

Prevalence of Hypertension and Its Clinical and Therapeutic Aspects among Young Adults (Aged 18 - 40) at Owendo University Hospital Center (Gabon): A Descriptive Cross-Sectional Study

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Abstract

Introduction: Hypertension is a major public health issue given its serious complications. Studies conducted in school settings in Gabon have revealed a high prevalence of hypertension among young people (19.4% to 28.0%), but hospital-based data remain scarce. The objective of this study was to determine the hospital prevalence of hypertension in young adults and to describe its clinical and therapeutic aspects. **Methods:** This was a descriptive cross-sectional study with retrospective data collection from the medical records of hypertensive patients aged 18 to 40 years who attended outpatient cardiology consultations at the Owendo University Hospital Center from February 11 to December 31, 2021. Sociodemographic, clinical, paraclinical and therapeutic parameters were collected. Pregnancy-related hypertensive disorders were distinguished from chronic hypertension in the interpretation of results. Hypertension was defined according to the European Society of Cardiology criteria. **Results:** Among the 534 patients seen, 51 met the selection criteria, corresponding to a hospital frequency of HBP in young adults of 9.6%. The median age was 35 years [18 - 39 years], with a sex ratio of 0.34. Obesity was present in 21.6% of patients. Hypertension was systolic-diastolic in 68.2% of cases and grade 3 in 76.6% of patients. A family history of hypertension was

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found in 17.6% of cases. In women, hypertension occurred in the context of current preeclampsia (52.6%) or previous preeclampsia (13.2%). In men, hypertension revealed chronic kidney disease (4/13 cases) or heart failure (3/13 cases). Dual antihypertensive therapy was prescribed in 51.8% of hypertensive patients outside pregnancy. **Conclusion:** Hypertension is common among young adults attending outpatient cardiology consultations at the Owendo University Hospital Center. A context of current or previous preeclampsia predominates in women. In men, complications are frequent. Early screening and appropriate management of HBP are essential. Etiological investigation should be performed.

Keywords

Hypertension, Young Adult, Outpatient Consultation, Preeclampsia, Owendo

1. Introduction

Hypertension is a major public health problem due to its serious complications [1]. Often perceived as a condition associated with aging, its incidence among adults aged 40 years and younger is increasing, particularly in Sub-Saharan Africa.

In South Africa, the prevalence among individuals aged 24 - 40 years reaches 24.0% [2].

In Gabon, school-based studies have revealed a high frequency of hypertension in young people (19.4% to 28.0%) [3] [4]. In the urban hospital, it was estimated at 14.7% among patients who consulted at the Libreville University Hospital Center [5].

The main concern lies in the early severity of this condition among melanoderm individuals and the lack of data on the clinical profile of young adults in peri-urban settings. Hypertension in young people is often associated with poor awareness of the disease (only 16.8% reported good levels of awareness in South Africa) and with a high cardiovascular risk from the time of diagnosis [2] [5].

The objective of this study was to determine the hospital frequency of hypertension among young adults attending cardiology consultations at the Owendo University Hospital Center and to describe its clinical and therapeutic aspects.

2. Methods

2.1. Study Design

This was a descriptive cross-sectional observational study with retrospective data collection.

2.2. Setting

The study was conducted at the Owendo University Hospital Center. This is a level III hospital and a reference trauma center that also includes a gynaecology and obstetrics department. An official cardiology service began operating in Feb-

ruary 2021 with the assignment of a cardiologist to the facility. The first data from outpatient cardiology consultations were used for this study.

2.3. Study Population

The data source consisted of the medical records of patients who attended consultations between February 11 and December 31, 2021.

2.4. Selection Criteria

The selected medical records met the following criteria:

- records of patients with confirmed hypertension according to the recommendations of the European Society of Cardiology (blood pressure \geq 140/90 mmHg or patients receiving antihypertensive treatment) [6];
- records containing at least the following information: age, sex, and blood pressure.

2.5. Exclusion Criterion

The absence of the minimum required information in the medical record constituted the exclusion criterion.

2.6. Study Variables

The variables extracted from the records included:

- Sociodemographic data: age and sex.
- Clinical data: reason for consultation, personal or family history of hypertension or cardiovascular disease, history of hypertensive disorders of pregnancy (past or current), cardiovascular risk factors, weight, height, body mass index calculation, systolic and diastolic blood pressure, and heart rate.
- Outcome variables: cardiac, renal, neurological, or ophthalmological complications of hypertension.
- Therapeutic variables: prescribed therapeutic categories, number of medications, treatment compliance, and blood pressure control for patients who had more than one consultation.

Pregnancy-related hypertensive disorders have been distinguished from chronic hypertension in the interpretation of results. However, global descriptive analyzes include all patients in order to reflect the clinical reality of recruitment.

2.7. Operational Definitions

An age of 40 years or younger defined a young adult.

Blood pressure values were classified according to the 2018 classification of the European Society of Cardiology [6].

Heart rate was considered elevated when it was greater than or equal to 80 beats per minute.

The Quetelet Index classification was used to define weight status based on the body mass index.

Therapeutic compliance was self-reported. Patients whose records mentioned “treatment interruption,” “non-compliance,” or “treatment not taken” were considered non-compliant. Blood pressure control was defined as blood pressure lower than 140/90 mmHg during consultation. It was assessed in patients who had at least one follow-up visit. The assessment was based on blood pressure values measured at the last visit. The follow-up interval was not standardized due to the retrospective nature of study.

2.8. Sample Size

The number of included records corresponded to all patients who met the selection criteria during the study period.

2.9. Data Collection, Processing, and Analysis

Data were collected using Microsoft Excel 365 and analyzed with Epi Info 7.

Quantitative variables were expressed as averages with standard deviation when the distribution was normal, and as medians with extremes when the distribution was non-normal. Qualitative variables were expressed as frequencies and percentages.

The hospital frequency of hypertension among young adults was calculated from the total number of patients who consulted during the study period. The proportion of young hypertensive patients was calculated from the total number of hypertensive patients during the study period.

Records containing the required data for the study but with missing variables were excluded from the analysis for those specific variables. The analyses were carried out using dominators corresponding to available data for each parameter. The analyzed sample sizes were specified for each parameter when data were missing.

2.10. Ethical Considerations

Prior authorization from the head of the department and from the hospital administration was obtained to conduct this study. The data were anonymized before analysis. Due to the retrospective nature of the study, individual consent was not required.

3. Results

During the study period, 534 medical records covering all pathologies were collected. Among them, 51 met the selection criteria, corresponding to a hospital frequency of 9.6% for hypertension in young adults. These young patients represented 12% of all hypertensive patients. **Figure 1** presents the flow diagram of patient records included in the study.

3.1. Sociodemographic Data

The median age was 35 years, with extremes ranging from 18 to 39 years. Participants were 31 years or older in 76.5% of cases. The sex ratio was 0.34 (**Table 1**).

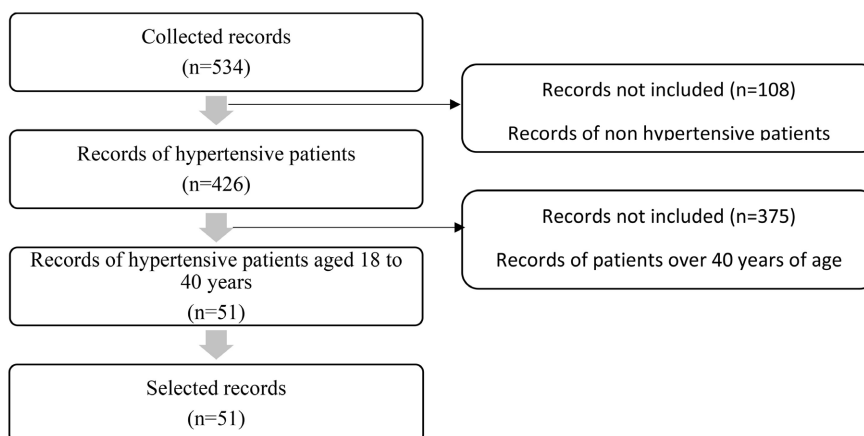


Figure 1. Flowchart of records from the study on hypertension in young subjects, Owendo 2021.

Table 1. General population data.

Variables	
Age (years): median [extremes]	35 [18, 39]
Age groups (years): n (%)	
- 18 - 24	03 (05.9)
- 25 - 30	09 (17.6)
- 31 - 35	18 (35.3)
- 36 - 40	21 (41.2)
Sex: n (%)	
- Male	13 (25.5)
- Female	38 (74.5)
• Hypertension + preeclampsia	19 (39.2)
• Hypertension without preeclampsia	18 (35.3)
Background information: n (%)	
- Hereditary hypertension	09/51 (17.6)
- Previous preeclampsia	05/38 (13.2)
- Current preeclampsia	20/38 (52.6)

3.2. Clinical Data

Table 2 shows the clinical and evolutionary data of the patients in the study. Most consultations for hypertension in young adults were related to follow-up of chronic hypertension or referral by a general practitioner or gynaecologist. Referral by a gynaecologist was related to hypertensive disorders of pregnancy in 37.5% of cases.

On the one hand, hypertension was chronic in 31 patients (60.8%), including 13 men (41.9%) and 18 women (58.1%). A history of preeclampsia was noted in five of these women (27.8%). On the other hand, hypertension was secondary to current preeclampsia in 20 women (39.2%).

Table 2. Clinical data and target organ damage.

Variables	n = 51
Reasons for consultation: n (%)	
- Patients with a history of hypertension	
Hypertension monitoring	15 (29.4)
Superimposed preeclampsia	01 (02.0)
Side effect of an antihypertensive drug	01 (02.0)
- Patients with newly diagnosed hypertension	
Palpitations	03 (05.8)
Patient consulting at the complication stage	06 (11.8)
Referred by a general practitioner for hypertension monitoring	06 (11.8)
Referred by gynaecologist for follow-up after an SPE or eclampsia	19 (37.2)
Weight Status: n (%)	
- Normal	08 (15.6)
- Overweight	08(15.6)
- Obesity	15 (29.4)
- N/a	20 (39.2)
Heart rate: n (%)	
- <80 bpm	19 (37.3)
- ≥80 bpm	32 (62.7)
Blood pressure level (mmHg): n (%)	
- Normal	12 (23.5)
- Grade I hypertension	06 (11.7)
- Grade II hypertension	11 (21.5)
- Grade III	22 (43.1)
Hypertension types: n (%)	
- Systolic	00 (00.0)
- Diastolic	04 (07.8)
- Systolic-diastolic	35 (68.6)
Damage to target organs by hypertension: n (%)	
- Heart failure	03 (5.9)
- Chronic kidney disease	01 (2.0)
- Heart failure + chronic kidney disease	02 (3.9)

Bpm: beats per minute; N/a: not available; SRE: Severe Preeclampsia.

A family history of hypertension was found in 17.6% of cases. BMI, available for 31 patients, averaged 31.0 ± 8.3 kg/m², with overweight or obesity present in 68.6% of cases.

Other cardiovascular risk factors included:

- elevated heart rate (62.7%)
- diabetes (2%)
- stress (2%)

The average heart rate was 89.7 ± 14.1 beats per minute.

Across the entire sample and in all patients outside the context of current preeclampsia, the average systolic blood pressure was 154.7 ± 20.3 mmHg, and the average diastolic blood pressure was 105.7 ± 20.4 mmHg. At the first consultation, 64.6% of patients were in grade II or III hypertension. Systolic-diastolic hypertension was observed in 68.6% of cases.

In women with current preeclampsia, the average systolic blood pressure was 147.7 ± 31.7 mmHg and the mean diastolic blood pressure was 100.2 ± 20.2 mmHg. Blood pressure at the first consultation was grade II or III in 55.0% of cases.

3.3. Evolutive Data

A complication of chronic hypertension was identified in six patients (11.8%), all of whom were men. These complications—cardiac (5.9%), renal (2.0%), or both (3.9%)—represented the mode of discovery of hypertension in these patients (table II). Among women, the recorded complications were related to hypertensive disorders of pregnancy. These included:

- eclampsia
- HELLP syndrome
- retroplacental hematoma
- disseminated intravascular coagulation

Each condition accounted for one case (2.0%).

3.4. Therapeutic Data

Treatment consisted of at least dual antihypertensive therapy in 58.9% of cases.

Calcium channel blockers were the most frequently prescribed therapeutic category, either as monotherapy or in combination. Of the 51 patients, 27 (52.9%) attended follow-up consultations. Blood pressure control was achieved in 37% of these patients, most of whom were women (80%). Therapeutic compliance, documented in 21 medical records, was 31.8% (Table 3).

Table 3. Prescribed treatment, therapeutic compliance and blood pressure monitoring.

Variables	n = 51*
Type of treatment: n (%)	
- HDM solely	06 (11.8)
- Monotherapy	15 (29.4)
- Dual therapy	14 (27.5)
- Triple therapy	15 (29.4)
- Quadruple therapy	01 (02.0)

Continued**Prescribed therapeutic categories: n (%)**

- ACE inhibitor	11 (21.6)
- ARA II	09 (17.6)
- Calcium antagonist	28 (54.9)
- Diuretics	17 (33.3)
- Beta blockers	10 (19.6)
- Central antihypertensive	11 (21.6)

Prescribed therapeutic combinations: n (%)

- ACE inhibitor or ARA II + calcium antagonist	07 (13.7)
- Calcium antagonist + diuretic	04 (07.8)
- Other dual therapies	03 (05.9)
- ACE inhibitor or ARA II + diuretics + calcium antagonists	08 (15.7)
- ACE inhibitor or ARA II + diuretics + beta blockers	04 (07.8)
- Central + calcium antagonist + beta blocker	03 (05.9)

Therapeutic compliance: n (%) 08/21 (38.1)

Follow-up consultation: n (%) 27/51 (52.9)

Blood pressure control: n (%) 10/27 (37.0)

ARA II: angiotensin II receptor antagonist; ACE: angiotensin-converting enzyme inhibitor; HDM: Hygiene and dietary measures. *Unless specified figure is given in the denominator.

4. Discussion

4.1. Achievement of Study Objectives

The objective of this study was to determine the hospital prevalence of hypertension in young adults attending cardiology consultations at the Owendo University Hospital Center and to describe its clinical and therapeutic aspects.

The study showed a hospital prevalence of 9.6%, a median age of 35 years [18 - 39], and a female predominance. Overweight and obesity were frequent, and a history of preeclampsia was commonly identified. From a therapeutic perspective, most patients received at least dual therapy in the majority of cases, although the blood pressure control rate remained low.

4.2. Discussion of Results and Comparison with the Literature

4.2.1. Demographic Profile

The female predominance observed at the Owendo University Hospital Center contrasts with some global data in which hypertension among young adults is often more common in men [7]-[9]. However, this finding is consistent with the study by Mtintsilana in South Africa, which also reported a high prevalence among women [2]. It also confirms the findings of Ndoume at the Libreville University Hospital Center [2].

This female predominance may also be explained by the close relationship with maternal health, as this hospital has a large obstetrics and gynaecology activity.

4.2.2. Overweight and Obesity

The high prevalence of overweight and obesity in this study is consistent with the findings of Ayo *et al.*, who studied a population of high school students and demonstrated the impact of semi-urban lifestyle changes in Owendo [3].

4.2.3. Clinical Severity

The high proportion of patients presenting initially with grade 3 hypertension is consistent with the severe hypertension found in other African studies [10] [11]. A proportion of patients had already developed complications. These findings corroborate those of Ndoume in Libreville and confirm that hypertension in melanoderm populations of Sub-Saharan Africa tends to be particularly aggressive and early in onset [5] [11].

The severity of blood pressure levels at diagnosis contrasts with the predominance of grade 1 hypertension reported in high-income countries. It suggests that hypertension may have remained undetected for several years. The low level of awareness about hypertension (only 16.8% good knowledge scores in the South African study) could explain this delay in consultation [2] [10].

4.2.4. Hypertensive Disorders of Pregnancy

More than half of the women had a past or recent history of preeclampsia. It has been demonstrated that preeclampsia increases the risk of chronic hypertension three-to four-fold. Mianroh, Voskamp, McDonald and other authors have shown that 26.0% to 60.0% of patients remained hypertensive after preeclampsia [12]-[16].

The transition from preeclampsia to permanent hypertension represents a missed opportunity for prevention. For these women, pregnancy appears to act as an early indicator of vascular vulnerability, requiring long-term cardiological follow-up that is often neglected after childbirth.

Thus, this study highlights maternity care as a key entry point for hypertension screening.

4.2.5. Blood Pressure Control

This study showed a low rate of blood pressure control among young adults despite frequent prescription of combination therapy, suggesting problems of treatment compliance, which are common in this population [1] [10].

The recommendations of the European Society of Cardiology advocate the use of fixed-dose combinations to improve compliance [6].

Clinical inertia and the cost of medications may also represent major barriers to effective blood pressure control [5].

The assessment of blood pressure control should be interpreted with caution due to the lack of standardization in follow-up and the variable number of visits per patient.

4.2.6. Target Organ Damage

Complications of hypertension were mainly observed in men and were sometimes the presenting symptom. This suggests later management in this group, possibly related to late screening.

These results highlight the need for early screening strategies and appropriate follow-up in young people to prevent long-term cardiovascular complications.

4.3. Strengths and Limitations

The main strength of this study is that it provides the first data on hypertension among young adults in a semi-urban center primarily dedicated to trauma care but also including obstetrics and gynaecology services.

It confirms the findings of a previous study conducted in Libreville regarding the severity of blood pressure levels at diagnosis. It also describes the types of treatment prescribed, particularly the frequent use of combination therapy.

Furthermore, it highlighted a predisposing factor for chronic hypertension—preeclampsia—indicating the need for stronger screening and monitoring strategies.

However, the single-center nature of the study limits the generalization of the results. Also, the presence of missing data for some variables, due to the retrospective collection, may limit the accuracy of some estimates.

5. Conclusion

Hypertension in young adults at the Owendo University Hospital Center is frequent and often severe. A female predominance is observed, partly related to hypertensive disorders of pregnancy. Complications were mainly found in men. Blood pressure control was insufficient despite the frequent use of polypharmacy. Overweight, obesity and preeclampsia are common, although this study does not establish a causal link. To integrate systematic screening in young people, to establish a follow-up program for women who have experienced hypertensive disorder during pregnancy and to strengthen therapeutic education are essential to prevent irreversible cardiovascular complications in young adults.

Conflicts of Interest

The authors declare no conflicts of interest.

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