

Frequency and Distribution of Cardiovascular Disease Risk Factor in Coronary Patients

I. D. Bindia¹, Z. Sangare¹, I. B. Diop¹, K. Regnault¹, Joseph Salvador Mingou², M. Dioum¹, E. M. Sarr¹, M. Leye¹, S. Manga¹, O. Dieye¹, A. Diagne¹, L. Diene¹

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

ABSTRACT

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 behaviors. **Aim:** The aim of this study was to evaluate the frequency and distribution of cardiovascular disease risk factor in coronary patients hospitalized for coronary angiography. **Methods:** 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:** A total of 206 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 <70 years old (79.6% vs. 20.3%). The frequency of hypertension, dyslipidemia, 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%; $P = 0.642$) did not vary significantly according to both the 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 factor. **Conclusion:** The most common risk factors, 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.

Key words: Cardiovascular disease risk factor, coronary heart disease, Dakar (Senegal), distribution, frequency

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 a 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 seems that this prevalence will double shortly by 2020 with 140% increase in myocardial infarction mortality.^[1,3]

This epidemiological situation is underlaid by an increase in the prevalence of coronary risk factor induced by a change in the lifestyle and new eating behaviors.^[1] The synergistic effect of the cardiovascular disease risk factor was emphasized in 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 studies have been conducted to evaluate cardiovascular disease risk factor in industrialized countries, but few have been interested in the situation in Africa, particularly, in Sub-Saharan Africa.

Address for correspondence:

Joseph Salvador Mingou, Department of Cardiology, Aristide Le Dantec Hospital University, Dakar, Senegal.
E-mail: mingoujoseph@gmail.com

© 2018 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

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

The main objective of this study was to evaluate the frequency and distribution of main cardiovascular disease risk factor in patients hospitalized and explored by coronary angiography in the Jacques Bessol Coronary Angiography Center of the Fann University Hospital in Dakar, Senegal.

Specific objective

The specific objective of this study was as follows:

- To identify cardiovascular disease risk factor in patients likely to have coronary heart disease;
- To determine the prevalence of each cardiovascular disease risk factor
- To study the distribution of this risk factor in population studied.

METHODS

It was a monocentric, retrospective, and descriptive study from April 2013 to January 2016 in the Jacques Bessol Coronary Angiography 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 was 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 analyze the difference between discontinuous variables.

A $P < 0.05$ was considered to be statistically 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 <70 years old (79.6% vs. 20.3%).

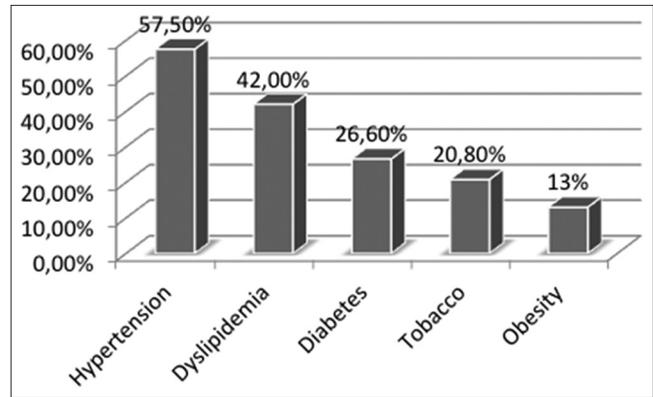


Figure 1: Prevalence of major cardiovascular risk factors

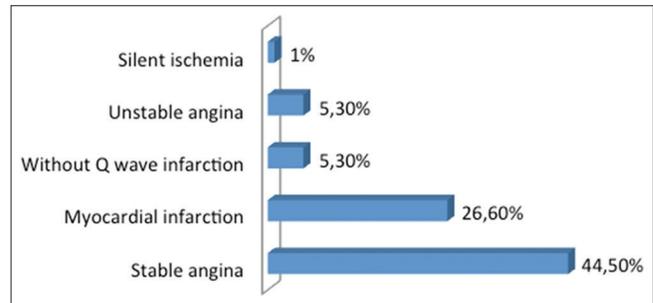


Figure 2: Distribution according to the angiogram

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%; $P = 0.642$) did not vary significantly according to both the 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 factor. 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 the study was relatively young, which may partly explain how male was 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).^[4,5] The same report was also found in the three EUROASPIRE I, II, and III studies which showed a mean age of 59, 59, and 60 years, respectively.^[6] The incidence according to gender and age bracket for all the three MONICA-France registers increases in a very important way in both the genders with a greater increase in women.^[7,8]

It was underlined in our study a predominance of hypertension, dyslipidemia, obesity, and diabetes among women. In coronary women, some risk factors such as diabetes and hypertension are more common.^[9] On 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% versus 23.7% and 68.7% versus 54.3%, respectively.^[10] Abdominal obesity, which essentially met after menopause, is frequently associated with diabetes, dyslipidemia, and hypertension, explaining the increase in the prevalence of metabolic syndrome reflecting an accumulation of cardiovascular disease risk factor.^[11]

In our study, only the distribution of the prevalence of dyslipidemia 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 groups except for smoking poisoning. However, it is classically described in many studies that the distribution of risk factor generally varies according to age. Thus, in a French study, it was shown that the frequency of hypertension increased with age, whereas dyslipidemia decreased with advanced age.^[13]

Another study showed a significant increase in the prevalence of hypertension and diabetes with age in both the genders. However, the prevalence of dyslipidemia 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, Dembélé *et al.*^[15] reported, in Mali, that the prevalence of hypertension was more frequent in diabetes type 2 with a rate of 29%. Even Lokrou *et al.*^[16] in Kinteweta and Adetuyibi^[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%), dyslipidemia (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 factors 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 to reduce this morbid situation and the risk of morbidity and mortality from cardiovascular disease.

REFERENCES

1. Gaziano TA. Cardiovascular disease in the developing world and its cost-effective management. *Circulation* 2005;112:3547-53.
2. Ticolat P, Bertrand Ed, Raben P, Bouramou C, Burdin J, Diouf S, *et al.* epidemiological aspects of coronary artery disease in African black: about 103 cases. Results of the Multicentre survey coronafric. *Cardio too* 1991; 17:7-20.
3. Okrainec K, Banerjee DK, Eisenberg MJ. Coronary artery disease in the developing world. *Am Heart J* 2004;148:7-15.
4. Shavadia J, Yonga G, Otieno H. A prospective review of acute coronary syndromes in an urban hospital in sub-Saharan Africa. *Cardiovasc J Afr* 2012;23:318-21.
5. Marcus M, Dia K, Fall PD. Acute coronary syndromes in Dakar: Clinical, therapeutic and evolutionary Aspects. *Pan Afr Med J* 2014; 19:126.
6. Kotseva K, Wood D, De Backer G, De Bacquer D, Pyörälä K, Keil U, *et al.* Cardiovascular prevention guidelines in daily practice: A comparison of EUROASPIRE I, II, and III surveys in eight European countries. *Lancet* 2009;373:929-40.
7. Merhawit M, Ducimetiere P, Ruidavets JB, Arveiler D, Nejad J, Bingham A, *et al.* North-South Gradient of coronary mortality and morbidity in France: Recent data from the French registers of ischemic heart disease, 1997-2002. *BEH* 2006; 8-9:62-4.
8. Ruidavets JB, Hass B, Merhawit M, Arveiler D, Wagner A, Cemetery P, *et al.* Lethality of myocardial infarction of hospitalized patients and its evolution in the three French registers of ischemic heart disease, 1997-2002. *BEH* 2006; 8:67-8.
9. Bongard V, Grenier O, Ferrières J, Danchin N, Cantet C, Amelineau E, *et al.* Drug prescriptions and referral to cardiac rehabilitation after acute coronary events: Comparison between men and women in the French PREVENIR survey. *Int J Cardiol* 2004;93:217-23.
10. Jacobs AK, Johnston JM, Haviland A, Brooks MM, Kelsey SF, Holmes DR Jr, *et al.* Improved outcomes for women undergoing

- contemporary percutaneous coronary intervention: A report from the national heart, lung, and blood institute dynamic registry. *J Am Coll Cardiol* 2002;39:1608-14.
11. Wessel TR, Arant CB, Olson MB, Johnson BD, Reis SE, Sharaf BL, *et al.* Relationship of physical fitness vs body mass index with coronary artery disease and cardiovascular events in women. *JAMA* 2004;292:1179-87.
 12. Elasmî M, Feki M, Sanhaji H, Jemaa R, Haj Taeib S, Omar S, *et al.* Prevalence of conventional cardiovascular risk factors in the great Tunis population. *Rev Epidemiol Sante Publique* 2009;57:87-92.
 13. Brands VP, Calleja JP, Ferrieres J, Thomas D, Grenier O. Distribution and management of cardiovascular risk factors in coronary patients: study prevent. *Arch Mal Coeur* 2001; 94:673-80.
 14. Ghani SB, Thiam M, Fall F, PS Mbaye. Fourcade Diabetes mellitus in sub-Saharan Africa; Epidemiological aspects, management difficulties. *Med too* 2007; 67:607-11.
 15. Deepak M, Sara AT, Thierry HA, Saran AT, Tchombou HI, Zounet B. Association blood hypertension and diabetes mellitus in services of internal medicine at Point G Hospital in Bamako. *Med AFR Black* 2000; 47:276-80.
 16. Terry A, Neelu M. Diabetes and blood hypertension in Ivory Coast. *Rev Fr Endocrinol Clin* 1997; 38:99-106.
 17. Kinteweta A, Adetuyibi A. Obesity and hypertension in diabetics Nigerians. *Trop Geogr Med* 1986;38:146-9.
 18. Pessinaba S, Komlavi Y, Machiude P, René B. Obesity in consultation cardiac in Lomé: prevalence and associated cardiovascular risk factors-study in 1200 patients. *Pan Afr Med J* 2012; 12:99.

How to cite this article: Bindia ID, Sangare Z, Diop IB, Regnault K, Mingou JS, Dioum M, Sarr EM, Leye M, Manga S, Dieye O, Diagne A, Diene L. Frequency and Distribution of Cardiovascular Disease Risk Factor in Coronary Patients. *J Clin Cardiol Diagn* 2018;1(2):1-4.