

Admission Delay and Profile of Stroke Patients Admitted to the Medical-Surgical Emergency Department of Donka National Hospital

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How to cite this paper: Yalla, C.A., Joseph, D., Sadou, D.T., Abdoulaye, T., Lamine, C.M., Almamy, B. and Atigou, D.B. (2025) Admission Delay and Profile of Stroke Patients Admitted to the Medical-Surgical Emergency Department of Donka National Hospital. *Open Journal of Emergency Medicine*, 13, 257-265.

<https://doi.org/10.4236/ojem.2025.133023>

Received: February 13, 2025

Accepted: September 13, 2025

Published: September 16, 2025

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Abstract

Introduction: Stroke remains a major public health issue, particularly in Africa. Our study aimed to analyze the admission delay and profile of stroke patients admitted to the Medical-Surgical Emergency Department of Donka National Hospital. **Materials and Methods:** This was a 6-month descriptive prospective study conducted from October 5, 2021, to March 5, 2022. **Results:** The hospital frequency of stroke was 45 cases (2.4%). The mean age was 63.3 ± 15.3 years, with a female predominance (53.3%, M/F ratio: 0.8). Hypertension (87.6%) and diabetes (34.5%) were the most common comorbidities. Loss of consciousness (76.1%), motor deficits (74.3%), and aphasia (53.1%) were the most frequent admission symptoms. The mean admission delay was 61.4 ± 59.5 hours. Ischemic stroke accounted for 69% of cases. The mean time to perform brain CT scans was 33.7 ± 44.1 hours. In-hospital mortality was 31.1%. **Conclusion:** Stroke remains a significant and consequential pathology. Utilizing the collected data can improve stroke prevention and management quality in Guinea.

Keywords

Admission Delay, Profile, Stroke, Medical-Surgical Emergencies, Donka National Hospital

1. Introduction

Stroke is a major public health problem because of its frequency, residual physical and cognitive disability, financial cost, number of recurrences and mortality rate

[1] [2].

It is a medical emergency that can be life-threatening, and in half of all cases, it is responsible for sequelae that are all the more serious if treatment is not initiated quickly, hence the notion of the golden hour [2].

In a 2015 study in France, Redjaline A *et al.* found that the median admission time for stroke patients was 5 h 15 min [1].

Several African authors have found long admission times. For example:

In 2020, in the Congo, Boubayi Motoula Latou H. D. *et al.* obtained in their study 43.7% DALYs in 45 patients and HCA in 58 patients (56.3%), with an average admission time of 16.4 ± 23.7 hours [3].

In 2019, in Mali, Kane S. reported in his study that the admission time was less than 24 hours for the majority of stroke patients (49.1%) and DALYs accounted for 60% of cases compared with 40% of HVAs [4].

In 2018, in Côte d'Ivoire, Gnazegbo A. *et al.* in their study carried out at the Bouaké University Hospital recorded 34.89% of strokes admitted within 24 to 72 hours [5].

Despite considerable progress over recent decades in both diagnosis and treatment, all forecasts point to an increase in the incidence of stroke, raising the prospect of a veritable epidemic [4].

The Guinean context, marked by the absence of pre-hospital medicine and universal health insurance, further exacerbates the delay in patient admission.

This is why, in 2020, Barry S. D. *et al.* from the Neurology Department of the University Hospital of Conakry, Guinea, reported that 408 cases of stroke had been hospitalised during their study period, of which 285 patients (69.8%) had cerebral ischaemia, and the average consultation time was 95.4 ± 77 hours [6].

The aim of this study was to describe the sociodemographic and clinical characteristics of stroke patients and to quantify the time between the onset of symptoms and admission of stroke patients to the medical-surgical emergency department of the Donka National Hospital.

2. Methods

This was a prospective cross-sectional observational study of descriptive type lasting 6 months from 05 October 2021 to 05 March 2022 in the medical-surgical emergency department of the Donka National Hospital.

We included in our study all patients admitted for stroke confirmed by brain imaging in the emergency department who agreed to participate in the study, regardless of age, sex or origin. We did not include patients with signs of stroke that were not confirmed by brain imaging.

Our study variables were quantitative and qualitative, broken down according to epidemiological, clinical and paraclinical data.

These data were recorded anonymously and confidentiality was respected.

The results were entered using Pack Office 2013. The data was collected from the results on the survey forms, which were then transcribed onto a model of the

Epi info software, version 7.2.2.

3. Results

From October 5, 2021, to March 5, 2022, we recorded 2,006 emergency medical consultations, of which 45 cases were confirmed strokes by brain imaging in the emergency department, accounting for 2.24% of cases that met our inclusion criteria.

Females were predominant, representing 53.33% of cases, with a sex ratio of 0.8. The average age was 63.3 ± 15.3 years, ranging from 27 to 96 years, with the most represented age group being 57 - 71 years, accounting for 42.20% of cases.

The onset of symptoms was sudden in 57.8% of cases and progressive in 42.2%.

Regarding the type of stroke, ischemic strokes were the majority at 69%, compared to 31% for hemorrhagic strokes.

The mode of transport at admission was non-medicalized for 92% of cases, with only 8% arriving by ambulance.

The average length of hospitalization was 39.7 ± 58.7 hours, ranging from 1 hour to 576 hours. There were 14 deaths, representing a mortality rate of 31.1%.

4. Discussion

Our study suffers from certain limitations linked to the weakness of the sample, which depends on the rate of imaging and the status of our centre, which is not a referral centre for neurological pathologies.

1) Frequency

During the course of our study, we recorded 45 patients, *i.e.* 2.24% of all patients. A similar rate was found in Mali by Coulibaly M. *et al.* [7], who recorded 108 patients admitted for stroke, *i.e.* 6.5%. Higher rates have been found in other African series: Balogou AAK *et al.* [8] in Togo in 2015 reported a stroke frequency equal to 49.4%. Babo CJ. *et al.* [9] in Côte d'Ivoire in 2014 had found 62 cases or 13.93%. Bonkougou PZ. *et al.* [10] in 2014 in Burkina Faso had obtained a frequency of stroke equal to 18.4%.

This low frequency in our series can be explained on the one hand by the duration of the study and on the other hand by the fact that the Donka University Hospital is not a reference in neurological pathologies.

Several African studies confirm this trend: Mapoure YN *et al.* [11] in Cameroon in 2015 found a mean age of 58.93 ± 13.19 years. Adjien K. C. *et al.* [12] in Benin in 2016 reported a mean age of 58.9 ± 13.6 years. Abdourahaman NA *et al.* [13] in Senegal in 2018 found a mean age of 59.2 ± 13 years. Age is a cardiovascular risk factor.

The female sex was the most represented in our study; the same observation was made by Agokeng Kemnang B-D *et al.* [14] in Cameroon in 2019, who found that 58.7% were women. The opposite finding was made in studies by Rasaholiarison N. F. *et al.* [15] in Madagascar in 2017 and Boubayi Motoula Latou H. D. *et al.* [3] in 2020 in the Republic of Congo, which found a male predominance of 61.44% and 61% respectively.

2) Clinical

With regard to comorbidities, hypertension predominated, followed by diabetes (see **Table 1**), confirming trends in the literature. Shi Chung H. Y. [15] in 2017 in France reported that 69.1% of patients were hypertensive, followed by diabetics with 31.5%.

Table 1. Distribution of patients by risk factors.

Risk Factors	Frequency (N = 45)	Percentage (%)
Hypertension (HTN)	43	95.5
Diabetes	31	68.9
Physical Inactivity	6	13.3
Obesity	3	6.7
Alcoholism	2	4.4
Smoking	2	4.4
Others*	3	6.6

*Chronic Kidney Disease (n = 1; 2.2%), Heart Diseases (n = 2; 4.4%)

N'goran YNK *et al.* [16] in Côte d'Ivoire in 2015 found that the main risk factors were hypertension and diabetes, respectively 86.4% and 11.4%.

Goita D *et al.* [17] in Mali in 2014 reported that the most common DRFs were hypertension and smoking (41.5% and 22.6% respectively).

Hypertension and diabetes are among the cardiovascular risk factors that are more conducive to stroke.

Clinical symptoms were dominated (see **Table 2**) by loss of consciousness, motor deficit and aphasia. Thus, Gnazegbo A. *et al.* [5] in Côte d'Ivoire in 2018 had reported motor deficit in 62.2% followed by a vigilance disorder *i.e.* 22.6%. N'goran YNK *et al.* [16] in Côte d'Ivoire in 2015 reported loss of consciousness, hemiplegia and headache (36.4%, 31.8% and 17.4% respectively). This explains the mode of onset of stroke, with a sudden onset.

The personal vehicle was the most commonly used mode of transport (51.1%).

Kumako V. K. *et al.* [18] in 2017 in Togo reported that 75% came in a private car.

Agokeng Kemnang BD *et al.* [14] in Cameroon in 2019 found that the most common means of transporting patients to hospital was by taxi (71.7%).

Our result can be explained by the fact that this mode of transport was much more available with the absence of pre-hospital medicine in the health organisation in our context.

The average Glasgow score of our respondents was 8.5 ± 6.1 . The most common Glasgow score on admission was between [9 and 11], *i.e.* a frequency of 60% (see **Table 3**).

Coulibaly M. *et al.* [7] in 2019 in Mali reported that more than half of their patients had a Glasgow score ≤ 12 on admission.

Table 2. Distribution of patients by reasons for admission.

Reasons for Admission	Frequency (N = 45)	Percentage (%)
Loss of Consciousness	34	75.5
Motor Deficit	31	68.9
Aphasia	23	51.1
Seizures	11	24.4
Vomiting	17	37.7
Upper Airway Obstruction	9	20
Dyspnea	5	11.1
Others*	4	8.9

*Headaches (n = 3; 2.7%), Abdominal Pain (n = 1; 0.9%).

Table 3. Distribution of patients by glasgow coma scale at admission.

Glasgow Coma Scale at Admission	Frequency	Percentage (%)
3 - 8	14	31.1
9 - 11	27	60
≥12	4	8.9
Total	45	100

Average Glasgow Coma Scale: 8.5 ± 6.1 . Range: 3 to 15.

Mananjo D. A. *et al.* [19] in Madagascar in 2016 found that 40% had a Glasgow score < 9% and 30% a Glasgow score between 9 and 12.

The Glasgow score is a widely used parameter for assessing the initial severity of the patient's alertness and state of consciousness. This reflects the severity of our patients on admission.

In our study, DALY represented 69% compared with 31% for HVA. Following the trend in the stroke literature, for example:

Abhé C. M. *et al.* [20] in 2014 in Côte d'Ivoire had reported the opposite data with 61.7% haemorrhagic stroke versus 38.3% ischaemic stroke.

Cissé F. A. *et al.* [21] in Guinea in 2016 found that 77% were DALYs and 23% HVAs.

This high frequency of DALYs could be explained by poor management of hypertension and other risk factors that may favour the occurrence of a DALY.

The average time taken to perform a cerebral CT scan in our respondents was 33.7 ± 44.1 hours (see **Table 4**), which is very long for a medical emergency.

Goita D. *et al.* [17] in 2014 in Mali had reported a delay in performing the CT scan of 24 hours in the majority of cases.

This delay in performing the CT scan could be explained by the lack of financial means with an absence of universal health insurance for the population in our context. All patient care costs had to be paid by the patient's family beforehand.

Table 4. Distribution of patients by time to perform brain CT scan.

Time to Perform (hours)	Frequency	Percentage (%)
0 - 6	2	4.4
6 - 24	3	6.6
24 - 72	31	68.9
>72	9	20
Total	45	100

Average Time to Perform: 33.7 ± 44.1 hours. Range: 1 hour to 288 hours.

Favourable outcomes accounted for 68.9% of cases, including 31.1% of deaths.

Kumako V.K. *et al.* [18] reported a favourable outcome of 56.7% in Togo in 2017. In Benin Adoukonou T. *et al.* found that 17 (21.8%) died [22].

This high case-fatality rate can be explained not only by the seriousness of the condition, but also by delays in treatment and the occurrence of various complications.

3) Delay (time)

The average admission time for our respondents was 61.4 ± 59.5 hours (see Table 5). Shorter admission times are found in sub-Saharan series such as Bou-bayi Motoula Latou HD *et al.* [3] in 2020 in the Republic of Congo reported that the mean admission time was 16.4 ± 23.7 hours. Agokeng Kemnang BD *et al.* [14] in Cameroon in 2019 with an admission time of between 1 h and 5 h in 63% of cases.

Table 5. Distribution of patients according to time between onset of symptoms and admission to hospital.

Admission Delay (hours)	Frequency	Percentage (%)
0 - 6	7	15.5
6 - 24	12	26.7
24 - 72	16	35.6
>72	10	22.2
Total	45	100

Average Admission Delay: 61.4 ± 59.5 hours. Range: 02 hours to 576 hours.

Abhé C. M. *et al.* [20] in 2014 in Côte d'Ivoire with an average admission time of 35 hours.

This long delay in our study can be explained by the fact that patients only consulted the hospital when the signs were worsening, which could have a serious impact on the patient's vital prognosis, and also by the fact that financial difficulties encouraged some patients to be admitted late.

A method of seeking care that favoured direct transport, without prior medical consultation, was most often associated with rapid admission times [1]. These de-

lays are mainly due to the way in which emergency services are organised. In the United States, Northern Europe and France, organisations that allow patients to be transported without prior medical consultation or with an established management protocol (SMUR) have reduced admission times [2].

Public information campaigns have proved effective in reducing admission times. However, to be effective, these campaigns need to be repeated [1]. In addition, similar campaigns need to be run for all medical and paramedical staff. The only way to reduce the time taken to admit stroke patients is to develop a care pathway involving all the various players (patients, paramedics, non-hospital medical staff and hospital staff), taking into account the organisation of emergency care in a given area and the constraints involved.

The average length of hospitalisation for our respondents was 39.7 ± 58.7 hours. The most common length of hospitalisation was [24 - 72] hours, a frequency of 73.4%.

Houehanou Y. C. N. *et al.* [23] in Benin in 2020 reported that the average length of hospitalisation was 6 ± 4.7 days, with extremes of 1 and 37 days.

This long hospital stay in our series can be explained by the fact that patients first had to be stabilised before being transferred to a specialist department.

5. Conclusion

Stroke is still a major public health problem, especially in Africa. Our study showed that elderly people were the most affected, with women predominating. The main risk factors were high blood pressure and diabetes. Loss of consciousness, motor deficit and aphasia were frequent symptoms on admission, and DALY was the most common. There was a long delay in admission, reflecting a delay in care, with serious consequences in terms of morbidity and mortality. Repeated public information campaigns must be continued and stepped up to improve recognition of the signs of stroke. The introduction of universal health insurance should help improve the quality of stroke care in Guinea.

Conflicts of Interest

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

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