Scientific Research Publishing

World Journal of Cardiovascular Diseases, 2025, 15(9), 436-442
https://www.scirp.org/journal/wjcd
ISSN Online: 2164-5337
ISSN Print: 2164-5329

Cardiovascular Diseases in Patients over the Age of 75 Hospitalized in Cardiology: Epidemiological, Diagnostic, Progressive and Therapeutic Aspects (A Retrospective Multicenter Study of 340 Cases)

Christolyn Michel[1], Sabe Kane[1], Papa Guirane Ndiaye[2], Margueritte T. Diouf[3], Papa M. D. Fall[1], Waly N. Mboup[4], Mamadou Coume[5], Momar Dioum[1]

[1]Cardiology Department, Centre Hospitalier National Universitaire de Fann, Dakar, Senegal
[2]Cardiology Department, Idrissa Pouye Hospital, Dakar, Senegal
[3]Cardiology Department, Dalal Jamm Hospital, Dakar, Senegal
[4]Cardiology Department, Dakar Army Training Hospital, Dakar, Senegal
[5]Geriatry Department, Centre Hospitalier National Universitaire de Fann, Dakar, Senegal
Email: *christolin1990@yahoo.fr

How to cite this paper: Michel, C., Kane, S., Ndiaye, P.G., Diouf, M.T., Fall, P.M.D., Mboup, W.N., Coume, M. and Dioum, M. (2025) Cardiovascular Diseases in Patients over the Age of 75 Hospitalized in Cardiology: Epidemiological, Diagnostic, Progressive and Therapeutic Aspects (A Retrospective Multicenter Study of 340 Cases). *World Journal of Cardiovascular Diseases*, **15**, 436-442.
https://doi.org/10.4236/wjcd.2025.159038

Received: July 11, 2025
Accepted: September 9, 2025
Published: September 12, 2025

Abstract

Introduction: The main objective of our study was to describe cardiovascular diseases in patients over 75 years of age hospitalized in the four major cardiology departments in Dakar. **Methodology**: We conducted a multicenter, retrospective, descriptive, and analytical study in the four major cardiology departments in Dakar from January 1, 2022, to December 31, 2023, a period of two years. The study included patients over the age of 75 hospitalized in cardiology departments with cardiovascular disease confirmed by clinical and paraclinical data. **Results**: We included 340 patients, representing a hospital prevalence of 5.96%. The mean age was 81.55 ± 3.45 years, with extremes of 76 and 97 years. The most represented age group was between 76 and 80 years. The female population was slightly predominant, with a sex ratio of 0.99. Stroke was the main history (7.94%). Most of our patients already had underlying heart disease (26.47%). Hypertension (66.76%) was the main cardiovascular risk factor. Dyspnea (62.94%) was the main symptom on admission. Arrhythmia and signs of heart failure were the most common examination findings, occurring in 31.56% and 27.37% of cases, respectively. The majority of patients had dyslipidemia (97.9%). Primary repolarization disorders (52%) were the main abnormality on ECG. Cardiac chamber dilatation (61.18%) was the predominant abnormality on cardiac Doppler echocardiography. Athero-

sclerotic plaques (14.89%) were predominant on supra-aortic trunk ultrasound. Three-vessel disease (37.1%) was predominant on coronary angiography. Ischemic heart disease (40.88%) was the most common cardiovascular condition. The most commonly used therapeutic class in our population was anticoagulants (69.41%). Angioplasty (20.58%) was the most commonly performed interventional procedure in our patients, followed by pacemakers (20%). Complications during hospitalization were dominated by heart failure (45.21%), and the outcome was unfavorable in 20% of cases. Overall mortality was 10.3%. Ischemic heart disease and age > 85 years were the main factors associated with death. **Conclusion**: The prevalence of cardiovascular disease increases with age, and hypertension is the main risk factor. Ischemic heart disease is the most common condition. Mortality is significant. Prevention and optimal management of cardiovascular risk factors are the solution to cardiovascular disease in older adults.

Keywords

Cardiovascular Diseases, Older Adults, Dakar, Senegal

1. Introduction

Cardiovascular diseases represent a real health and socioeconomic problem for families and healthcare facilities for people over the age of 75. They are responsible for an increasing number of hospitalizations in our hospitals and are associated with significant morbidity and mortality due to diagnostic and treatment difficulties [1].

In 2018, patients over the age of 75 accounted for 9.2% of the global population. As of January 1, 2019, the French population was 65 million, of which 9.3% were over 75 years of age. It is estimated that by 2030, this figure will rise to 12.2% and by 2050 to 16.3%, according to data from INSEE in France [2]. Demographic data from 2023 compiled by ANSD reveals that in Senegal, people over the age of 75 represent 1.3% of the population [3].

The frequency and severity of these diseases should encourage us to take a greater interest in seniors in order to find the most appropriate solutions to reduce the negative repercussions [4]. This study we conducted is of paramount importance given the lack of data on people over 75 in Africa and Senegal in particular. It is one of the few studies to focus on seniors, with the main objective to describe cardiovascular diseases in people over 75 hospitalized in various cardiology departments.

2. Methodology

Our work was carried out in the cardiology departments of four hospitals in Dakar: Idrissa Pouye Hospital in Grand Yoff, Fann University Hospital, Dalal Jam University Hospital, and Dakar Principal Hospital.

This was a multicenter, retrospective, descriptive, and analytical study conducted from January 1, 2022, to December 31, 2023, over a period of two years.

The study included patients over the age of 75 who were hospitalized for the first time in the cardiology department and had cardiovascular disease confirmed by clinical and paraclinical data. The parameters studied were sociodemographic data, cardiovascular history and risk factors (high blood pressure, obesity, dyslipidemia) functional signs, and clinical examination findings. On the paraclinical level, data from electrocardiograms (repolarization anomaly, arrhythm disorders) cardiac Doppler echocardiograms, and other imaging modalities (thoracic and cerebral CT angiography, supra-aortic trunk ultrasound and venous and arterial Doppler ultrasound of the lower limbs) were recorded. We also studied the various lesions found on coronary angiography, as well as the methods of managing cardiovascular diseases and the progression of hospitalization under treatment.

The data were entered using Sphinx software (version V5) and analyzed using R software version 4.4.0. Categorical variables were described in terms of relative frequencies (numbers) and absolute frequencies (percentages). The Shapiro test was used to test for normality of the distribution of certain variables. Pearson correlation was used to determine the strengths of association.

We complied with the ethical rules set out in the declaration of Helsinki by ensuring the confidentiality of study participants through the use of personal identification numbers on data collection forms instead of names.

3. Results

We included 340 patients, representing a hospital prevalence of 5.96%. The average age was 81.55 ± 3.45 years, with extremes of 76 and 97 years. The most represented age group was between 76 and 80 (51.8%). Table 1 summarizes the distribution by hospital center. The female population was slightly predominant, with a sex ratio of 0.99. In our population, 45.6% of our patients were inactive retirees. Stroke and atrial fibrillation were the most common medical histories in our population, occurring in 7.94% and 5.88% of cases, respectively. Hypertension was the main cardiovascular risk factor in 66.76% of cases, followed by a sedentary lifestyle (45.6%), as shown in Table 2. Dyspnea was the most common functional sign on admission in 62.94% of cases, followed by precordial pain (40.88%).

Table 1. Distribution of patients by hospital.

Cardiology Center	Patients hospitalised (Jan 2022-Dec 2023)	Patients > 75 ans	Percentage (%)
CHDJ	1402	75	5.35
CHNU Fann	1474	40	2.71
HOGIP	1311	70	5.34
HPD	1515	155	10.23
Total	**5702**	**340**	**5.96**

Table 2. Distribution of patients according to cardiovascular risk factors.

Cardiovascular risk factor	Number (N)	Percentage (%)
HTA	227	66.76
Sedentary lifestyle	155	45.60
Diabetes	112	32.94
Active smoking	45	13.23
Heredity of cardiovascular pathology	29	8.53
Alcohol	12	3.53

On clinical examination, high blood pressure was found in 47.1% of cases. We found 7.4% of patients to be obese and 0.3% to be malnourished. A good general condition was noted in 52.6% of cases. Cardiac arrhythmia and signs of heart failure were the most common signs found on examination, at 31.56% and 27.35% respectively. Pulmonary condensation was the most commonly associated sign (46.43%).

In the paraclinical setting, dyslipidemia was found in our population in 97.85% of cases followed by high BNP levels in 81.25% of cases. On ECG, electrical abnormalities were dominated by primary repolarization disorders (52.65%), followed by conduction disorders, namely Mobitz type 2 AV block and high-degree AV block (50.35%). Echocardiography revealed cardiac chamber dilation in 61.18% of cases, impaired left ventricular ejection fraction in 58.29% of cases, kinetic disorders in 53.80% of cases, pulmonary arterial hypertension in 42.75% of cases, elevated filling pressures in 38.57% of cases, and the presence of thrombus or spontaneous contrast in 8.64% of cases. Brain CT scans showed images consistent with ischemic stroke in 95.7% of cases, compared with 4.3% of hemorrhagic strokes.

Thoracic angiography revealed pulmonary embolism in 34.4% of cases, with proximal involvement being predominant (50%). Doppler ultrasound of the lower limbs revealed deep vein thrombosis in 15% of cases and arterial thrombosis in 11.03% of cases. Lesions found on ultrasound of the supra-aortic trunks were predominantly plaques (14.89%). Coronary angiography revealed that coronary involvement was predominantly three-vessel disease in 37.1% of cases.

The predominant cardiovascular pathology was ischemic heart disease (40.88%); the other pathologies are listed in Table 3. The most commonly associated pathology was pulmonary infections (31.3%). Injectable anticoagulants were the most commonly used therapeutic class (69.41%), followed by antiplatelet agents (52.51%). Angioplasty was the most commonly performed interventional procedure in 20.58% of cases, followed by pacemakers in 20% of cases. Depending on the type of stimulation, single-chamber pacemakers were used in 84.5% of cases. The outcome was unfavorable in 20% of cases. Female patients are at greater risk of an unfavorable outcome than men (24.56 vs. 15.38, $p = 0.034$). Complications during hospitalization were dominated by heart failure, found in 45.21% of cases.

Table 3. Distribution of patients according to type of cardiovascular pathology.

Cardiovascular pathologies	Numbers	Percentage (%)
Ischemic heart disease	139	40.88
Conduction disorders	69	20.29
Rhythm disorders	61	17.94
Myocardiopathies	41	12.06
Venous thromboembolic disease	40	11.76
Cerebrovascular disease	27	7.94
Hypertensive heart disease	14	4.12
Valvulopathies	12	3.53
Peripheral arteriopathies	12	3.53
Pericarditis	5	1.47
Aortic Disease	1	0.29

The overall mortality rate was 10.3%. The main factors associated with death were age > 85 years (ORa 2.72 [1.21 - 5.93; p = 0.01]) and ischemic heart disease (ORa 2.79 [1.25 - 6.53; p = 0.01]), as shown in **Table 4**.

Table 4. Factors in the occurrence of death.

Characteristics	ORa	IC 95%	P
Male	0.70	0.33 - 1.46	0.3
Age > 85	2.72	1.21 - 5.93	**0.01**
Ischemic heart disease	2.79	1.25 - 6.53	**0.01**
Rhythm disorder	2.43	0.92 - 6.25	0.07
Heart failure	7.23	0.88 - 48.7	0.05

4. Discussion

The study has limitations in recruitment. Patients hospitalized in geriatric wards were not included.

The most common age group was between 76 and 80 years, accounting for 51.8% of cases. The study of Gaillard [5] showed a mean age of 82.28 years, with extremes of 75 to 96 years, similar to our results. This similarity is explained by the specificity of the population studied. The patients in our series had arterial hypertension as their main cardiovascular risk factor (66.76%). This was the case in a study carried out in Burkina Faso by Tougouma *et al.* [6], where the prevalence of hypertension was 61.36%. The second most common risk factor in our study population was a sedentary lifestyle, accounting for 45.60% of cases. In a study by Bachar *et al.* [7], sedentary lifestyle was the second most common cardiovascular risk factor (74.6%). In our series, symptoms were dominated by dyspnea, found in 62.94% of cases. A predominance of dyspnea was demonstrated in the study by Hanon *et al.* [8]. The physical examination revealed cardiac arrhyth-

mia (31.56%) and signs of heart failure (27.35%) as the most frequent examination findings. In the study conducted in Bamako by Menta [9], auscultatory tachycardia (61%) was the predominant sign on clinical examination. The majority of patients had dyslipidemia (97.9%). A study carried out in Dakar, Senegal by Bachar *et al.* [7], the results were quite similar to our own, with 80% of patients suffering from dyslipidemia. This high rate of dyslipidemia is explained by a diet high in fat and the frequency of ischemic heart disease.

Most patients (52%) had primary repolarization disorders, followed by atrioventricular block (50%) and atrial fibrillation (44.35%). This predominance of primary repolarization disorders was also found in the series by Golden *et al.* [10], in which all seniors had primary repolarization disorders. Our findings in favor of primary repolarization disorders may be explained by the fact that in our population, ischemic heart disease is the most frequent cardiovascular pathology. On Echocardiography in our study population, dilatation of the heart chambers was the predominant abnormality in 61.18% of cases, followed by dysfunction of LV systolic function (58.29%). These results are similar to those of Sissoko [11], in whom cardiac echography showed dilatation of the heart chambers as the predominant abnormality (76%). These results reflect the fact that very elderly patients are seen at an advanced stage of cardiovascular disease. Predominant cardiovascular pathology in our study population was ischemic heart disease in 40.88% of cases. This was also the case in the Moroccan study by Ghazi *et al.* [4], where ischemic heart disease was found in 30.66% of cases. Coronary artery disease was dominated by tritruncular damage in 37.1% of cases. Roman [12] found in his study 21% tritruncular damage, slightly less than ours. This multi-truncular damage in this population may be explained by the severe atherosclerotic involvement of the coronary arteries at this age. Pulmonary embolism was found in 34.4% of cases. This prevalence was lower under 75 years old; 28.26% in the Dakar study by Rokhaya *et al.* [13]. The frequency of pulmonary embolism increases with age. Ischemic stroke was found in 95.7% of cases. Ischemic stroke accounted for 84.1% in the study by N'Goran [14]. This high prevalence of ischemic stroke may be explained by the polyfactorial nature of the elderly and the existence of atrial fibrillation. The most commonly used therapeutic class was anticoagulants (69.41%), followed by ACE inhibitors (62.94%). In the study by Auvray *et al.* [15], drugs active on the renin angiotensin system were the most widely used, followed by lipid-lowering agents. Our results may be explained by the high rate of hospitalization in our study of patients with ischemic heart disease and thrombotic venous disease.

5. Conclusion

Our study confirmed that the elderly are at greater risk of developing cardiovascular disease, and showed that age plays a key role in the impairment of cardiovascular system function. Cardiovascular disease is the leading cause of death among the world's elderly. It is a public health and socio-economic problem for people over 75 years old, with complications that can impair quality of life.

Conflicts of Interest

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

References

[1] Damorou, F., Baragou, S., Pio, M., Afassinou, Y.M., N'da, N., Pessinaba, S., *et al.* (2014) Morbidité et mortalité hospitalière des maladies cardiovasculaires en milieu tropical: Exemple d'un centre hospitalier à Lomé (Togo). *Pan African Medical Journal*, **17**, 2-8. https://doi.org/10.11604/pamj.2014.17.62.2237

[2] Sylvain, P. and Catherine, B. (2018) Division des enquêtes et études démographiques, Insee. Bilan démographique. https://www.insee.fr/fr/statistiques/3692693

[3] ANSD, Agence Nationale de la Statistique et de la Démographie du Sénégal (2023) Données de population. https://www.ansd.sn/Indicateur/donnees-de-population

[4] Ghazi, I.E., Berni, I., Menouni, A., *et al.* (2018) Epidemiological Profile of Cardiovascular Diseases in the City of Meknes (Morocco). *European Scientific Journal*, **14**, 49.

[5] Gaillard, J. (2008) Pulmonary Embolism in Subjects over 75 Years of Age: Retrospective Study of 111 Patients. Thesis, Université de Limoges, 90 p.

[6] Tougouma, S.J., Hien, H., Aweh, A.B., Yaméogo, A.A., Méda, C., Kambiré, Y., *et al.* (2018) Prévalence et connaissances de l'hypertension artérielle chez les personnes âgées: Étude transversale menée à Bobo-Dioulasso, Burkina Faso. *Pan African Medical Journal*, **30**, Article No. 243. https://doi.org/10.11604/pamj.2018.30.243.15997

[7] Bachar, A., Nikièma, S., Massimbo, D., *et al.* (2022) Evaluation of Cardiovascular Risk Factors among Imams: Example of Dakar Imams (about 67 Cases). *Pan African Medical Journal*, **43**, 1-10.

[8] Hanon (2010) O L'infarctus des sujets âgés et très âgés. Cardiologie Pratique. https://www.cardiologie-pratique.com/journal/article/linfarctus-des-sujets-ages-et-tres-ages

[9] Menta, I.A. (1999) Pathologie cardiovasculaire du sujet âgé: Socio-démographie, épidémiologie, clinique, traitement et évolution. Thesis, Université de Bamako, 103 p.

[10] Golden, G.S. and Golden, L.H. (1974) The "Nona" Electrocardiogram: Findings in 100 Patients of the 90+ Age Group. *Journal of the American Geriatrics Society*, **22**, 329-332. https://doi.org/10.1111/j.1532-5415.1974.tb05402.x

[11] Sissoko, M.S. (2018) Insuffisance cardiaque du sujet âgé dans le service de cardiologie du CHU Point-G. Thesis, Université des sciences, des techniques et des technologies de Bamako, 94 p.

[12] Roman, C. (2020) Coronary Angioplasty in Nonagenarians. Thesis, Université de Nice Sophia Antipolis, 55 p.

[13] Diajhete, R., Ba, M., Sall, A., Ba, D. and Coumé, M. (2023) Pulmonary Pathologies of the Elderly: Diagnostic and Evolutionary Particularities in the Geriatric Department of the FANN University Hospital in Dakar. *Acta Scientific Medical Sciences*, **7**, 94-101. https://doi.org/10.31080/asms.2023.07.1700

[14] N'Goran, Y.N.K., Traore, F., Tano, M., *et al.* (2015) Epidemiological Aspects of Strokes in the Emergency Department of the Abidjan Heart Institute (ICA). *Pan African Medical Journal*, **21**, 2-5.

[15] Auvray, L. and Sermet, C. (2002) Pharmaceutical Consumption and Prescriptions in the Elderly. Un état des lieux. *Gérontologie et Société*: *Cahiers de la Fondation Nationale de Gérontologie*, **103**, 13-27.