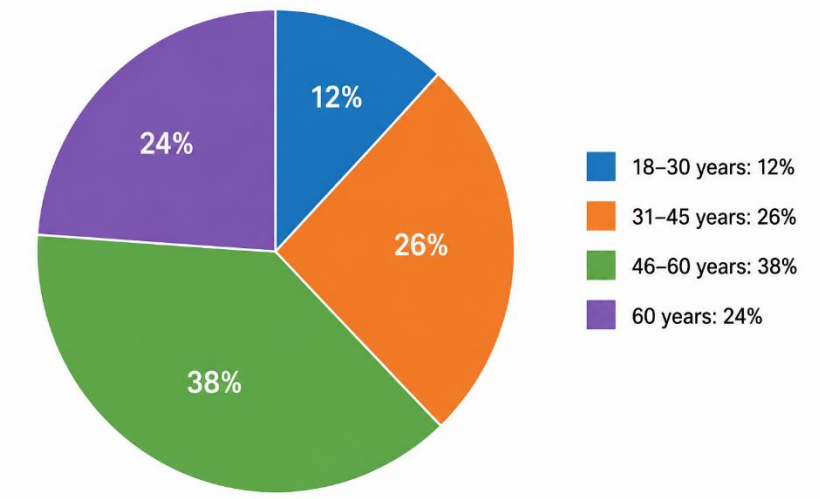


Figure 1. Distribution of Respondents according to Age Group

Table 1 shows the distribution of respondents by gender. There were 248 males (62%) and 152 females (38%), indicating a male predominance among the participants in the study.

Table 1. Distribution of Participants according to Sex

Sex	Frequency (n = 400)	Percentage (%)
Male	248	62
Female	152	38
Total	**400**	**100**

Figure 2 shows the distribution of respondents by level of education. There were 184 (46%) respondents with a higher (university) education, 128 (32%) with secondary education and 88 (22%) with primary education.

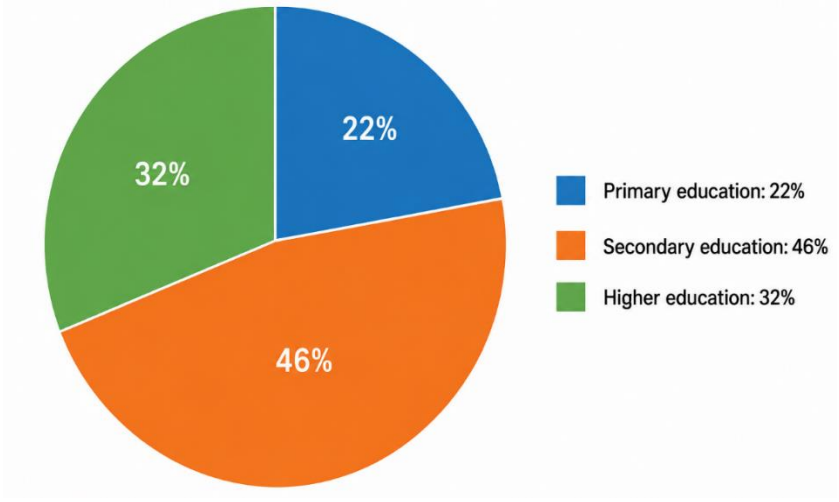


Figure 2. Distribution of Respondents according to Educational Level

Modifiable Cardiovascular Risk Factors

Table 2 presents the distribution and statistical analysis of modifiable cardiovascular risk factors among study participants. The results revealed a high prevalence of alcohol consumption: 72% of respondents said they consumed alcohol, while only 28% said they did not. Smoking was also identified as a significant risk factor, with 29% of participants

reporting that they were smokers, compared to 71% who did not smoke.

The study also found that poor eating habits were common among respondents, with 55% of respondents reporting regular consumption of foods high in saturated fats and added sugars. Moreover, a very large majority of participants (97%) reported experiencing high levels of daily stress, indicating that stress is one of the most common cardiovascular risk factors in the study population.

With respect to physical activity, only 17% of respondents engaged in physical activity daily, while 41% engaged in it only a few times per month and 25% reported rarely or never engaging in it. These results suggest a low level of regular physical activity among participants.

Statistical analysis showed that the differences observed for most cardiovascular risk factors were statistically significant ($p < 0.05$).

Table 2. Distribution of Modifiable Cardiovascular Risk Factors among Study Participants (N = 400)

Variable	Category	Frequency (n)	Percentage (%)	Statistical Analysis
Smoking Status	Smoker	116	29	$\chi^2 = 70.56$, $p < 0.001$
	Non-smoker	284	71	
Alcohol Consumption	Yes	288	72	$\chi^2 = 77.44$, $p < 0.001$
	No	112	28	
Consumption of Foods Rich in Saturated Fats and Added Sugars	Yes	220	55	$\chi^2 = 4.00$, $p = 0.046$
	No	180	45	
Level of Daily Stress	High	388	97	$\chi^2 = 353.44$, $p < 0.001$
	Low	12	3	
Frequency of Physical Activity	A few times per month	164	41	$\chi^2 = 64.96$, $p < 0.001$
	Few times per week	68	17	
	Daily	68	17	
	Rarely/Never	100	25	

χ^2 = Chi-square test statistic; $p < 0.05$ was considered statistically significant.

Figure 3 shows the most practiced physical activity by the respondents. Walking represented the most commonly practiced activity among respondents (77.5%), followed by running (10%), other activities (7.5%), and cycling (5%).

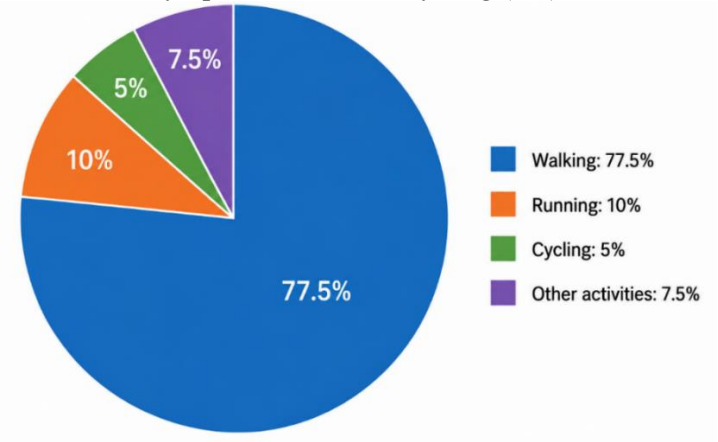


Figure 3. Most Commonly Practiced Physical Activities among Respondents

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Non-modifiable Cardiovascular Risk Factors

The study identified several non-modifiable cardiovascular risk factors in participants, including family history of cardiovascular disease and age (Figure 4). A total of 292 participants (73%) reported having a family history of cardiovascular disease, while 108 (27%) did not. The results also revealed that 88% of participants had experienced changes in their cardiovascular health with age.

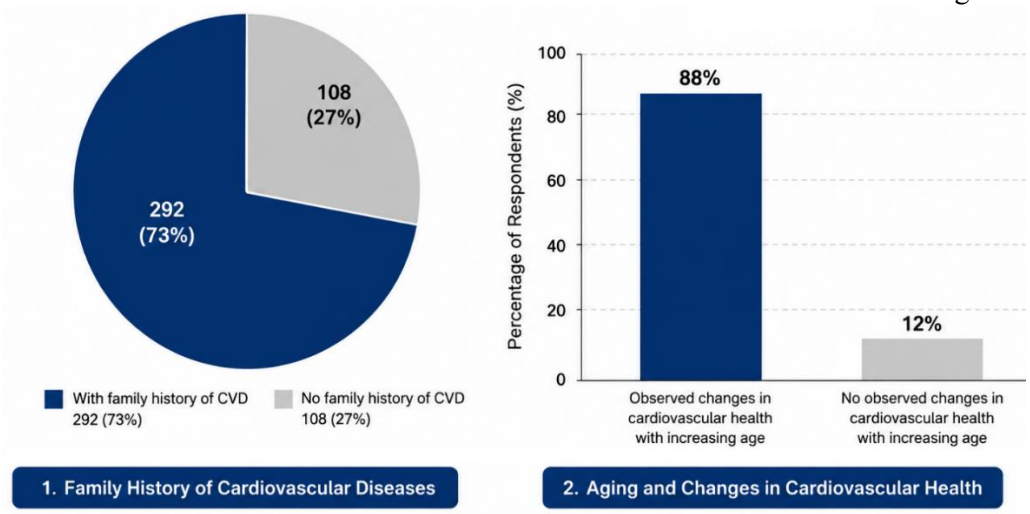


Figure 4. Non-modifiable Cardiovascular Risk Factors among Respondents

Prevention Strategies

The study identified several preventive measures implemented by participants to reduce cardiovascular risks and improve their cardiovascular health. Table 3 shows the frequency of self-measurement of blood pressure at home. Among participants, 136 (34%) measured their blood pressure daily, 184 (46%) occasionally and 80 (20%) never at home.

Table 3. Frequency of Blood Pressure Monitoring at Home

Frequency of BP Monitoring	Frequency	Percentage (%)
Daily	136	34
Occasionally	184	46
Never	80	20
Total	**400**	**100**

Figure 5 depicts the pattern of medication for cardiovascular problems. Out of 400 participants, 352 (88%) were on medication for cardiovascular problems, while 48 (12%) were not. Of the 352 participants on medication, 260 (73.86%) reported regular adherence to prescribed medication, while 92 (26.14%) reported irregular adherence. Out of 400 participants, 196 (49%) received education on cardiovascular disease prevention from healthcare professionals, whereas 204 (51%) did not receive such education.

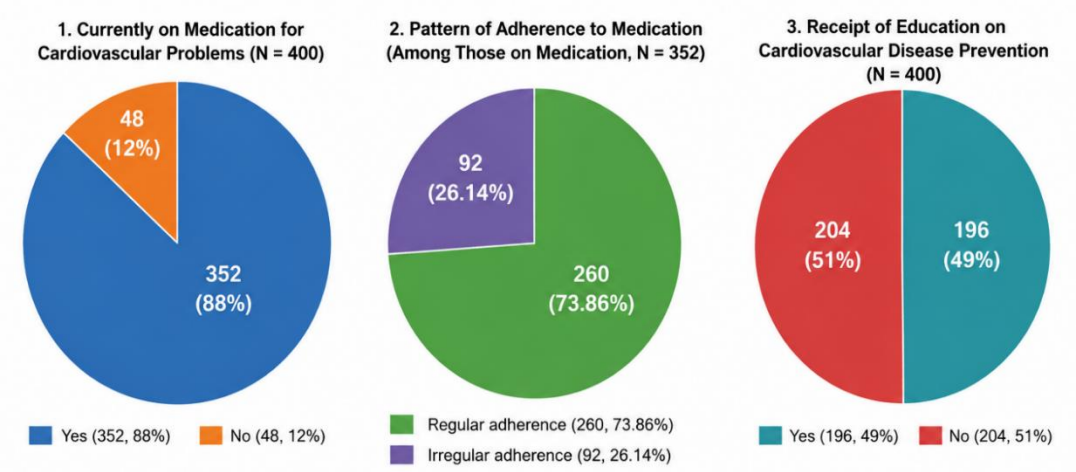


Figure 5. Pattern of Medication for Cardiovascular Problems

Figure 6 shows the cardiovascular diseases diagnosed among participants. Hypertension was the most frequently reported condition (48%), followed by diabetes (26%), heart failure (14%) and stroke (12%).

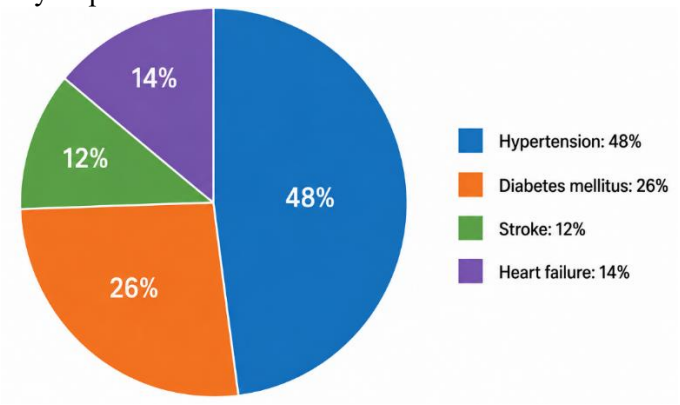


Figure 6. Diagnosed Cardiovascular Conditions amongst Participants

Discussion

The present study revealed a high prevalence of modifiable and non-modifiable cardiovascular risk factors among patients visiting the cardiology departments of some district hospitals in Douala, Cameroon. These results confirm that cardiovascular disease remains a major public health issue in urban populations, where unhealthy lifestyles, socioeconomic pressures and inadequate prevention practices contribute significantly to their occurrence and progression. Similar findings have been reported in several studies conducted in Sub-Saharan Africa, where rapid urbanization and epidemiological transition have led to increased cardiovascular morbidity and mortality [1, 2].

One of the main findings of this study is the high prevalence of alcohol consumption among participants. More than two-thirds reported consuming alcohol, which is consistent with studies showing that excessive alcohol consumption is strongly associated with hypertension, obesity, metabolic syndrome and cardiovascular complications [3, 4]. Piano [3] reported that chronic alcohol consumption impairs blood pressure regulation and contributes to cardiomyopathy, arrhythmias and strokes. In developing countries, alcohol consumption is often influenced by socioeconomic stressors, insufficient awareness of health consequences and inadequate preventive education. The high prevalence observed in this study could

therefore reflect increasingly common lifestyle behaviors in urban areas such as Douala.

Unhealthy dietary practices were also common among participants, including the consumption of foods high in saturated fats and added sugars. These dietary habits are known to contribute to obesity, dyslipidemia, insulin resistance and atherosclerosis [5]. Mozaffarian et al. [5] have shown that excessive consumption of unhealthy fats and processed foods significantly increases cardiovascular risk. Similarly, Afshin et al. [6] pointed out that poor dietary habits remain among the main factors contributing to global cardiovascular mortality. The persistence of unhealthy nutritional behaviors among participants in this study could be linked to urban food transitions characterized by increased consumption of processed and energy-rich foods.

Stress was another major cardiovascular risk factor identified among participants. Almost all of them reported high levels of stress, highlighting the psychological and socioeconomic pressures faced by urban populations. Chronic stress has been associated with increased sympathetic nervous system activity, hypertension, hormonal imbalance, endothelial dysfunction and adverse cardiovascular outcomes [7]. Steptoe and Kivimäki [7] found that psychosocial stress contributes significantly to cardiovascular morbidity through both physiological and behavioral mechanisms. The high prevalence of stress observed in this study could reflect unemployment, financial instability, work pressures and difficult living conditions frequently encountered in cities undergoing urbanization.

Physical inactivity has also been identified as an important modifiable cardiovascular risk factor. Although some participants reported being physically active, many engaged in physical activity only occasionally. This is in accordance with previous reports in which physical inactivity was found to be associated with obesity, hypertension, diabetes and increased cardiovascular mortality [8]. According to the World Health Organization, regular physical activity plays a protective role against cardiovascular disease by improving metabolic functions and maintaining a healthy body weight [9]. The predominance of walking as a main physical activity among participants suggests limited participation in structured exercise programs.

Regarding unmodifiable risk factors, the study showed that a large proportion of participants had a family history of cardiovascular disease. This result confirms the importance of hereditary and genetic predisposition to cardiovascular risk [10]. Lloyd-Jones et al. [10] showed that people with a family history of cardiovascular disease are significantly more likely to develop similar conditions due to genetic susceptibility and common environmental factors. Aging was also recognized as an important determinant of cardiovascular disease, with most participants reporting deterioration in their cardiovascular health with age. This observation is consistent with studies indicating that aging contributes to vascular rigidity, endothelial dysfunction and progressive atherosclerosis [11].

Despite the presence of several cardiovascular risk factors, some participants demonstrated encouraging preventive practices, such as fruit and vegetable consumption, blood pressure monitoring and medication adherence. An adequate intake of fruits and vegetables is associated with a reduction in cardiovascular morbidity due to their antioxidant, anti-inflammatory and lipid-lowering properties [12]. In addition, regular monitoring of blood pressure and adherence to antihypertensive therapy are essential to reduce cardiovascular complications and improve long-term prognosis [13].

A major problem identified in this study was the insufficient preventive education received by participants regarding the prevention and control of cardiovascular disease (CVD). More than half of the participants reported that they

had never received advice, health education or therapeutic guidance from healthcare professionals regarding cardiovascular risk factors and preventive measures. This raises important public health concerns, given the increasing prevalence of cardiovascular diseases in Cameroon and throughout sub-Saharan Africa. Previous African studies have also shown that insufficient patient education contributes to poor adherence to treatment, low knowledge of cardiovascular risk factors, late use of care and inadequate preventive practices [14, 15]. Therapeutic education is an essential component of chronic disease management because it provides patients with the knowledge and skills to make informed decisions about their health and adopt healthier lifestyles.

Effective health education plays a major role in promoting cardiovascular health by improving patients' understanding of modifiable and non-modifiable risk factors such as hypertension, obesity, smoking, excessive alcohol consumption, unhealthy dietary habits, physical inactivity, diabetes, and chronic stress. Studies have demonstrated that individuals who receive regular counseling and preventive education from healthcare providers are more likely to comply with prescribed medications, attend routine medical follow-up visits, and adopt healthier behavioral practices [16, 17]. Furthermore, patient education improves self-management capacities, facilitates early recognition of symptoms, and enhances healthcare utilization, thereby reducing cardiovascular complications and mortality. However, in many African healthcare settings, preventive education remains inadequate due to factors such as shortage of healthcare personnel, high patient load, insufficient consultation time, and limited healthcare resources [18].

The lack of structured therapeutic education observed in this study could partly explain the persistence of risk behaviors and modifiable cardiovascular risk factors among participants. Lack of knowledge about cardiovascular disease and its prevention is a major factor in the increase in the prevalence of hypertension, diabetes, obesity and other cardiovascular diseases in sub-Saharan Africa [14, 15, 19]. In particular, the high prevalence of undiagnosed hypertension among African populations underscores the urgent need to improve screening and public awareness programs [15]. Many people are unaware of their cardiovascular status until they develop serious complications such as stroke, heart failure or kidney disease. Consequently, insufficient preventive education is a major obstacle to the early diagnosis, prevention and effective management of cardiovascular diseases.

The results of this study therefore highlight the urgent need to strengthen public health interventions targeting the prevention of cardiovascular diseases in Cameroon. Health professionals, public health actors and policy makers should prioritize therapeutic education, community outreach and regular cardiovascular counseling within healthcare facilities and communities. Educational interventions should emphasize the importance of a healthy diet, reduced alcohol consumption, smoking cessation, stress management, weight control and regular physical activity. Community awareness campaigns, broadcast through radio, television, social media, churches, schools and local organizations, could significantly improve knowledge of cardiovascular health and encourage positive behavioral changes in the population [20, 21].

In addition, the integration of cardiovascular health education into primary health care services could significantly improve early detection and prevention of cardiovascular disease. Regular blood pressure monitoring, diabetes screening and lifestyle counselling should become essential components of primary health care. Health professionals should also benefit from ongoing training in preventive cardiology and patient-centered communication to improve the quality of

advice provided to patients. Moreover, multisectoral collaboration involving government institutions, health organizations, civil society and international partners is essential to address the growing burden of cardiovascular disease in urban populations [16, 22]. Policies promoting a healthy food environment, improved access to recreational facilities, affordable health services and routine screening programmes could contribute significantly to the reduction of cardiovascular morbidity and mortality. If properly implemented, these prevention strategies could improve the health status of the population and reduce the long-term socioeconomic burden associated with cardiovascular diseases in Cameroon and other developing countries [23].

Conclusion

Cardiovascular diseases remain a major public health issue in Cameroon and are strongly associated with modifiable and non-modifiable risk factors. The study highlighted high alcohol consumption, poor eating habits, stress, a sedentary lifestyle, a family history of cardiovascular disease and insufficient preventive education among patients visiting the cardiology departments of some district hospitals in Douala. Although some participants had adopted preventive practices such as physical activity, fruit and vegetable consumption, blood pressure monitoring, and medication adherence, major gaps remain in cardiovascular prevention and health education. Strengthening awareness campaigns, improving therapeutic education and promoting healthy lifestyles could contribute significantly to reducing cardiovascular risk and improving the cardiovascular health of the population. We therefore recommend that health professionals strengthen patient education on the prevention of cardiovascular disease, encourage regular physical activity and healthy eating, and improve communication with patients. Health authorities, for their part, should strengthen cardiovascular screening programs, improve access to preventive care services, and organize public awareness campaigns aimed at reducing modifiable cardiovascular risk factors.

Conflict of Interest

The authors declare no conflict of interest.

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Ethical Approval

Ethical approval for this study was obtained from the Ethics Committee of the University of Douala. Written informed consent was obtained from all participants before data collection.

Author Contributions

Fankep Dihewou Alphonse Bertin: Conceptualization, Data Collection, Methodology, Writing, Formal Analysis, and Project Administration. Christina Mbongueh Mohnchimbare and Mbabazi Asiati: Original Draft Preparation. Kamga Fouamno Henri Lucien: Research Supervision, Review and Editing.

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Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

References

[1]. Roth GA, Mensah GA, Johnson CO, Addolorato G, Ammirati E, Baddour LM, et al. Global burden of cardiovascular diseases and risk factors, 1990–2019. Journal of the American College of Cardiology. 2020;76(25):2982–3021. https://doi.org/10.1016/j.jacc.2020.11.010.

[2]. Kengne AP, Awah PK, Fezeu L, Sobngwi E, Mbanya JC. Cardiovascular diseases and diabetes in sub-Saharan Africa. Diabetes Research and Clinical Practice. 2019;103(2):240–248. https://doi.org/10.1016/j.diabres.2014.01.030.

[3]. Piano MR. Alcohol's effects on the cardiovascular system. Alcohol Research. 2017;38(2):219–241. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5513687/.

[4]. World Health Organization. Global status report on noncommunicable diseases. Geneva, WHO. 2021. https://www.who.int/publications/i/item/9789241564854.

[5]. Mozaffarian D, Fahimi S, Singh GM, Micha R, Khatibzadeh S, Engell RE, Lim S, Danaei G, Ezzati M, Powles J. Global sodium consumption and cardiovascular mortality. New England Journal of Medicine. 2014;371(7):624–634. https://doi.org/10.1056/NEJMoa1304127.

[6]. Afshin A, Sur PJ, Fay KA, Cornaby L, Ferrara G, Salama JS, Mullany EC, Abate KH, Abbafati C, Abebe Z, et al. Health effects of dietary risks in 195 countries, 1990–2017. The Lancet. 2019;393(10184):1958–1972. https://doi.org/10.1016/S0140-6736(19)30041-8.

[7]. Steptoe A, Kivimäki M. Stress and cardiovascular disease. Nature Reviews Cardiology. 2012;9(6):360–370. https://doi.org/10.1038/nrcardio.2012.45.

[8]. Lear SA, Hu W, Rangarajan S, Gasevic D, Leong D, Iqbal R, Casanova A, Swaminathan S, Anjana RM, Kumar R, et al. The effect of physical activity on mortality and cardiovascular disease. The Lancet. 2017;390(10113):2643–2654. https://doi.org/10.1016/S0140-6736(17)31634-3.

[9]. World Health Organization. WHO guidelines on physical activity and sedentary behaviour. Geneva, WHO. 2020. https://www.who.int/publications/i/item/9789240015128.

[10]. Lloyd-Jones DM, Nam BH, D'Agostino RB, Levy D, Murabito JM, Wang TJ, Wilson PW, O'Donnell CJ. Parental cardiovascular disease as a risk factor for cardiovascular disease in middle-aged adults. JAMA. 2004;291(18):2204–2211. https://doi.org/10.1001/jama.291.18.2204.

[11]. North BJ, Sinclair DA. The intersection between aging and cardiovascular disease. Circulation Research. 2012;110(8):1097–1108. https://doi.org/10.1161/CIRCRESAHA.111.246876.

[12]. Wang X, Ouyang Y, Liu J, Zhu M, Zhao G, Bao W, Hu FB. Fruit and vegetable consumption and mortality from all causes, cardiovascular disease, and cancer. BMJ. 2014;349. https://doi.org/10.1136/bmj.g4490.

[13]. Burnier M, Egan BM. Adherence in hypertension. Circulation Research. 2019;124(7):1124–1140. https://doi.org/10.1161/CIRCRESAHA.118.313220.

[14]. Nansseu JR, Noubiap JJ. Cardiovascular disease prevention in Cameroon. Pan African Medical Journal. 2020;35:45. https://doi.org/10.11604/pamj.2020.35.45.21694.

[15]. Ataklte F, Erqou S, Kaptoge S, et al. Burden of undiagnosed hypertension in sub-Saharan Africa. Hypertension. 2015;65(2):291–298. https://doi.org/10.1161/HYPERTENSIONAHA.114.04394.

[16]. Fuster V, Kelly BB. Promoting cardiovascular health in the developing world: A critical challenge to achieve global health. Washington DC, National Academies Press. 2010. https://nap.nationalacademies.org/catalog/12815/promoting-cardiovascular-health-in-the-developing-world-a-critical-challenge.

[17]. World Health Organization. Cardiovascular diseases (CVDs). Geneva, WHO. 2021. https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds).

[18]. Kengne AP, Noubiap JJ. Challenges of cardiovascular disease prevention in sub-Saharan Africa. Progress in Cardiovascular Diseases.

2018;61(2):150–157. https://doi.org/10.1016/j.pcad.2018.09.004.

[19]. Gaziano T. Reducing the growing burden of cardiovascular disease in the developing world. Health Affairs. 2007;26(1):13–24. https://doi.org/10.1377/hlthaff.26.1.13.

[20]. World Heart Federation. Cardiovascular disease prevention and control policies. Geneva, WHF. 2019. https://world-heart-federation.org/.

[21]. Centers for Disease Control and Prevention. Strategies for preventing cardiovascular disease. Atlanta, CDC. 2020. https://www.cdc.gov/heartdisease/prevention.htm.

[22]. United Nations. Political declaration on the prevention and control of non-communicable diseases. New York, UN. 2018. https://www.un.org/pga/73/event-latest-on-ncds/.

[23]. World Health Organization. Global action plan for the prevention and control of noncommunicable diseases 2013–2030. Geneva, WHO. 2023. https://www.who.int/publications/i/item/9789240047761.