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# Frequency and Distribution of Cardiovascular Disease Risk Factor in Coronary Patients

**Bindia I. D[1], Sangare Z[2], Diop I. B[1], Regnault K[1], Mingou J. S[2,*], Dioum M[1], Sarr E. M[1], Leye M[1], Manga S[1], Dieye O[1], Diagne A[1], Diene L[1]**

[1]Department of Cardiology, Fann Hospital University, Dakar, Senegal
[2]Department of Cardiology, Aristide Le Dantec Hospital University, Dakar, Senegal

***Corresponding author:** Joseph Mingou, CardiologyDepartment, Aristide Le Dantec Hospital University, Dakar, Senegal, Email: mingoujoseph@gmail.com

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## Summary

**Introduction:** Coronary heart disease, considered as uncommon in sub-Saharan Africa is increasing. This epidemiological situation due to the increase in the prevalence of coronary disease risk factor is induced by a change in lifestyle and new eating behaviours.

**Aim:** To evaluate the frequency and distribution of cardiovascular disease risk factor in coronary patients hospitalized for coronary angiography.

**Method:**We conducted a retrospective study from patients' files explored by coronary angiography during the period from April 2013 to January 2016 in the Jacques Bessol Coronary Angiography Center of the Fann University Hospital in Dakar, Senegal.

**Results:**Two hundred and six patients were enrolled. There were significant differences between men and women participants with male predominance (sex-ratio=3.03). The mean age was 61.7 +/- 10.7 years. Most of the patients were less than 70 years old (79.6% vs. 20.3%).The frequency of hypertension, dyslipidaemia, diabetes, smoking and obesity was 57.5%, 42%, 26.6%, 20.8% and 13% respectively. Women had a higher frequency of hypertension (70.5% vs. 53.5%; P=0.002), hypercholesterolemia (56.8% vs. 37.4%; P=0.001), diabetes (29.4% vs. 25.8%; P=0.012) and obesity (27.4% vs. 8.3%; P=0.001).The frequency of hypertension (55.5% vs. 66.6%; P=0.241), diabetes (28.04% vs. 21.4%; P=0.245) and hypercholesterolemia (43.3% vs. 38%; P=0.642) didn't vary significantly according to both gender.Smoking decreased with age (25.61% vs. 2.38%; P=0.003). More than half of diabetic and nearly two-third of obese patients had at least three cardiovascular disease risk factor.

**Conclusion:** The most common risk factor in our study, were hypertension, hypercholesterolemia and diabetes. Women cumulated more risk factor than men. Diabetic and obese patients were characterized by the multiplication of risk factor.

**Keywords:** Cardiovascular disease risk factor, distribution, frequency, coronary heart disease, Dakar (Senegal).

## Introduction

Coronary heart disease which is considered to be rare in Africa, has been dangerously increasing in these recent years [1].

Some available statistical data issued from small series showed marked increase in the prevalence of coronary heart disease since CONAFRIC I survey in 1989. This prevalence increases from 3.17% to 9% in Ouagadougou in 2012 and 12% in Dakar in 2008 [2].It seem that this prevalence will double shortly by 2020 with 140% increase in myocardial infarction mortality [1, 3].This epidemiological situation is underlid by an increase in the prevalence of coronary risk factor induced by a change in the lifestyle and new eating behaviours [1]. The synergistic effect of the cardiovascular disease risk factor was emphasizedin the preliminary results of the Framingham epidemiological survey. The fight against the explosion of coronary heart disease will go by the management of cardiovascular disease risk factor [1].

Some epidemiological studieshas been conducted in order to evaluate cardiovascular disease risk factor in industrialized countries, but few have been interested in the situation in Africa, particularly in sub Saharan Africa .

In Senegal, a change in the causes of death in the benefit of cardiovascular disease is occurring due to the change in eating behavior, the tendency to sedentary lifestyle and permanent stress.

## Main objective

To evaluate the frequency and distribution of main cardiovascular disease risk factor in patients hospitalized and explored by coronary angiography in the Jacques Bessol coronarography center ofthe Fann University Hospital in Dakar-Senegal.

### Specific objective
- identify cardiovascular disease risk factor in patients likely to have coronary heart disease;
- Determine the prevalence of each cardiovascular disease risk factor
- Study the distribution of these risk factor in populationstudied

## Method

It was a monocentric, retrospective and descriptive study from April 2013 to January 2016 in the Jacques Bessol coronarography center of the Fann University Hospital in Dakar-Senegal.

We included in the study any patients seen or hospitalized in the center who had a coronary angiography The Studied parameters concerned epidemiological, clinics and paraclinical data.Data analysis were performed using the SPSS® Version.10.0. Software.

The Results were expressed as means ± standard deviation for continuous variables and percentage for discontinuous variables
Confidence intervals were calculated at the risk of 5%.
Chi-2 test was used to analyse the difference between discontinuous variables
A p-value of <0.05 was considered significant.

## Results

Two hundred and six patients were enrolled. There were significant differences between men and women participants with a male predominance (sex-ratio=3.03). The mean age of patients was 61.7 +/- 10.7 years. Most of the patients were less than 70 years old (79.6% vs. 20.3%).

The frequency of classical cardiovascular risk factor including hypertension, dyslipidemia, diabetes, current smoking, and obesity was 57.5%, 42%, 26.6%, 20.8%, and 13% respectively (figure 1). Women had a higher frequency of hypertension (70.5% vs. 53.5%; P=0.002), hypercholesterolemia (56.8% vs. 37.4%; P=0.001), diabetes (29.4% vs. 25.8%; P=0.012) and obesity (27.4% vs. 8.3%; P=0.001). The frequency of hypertension (55.5% vs.66.6%; P=0.241), diabetes (28.04% vs. 21.4%; P=0.245) and hypercholesterolemia (43.3% vs. 38%; P=0.642) didn't vary significantly according to both genders. Smoking decreased with age (25.61% vs. 2.38%; P=0.003). More than half of diabetic and nearly two-third of obese patients had at least three cardiovascular disease risk factors. The motif of angiography was dominated by stable angina (44.5%) and then myocardial infarction (26.6%), unstable angina (5.3%) and without Q waved infarction (5.3%) (figure 2).

## Discussion

In our study we found a male predominance of 74.9%. A similar study conducted by Kenyane reported 80.6% [4]. Our population of study was relatively young, that may partly explain how male were predominant.

The mean age was 61.7 years old, and any etiologies combined were slightly similar to the two African series (57.1 years old) and (63.3 years) [5,4]. A same report was also found in the three EUROASPIRE I, II and III study which showed a mean age of 59, 59, 60 years respectively [6].The incidence according to gender and age bracket for all the three MONICA-France registers increase in a very important way in both gender with a greater increasing in women [7, 8].

It was underlined in our study a predominance of hypertension, dyslipidaemia, obesity and diabetes among women. In coronary women some risk factor such as diabetes and hypertension are more common [9]. In the other hand, another study showed that women had a higher cardiovascular disease risk factor profile than men, with a higher frequency of diabetes and hypertension of 35.8% vs. 23.7% and 68.7% vs. 54.3% respectively [10].Abdominal obesity, essentially met after menopause, is frequently associated with diabetes, dys-lipidaemia and hypertension, explaining the increase in the prevalence of metabolic syndrome reflecting an accumulation of cardiovascular disease risk factor [11].
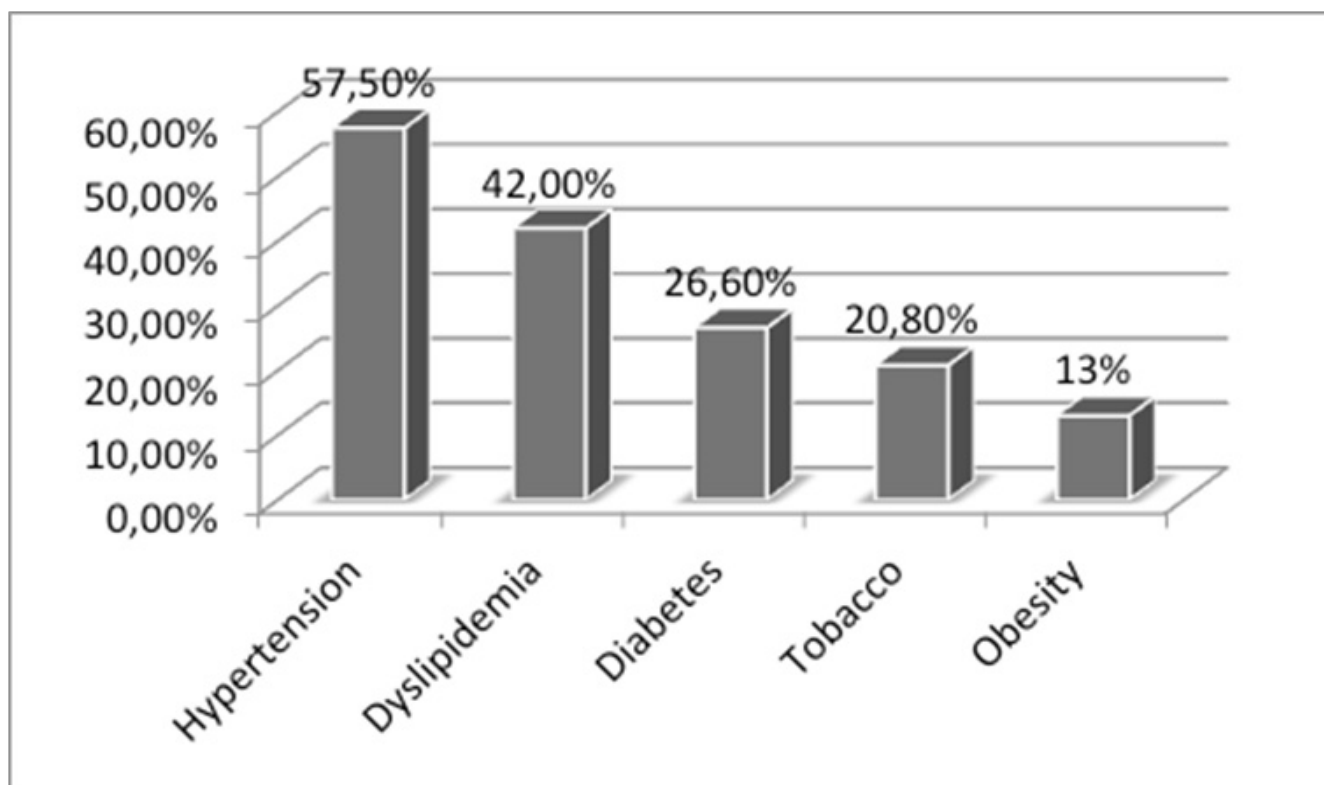
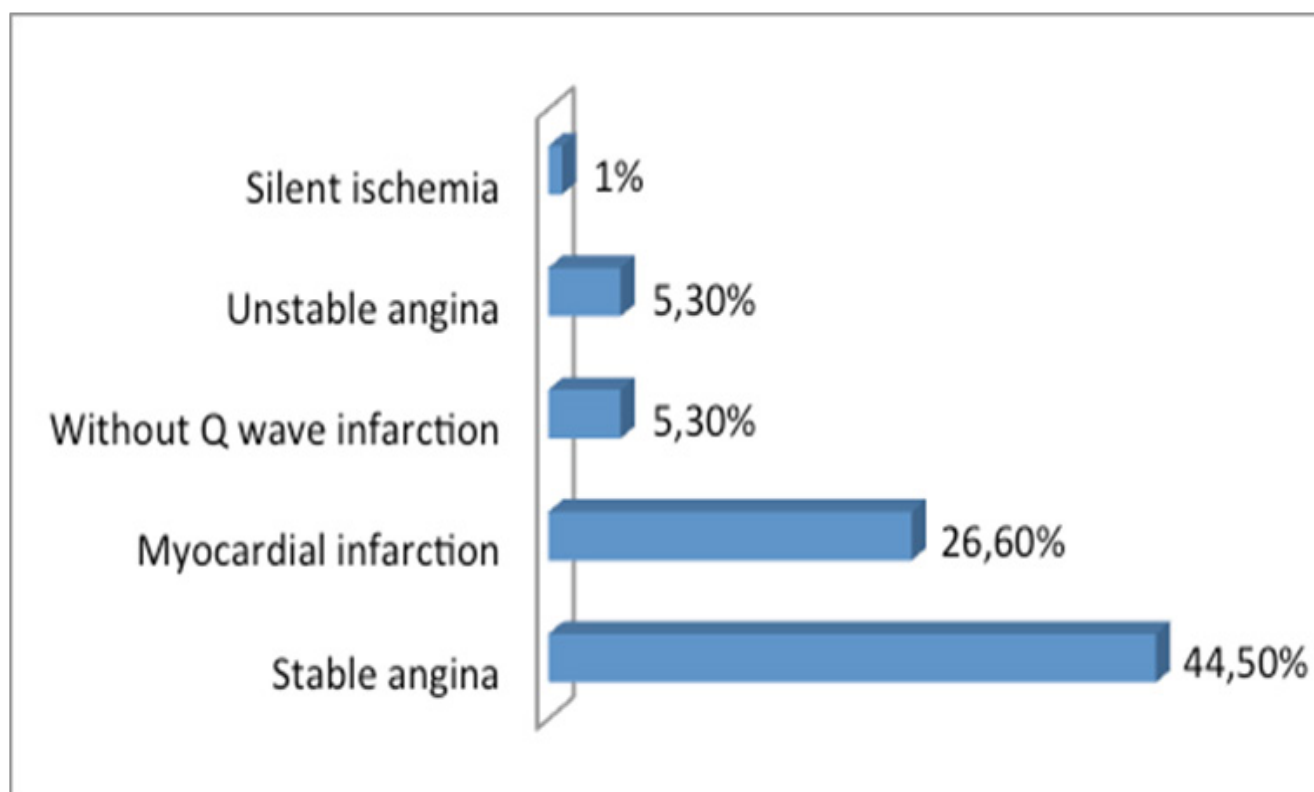Figure 1: Prevalence of major cardiovascular risk factors



Figure 2: Distribution according to the angiogram

In our study, only the distribution of the prevalence of dyslipidaemia according to gender seemed to be deviated from the whole data set in certain studies [12]. The analysis of the distribution of risk factor according to age bracket revealed a similarity between the two age group except for smoking poisoning. But it's classically described in many studies that the distribution of risk factor generally vary according to age. Thus, in a French study, it was shown that the frequency of hypertension increased with age whereas dyslipidaemia decreased with advanced age [13].

Another study showed a significant increase in the prevalence of hypertension and diabetes with age in both gender. However, the prevalence of dyslipidaemia increased significantly with age, but only among women [12]. The disparity in our results with those of medical literature can be explained by early exposure of our patients to cardiovascular disease risk factor. The decrease in smoking rate among senior citizen is coherent with the medical literature [12, 13].The analysis of the subgroup of diabetic patients in our study showed a frequent association of multiple risk factor including obesity and hypertension. In fact, more than half of diabetic patients (53.5% vs. 7.28% of non-diabetics P=0.0001) had at least three cardiovascular risk factors associated. Similar results were reported in several African studies. Thus, it has been noticed in other studies that in addition to obesity, hypertension was the main risk factor for cardiovascular disease risk associated with diabetes [14]. Moreover, Dembele [15] reported in Mali that the prevalence of hypertension was more frequent in diabetes type2 with a rate of 29%. Even Lokrou [16]in Ivory-Cost and Akintewe [17] in Nigeria reported a prevalence of 31%.

We found that nearly two-third of obese patients(63% vs. 12.84% non-obese patients, P = 0.0001) had at least three associated cardiovascular disease risk factors. An African study reported among obese patients, hypertension (54, 8% vs. 39, 2%), dyslipidaemia (34, 5% vs. 20%), diabetes (30, 9% vs. 10, 7%) and smoking (14, 1% vs. 20, 3%) with significant differences between the two groups [18].

## Conclusion

The most common risk factor in our study were hypertension, hypercholesterolemia, diabetes and a lower rate of smoking patients than in developed countries. Women cumulated more risk factor than men. Diabetics and obese patients were characterized by the multiplicity of risk factor. This reflected the high level of cardiovascular disease risk in most of our patients.

These results have to incite to reconsider imperatively in a hurry the dietary and the lifestyle behaviour in Senegal in order to reduce this morbid situation and the risk of morbidity and mortality from cardiovascular disease.

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