

Mortality and Morbidity of Cardiovascular Diseases in the Cardiology Department of Point G University Hospital

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Abstract

Introduction: According to the WHO, cardiovascular diseases are the leading cause of death worldwide, with 17.9 million deaths in 2019, accounting for 32% of all deaths globally [1]. Of these deaths, 7.4 million were due to ischaemic heart disease and 6.7 million to stroke. [1]. More than 82% of deaths related to cardiovascular disease occur in low- and middle-income countries and affect both sexes almost equally. [1]. In developing countries, the frequency of cardiovascular disease is underestimated due to the lack of large epidemiological surveys that could provide baseline data. The objective was to study morbidity and mortality related to cardiovascular disease in the cardiology department of the Point G University Hospital. **Materials and Methods:** This is a prospective, descriptive study based on the records of patients hospitalised or not in the cardiology department of the Point G University Hospital. The study covered the period from 1 January 2015 to 31 December 2015 and included a population of 2000 patients, of whom 1264 had usable medical records. This constitutes a risk of selection bias, given that 36.8% of the initial patient records (736 out of 2000) were excluded due to incomplete records, key examinations not performed on patients, most often due to lack of re-



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sources, and poor record keeping in the department. This reduction could have an impact on the generalisation of the results. **Results:** The sample comprised 1264 patients, including 736 women (58.2%) and 528 men (41.8%), with a sex ratio of 0.72 in favour of women. The 56 - 65 age group was the dominant modal class, representing approximately one quarter of the sample (24.2%). The main reasons for consultation were dyspnoea (22.2%), cough (15.5%) and high blood pressure (13.7%). Hypertension was the main risk factor (60.1%). Nearly three-quarters of patients (74.8%) had hypertension on admission. The heart rhythm was mainly sinus (94%) and regular (90.7%). 234 patients had conduction disorders, including 26 with BBG, and 329 had rhythm disorders, including 75 with extrasystoles. Left ventricular hypertrophy (30.2%) predominated among chamber hypertrophies. Of 203 echocardiograms, valvular lesions were observed in 124 cases (single orifice) and 65 cases (double orifice). The lesions were patent in 128 cases, stenotic in 33 cases, and double in 42 cases. Overall systolic function was impaired in more than one-third of cases (33.4%), and segmental kinetics were impaired in 15.8% of cases. In the distribution of nosological groups according to age, we also observed: 1) early onset of hypertension, with an increase in recruitment with age; 2) a distribution of primary cardiomyopathies and vascular diseases across all age groups; 3) early recruitment of chronic pulmonary heart disease; 4) and finally, the absence of congenital heart disease. Vascular diseases were dominated by neurovascular events, which accounted for approximately two-thirds of the total (64%). Ischemic strokes accounted for more than three-quarters of the total (78.3%). In addition to a low-salt diet (74%), the most frequently used therapeutic agents were ACE inhibitors (44.2%), calcium channel blockers (amlodipine) with 40.6%, diuretics (39.7%), antiplatelet agents (40.3%) and beta-blockers (34.3%). The average length of hospitalisation was 10 days, with extremes of 3 and 28 days. The results were generally favourable (87.5%). We recorded 36 cases of complications (2.7%), including 28 cardiac decompensations, 4 strokes, 3 pulmonary embolisms and one ST (+) acute coronary syndrome (ACS). We recorded 86 deaths, representing an overall mortality rate of 6.8%.

Keywords

Cardiovascular Diseases, CHU Point G, Aissata Ibrahima Cissé Cardiology Practice

1. Introduction

The WHO estimates that by 2020, cardiovascular morbidity in African countries will have doubled; this will have negative socio-economic repercussions on the development of these countries, making them poorer as a result [1].

In developed countries, cardiovascular mortality is concentrated among the oldest segments of the population [2]. Primary and secondary prevention, therapeutic advances and effective management of myocardial infarctions and strokes are helping to delay the age of death [2].

In Africa, according to Bertrand [3], cardiovascular diseases account for 15% of adult hospitalisations and are responsible for 10% to 20% of hospital deaths.

According to hospital statistics from the Point G University Hospital Centre in 2014, 6203 outpatient consultations (9.42%), 1006 hospitalisations (11.70%) and 174 deaths (14.34%) were recorded in the cardiology department. Based on these findings, a hospital study was deemed necessary to better understand the contours of cardiovascular morbidity and mortality in the cardiology department of the Point G University Hospital. The objective was to study the morbidity and mortality of cardiovascular diseases within the cardiology department of the Point G University Hospital.

2. Materials and Methods

- Setting and location of the study: The study was conducted in the cardiology department of Point G University Hospital, located east of the main hospital entrance and comprising 49 hospital beds divided between three units: A, B and Intensive Care.
- Type of study: This was a prospective, descriptive study based on the records of patients hospitalised or not in the cardiology department.
- Study period: The study was conducted over a period of one year: from 1 January 2015 to 31 December 2015.
- Sampling: This was an exhaustive sample of all patients, whether hospitalised or not, who met the inclusion criteria.
- Inclusion criteria: The following were eligible for the protocol:
All patients of both sexes and all ages, hospitalised or not, in the cardiology department during the study period and with cardiovascular disease.
- Exclusion criteria:
Eligibility criteria: Any patient of either sex and of any age, hospitalised or not, in the cardiology department during the study period and with cardiovascular disease.
- Exclusion criteria: The following were excluded:
Patients registered for non-cardiovascular disease and those whose medical records were incomplete or unusable.
- Data collection: Each patient in the sample was given an individual follow-up form with systematic recording of sociodemographic, clinical and paraclinical data and the progression of the disease.
- Data entry and analysis: Data masking, entry and analysis were performed using Word 2013, Excel 2013 and SPSS v16.0 software.
The statistical test used was Pearson's chi-square test, with a significance threshold of $P < 0.05$.
- Ethics and professional conduct: Informed consent was not sought from patients, but patient data confidentiality was respected.

3. Results

The sample comprised 1264 patients, including 736 women (58.2%) and 528 men

(41.8%), with a male-to-female ratio of 0.72 in favour of women. The 56 - 65 age group was the dominant modal class, representing approximately one quarter of the sample (24.2%). The distribution increased with age up to 65 years and then decreased beyond that age. Before the age of 56, women predominated (60.8%), followed by men (61.5%), with a statistically significant difference ($X^2 = 1.028$ and $p < 0.001$). In the 56 - 65 age group, the gender distribution was almost identical (11.1% men and 12.7% women). More than two-thirds of our patients (68.5%) lived in Bamako. More than two-thirds of our patients (66.5%) had a low standard of living (we classified patients' standard of living according to their occupation). The high standard of living group included senior civil servants, senior executives, large traders and economic operators. The low standard of living group included the unemployed, labourers, bricklayers, domestic helpers, bellboys, laundresses, dyers, commercial employees and drivers. The average standard of living group included B and C grade civil servants and small traders. This classification is therefore relative.) The Bambara and Fulani ethnic groups dominated, accounting for 36% and 17% respectively. More than half of our patients (55.9%) were recruited on an outpatient basis. The main reasons for consultation were dyspnoea (22.2%), cough (15.5%) and high blood pressure (13.7%), which together accounted for 51.4% of the reasons for consultation. Gastroduodenal ulcers, strokes and asthma were the most common medical conditions, with respective frequencies of 4.2%, 3.5% and 1.7%. At least one previous surgery was noted in 11.2% of patients. Hypertension was the main risk factor (60.1%). Sedentary lifestyle, menopause and smoking followed, with respective frequencies of 33.3%, 23% and 16.5% (**Table 1**).

Table 1. Distribution according to sociodemographic and clinical characteristics.

	By gender	Frequency	Percentage
	Male	528	41.8
	Female	736	58.2
By mode of recruitment			
	Referral or evacuation	707	55.9
	Consultation	557	44.1
Reason for admission/consultation			
	Dyspnea	547	22.2
	Cough	381	15.5
	HTA	336	13.7
	Edema of lower limbs	315	12.8
	Dieulafoy symptoms	234	9.5
	Chest pain	174	7.1
	Functional impotence	171	7
	Palpitations	134	5.4

Continued

Loss of consciousness	56	2.3
Heart rhythm disorders	11	0.4
According to history		
UGD	53	4.2
STROKE	44	3.5
Asthma	22	1.7
Renal failure	14	1.1
Surgical	142	11.2
By CVDRF		
HTA	760	60.1
Sedentary lifestyle	421	33.3
Menopause	291	23
Smoking	209	16.5
Diabetes	78	6.2
Obesity or overweight	64	5.1
According to admission blood pressure		
Hypotension	312	24.7
HTA grade 1	252	20
HTA grade 2	246	19.5
HTA grade 3	173	13.7
Isolated systolic hypertension	8	0.6
Unrecoverable blood pressure	6	0.5
According to cardiac auscultation signs		
Irregular rhythm 138 10.8	138	10.8
Tachycardia 571 45.1	571	45.1
Bradycardia 11 0.9	11	0.9
Galop B3 160 12.7	160	12.7
Galop B4 2 0.2	2	0.2
Systolic murmur of mitral focus regurgitation 152 12	152	12
Diastolic murmur of aortic focus regurgitation 8 0.6	8	0.6
Muffled heart sounds 88 7	88	7
B2 flare 14 1.1	14	1.1
Diastolic rolling 9 0.7	9	0.7
Pericardial friction 4 0.3	4	0.3
According to pulmonary examination		
Pleural fluid effusion syndrome 327 25.9	327	25.9
Pulmonary condensation syndrome 57 4.5	57	4.5
Pleural gas effusion syndrome 4 0.3	4	0.3

Continued

According to neurological deficit

Hemiplegia	169	13.4
Dysarthria	81	6.4
Facial paralysis	49	3.9
Aphasia	34	2.7

Nearly three-quarters of patients (74.8%) had hypertension at admission (**Table 1**).

The heart rhythm was mainly regular (89.2%) and the heart rate normal (54%). 162 patients had a protodiastolic gallop. A heart murmur was heard in 189 patients, systematically associated with regurgitation. 152 patients had isolated mitral regurgitation, 8 had isolated aortic regurgitation and 25 patients had a multi-orifice murmur. 4 patients had pericardial friction. Pleural effusion syndrome (25.9%) was predominant (**Table 1**).

Hemiplegia (13.4%) was the dominant neurological sign, followed by dysarthria (6.4%) (**Table 1**).

The heart rhythm was mainly sinus (94%) and regular (90.7%). 234 patients had conduction disorders, including 26 with left bundle branch block (LBBB), and 329 had rhythm disorders, including 75 with extrasystoles. Left ventricular hypertrophy (30.2%) predominated among chamber hypertrophies.

Chamber dilatation was observed in 381 patients (42.9%). It was single in 210 cases and left ventricular in 196 cases. In 60 patients, it was left bicameral and right bicameral in 29 cases. Dilatation was global in 14 patients. Sixty-four patients had mainly parietal ventricular hypertrophy (82.8%). Out of 203 echocardiograms, a valvular lesion was observed; a single orifice 124 times and a double orifice 65 times. The lesions were patent in 128 cases, stenotic in 33 cases, and double in 42 cases. Overall systolic function was impaired in more than one-third of cases (33.4%), and 15.8% had impaired segmental kinetics (**Table 2**).

Table 2. Breakdown by para-clinical signs.

ECG N = 830	Frequency	Percentage
Non-sinus rhythm	50	6
Irregular rhythm	77	9.3
BBD	34	4.1
BBG	26	3.1
HBAG	13	1.6
BAV	9	1.1
Tachycardia	226	27.2
Extrasystoles	75	9
AC/FA	13	1.6

Continued

Bradycardia	11	1.3
Atrial flutter	2	0.2
Junctional tachycardia	2	0.2
LVH	251	30.2
LVH and AGH	17	2
HAD	9	1.1
HVD	8	1.0
Cardiac Doppler Ultrasound N = 888		
LV Dilatation	196	51.4
LV and OG Dilatation	60	15.7
4-chamber Dilatation	14	3.7
Septal Hypertrophy	11	17.2
Lateral Wall Hypertrophy	53	82.8
Valvular Lesions	203	22.9
Alteration of LV Systolic Function	297	33.4
Pericardial Effusion	57	6.4
Relaxation Abnormalities	97	10.9
High PAPS/IT	92	10.4
Segmental Kinetic Disorders	140	15.8
Intracavitary Thrombus	10	1.1
Frontal Chest X-ray N = 227		
Cardiomegalia	162	71.4
Venous-Capillary Hypertension	124	54.6
Parenchymal Lesions	86	37.9
Pleural Effusion	75	33.2
Biology		
NFS Anemia	201/650	30.9
Elevated Blood Glucose	92/680	13.5
Elevated Creatinemia	155/699	22.2
Dislipidemia	65/232	28
Positive IDR	4/14	28.6
HIV Serology	8/40	20
Elevated Troponins	29/54	53.7
Thickened Drop	15/42	35.7
Elevated Uricemia	130/204	63.7

Cardiomegaly (71.4%) was the most common abnormality, associated with venous capillary hypertension in more than half of patients (54.6%) (**Table 2**).

Biologically, anaemia (30.9%), hyperglycaemia (13.5%), hypercreatininaemia (22.2%) and hyperuricaemia (63.7%) were the most common abnormalities (**Table 2**). Hypertension, primary cardiomyopathy and vasculopathy were the most common conditions, with respective frequencies of 52.5%, 21.2% and 19.3% (**Table 2**).

The distribution by gender was as follows:

- Primary cardiomyopathy (26.3%), coronary artery disease (17%) and congenital heart disease (2.7%) were more prevalent in men.
- In contrast, hypertension (57.9%) and cardiothyroid disease (1.4%) were more common in women.
- Both sexes were almost equally affected by cardiac rhythm and conduction disorders, as well as pericarditis.
- Both cases of endocarditis (0.3%) involved women.
- 0 - 17 years: valvular heart disease was the most common (35.9%), followed by perinatal cardiomyopathy (28.2%).
- 18 - 25 years: hypertension and perinatal cardiomyopathy were the most common, with respective frequencies of 42.9% and 24.5%.
- Between 26 and 35 years of age: high blood pressure (37%), perinatal cardiomyopathy (20.7%) and primary cardiomyopathy (15.6%) were the dominant groups. Vascular diseases were also common (14.1%), followed by valvular heart disease (11.8%) and rhythm and conduction disorders (6.7%).
- Between 36 and 45 years of age, patients mainly suffered from high blood pressure (55.3%), primary cardiomyopathy (24.4%) and vascular disease (16.2%).
- Between the ages of 46 and 55, hypertension was predominant (63.2%).
- Beyond this age group, hypertension, dilated cardiomyopathy and vascular disease predominated, with average frequencies of 51.3%, 20.8% and 21.25% respectively.

In the distribution of nosological groups according to age, we also observed:

- An early onset of hypertension, with increasing recruitment with age;
- A distribution of primary cardiomyopathies and vasculopathies across all age groups.
- Early recruitment of chronic pulmonary heart disease;
- And finally, the absence of congenital heart disease.

Patients with low socioeconomic status predominated in all nosological groups.

Vascular diseases were dominated by neurovascular events, accounting for approximately two-thirds of the total (64%). Ischemic strokes accounted for more than three-quarters of the total (78.3%). In addition to a low-salt diet (74%), the most commonly used therapeutic agents were ACE inhibitors (44.2%), calcium channel blockers (amlodipine) at 40.6%, diuretics (39.7%), antiplatelet agents (40.3%) and beta-blockers (34.3%) (**Table 3**). The average length of hospitalisation was 10 days, with extremes of 3 and 28 days. The results were generally favourable (87.5%) (**Table 3**). We recorded 36 cases of complications (2.7%), including 28 cardiac decompensations, 4 strokes, 3 pulmonary embolisms and one ST-elevation acute coronary syndrome (SCA). We recorded 86 deaths, representing an

overall mortality rate of 6.8%. By gender, male mortality (9.7%) was higher than female mortality (4.8%), with statistical significance ($p < 0.001$). The extreme age groups were the most affected (12.8% in the 0 - 18 age group and 33.3% in the 85+ age group), with statistical significance ($p < 0.001$). More than half (57.0%) had a low socioeconomic status.

Table 3. Breakdown by nosological group and evolution.

Nosological groups	Effective	Percentage
H.T.A	663	52.5
Primary cardiomyopathy	268	21.2
Vasculopathies	244	19.3
Coronary artery disease	135	10.7
Rhythm and conduction disorders	69	5.5
Valvulopathies	67	5.3
Peripartum cardiomyopathy	57	4.5
Chronic pulmonary heart disease	23	1.8
Pericarditis	17	1.3
Cardiothyreosis	15	1.2
Endocarditis	2	0.2
BY TYPE OF VASCULOPATHY N = 244		
Stroke	156	64
Pulmonary Embolism	56	23
Phlebitis	27	11
Arteritis	5	2
By Type of Stroke N = 157		
Ischemic	122	78
Hemorrhagic	33	21
Mixed	2	1
By Treatment N = 1264		
Salt-free diet	318	25.2
Low-salt diet	931	74
Diuretics	502	39.7
I.E.C	559	44.2
Calcium channel blockers (amlodipine)	513	40.6
Beta-blockers	433	34.3
Antiplatelet agents	509	40.3
A.V.K	82	6.5
LMWH	32	2.5
Statins	241	19.1

Continued

Central anti-HTA	29	2.3
Spironolactones	92	7.3
Digitalis	16	1.3
Nitrates	22	1.7
Antiarrhythmics	5	0.4
Transfusion	9	0.7
Antibiotics	118	9.3
Physiotherapy	63	5
By number of days in hospital N = 1264		
Less than 7 days	191	15.1
7 to 15 days	865	68.4
More than 15 days	208	16.5
According to progress under treatment N = 1264		
Favorable	1142	90.3
Cardiac decompensation	28	2.2
A.V.C	4	0.3
E.P	3	0.2
S.C.A ST (+)	1	0.1
Death	86	6.8

4. Comments and Discussion

Our study had certain limitations:

- The cramped technical facilities at the hospital;
- The impossibility of performing certain additional tests due to the precarious nature of the population;
- The poor maintenance of certain patient records.

The study covered the period from 1 January 2015 to 31 December 2015. It was conducted in the cardiology department of the Point G University Hospital and involved a population of 2000 patients, 1264 of whom had usable medical records.

Women predominated in the series (58.2%) compared to 58.0% for Koate [4] and 56.6% for Findibe D [5]. Touré A [6], Touré M [7], Serme [8] and Diallo [9] were predominantly male, while Diouf [10] showed no difference in gender distribution. The modal age group was between 56 and 65 years (24.2%), compared to 60 to 74 years in the Touré A [6] study (28.4%) and 60 to 89 years in the Coulibaly [11] study (45.5%). Patients with low socioeconomic status were the most common (66.5%), which is consistent with the rest of the literature [6] [8] [13]. Hypertension was the predominant cardiovascular risk factor (60.1%), as in the Touré A [6] (70.3%) and Touré M [7] (72.6%) studies. Sedentary lifestyle (33.3%), menopause (23.0%) and smoking (16.5%) were also present. In this study, high blood pressure and its complications were by far the most common nosological

group (52.5%), with an increasing incidence up to the age of 65, which is consistent with what's typically seen in the literature [5] [6] [12]. However, its current frequency is much higher than that observed by Touré M [7] in Mali (25.07%), reflecting the progression of this disease. Primary cardiomyopathies (21.2%) were the second most common nosological group. This rate was comparable to that of Touré M [7] (18.71%), but higher than those of Touré A [6], Bertrand [15] and Bouramou [14] (7.9%, 5.3% and 10.1%, respectively). This difference could be explained by inadequate technical facilities and delays in treatment, making it difficult to establish an aetiological diagnosis. Vascular diseases ranked third with 19.3% and ischaemic cardiomyopathies fourth with 10.7%. These rates were much higher than those reported in 2005 by Touré M [7], indicating a resurgence of these pathologies, linked at least in part to the spread of smoking, poor diet, sedentary lifestyles and the spread of the HIV epidemic in our country, which warrants further investigation. Rhythm and conduction disorders ranked fifth among nosological groups, with a frequency of 5.5%. This rate is higher than that reported in the rest of the literature. Valvular heart disease accounted for 5.10% of nosological groups, compared with 7% in Touré A [6] and 11.9% in Touré M [7]. No cases of congenital heart disease were reported. Overall mortality was 6.8%. These figures are lower than those reported in the rest of the literature and partly reflect the progress made by our team in treatment. Higher mortality among men was reported by Mahnane [13] (55%). Low socioeconomic status was associated with higher mortality (57.0%). This excess mortality in this category could be explained by the prohibitive cost of medication, poor treatment compliance and lack of follow-up. Vascular diseases (24.4%), primary cardiomyopathies (17.4%) and coronary heart disease (15.1%) were the most lethal nosological groups, reflecting their recruitment at advanced stages of myocardial damage and the absence of cardiac surgery and interventional cardiology units in Bamako.

Finally, the mortality rate associated with hypertension was 11.6%, lower than those reported by Camara [16] (32.05%), Mahnane [13] (15%) and Diallo [9] (12.5%).

5. Limitations

Excluded records, representing 36.8% of the initial patient records (736 out of 2000).

The examinations were not exhaustive.

The type of study (prospective and descriptive, based on the records of patients hospitalised or not in the cardiology department).

6. Conclusion

Cardiovascular diseases are now a major public health problem in Mali, due to their frequency, severity, high cost of treatment and the large number of children and young adults affected. Our results corroborate the observations of the WHO and the World Bank that the evolution of cardiovascular diseases is a growing

concern. Our low mortality rate (6.8%) reflects the improvement in the management of cardiovascular diseases in the department, but much remains to be done to reduce morbidity and mortality.

Conflicts of Interest

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

References

- [1] WHO: 2014 Report on Cardiovascular Disease Mortality Worldwide. <http://www.OMS.com>
- [2] Gaziano, T.A. and Gaziano, J.M. (2014) Braunwald's Global Burden of Cardiovascular Disease. Heart Disease: A Textbook of Cardiovascular Medicine. 201 Boston. Elsevier Saunders. *The Pan African Medical Journal*, **17**, 62.
- [3] Bertrand, et al. (1978) Cardiovascular Morbidity and Mortality in an Internal Medicine Department in Abidjan in 1974. *Médecine d'Afrique Noire*, **25**.
- [4] Koate, P. (1978) High Blood Pressure in Black Africa. *Bulletin of the World Health Organization*, **56**, 841-848.
- [5] Findibé, S.D., Syllam, G.D., Touré, I., Kébé, M.B., Sarr, M., Ba, S.A., Tarraf, R. and Yehouessi, E.Y. (1984) Changes in the Prevalence and Profile of Cardiovascular Disease in Senegal over Two Decades (1960-1980). *Médecine d'Afrique Noire*, **24**, 247-250.
- [6] Touré, A.L. (2005) Cardiovascular Morbidity and Mortality in the Cardiology Department B of the Point G University Hospital. Med. Thesis, 53 p.
- [7] Touré, M.M. (2009) Cardiovascular Morbidity and Mortality in the Cardiology Department A of the Point G University Hospital. Med. Thesis, 51 p.
- [8] Serme, I.A. and Ouandaogo, B.J. (1991) Cardiovascular Morbidity and Mortality in the Internal Medicine Department in Ouagadougou. *Cardiologie Tropicale*, **17**, 23-29.
- [9] Diallo, B. and Touré, M.K. (1994) Cardiovascular Morbidity and Mortality in the Cardiology Department of Bamako. *Tropical Cardiology*, **20**, 26-29.
- [10] Diouf (1974) Current Prevalence and General Aspects of Cardiovascular Disease in Black Africans. Medical Thesis, University of Medicine, Pharmacy and Odontostomatology of Dakar, 64 p.
- [11] Coulibaly, S. (2015) Morbidity and Mortality from Cardiovascular Disease in the General Medicine Department of the Ségou Regional Hospital. 52 p.
- [12] Kingue, S., Dzudie, A., Menanga, A., Akono, M., Ouankou, M. and Muna, W. (2005) Nouveau regard sur l'insuffisance cardiaque chronique de l'adulte en Afrique à l'ère de l'échocardiographie Doppler: Expérience du service de médecine de l'Hôpital Général de Yaoundé. *Annales de Cardiologie et d'Angéiologie*, **54**, 276-283. <https://doi.org/10.1016/j.ancard.2005.04.014>
- [13] Mahnane, A., Abdoun, M., Bouaoud, S., Zaidi, Z., Hamdi-Cherif, M. and Lafi, N. (2015) P-129: Epidemiology Hospital Mortality by Disease Cardiovascular (HTA) in Setif, 2006-2014. *Annales de Cardiologie et d'Angéiologie*, **64**, S67. [https://doi.org/10.1016/s0003-3928\(16\)30173-1](https://doi.org/10.1016/s0003-3928(16)30173-1)
- [14] Bouramoué, C., Nkoua, J.L. and Ekoba, J. (1979) Epidemiology of High Blood Pressure in Central Africa. In: *High Blood Pressure in Africa Today*, Sidem Edition, National

Institutes of Health (NIH), 59, 73.

- [15] Ed Bertrand, D., Charles, J., Chouvet, A., Coulibaly, O., Dienot, B., Ekra, A., Kerfelec, J., Metras, D., Assamoi, M.Odi. and Rénambot, J. (1979) Statistical Tables Concerning Causes of Mortality and Morbidity in Tropical Areas. Place of Cardiovascular Disease. In: *Précis de Pathologie Cardiovasculaire Tropicale (Compendium of Tropical Cardiovascular Disease)*, 2nd Edition, Sandoz, 393-417.
- [16] Camara, M. (1996) Hypertension: Epidemiological, Clinical, Evolutionary and Prognostic Aspects in the Cardiology Department of the Point G University Hospital.