

Research Paper

Prevalence of severe hypertension in a Sub-Saharan African community

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ABSTRACT

Background: Though some data from in-hospital or selected populations are available, there are no studies reporting community-level prevalence of Severe Hypertension (SH) in sub-Saharan Africa.

Methods: Study participants were recruited within the framework of The Heart Fund's global health initiative. Data were collected in August 2016 from 6 randomly selected sites, ensuring representativeness of both urban and rural areas. Blood pressure (BP) was measured twice, 10 min apart, after optimal resting time. SH was defined as systolic blood pressure ≥ 180 and/or diastolic blood pressure ≥ 110 mmHg at both readings. Demographics and data on cardiovascular history/risk factors were collected in the field.

Results: Among 1785 subjects examined, 1182 aged between 18 and 75 years were included in this analysis. The prevalence of SH was 14.1% (12.5% females vs 17.0% males; $P = .03$) (Fig. 1). Among participants with severe hypertension, 28.9% were either undiagnosed or untreated. Alarming, subjects at high cardiovascular risk (age ≥ 60 years and/or obese) had even higher prevalence of overall SH (29.6% and 24.9%, respectively) as well as undiagnosed/untreated SH (29.4% and 24.6%). SH prevalence was almost double in urban compared to rural areas (17.0% vs. 9.2%, $P = .02$); however, conversely, undiagnosed/untreated SH was significantly higher in rural areas (50.4% vs 21.9%).

Conclusion: (s): Our community-based study revealed very high prevalence of SH among adults in Abidjan area, with almost one out of every seven having SH. This underscores SH as a growing public health problem in sub-Saharan Africa.

1. Introduction

Individuals with SH have high 10-year risk of cardiovascular disease, especially when additional risk factors or target organ damage are present [3,4]. Though some data from in-hospital or selected populations are available, there are no studies reporting community-level prevalence of Severe Hypertension (SH) in sub-Saharan Africa. This is of major public health importance as hypertension is the number one preventable risk factor for cardiovascular/cerebrovascular disease, a major problem in Africa [1,2].

2. Methods

Using a cross sectional design in Abidjan (Ivory Coast), we assessed prevalence of SH (defined as systolic blood pressure (BP)

≥ 180 and/or diastolic BP ≥ 110 mmHg) among adults, employing rigorous methodology for blood pressure measurement. Study participants were recruited within the framework of The Heart Fund's global health initiative (<https://www.theheartfund.eu>). Data were collected in August 2016 from 6 randomly selected sites, ensuring representativeness of both urban and rural areas. Blood pressure (BP) was measured twice, 10 min apart, after optimal resting time. Body Mass Index (BMI) categories were defined as follows: Normal weight (below 25 kg/m²), Overweight (from 25.0 to 29.9 kg/m²) and Obese (30 or higher). Demographics and data on cardiovascular history/risk factors were collected in the field. Ethics approval for the study was obtained from the National Ethical Committee of Côte d'Ivoire and written informed consent was obtained from all adult patients.

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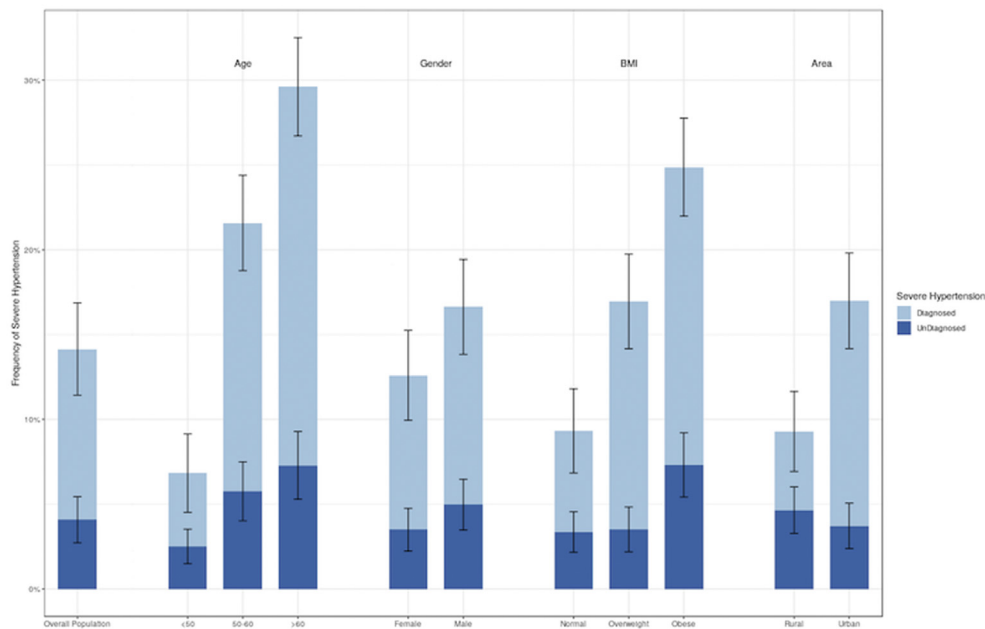


Fig. 1. Prevalence of diagnosed and undiagnosed severe hypertension (SH) according to Age, Gender, BMI and Area.

Table 1
Adjusted and Unadjusted Odds Ratio of SH by Age, Gender and BMI groups.

		N (%)	Crude OR	P value	Adjusted OR*	P value
Age (year)	18-50	718 (60)	-	-	-	-
	50-60	278 (23)	3.78 (2.52-5.69)	<0.001	3.51 (2.31-5.34)	<0.001
	60 and above	206 (17)	5.78 (3.82-8.81)	<0.001	6.04 (3.93-9.36)	<0.001
BMI (kg/m ²)	Normal (<25)	655 (54)	-	-	-	-
	Overweight (25-<30)	342 (28)	2.00 (1.35-2.94)	<0.001	1.95 (1.30-2.93)	0.001
	Obese (>=30)	205 (17)	3.25 (2.14-4.90)	<0.001	4.24 (2.68-6.74)	<0.001
Gender	Female	659 (56)	-	-	-	-
	Male	523 (44)	1.39 (1.00-1.92)	0.0496	1.71 (1.19-2.47)	0.004

*Adjustment for age, gender and BMI. Individuals with missing covariate data were excluded from this analysis.

3. Results

Among 1785 subjects examined, 1182 aged between 18 and 75 years were included in this analysis. The prevalence of SH was 14.1% (12.5% females vs 17.0% males; $P = .03$) (Fig. 1). Of those, 28.9% were either undiagnosed or untreated. Alarmingly, subjects at high cardiovascular risk (age ≥ 60 years and/or obese) had even higher prevalence of overall SH (29.6% and 24.9%, respectively) as well as undiagnosed/untreated SH (24.6% and 29.4%) (Table 1). SH prevalence was almost double in urban compared to rural areas (17.0% vs. 9.2%, $P = .02$); however, conversely, undiagnosed/untreated SH was significantly higher in rural areas (50.4% vs 21.9%). Compared to normal bodyweight, those who were overweight and obese had a 1.95-fold (95%CI, 1.30-2.93; $P < .001$) and 4.24-fold (95%CI, 2.68-6.74; $P < .001$) increased odds of SH (adjusting for age and sex), respectively. Similarly, participants ≥ 60 years had a 6.04-fold (95% CI, 3.93-9.36; $P < .001$) increased risk of undiagnosed SH compared to under 50 years (Table 1). Finally, men had higher odds of SH compared to women (OR 1.71, 95%CI, 1.19-2.47; $P = .004$).

4. Discussion

Our community-based study revealed very high prevalence of SH among adults in Abidjan area, with almost one out of every seven having SH. This underscores SH as a growing public health problem in sub-Saharan Africa. More concerning, a significant (almost one third) proportion of them were either undiagnosed or untreated.

Most high-income countries promote guidelines and public health practices to identify patients with undiagnosed hypertension [5]. In stark

contrast, in sub-Saharan Africa, there is little impetus towards prevention and management of hypertension. This is worrisome because sub-Saharan Africa's population is rising faster than the rest of the world. Moreover, the ongoing epidemiologic transition in this region, along with an increased life expectancy (62.4 and 65.5 years for men and women, respectively), augments disease burden further [6], culminating in a sharp rise in cardiovascular disease among elderly. Current rates of hypertension under diagnosis and resource-constraints for management, alongside burgeoning cardiovascular risk factors such as obesity in this region underline an urgent need to boost healthcare systems to tackle this menace.

Screening for and controlling SH in the vast Sub-Saharan African region should therefore be top public health priority. However, this massive task requires political will at the highest level, and an international multidisciplinary effort involving public health officials, non-governmental organizations, scientists, epidemiologists and clinicians. At the same time, implementation strategies should be uncomplicated, inexpensive and inclusive to maximize impact. Our study presents however some limitations. Firstly, details of baseline medical history including myocardial infarction, stroke, renal disease or diabetes is missing and could help to better contextualize the clinical characteristics of our population. Secondly, the study population may not be representative of the Ivory Coast population however to minimize the selection bias, our population was selected from 6 randomly selected sites, ensuring representativeness of both urban and rural areas.

The Heart Fund's global health initiative has several programs to enhance healthcare and improve the cardiovascular status of

disadvantaged communities in the developing world, through innovative and sustainable solutions such as mobile clinics and telemedicine. These and other similar initiatives will hopefully help achieve speedy, sustainable progress in cardiovascular health in Sub-Saharan Africa.

Disclosure statement

The authors have nothing to disclose and all authors had access to the data and a role in writing the manuscript.

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