



# Cardiovascular Death in the Regional Hospital of Koudougou

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## Abstract

Cardiovascular diseases actually are a real public health concern all over the world and more specifically in the developing countries. The aim of this study was to analyze the causes and factors associated to deaths due to cardiovascular diseases in medicine and medical emergencies departments at the Regional Hospital (RH) of Koudougou to contribute to treatment improvement. This study was a retrospective and descriptive study conducted over a period of 12 months from January 1st 2014 to December 31st, 2014. This study took place in medicine and medical emergencies departments within the Regional Hospital of Koudougou. We have recorded 282 deceased persons. We have selected 275 deceased persons according to our inclusion criteria. Deaths due to cardiovascular pathologies accounted for 73 cases corresponding to 26.55%. Sex ratio was estimated at 1.8. Patients' average age was estimated at  $62 \pm 17.6$  years. Forty patients corresponding to 54.8% were referred and 80% of them came from health and social promotion centers. Strokes representing 32.8% were the hypotheses mentioned upon admission. State of shock represented 32.8% of the immediate causes of death. Sixty-four point four percent of patients had high blood pressure as the most frequent initial death cause (47 cases). Thirty five cases of premature deaths, corresponding to 47.9% were observed. Cardiovascular diseases are a real public health concern in our countries undergoing an epidemiological transition. Mortality related to these diseases in Koudougou RH has been widely dominated by high blood pressure. This mortality can be reduced through preventive actions meant for the population including a reorganization of health system and hospital services to improve care quality.

## Subject Areas

Cardiology

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## Keywords

Causes of Death, Cardiovascular Disease, Mortality, Koudougou

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### 1. Introduction

Nowadays, cardiology domain has undergone progress. This includes always providing more remedies or preventive solutions to allow human beings to live longer and enjoy a better living. Notwithstanding, cardiovascular diseases keep on causing deaths [1]. They actually are a real public health concern all over the world and more specifically in the developing countries. This is due to their high prevalence and more particularly their high mortality rate. They represent a heavy burden for society and bring about great costs to the health system. Besides, these diseases are the first cause of mortality all over the world [2]. According to WHO, these affections in 2011 have caused the death of 16.7 million persons all over the world among which 29% occurred before 60 years. These diseases would cause the death of 23.3million persons in 2030 if no action is undertaken. Moreover, they are the first cause of death among the women over 65 years old. As for the macroeconomic domain, cardiovascular diseases take a heavy toll on economies of the developing countries up to 6.7% of their GDP. By 2025, the developing countries (DC) would lose 7000 billion Dollars US for the treatment of non-transmissible diseases against 170 billion Dollars US meant for prevention [3]. These figures are inevitably expected to rise with an ageing population, the increasing urbanization and adoption of new eating habits [4]. Actions need to be rapidly undertaken in order to stop this evolution [5]. A study conducted in the cardiology department of University Hospital-Yalgado Ouédraogo in 2013 revealed that the mortality rate was estimated at 13.2% with high blood pressure as the main cause of death among which 46.1% and 59.4% of patients were under 65 years old [6]. Mortality statistics are the most reliable database to measure the scope of health issues within a country. Death causes are commonly used to guide and assess actions and researches in public health sector [7]. This is the reason why we intend to analyze the causes and factors associated to deaths due to cardiovascular diseases in medicine and medical emergencies departments at the Regional Hospital (RH) of Koudougou to contribute to treatment improvement.

### 2. Methodology

This dealt with a retrospective and descriptive study conducted over a period of 12 months from January 1st 2014 to December 31st, 2014. This study took place in medicine and medical emergencies departments within the RH of Koudougou.

The study has taken into account all the patients suffering from a cardiovascular disease and who died in medicine and medical emergencies departments during the survey period. We have reviewed all the deceased patients' clinical records in medicine and medical emergencies departments of Koudougou RH.

The following were considered in the study: all the patients having clinical records who died in the medicine and medical emergencies departments at Koudougou RH during the study period.

All the patients who died at their arrival at the medical emergencies of Koudougou RH during the study period have not been taken into account.

Data have been collected from: entry and output records, patients' clinical records and an individual form of pre-established collection.

Information was collected using clinical records including treatment and hospitalization registers of the deceased patients in the medical emergencies and medicine departments during our study period.

Data were reviewed through the French version of the software Epi-info 3.5.3. Khi-Deux and Fischer test have been used as statistical tests. The test was significant if  $p < 0.05$ .

This investigation was approved by the local Ethics Committee of the Hospital. Data confidentiality was considered when collecting data, and data anonymity has been respected.

### 3. Results

#### 3.1. Epidemiological and Socio-Demographics Aspects

From January 1st to December 31st, 2014, 1795 patients were admitted in the department of medical emergency. We have recorded 282 deceased persons in the departments of medical emergency ( $n = 219$ ) and general medicine ( $n = 63$ ) of RH Koudougou. We have selected 275 deceased persons according to our inclusion criteria. Seven patients were excluded (five patients died at arrival and two medical records were not found). Deaths due to cardiovascular pathologies accounted for 73 cases corresponding to 26.6%. Deaths were registered at the level of medical emergencies for 63 cases corresponding to 86.3% against 10 cases corresponding to 13.7% in the medicine department.

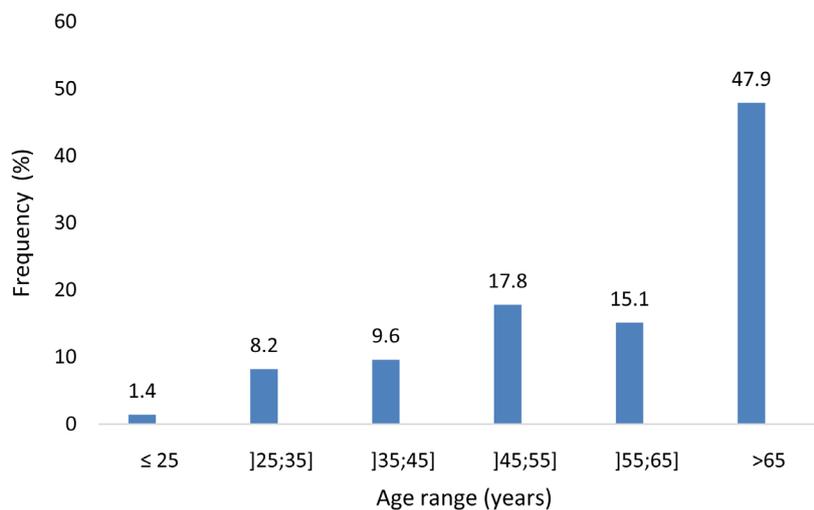
Sex ratio was estimated at 1.8. Forty-seven patients corresponding to 64.4% were male against 26 females corresponding to 35.6%. Thirty-six patients were living in Koudougou, corresponding to 49.3% and 37 were living out of the town corresponding to 50.7%.

Patients' average age was estimated at  $62 \pm 17.6$  years with extremes reaching 25 and 98 years. Patients over 65 years accounted for 35 cases corresponding to 47.9%. Men's average age was  $61.1 \pm 16.6$  years with extremes reaching 26 and 98 years and that of women was estimated at  $63.5 \pm 19.4$  years with extremes reaching 25 and 94 years. The difference between the average age of men and women was not significant ( $p = 0.5$ ).

**Figure 1** shows the distribution of patients deceased according to age range.

#### 3.2. Clinical Aspects of the Deceased Patients

Forty patients corresponding to 54.8% were referred and 80% of them came from health and social promotion centers. **Table 1** shows the distribution of the deceased patients according to their admission method.



**Figure 1.** Distribution of patients deceased according to age range.

**Table 1.** Distribution of the deceased patients according to their admission method.

	Frequency	Percentage (%)
Direct admission	33	45.2
Referral	40	54.8
Transfer	0	0
Total	73	100

Twenty four (24) patients had previous medical history of high blood pressure (32.8%); four had diabetes history (5.5%). Seven patients (9.6%) have been previously hospitalized.

Patients went for consultation in a health facility on an average of  $3.3 \pm 3.4$  days with extremes of 1 and 14 days; others went to RH on an average of  $5.5 \pm 12.8$  days with extremes of one and 90 days upon the symptomatology start.

Strokes representing 32.8% were the hypotheses mentioned upon admission. The **Table 2** shows the distribution of diagnosis upon patients' admission.

State of shock represented 32.8% of the immediate causes of death (concerning 24 cases) and heart failure represented 15.1% (11 cases). **Table 3** shows the distribution of immediate causes of death.

Sixty-four point four percent of patients had high blood pressure as the most frequent initial death cause (47 cases). The following table shows the distribution of patients per initial causes. The **Table 4** shows the distribution of initial causes of death.

The average duration for hospitalizing patients was  $2.7 \pm 2.6$  days with extremes of one and 15 days.

### 3.3. Cases of Premature Death

Thirty five cases of premature deaths, corresponding to 47.9% were observed. The total

**Table 2.** Distribution of diagnosis upon patients admission.

	Frequency	Percentage (%)
Stroke	24	32.8
High blood pressure	15	20.5
Dilated cardiomyopathy	11	15
Pulmonary embolism	7	9.6
Pulmonary disease	7	9.6
Acute kidney failure	3	4.1
Stroke recurrence	2	2.8
Post-partum cardiomyopathy	1	1.4
Keto-acidosis coma	1	1.4
Chronic pulmonary heart disease	1	1.4
Thrombophlebitis	1	1.4
Total	73	100

**Table 3.** Distribution of 73 patients deceased per immediate causes of death.

	Frequency	Percentage (%)
State of shock	24	32.8
Heart failure	11	15.1
Acute pulmonary oedema	9	12.3
Toxic shock	8	10.9
Stroke	4	5.5
Metabolic disorder	4	5.5
Severe anemia	3	4.1
Pleurisy	3	4.1
Decubitus complications	2	2.8
Convulsions	2	2.8
Cerebral herniation	2	2.8
Chest pains	1	1.4
Total	73	100

**Table 4.** Distribution of 73 deceased patients per initial death causes.

	Frequency	Percentage (%)
High blood pressure	47	64.4
Dilated cardiomyopathy	13	17.7
Pulmonary embolism	9	12.3
Post-partum cardiomyopathy	1	1.4
Stroke	1	1.4
Chronic pulmonary heart disease	1	1.4
Thrombophlebitis	1	1.4
Total	73	100

number of life years lost was estimated at 638 years corresponding to an average of 18.2 years. Males were predominant with a sex ratio estimated at 2.1. The average age of the premature deaths was estimated at  $18.2 \pm 11.4$  years. State of shock was the first cause of death for 45.7% of cases and high blood pressure was the initial cause of death for 62.8%. 18 cases corresponding to 51.4% had acute pathologies. The **Table 5** and **Table 6** show distribution of premature deaths cases according to immediate causes of death and initial causes of death.

#### 4. Discussion

In our study, the mortality rate due to cardiovascular diseases was estimated at 26.5%. In 1998, Sedego in Burkina Faso had found a mortality rate of 21.3% [8]. Parkouda and Yaméogo in Burkina Faso respectively reported a mortality rate of 15.8% in 2010 and 13.2% in University Hospital Yalgado Ouédraogo [6] [9]. It worth noticing that the technical unit of Koudougou RH is very limited concerning diagnosis and therapeutic means. Besides, in most cases medicine and emergencies departments are managed by general practitioners. So, there is the need to link delay in consultation and late diagnosis of cardiovascular diseases to complicated stage. The average age in our study was estimated at 62 years. In the developed countries like France, the average age of deaths related to cardiovascular diseases (CVD) was 80 years [10]. World Health Organization (WHO) affirmed that nearly half of deaths related to CVD in the developing countries occurred before 70 years in 1990 [10]. The persistence of this status after more than two decades shows the failure of health policies conducted in such countries.

**Table 5.** Distribution of premature deaths cases according to death immediate causes.

	Frequency	Percentage (%)
State of shock	16	45.7
Heart failure	7	20
Acute pulmonary oedema	6	17.2
Stroke	4	11.4
Anemia	2	5.7
Total	35	100

**Table 6.** Distribution of premature deaths cases according to initial death causes.

Initial causes	Numbers	Percentage (%)
High blood pressure	22	62.8
Dilated cardiomyopathy	8	22.8
Pulmonary embolism	4	11.5
Post-partum cardiomyopathy	1	2.9
Total	35	100

CVD has brought about premature deaths in 47.9% of cases in our study with 638 life years lost. In African countries, more than half of deaths per cardiovascular diseases occur among the persons aged between 30 and 69 years, an age beyond 10 years or further below the equivalent group in Europe and Northern America [11]. These deaths will increase throughout time within our context along with premature deaths and significant life years lost if no action is undertaken.

Patients in our study had a consultation in a health facility other than the RH in an average deadline of 3.3 days upon the symptomatology start. This time limit was 5.5 days for those patients received at the RH. Bertrand has made the same observation in 2006 as he found an average consultation time limit estimated at 6.8 days in Sub-Saharan African [12]. Patients did not go to consultation upon the disease outward signs. Several factors could explain the long consultation deadline: the lack of resources to guarantee the funding of first care when being admitted at the emergencies department; the hope to recover spontaneously; the organization of health system requiring the systematic passage to CSPS (primary cares centers), to CMA (medical center with surgical antenna) with and towards the RH. This extends patient's pathway and favors self-medication and sociocultural factors.

Diagnoses mentioned while admitting patients were: stroke and stroke recurrence for 35.5% of cases, high blood pressure for 20.5%, dilated cardiomyopathy for 15% cases. Bertrand has observed comparable proportions in Western Africa [12]. Stroke, high blood pressure and cardiomyopathies are the main cardiovascular diseases having a high mortality rate. In 2012 [13], high blood pressure had a prevalence of 30% in Burkina Faso. This is a major risk factor often unknown by more than 60% of cases. Less than 30% of persons suffering from high blood pressure are followed-up [14]. High blood pressure silently evolves towards complications such as stroke and cardiomyopathies.

State of shock and heart failure respectively estimated at 32.8% and 15.1% of cases were the immediate death causes in our survey. We notice that the immediate death cause of most deaths was a state of shock directly or indirectly by heart failure and acute pulmonary oedema. Yaméogo's study in 2013 in Burkina Faso showed the state of shock as the immediate death causes due to CVD in 65.7% of cases [6]. This can be explained by the fact that the majority of cardiac pathologies would evolve in a long term towards a state of shock by deactivating the cardiac pump. This probably explains the late consultations at complicated stages along with life-threatening emergencies.

High blood pressure was the initial death cause of 64.4% of patients. Our outcomes can be superimposed to Yameogo's at the University Hospital Yalgado Ouédraogo who had observed a predominance of hypertensive cardiac diseases as regards deaths resulting from cardiovascular diseases (46.1%) [6]. A late diagnosis as well as inadequate treatment are factors bringing patients with complicated stages to emergencies, even with critical emergencies [15] [16]. Mortality resulting from cardiovascular diseases in most cases can be avoided by means of a primary prevention by raising population awareness to recognize and fight against risks factors, and secondary prevention through

diagnosis and early treatment. High blood pressure is the main risk factor. Its late diagnosis and inappropriate treatment could be the reason for its significant mortality rate.

## 5. Conclusion

Cardiovascular diseases are a real public health concern in our countries undergoing an epidemiological transition. Mortality related to these diseases in Koudougou RH has been widely dominated by high blood pressure. Patients not respecting their therapy, the late consultation and the lack of qualified staff are factors likely to explain the high mortality due to cardiovascular diseases. This mortality can be reduced through preventive actions meant for the population including a reorganization of health system and hospital services to improve care quality.

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