



High Blood Pressure and Stroke in the City of Lubumbashi: Determinants and Socio-Demographic Characteristics, Case of the Rail Ways Company Hospital

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Abstract

Introduction: We conducted a cross-sectional study to describe the epidemiological and sociodemographic situation of stroke and high blood pressure at the Lubumbashi rail ways company hospital. **Methodology:** Our cross-sectional analytical study is spread over a period of one year, from January 1st to December 31st, 2018. The study population is the one having suffered from high blood pressure and stroke at the Lubumbashi railways company hospital during our period. Our sampling is exhaustive and its size is 487 patients among 372 high blood pressure patients. The data were collected on Excel and analyzed on SPSS version 23. **Results:** The prevalence of high blood pressure is 76.4%. The average age of hypertensives is 62.6 ± 9.4 years. The extreme ages are respectively 17 and 91 years. Women are the majority with 52.9%. There is no statistically significant link between sexes, living in urban or rural areas, diabetes, or renal failure with the occurrence of high blood pressure at the Lubumbashi railways company hospital during our study period (P -value > 0.05). No statistically significant association was observed between vital records and arterial hypertension at the Lubumbashi railways company hospital during our study period (P -value > 0.05 and Chi-square < 3.84). The age of the patients was by no means associated with the occurrence of cerebrovascular accidents (Chi-square < 3.84 and P -value > 0.05). Living in an urban area (Chi-square: 5.02, P -value: 0.025) and kidney failure (Chi-square: 4.1, P -value: 0.04) predispose to accidents cerebrovascular disorders, whereas being diabetic does not predispose to stroke (Chi-square, 0.1, P -value: 0.7). **Conclusion:** High blood pressure remains a reality in our envi-

ronment. Special attention must be paid to this pathology that spares no one. The consequences inherent to this pathology (stroke, death and even disability) remain formidable.

Subject Areas

Emergency & Critical Care, Surgery & Surgical Specialties

Keywords

High Blood Pressure, Stroke, Determinants, Lubumbashi

1. Introduction

For, the World Bank, quoted by YAYEHD [1], the prevalence of high blood pressure (hypertension) in sub-Saharan Africa is increasing, a manifestation of a rapid epidemiological transition, and requires the mobilization of significant resources by these countries. The World Bank estimates that it is cheaper to prevent cardiovascular disease than to treat it, suggesting the need to know the importance of hypertension to enable the development of prevention programs in our populations.

Stroke and high blood pressure are the leading causes of death and disability worldwide. Although there is a lack of comprehensive data on stroke surveillance in Africa, available data indicate that the age-standardized mortality, number of cases, and prevalence of age-standardized disabling stroke are similar to or greater than those measured in most high-income regions of the United States. In Africa, more than 90% of patients with haemorrhagic stroke and more than half with ischemic stroke have high blood pressure. However, awareness of hypertension and the prevention, treatment and control of hypertension remains very low in Africa, although recent surveys show an increasing prevalence of the disease, which is consistent with the nutritional and nutritional transition epidemiology in the region [2].

High blood pressure is a common, modifiable and inherited cardiovascular risk factor. Essential hypertension is a polygenic complex disease, in which many genes and environmental factors are involved. Recently, advances in the identification of genetic variants associated with blood pressure and essential hypertension have been made through extensive international studies on the entire human genome [3].

According to Donnison C., quoted by ATOBA, formerly unknown to African indigenous populations and long misunderstood among these populations, hypertension is nowadays a major public health problem in sub-Saharan Africa (SSA). Several epidemiological studies conducted around the world indicate that heredity, age, gender, place of residence, level of education, income, social burden, obesity, consumption of alcoholic beverages and tobacco, marital status, lack of exercise are non-biological factors frequently associated with hyperten-

sion [4] [5].

Cardiovascular disease (CVD) is now a serious public health concern for developing countries (DCs) [6] [7]; they pose a serious threat to economic development, particularly because of the prohibitive costs of their long-term treatments and the negative effects of these diseases on productivity [8]; and they suffocate the health budgets of these nations with limited financial resources [9].

2. Methodology

The cross sectional study covers a period of one year, from January 1st to December 31st, 2018.

The study population is the one having suffered from arterial hypertension and having consulted at the Lubumbashi railway company hospital during our study period (from 01/01/2018 to 31/12/2018).

All high blood pressure patients who attended the Lubumbashi railway company hospital during our study period were included in this study.

The sampling is exhaustive and its size is 372 patients.

3. Results

The sex ratio is 0.948 (250 Females versus 237 Males) (**Figure 1**).

From the observation of **Table 1**, it appears that of those who were declared hypertensive 372, ten died among hypertensives.

The average age of hypertensives is 62.6 ± 9.4 years. The extreme ages are respectively 17 and 91 years (**Figure 2**).

From the results of **Table 2** & **Table 3**, it appears that there is no link between marital status and hypertension ($P\text{-value} > 0.05$).

From the results in **Table 4**, it appears that there is no statistically significant association between cholesterol and stroke ($P\text{-value} > 0.05$). Of 372 diabetics, 6.7% developed a stroke.

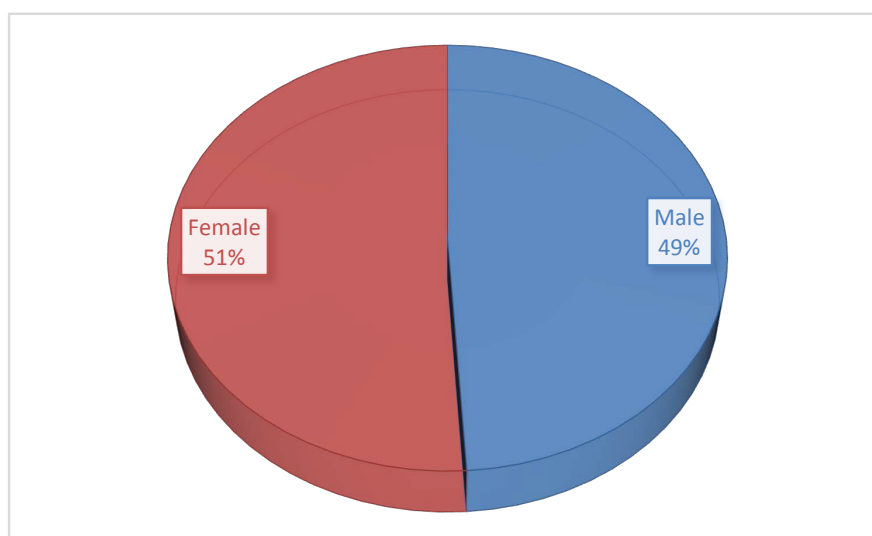


Figure 1. Distribution of patients by sex.

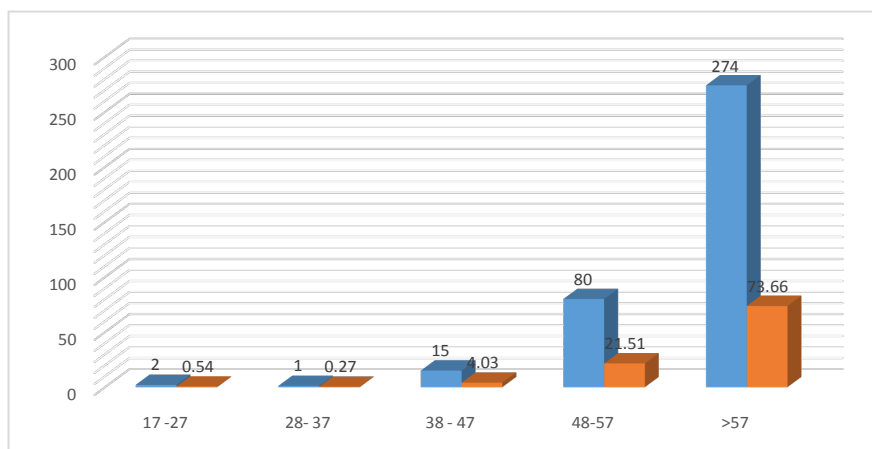


Figure 2. Distribution of hypertensive by age.

Table 1. Association between outcome and pathologies.

High Blood pressure	STATUS		Total
	deceased	recovered	
Yes	10	362	372
No	1	114	115
Total	11	476	487

Table 2. Association between sex and hypertension.

variable	Hypertension		OR	IC95%
	YES (N = 372)	NO (N = 115)		
Sex				
Male	175	62	0.76	[0.5 - 1.2]*
Female	197	53		
Urban area				
Yes	358	111	0.9	[0.3 - 2.9]*
No	14	4		
Diabetes				
Yes	38	8		
No	334	107	1.5	[0.7 - 3.4]*
Kidney insufficiency				
Yes	64	18	1.1	[0.6 - 1.9]*
No	308	97		

*P-value > 0.05.

It can be seen from **Table 5** that there is no link between age and stroke (P-value > 0.05).

From the results in **Table 6**, it appears that there is no link between diabetes and stroke (P-value > 0.05) but the link is statistically significant between the urban environment and renal insufficiency. And stroke (P-value 0.025 and 0.04).

Table 3. Association between marital status and hypertension.

Marital Status	HIGH BLOOD PRESSURE		Total	Chi-square	P-value
	YES	No			
Single	1	0	1	1.1	1
Married	370	114	484		
Widower	1	1	2		
TOTAL	372	115	487		

Table 4. Association between cholesterol and stroke.

Cholesterol	STROKE		Chi-square	P-value
	YES	NO		
<200 mg/dl	14	182	1.4	0.5
>240 mg/dl	3	75		
200 - 239 mg/dl	8	90		
Total	25	347		

Table 5. Association between age and stroke.

Age	STROKE		Chi-square	P-value
	Yes	No		
17 - 27	0	2	2.5	0.6
28 - 37	0	1		
38 - 47	2	13		
48 - 57	3	77		
>57	20	254		
Total	25	347		

Table 6. Association between variables and stroke.

Variables	Stroke		Chi-square	P-value
	Yes (N = 25)	No (N = 347)		
Urban				
Yes	22	336	5.02	<u>0.025*</u>
No	3	11		
Diabetes				
Yes	2	36	0.1	0.7
No	23	311		
Kidney failure				
Yes	8	56	4.1	<u>0.04*</u>
No	17	291		

*P-value < 0.05.

4. Discussion

The sex ratio is 0.948 (95 men for every 100 women and 51% for women), the majority of whom are affected as shown in **Figure 1**.

In our series, 11 deaths were observed out of a total of 487 patients, of whom 10 (90.9%) were attributable to hypertension; thus, the lethality associated with arterial hypertension is 2.7% (**Table 1**).

Table 2 shows that the prevalence of arterial hypertension is 76.4%. Our observation is different from that found by Egion in Nigeria where the prevalence of hypertension was 18.3% (95% CI 516.0% to 20.7%). [10]. There is no link between marital status and HTA (P-value > 0.05). In Nigeria, high blood pressure was higher among married people (RR5.35, P5.00) [10].

There is no statistically significant relationship between sexes, whether living in urban or rural areas, diabetes, or kidney failure with the occurrence of high blood pressure at the Lubumbashi railways during our study period (P-value > 0.05).

Barbet has, in his study revealed that high blood pressure is associated in 23.2% of cases with heart disease [11]. The National Kidney Foundation attests that hypertension is one of the leading causes of chronic kidney disease. Over time, hypertension can damage blood vessels throughout your body. This can decrease the vital blood supply for important organs such as the kidneys. According to the same association, hypertension can also become a complication of chronic kidney disease. The kidneys play a key role in keeping the blood pressure within an acceptable range. Sick kidneys are less able to help regulate blood pressure. As a result, the tension increases [12].

Cholesterol levels (normal, moderate, or high) were not statistically significant to the occurrence of stroke (P-value > 0.05 and Chi-square < 3.84).

Table 4 indicates that the age of the patients was by no means associated with the occurrence of cerebrovascular accidents (Chi-square < 3.84 and P-value > 0.05).

Living in an urban area (Chi-square: 5.02, P-value: 0.025) and kidney failure (Chi-square: 4.1, P-value: 0.04) predispose to accidents cerebrovascular disease, as shown in **Table 6** (Chi-square, 0.1, P-value: 0.7). Recently, several studies have shown that chronic renal disease is associated with a risk of stroke [13]. Ousmane says that blood sugar and lipid disorders are very often associated with stroke [14].

For Thierry, the relative risk of stroke in diabetic patients compared to the non-diabetic population is 2.28 (95% CI: 1.93 - 2.69) in women, and 1.83 (1.60 - 2.08) for men [15].

A cohort performed on 492 diabetic in Congolese hypertensives from Kinshasa until the onset of stroke or not indicates that 16.5% had presented the stroke. The rate of stroke is high in hypertensive diabetics with a relative risk of 6.2 (95% CI 3.2 to 11.9, P < 0.0001) [16]. This proportion of hypertensives who have developed a stroke is close to ours 6.7%. MILL in his study found that the risk factors for stroke are: high blood pressure (the main risk factor for stroke,

ischemic or hemorrhagic with a relative risk of about 4); tobacco: RR = 2; diabetes it presents a relative risk of 1.5 [17].

Regarding the link between place of residence and the occurrence of strokes, our results corroborate those in South Kivu where a higher prevalence of arterial hypertension (P < 0.001) was observed in urban subjects than in rural subjects. hypertension (41.4% vs 38.1%) [18].

5. Conclusions

High blood pressure remains a real public health problem today. Its prevalence is still worrying in all parts of the world.

We conducted a cross-sectional study of hypertension. The prevalence of high blood pressure is 76.4%. Women are the most affected. The age of the patients was by no means associated with the occurrence of cerebrovascular accidents (Chi-square < 3.84 and P-value > 0.05). Cholesterol levels (normal, moderate, or elevated) were not statistically significant to the occurrence of stroke (P-value > 0.05 and Chi-square < 3.84).

Conflicts of Interest

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

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