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Prevalence and Factors Associated with Self-Medication with Antihypertensive Drugs among Pharmacy Clients in Brazzaville, Republic of Congo: A Cross-Sectional Study

Christian Michel Kouala Landa[1,2], Eudes Junior Emmahus Bitemo[1], Solange Flore Ngamami Mongo[1,2], Jospin Karel Bassakouahou Makani[1], Rog Patern Bakekolo[1,2], Eric Gibrel Kimbally-Kaky[1,2], Kivié Mou-Moué Ngolo Letomo[1,2], Franck Yannis Kouikani[1*], Bertrand Fikahem Ellenga Mbolla[1,2]

[1]Department of Cardiology and Internal Medicine B, University Hospital of Brazzaville, Brazzaville, Republic of Congo
[2]Faculty of Health Sciences, Marien Ngouabi University, Brazzaville, Republic of Congo
Email: *yannisfranck@yahoo.fr, yanniskouiks@gmail.com

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Abstract

Background: Self-medication with antihypertensive drugs is a common practice in sub-Saharan Africa that may contribute to poor blood pressure control and cardiovascular complications. However, quantitative data on this practice remain scarce in Central Africa, particularly in the Republic of Congo. **Objective:** To determine the prevalence of self-medication with antihypertensive drugs among pharmacy clients in Brazzaville and to identify associated factors and pharmacy dispensing practices. **Methods:** A cross-sectional descriptive study was conducted from March to November 2021 in five community pharmacies in Brazzaville. Hypertensive patients purchasing antihypertensive drugs without valid prescriptions were interviewed using structured questionnaires. Pharmacy staff were also surveyed regarding their dispensing practices and knowledge about self-medication risks. **Results:** Among 367 pharmacy clients screened, 100 (27.2%; 95% CI: 22.4% - 32.5%) practiced self-medication. The mean age was 53.8 ± 14.5 years with male predominance (59%). Most participants had secondary (39%) or higher education (37%), worked in the informal sector (32%) or were retired (29%). The main reason for self-medication was lack of money (72%), followed by lack of time (15%). Diuretics (52%), ACE inhibitors (39%), and calcium channel blockers (32%) were the most commonly self-medicated drugs. Only 20% of participants knew about health risks of self-medication. In case of treatment failure, 73% reported they would consult a physician. Among 25 pharmacy staff surveyed, 52% had dis-

pensed antihypertensive drugs without prescriptions, and 12% believed medical consultation was not essential before starting antihypertensive treatment. **Conclusion:** Self-medication with antihypertensive drugs is highly prevalent among pharmacy clients in Brazzaville, driven primarily by economic constraints and facilitated by inadequate enforcement of prescription requirements. Urgent interventions targeting patient education, pharmacy practice regulation, and economic barriers to healthcare access are needed to improve hypertension management in Congo. However, conclusions regarding pharmacy practices should be interpreted with caution, given the limited number of pharmacy staff included in the study.

Keywords

Self-Medication, Antihypertensive Agents, Hypertension, Pharmacy Practice, Congo, Sub-Saharan Africa

1. Introduction

Hypertension is a leading global cardiovascular risk factor, responsible for an estimated 10.8 million deaths annually worldwide [1]. The burden is particularly heavy in sub-Saharan Africa, where age-standardized prevalence reaches 27% - 30%, with control rates below 20% in most countries [2]. In the Republic of Congo, the May Measurement Month 2018 survey documented 40.2% hypertension prevalence among adults in Brazzaville [3], among the highest rates in Central Africa.

Despite the availability of effective antihypertensive medications, blood pressure control remains suboptimal in sub-Saharan Africa due to multiple barriers, including limited access to healthcare, medication costs, and poor adherence to treatment [4] [5]. In this context, self-medication—defined as the use of medications without a medical prescription—has emerged as a common but potentially harmful practice [6]. Self-medication with antihypertensive drugs exposes patients to numerous risks, including inappropriate drug selection, incorrect dosing, drug interactions, delayed diagnosis of secondary hypertension, and cardiovascular complications [7] [8].

While self-medication is well-documented in developed countries and some African nations, data from Central Africa remain scarce. A study in Côte d'Ivoire reported 60.1% self-medication prevalence among hypertensive patients [9], while prevalence in Mexico and the Philippines was 11% [10]. However, no quantitative data exist for Congo-Brazzaville despite anecdotal reports of widespread practice. This knowledge gap limits evidence-based policy formulation and targeted interventions in the Congolese healthcare context.

Furthermore, the role of pharmacy staff in facilitating or preventing self-medication remains poorly understood in Central Africa. Understanding both patient behaviors and pharmacy practices is essential for developing comprehensive in-

terventions to improve hypertension management.

This study aimed to: 1) determine the prevalence of self-medication with antihypertensive drugs among pharmacy clients in Brazzaville; 2) describe the sociodemographic characteristics, knowledge, and attitudes of patients practicing self-medication; 3) identify the classes of antihypertensive drugs most commonly used in self-medication; 4) assess pharmacy staff attitudes and practices regarding dispensing antihypertensive drugs without prescriptions; and 5) identify factors associated with self-medication practices.

2. Methods

2.1. Study Design and Setting

This was a cross-sectional descriptive study conducted from March to November 2021 in community pharmacies in Brazzaville, the capital of the Republic of Congo. The city has approximately 2 million inhabitants across nine districts and about 150 registered community pharmacies.

2.2. Pharmacy Selection

Nine pharmacies (one per district) were initially selected using simple random sampling. Four declined participation due to concerns about confidentiality and business impact. Five pharmacies located in Makélékélé, Potopoto, Moungali, Ouenzé, and Mfilou districts participated, which may have introduced selection bias toward more permissive dispensing practices.

2.3. Sample Size Determination

Based on a reported self-medication prevalence of 60% among hypertensive patients in Côte d'Ivoire, a minimum sample size of 93 participants was calculated using a 95% confidence level and a 10% margin of error. A total of 100 participants were recruited, ensuring adequate statistical power.

2.4. Study Population and Eligibility Criteria

Eligible participants were adults (≥18 years) with a self-reported diagnosis of hypertension who presented to participating pharmacies to purchase antihypertensive drugs without a valid or with an expired prescription and who provided informed consent. Clients with valid prescriptions or purchasing only over-the-counter medications were excluded.

2.5. Data Collection

Patient Questionnaire: A structured, pre-tested questionnaire was used to collect data on sociodemographic characteristics, hypertension history, self-medication practices, knowledge and attitudes regarding risks, and satisfaction with treatment outcomes.

Pharmacy Staff Questionnaire: A separate questionnaire was administered to pharmacists and pharmacy assistants to assess professional qualifications, fre-

quency of non-prescription dispensing, knowledge of prescribing regulations, commonly dispensed drug classes, and perceived barriers to medical consultation.

Data Collection Procedure: Trained investigators conducted face-to-face interviews during pharmacy operating hours over a two-week period in each pharmacy. All eligible clients were recruited consecutively. Interviews lasted 15 - 20 minutes and were conducted in French or local languages as preferred.

2.6. COVID-19 Safety Protocol

Data collection complied with national COVID-19 prevention measures, including mandatory mask use, temperature checks, physical distancing, hand hygiene, restricted entry, and the use of plexiglass barriers.

2.7. Variables and Definitions

Self-medication was defined as the use of antihypertensive drugs without a valid prescription or with an expired prescription older than three months. Definitions were standardized for valid prescriptions, professional status categories, and education levels.

2.8. Statistical Analysis

Data were analyzed using EPI-INFO version 7. Descriptive statistics were used to summarize variables, and bivariate analyses were performed using chi-square or Fisher's exact tests as appropriate. Statistical significance was set at $p < 0.05$. Multivariate analysis was not conducted due to sample size limitations.

2.9. Ethical Considerations

The study was approved by the Institutional Review Board of the Faculty of Health Sciences, Marien Ngouabi University, with authorization from national health authorities. Written informed consent was obtained from all participants, and confidentiality and voluntary participation were strictly ensured.

3. Results

3.1. Study Population and Self-Medication Prevalence

Between March and November 2021, a total of 367 clients were approached in the five participating pharmacies. Of these, 267 (72.8%) presented with valid prescriptions and were excluded. Among the remaining 100 clients, 65 (17.7%) presented without any prescription and 35 (9.5%) had expired prescriptions. All 100 eligible clients agreed to participate, resulting in a 100% participation rate among eligible clients.

The overall prevalence of self-medication with antihypertensive drugs was 27.2% (100/367; 95% CI: 22.4% - 32.5%).

3.2. Sociodemographic Characteristics

The mean age was 53.8 ± 14.5 years (range: 20 - 90 years), with 51% aged 41 - 60

years. Males predominated (59%, n = 59) over females (41%, n = 41).

The majority of participants had secondary education (39%) or higher education (37%), while 17% had primary education only and 7% had no formal education. Regarding professional status, informal sector workers represented the largest group (32%), followed by retired persons (29%), civil servants (15%), private sector employees (12%), students (4%), and housewives (2%).

Geographically, participants were predominantly from Mfilou (37%) and Ouenzé (35%) districts, with smaller proportions from Makélékélé (19%), Potopoto (6%), and Moungali (3%).

3.3. Knowledge and Attitudes toward Self-Medication

3.3.1. Awareness of Health Risks

Only 20 participants (20%) reported being aware that self-medication could pose health risks. Among those aware of risks, participants with higher education were most represented (27%), followed by those with secondary education (23%). None of the participants without formal education reported awareness of self-medication risks (Figure 1).

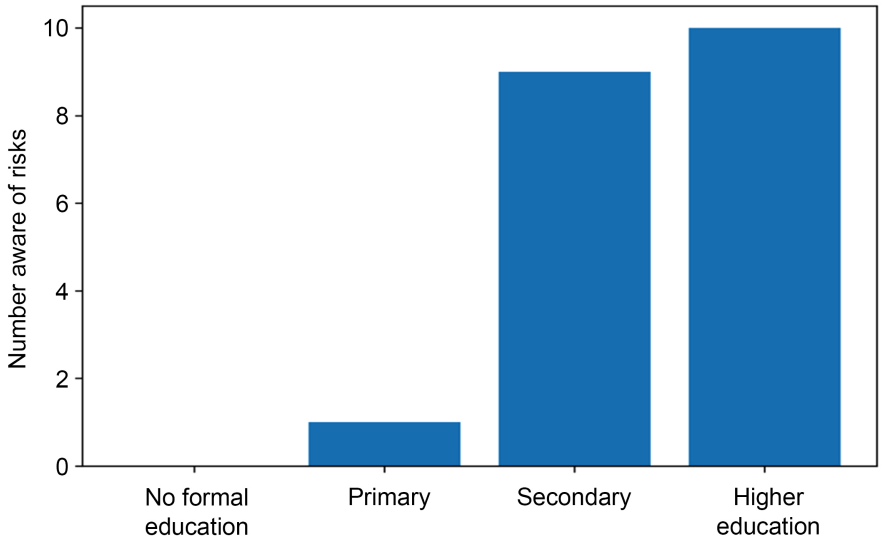

Figure 1. Awareness of self-medication health risks by education level.

3.3.2. Actions in Case of Treatment Failure

When asked what they would do if self-medication failed to control their blood pressure, the majority (73%, n = 73) reported they would consult a medical professional. Other responses included trying another antihypertensive drug (12%, n = 12), seeking advice from a friend (8%, n = 8), or consulting a pharmacist (7%, n = 7) (Table 1).

There was no significant difference in responses between men and women ($p = 0.50$, $\chi^2 = 2.36$, $df = 3$) (Table 2).

Actions varied by education level (Table 3). All participants without formal education (100%) reported they would consult a medical professional if self-medi-

cation failed. This proportion decreased to 82.4% among those with primary education, 61.5% with secondary education, and 75.7% with higher education. Participants with secondary education were more likely to try another antihypertensive drug (20.5%) or seek advice from a friend (12.8%), while those with higher education were more likely to consult a pharmacist (13.5%).

Table 1. Intended actions in case of self-medication failure (N = 100).

Action	n (%)
Consult a medical professional	73 (73.0)
Try another antihypertensive drug	12 (12.0)
Seek advice from a friend	8 (8.0)
Seek advice from a pharmacist	7 (7.0)

Table 2. Actions in case of treatment failure by sex.

Action	Men, n (%)	Women, n (%)	Total, n (%)	p-value*
Consult medical professional	30 (73.2)	43 (72.9)	73 (73.0)	0.50
Seek advice from a friend	4 (9.7)	4 (6.7)	8 (8.0)	
Try another antihypertensive	3 (7.3)	9 (15.3)	12 (12.0)	
Seek advice from pharmacist	4 (9.7)	3 (5.1)	7 (7.0)	

*Chi-square test, df = 3, $\chi^2 = 2.36$.

Table 3. Actions in case of treatment failure by education level.

Action	No formal education, n (%)	Primary, n (%)	Secondary, n (%)	Higher education, n (%)
Consult medical professional	7 (100.0)	14 (82.4)	24 (61.5)	28 (75.7)
Seek advice from friend	0 (0)	1 (5.8)	5 (12.8)	2 (5.4)
Try another antihypertensive	0 (0)	2 (11.8)	8 (20.5)	2 (5.4)
Seek advice from pharmacist	0 (0)	0 (0)	2 (5.1)	5 (13.5)

3.3.3. Management of Unused Medications

When asked about the fate of medications not completely used, the majority of participants (84%, n = 84) reported keeping them for future use, while 11% (n = 11) discarded them and 5% (n = 5) gave them to others (Figure 2).

This practice varied by education level (Table 4). All participants without formal education kept unused medications. Among those with primary education, 58.8% kept medications while 23.5% discarded them and 17.6% gave them to others. The proportion keeping medications increased to 87.2% among those with secondary education and 89.2% among those with higher education.

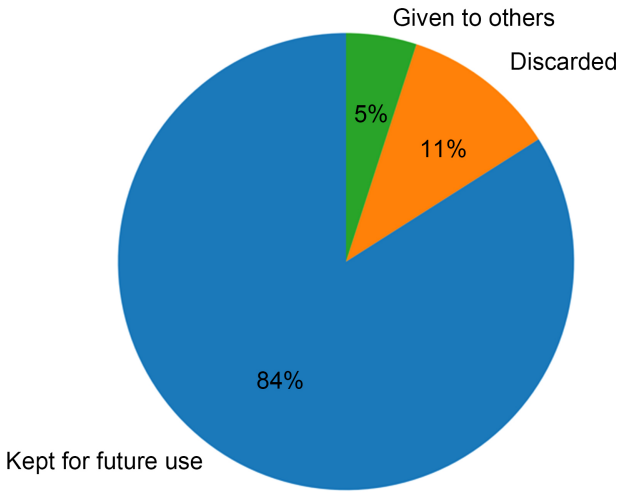

Figure 2. Management of unused antihypertensive medications (N = 100).

Table 4. Management of unused medications by education level.

Management	No formal education, n (%)	Primary, n (%)	Secondary, n (%)	Higher education, n (%)
Kept for future use	7 (100.0)	10 (58.8)	34 (87.2)	33 (89.2)
Discarded	0 (0)	4 (23.5)	4 (10.3)	3 (8.1)
Given to others	0 (0)	3 (17.6)	1 (2.5)	1 (2.7)

3.4. Self-Medication Practices

3.4.1. Sources of Information about Dosing

Table 5 shows the sources of information participants used to determine medication dosing. The most common source was renewal of an expired prescription (35%), followed by advice from an acquaintance (31%), advice from a pharmacy staff member (22%), personal initiative (11%), and media/press (1%).

Table 5. Sources of information about medication dosing (N = 100).

Source	n (%)
Renewal of expired prescription	35 (35.0)
Advice from acquaintance	31 (31.0)
Advice from pharmacy staff	22 (22.0)
Personal initiative	11 (11.0)
Media/press	1 (1.0)

3.4.2. Duration of Self-Medication Practice

The majority of participants (65%, n = 65) had been practicing self-medication for less than 5 years, while 32% (n = 32) had been doing so for 5 - 10 years, and

3% (n = 3) for more than 10 years.

3.4.3. Satisfaction with Self-Medication

When asked about their satisfaction with self-medication outcomes, 47% (n = 47) reported complete satisfaction, 52% (n = 52) reported partial satisfaction, and 1% (n = 1) reported disappointment. There was no significant association between duration of self-medication practice and degree of satisfaction (p > 0.80) (Table 6).

Table 6. Satisfaction with self-medication by duration of practice.

Duration	Complete satisfaction, n (%)	Partial satisfaction, n (%)	Disappointment, n (%)	p-value
<5 years	31 (66.0)	33 (63.5)	1 (100.0)	>0.80
5 - 10 years	14 (29.8)	18 (34.6)	0 (0)	
>10 years	2 (4.2)	1 (1.9)	0 (0)	

3.4.4. Antihypertensive Drug Classes Used

Figure 3 shows the classes of antihypertensive drugs most commonly used in self-medication. Diuretics were the most frequently used (52%), followed by ACE inhibitors (39%), calcium channel blockers (32%), anti-aldosterone agents (11%), and beta-blockers (4%). Note that percentages exceed 100% as some participants used multiple drug classes.

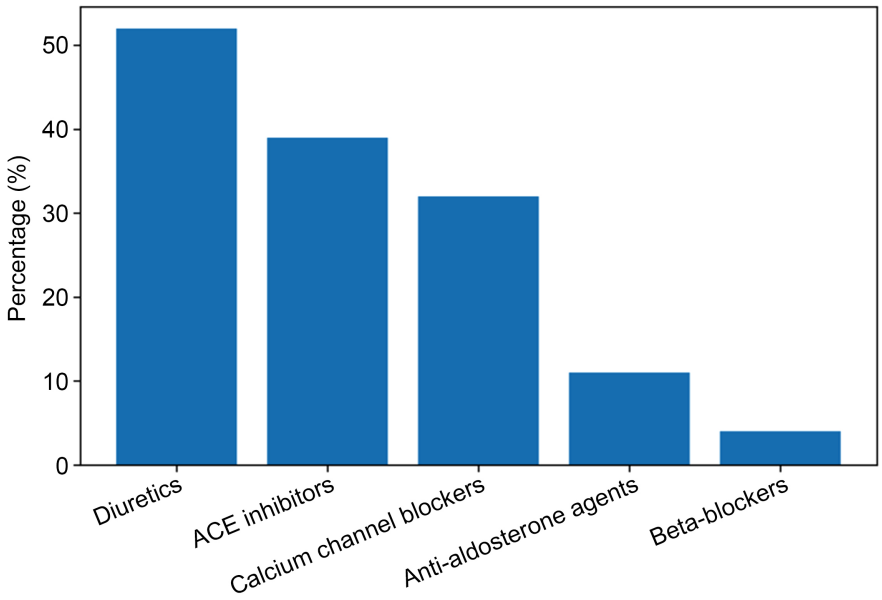

Figure 3. Classes of antihypertensive drugs used in self-medication (N = 100).

3.5. Factors Associated with Self-Medication

3.5.1. Reasons for Self-Medication

The primary reason for self-medication was lack of money (72%, n = 72), followed

by lack of time to consult a physician (15%, n = 15), and both lack of money and time (13%, n = 13) (Figure 4).

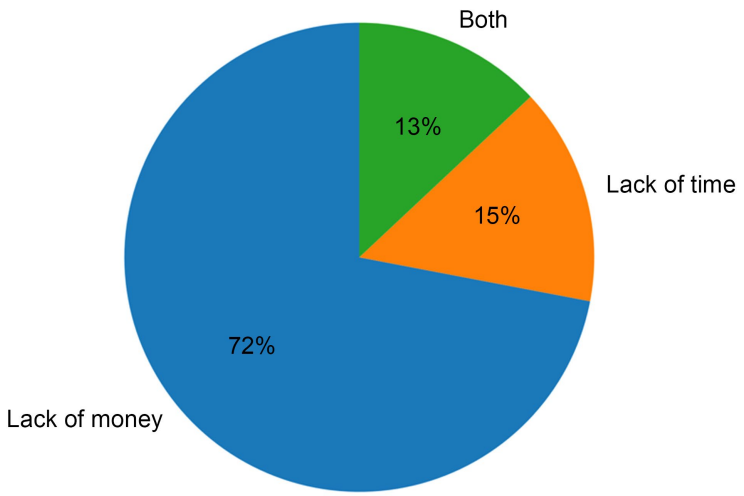

Figure 4. Reasons for self-medication (N = 100).

3.5.2. Reasons by Professional Status

Table 7 shows the distribution of reasons for self-medication by professional status. Lack of money was the predominant reason across all groups, particularly among informal sector workers (84.2%), retirees (89.7%), and housewives (100%). In contrast, lack of time was more common among private sector employees (50%), civil servants (20%), and students (25%).

Table 7. Reasons for self-medication by professional status.

Reason	Informal sector, n (%)	Private sector, n (%)	Student, n (%)	Civil servant, n (%)	Housewife, n (%)	Retired, n (%)
Lack of money	32 (84.2)	3 (25.0)	3 (75.0)	6 (40.0)	2 (100.0)	26 (89.7)
Lack of time	3 (7.9)	6 (50.0)	1 (25.0)	3 (20.0)	0 (0)	2 (6.9)
Both	3 (7.9)	3 (25.0)	0 (0)	6 (40.0)	0 (0)	1 (3.4)

3.6. Pharmacy Staff Practices and Attitudes

A total of 25 pharmacy staff members were interviewed across the five pharmacies, including pharmacists and pharmacy assistants.

3.6.1. Dispensing Practices

When asked whether they had ever dispensed antihypertensive drugs without a prescription, 13 of 25 staff members (52%) acknowledged having done so.

3.6.2. Knowledge and Attitudes

When asked whether medical consultation is essential before starting antihypertensive treatment, 3 of 25 staff members (12%) stated that consultation was not

indispensable and that pharmacy counseling could adequately replace medical consultation.

4. Discussion

4.1. Principal Findings

This study provides the first quantitative assessment of self-medication with antihypertensive drugs in the Republic of Congo. Our main findings are: 1) more than one-quarter (27.2%) of pharmacy clients purchased antihypertensive drugs without valid prescriptions; 2) self-medication was driven primarily by economic constraints (72%), despite relatively high education levels; 3) diuretics, ACE inhibitors, and calcium channel blockers were the most commonly self-medicated drug classes; 4) only 20% of participants were aware of health risks associated with self-medication; and 5) more than half (52%) of pharmacy staff had dispensed prescription-only antihypertensive drugs without valid prescriptions, with 12% believing medical consultation was not essential.

4.2. Comparison with Literature

4.2.1. Prevalence of Self-Medication

Our observed prevalence of 27.2% falls between rates reported in other African countries and developed nations. Konin *et al.* in Côte d'Ivoire reported a much higher prevalence of 60.1% among hypertensive patients followed in outpatient clinics [9]. This difference may be explained by methodological differences: Konin's study specifically recruited patients already diagnosed and followed for hypertension, who may have greater familiarity with their medications and thus higher propensity for self-medication. In contrast, our study included all pharmacy clients purchasing antihypertensive drugs, regardless of their follow-up status.

Studies from Mexico and the Philippines reported an 11% prevalence of self-medication with antihypertensive drugs [10], considerably lower than our findings. This likely reflects better healthcare insurance coverage, stricter pharmaceutical regulations, and higher economic development in these countries. In Saudi Arabia, Al Hadlaq *et al.* found that only 47.8% of hypertensive patients always consulted physicians, with 37.4% consulting only sometimes [11], suggesting that intermittent self-medication is common even in relatively high-income settings.

The absence of comparable data from Central Africa limits regional contextualization. The economic situation in Congo, characterized by high poverty rates and limited health insurance coverage, likely contributes to higher self-medication rates compared to developed countries but lower rates compared to settings where healthcare system dysfunction is more severe.

The sample size was calculated assuming a self-medication prevalence of 60%, based on data from Côte d'Ivoire, whereas the observed prevalence in our study was lower (27.2%). This discrepancy likely reduced the study's statistical power and resulted in wider confidence intervals, limiting the precision of estimates and the ability to detect significant associations. This methodological constraint partly

explains the absence of multivariate analysis and should be considered when interpreting the findings.

4.2.2. Sociodemographic Profile

The male predominance (59%) in our study is consistent with findings from Konin in Côte d'Ivoire (50%) [9] and Ueno in Japan (47.2%) [12], though the Japanese study population was considerably older. The mean age of 53.8 ± 14.5 years in our cohort is similar to that reported by Konin (55 years) and Kassahun in Ethiopia (53 years) [13], reflecting the relatively young age of hypertension onset in sub-Saharan African populations [14].

Paradoxically, self-medication was more common among individuals with secondary (39%) and higher education (37%) in our study. This contrasts with the common assumption that self-medication primarily affects those with limited education. A similar pattern was reported by Niang *et al.* in Senegal, where 73% of women with higher education practiced self-medication, often obtaining information through social media networks [15]. This suggests that education level alone does not ensure appropriate medication use and may actually facilitate self-medication through increased confidence in managing one's own health and better access to health information, albeit not always applied correctly.

The predominance of informal sector workers (32%) and retirees (29%) in our sample reflects both the economic constraints and healthcare access patterns in Brazzaville. Informal sector workers typically lack health insurance and regular income, while retirees may face reduced pensions and increasing healthcare needs.

4.2.3. Motivations for Self-Medication

Economic constraints were overwhelmingly the primary motivation for self-medication in our study (72%), consistent with findings from Konin [9] and Makita-Ikouaya in Gabon [16]. The high cost of medical consultations relative to household income, combined with the need for regular medication refills, creates a strong economic incentive for bypassing medical consultation.

In contrast, other studies have identified diverse motivations. Rahmawati's systematic review found that factors promoting self-medication included demographic variables (age, gender, socioeconomic status) and psychosocial factors such as health beliefs and perceived severity of illness [10]. Karimy *et al.* in Iran found that the most common reasons were believing medications are safe (41%), long duration of disease (35.5%), availability of medications at home (34%), ease of pharmacy access (30%), and considering the disease benign (29%) [17]. In Japan, elderly individuals living alone were particularly prone to self-medication [12]. These cross-cultural differences highlight the importance of context-specific factors in shaping self-medication behaviors.

The relatively low proportion citing lack of time (15%) in our study suggests that time constraints are secondary to economic barriers in the Congolese context, unlike in higher-income countries, where convenience may be a more important driver.

4.2.4. Knowledge and Attitudes

The finding that only 20% of participants were aware of health risks associated with self-medication is concerning and represents a critical gap in patient education. This low awareness persisted even among participants with higher education (27% aware of risks), suggesting that formal education does not necessarily translate to health literacy regarding medication safety.

Although the majority (73%) reported they would consult a physician in case of treatment failure if self-medication failed, this behavior reflects a predominantly reactive approach to care, in which medical consultation is sought only after unsuccessful self-management. Such delays may expose patients to prolonged periods of inadequate blood pressure control and increase the risk of complications. indicating recognition of the limitations of self-care and willingness to seek professional help when needed. However, this reactive approach—seeking medical attention only after treatment failure—may delay appropriate management and increase risks of complications.

Financial barriers to hypertension care are well documented in sub-Saharan Africa, where out-of-pocket payments remain the primary mode of health financing. The cumulative cost of medical consultations, laboratory investigations, and long-term antihypertensive treatment can represent a substantial burden for households, particularly among uninsured patients and those working in the informal sector [4] [5]. Even when generic antihypertensive drugs are available, medication costs combined with consultation fees may discourage regular medical follow-up and favor direct drug purchase, thereby contributing to self-medication.

The In addition, the widespread practice of keeping unused medications (84%) for future use, reported by 84% of participants, further facilitates recurrent self-medication. This behavior raises concerns regarding inappropriate storage conditions, use of expired drugs, and unintended sharing of medications, a pattern similarly reported in other settings [17]. is particularly problematic, as it facilitates continued self-medication cycles and raises concerns about medication storage conditions, expiration dates, and potential inappropriate sharing with others. Similar patterns have been reported elsewhere, with one study finding that 98.9% of women had medication stocks at home [17].

An apparent paradox emerged from our findings: although 73% of participants reported that they would consult a physician in case of treatment failure, only 20% were aware of the risks associated with self-medication. This pattern suggests a predominantly reactive approach to healthcare, in which medical consultation is sought only after symptom persistence or treatment failure rather than as a preventive measure. Such behavior may reflect normalization of self-medication, underestimation of long-term cardiovascular risks, and limited health literacy regarding chronic disease management. This highlights the need for targeted educational interventions emphasizing preventive care and the importance of regular medical follow-up in hypertension management.

4.2.5. Drug Classes Used in Self-Medication

The most commonly self-medicated drug classes in our study—diuretics (52%), ACE inhibitors (39%), and calcium channel blockers (32%)—are consistent with first-line antihypertensive agents recommended in international guidelines [14] [18]. This suggests that participants generally used guideline-concordant medications, likely reflecting prior medical prescriptions, as evidenced by the proportion renewing expired prescriptions (35%).

However, appropriate drug selection does not guarantee appropriate use. In the absence of medical supervision, patients may continue treatment despite contraindications, fail to monitor adverse effects, omit necessary dose adjustments, or develop drug interactions with other prescribed or self-medicated drugs.

Compared with other settings, all participants in our study obtained antihypertensive drugs from licensed pharmacies, contrasting with findings from Côte d'Ivoire where street vendors were the predominant source [9]. This difference may reflect improved regulation of informal drug markets in Brazzaville or methodological variations across studies.

Beyond drug class distribution, two distinct forms of self-medication were identified: renewal of expired prescriptions (>3 months) and initiation of new antihypertensive drugs without prior medical evaluation. Although analyzed together, these practices differ in clinical risk. Renewing a previously prescribed and tolerated treatment may carry a lower immediate risk when no major clinical changes have occurred, whereas initiating a new antihypertensive drug without medical assessment poses greater risks, including inappropriate drug selection, contraindications, and unrecognized comorbidities. Future studies should explicitly distinguish between these behaviors.

4.2.6. Pharmacy Practices

The finding that 52% of pharmacy staff had dispensed antihypertensive drugs without prescriptions, and that 12% believed medical consultation was not essential before starting antihypertensive treatment, reveals serious deficiencies in adherence to pharmaceutical regulations. According to the Congolese Pharmaceutical Code (Law 009-88 of May 23, 1988), prescription-only medications should not be dispensed without valid prescriptions [19].

This non-compliance may reflect multiple factors including: commercial pressures to maintain sales, sympathy for economically disadvantaged clients, inadequate enforcement of regulations by health authorities, and insufficient training on pharmaceutical ethics. In Mexico and the United States, most self-medicated antihypertensive drugs were previously prescribed by physicians, and pharmacy staff more consistently advised patients to seek medical consultation [10].

The facilitation of self-medication by pharmacy staff represents a shared responsibility between patients and healthcare providers in perpetuating this potentially harmful practice. Interventions must therefore target both demand-side factors (patient education, economic barriers) and supply-side factors (pharmacy regulation, professional ethics).

4.3. Strengths and Limitations

4.3.1. Strengths

This study has several key strengths. As the first quantitative study in the Republic of Congo on self-medication with antihypertensive drugs, it addresses a major knowledge gap in Central Africa. By including both patients and pharmacy staff, it offers a comprehensive view of both demand- and supply-side factors. In addition, the use of a rigorous methodology, a high participation rate, and recruitment from multiple pharmacies across different districts enhances the reliability and representativeness of the findings.

4.3.2. Limitations

This study has several limitations. Selection bias and limited geographic representativeness may have led to an overestimation of self-medication, while social desirability and recall biases may have affected the accuracy of self-reported data. The limited sample size, the small number of pharmacy staff interviewed, and the cross-sectional design restricted in-depth analyses and prevented causal inference. Finally, the lack of clinical validation, the specific context of the COVID-19 pandemic, and the absence of assessment of clinical outcomes limit the generalizability and interpretability of the findings.

5. Conclusion

This study reveals that more than one-quarter of pharmacy clients in Brazzaville practice self-medication with antihypertensive drugs, driven primarily by economic constraints despite relatively high education levels. Diuretics, ACE inhibitors, and calcium channel blockers are the most commonly self-medicated drugs, generally consistent with treatment guidelines but used without medical supervision. Alarmingly, among the small sample of pharmacy staff surveyed, dispensing antihypertensive drugs without prescriptions was frequently reported, suggesting potential gaps in regulatory compliance.

These findings highlight a critical gap in hypertension management that likely contributes to poor blood pressure control and increased cardiovascular morbidity in Congo. The practice of self-medication exposes patients to risks of inappropriate medication use, inadequate blood pressure control, drug interactions, and delayed diagnosis of secondary hypertension.

Self-medication with antihypertensive drugs is not merely an individual behavior problem but reflects broader healthcare system challenges including economic inaccessibility, inadequate primary care infrastructure, and insufficient regulation enforcement. Comprehensive solutions must address these systemic issues while simultaneously promoting individual health literacy and professional accountability.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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