

Research Article

Prevalence of Psychosocial Triggers in the Seven Days Preceding a Stroke in Lomé (Togo, West Africa) in 2024

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Abstract

Introduction: In Togo, a West African country, curative treatment for strokes, which constitute a public health problem, is limited. Prevention remains the most effective strategy for combating strokes. This study aims to describe the potential psychosocial triggers of strokes to better guide stroke prevention strategies. **Method:** This was a cross-sectional study conducted from August to October 2024 in the neurology departments of the Lomé University Hospital Campus and the Kara University Hospital, which receive approximately 1,200 hospitalized stroke patients per year. Patients hospitalized for a clinical stroke diagnosed by brain imaging and/or their caregivers were interviewed. Psychosocial factors present in the seven days preceding the stroke were considered. Life events were explored using the Holmes and Raha Stress Scale and the Interview for Recent Life Events. **Results:** One hundred and forty-two patients were included: 61.3% cerebral infarctions and 38.7% hemorrhagic strokes; the mean age was 55 +/- 12.6 years, and the sex ratio (M/F) = 1.1. Traders accounted for 31.0% of patients. Psychosocial triggers were found in 75.4% of patients in the seven days preceding the stroke. In 78.5% of patients, these were negative emotions related to difficulties at work (25.4%) and financial difficulties (21.1%). **Conclusion:** In our context, negative emotions are common in the days preceding strokes. They must therefore be taken into account in stroke prevention strategies. In practice, each awareness-raising session on cardiovascular risk factors should also be an opportunity

Keywords

Stroke, Triggers, Psychosocial, Togo

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1. Introduction

Strokes remain a major public health issue due to their frequency, mortality, and the residual physical and cognitive disabilities they cause. The lifetime risk of developing a stroke has increased by 50% over the past 17 years. From 1990 to 2019, there was a 70% increase in stroke incidence, a 43% increase in stroke deaths, and a 102% increase in stroke prevalence. Today, it is estimated that one in four people has suffered a stroke during their lifetime [1]. By 2050, there are projected to be 21.43 million stroke cases, 159.31 million survivors, 12.05 million deaths, and 224.86 million disability-adjusted life years due to stroke worldwide [2]. In low- and middle-income countries, the burden of stroke is increasing, and due to the high rate of victims and insufficient resources in health systems, stroke and several non-communicable diseases are now targeted as public health priorities [3]. The presence of a certain number of risk factors (RFs) in a subject predisposes them to the occurrence of a stroke. The role of traditional RFs in the pathophysiology of strokes is now well established, and it has been shown that 90% of the risk of stroke is attributable to 10 RFs [4]. However, it is impossible to predict exactly when a stroke will occur, even in subjects at high vascular risk. It has been suggested that some vascular events could be caused by brief exposure to so-called triggering factors, which may increase the risk of a vascular event over a short period and/or precipitate its occurrence [5-7]. These triggering factors are multiple, including psychosocial factors, which designate any element linked to both psychology (emotions, thoughts, behaviors) and the social environment (interpersonal relationships, living conditions) that can influence a person's physical and mental health [7]. A better understanding of these factors would help guide prevention, which remains the best way to combat strokes, particularly in resource-limited countries. The main objective was to describe the psychosocial triggers in the occurrence of strokes in Togo, a West African country.

2. Materials and Methods

2.1. Study Area

The largest neurology department in the south (University Hospital Center, Lomé Campus Hospital) and the one in the north (Kara University Hospital) of Togo served as our study setting. The neurology department at the University Hospital Campus is the largest of the five referral centers for the treatment of neurological disorders in Togo. The department has 45 beds divided into nine wards, including two intensive care units and three individual wards. Each year, the neurology department receives approximately 1,000 stroke cases. The neurology department at the Kara University Hospital receives approximately 1,080 outpatient consultations and 370 hospitalizations each year.

2.2. Methods

We conducted a cross-sectional, descriptive study from August 1 to October 31, 2024, over three months, on patients hospitalized for stroke in the two university hospitals. Our study included all patients aged 18 years and older whose clinical diagnosis of stroke was confirmed by brain imaging (computed tomography, CT, or magnetic resonance imaging, MRI) and whose informed consent and/or that of their companion was given. Patients whose clinical condition (coma, aphasia) made the survey impossible were excluded from this study. Interviews were conducted within the first seven days of hospitalization on patients and/or their companions, depending on their health status. For stable patients able to communicate, data collection was conducted without an intermediary. For patients less able to communicate, data collection was carried out with the assistance of their companions. All data were initially collected on a pre-designed data collection form and subsequently entered into Excel 2021 software. This form was inspired by the Holmes and Rahe Stress Scale [8] and the Interview for Recent Life Events (IRLE) to identify psychosocial factors [9]. The following data collection tools were used: hospitalization records and patient medical records. The parameters studied were:

1. Sociodemographic data: age, sex, education level, occupation, area of residence (urban/rural), marital status
2. Stroke risk factors: alcoholism and smoking were qualitatively assessed
3. Clinical characteristics and types of stroke: etiologies were grouped according to the TOAST classification [10].
4. Prevalence of triggering factors. Each event was categorized as follows:
 - 1) Work: change in work environment, retirement, dismissal, difficulty with employer, lack of work
 - 2) Grief: death of a spouse, death of a parent, death of a friend
 - 3) Finances: borrowing money, material losses, other financial difficulties
 - 4) Socio-family event: bad news, birthday, sadness/depression
 - 5) Marital event: divorce, separation, argument
 - 6) Health: health problem of a family member, sexual difficulty
 - 7) Negative emotions: unpleasant feelings that cause emotional distress
5. Risk period: period from exposure to an event to the occurrence of the stroke. Here, a maximum of seven days was allowed.

The data collected were entered and analyzed using Epi info version 7.2 software. The tables were created using Microsoft Excel 2021 software. The results are presented as counts and proportions for qualitative variables and as means and standard deviations for quantitative variables. Pearson's

and Fisher's Chi-square tests were used to compare quantitative variables; p -value < 0.05 was considered as the threshold for statistical significance. Data collection was conducted with respect for patient confidentiality and anonymity. Furthermore, access to the records was restricted to medical staff. Authorization was obtained from the Director of each hospital center to analyze medical records. Our study also received signed authorization from the Ethics Committee of the Faculty of Health Sciences at the University of Lomé

3. Results

During the study period, 406 patients were hospitalized in the neurology departments, including 261 for stroke. We excluded 119 patients who were either clinically unstable or unable to communicate. Thus, 142 patients were considered (120 hospitalized at Lomé and 22 at Kara).

3.1. Sociodemographic Data

The mean age of patients was 55.3 ± 12.6 years, ranging from 19 to 100 years. The 55-65 age group was the most represented, with 45 patients (31.7%). The study population consisted of 75 men and 67 women, corresponding to a male/female sex ratio of 1.1. In our series, 81 patients (59.1%) had a secondary education; 69 patients (55.6%) were married. Regarding place of residence, 96 patients (67.6%) lived in an urban area and 46 patients (32.4%) in a rural area. Forty-four patients (31.0%) were traders (Table 1).

Table 1. Socio-demographic characteristics of 142 patients hospitalized for stroke (Togo, 2024).

	Number	Proportion (%)
Level of education		
No schooling	16	11,3
Primary	23	16,2
Secondary	81	57,0
University	22	15,5
Marital status		
Single	11	7,7
Cohabiting	32	22,6
Married	79	55,6
Divorced/widowed	20	14,1
Profession		
Tradesmen	44	31,0
Drivers	13	9,2

	Number	Proportion (%)
Cultivators	19	13,4
Teachers	12	8,5
Electricians	3	2,1
Artists	28	19,7
Unemployed/retired	23	16,1
Total	142	100,0

3.2. Stroke Characteristics

Among the patients, 87 (61.3%) suffered an ischemic stroke and 55 (38.7%) suffered a hemorrhagic stroke. One hundred and thirty-five patients (95.1%) had at least one modifiable cardiovascular RF: arterial hypertension in 97 patients or 68.3%, and dyslipidemia in 55 patients or 38.7%. Seven had none. Of the patients, 124 or 87.3% were admitted for motor deficit and speech disorders were the reason for admission in 91 patients or 64.1%. Occlusion of the Sylvian artery or its branches was retained in 67 patients (77%) and the etiologies were undetermined in 66.7% of cases. Supratentorial hematomas accounted for 89.1% ($n=49$) of hemorrhagic strokes with hypertension as the etiology in 47 patients or 85.5%.

3.3. Prevalence of Triggering Factors

One hundred and seven patients (75.35%) reported at least one triggering factor. A total of one hundred and forty-eight events were identified, with no individual associations presumed. Borrowing money was reported in 22 patients (15.5%). Table 2 shows the distribution of patients by event category and by triggering factor. The category of work-related events was mentioned in 28.9% of patients. No significant difference was observed in the prevalence of triggering factors between ischemic and hemorrhagic strokes. The prevalence of triggering factors was significantly higher in patients under 55 years of age (Table 3).

Table 2. Psychosocial triggers in the 7 days preceding stroke in 142 patients (Togo, 2024).

	Number	Proportion (%)
Work	41	28,9
Difficulty with employer/collaborators	13	9,2
Lack of work	4	2,8
Dismissal	2	1,4
Retirement	6	4,2

	Number	Proportion (%)
Change in working environment	16	11,3
Finance	30	21,1
Loss of money	8	5,6
Cash borrowed	22	15,5
Bereavement	12	8,5
Death of a spouse	3	2,1
Death of a parent	7	4,9
Death of a friend	2	1,4
Socio-family event	28	21,2
Sadness/Depression	17	12,0
Bad news	11	9,2
Marital event	22	15,5
Birthday	1	0,7
Marital dispute	17	12,0
Separation of spouses	2	1,4
Sexual difficulties	2	1,4
Health	6	4,2
Family member's health problem	6	4,2
Other	9	6,3

	Number	Proportion (%)
Change in sleep habits	7	4,9
Moving	2	1,4

*No obvious cause

Table 3. Distribution of events by risk period (hour) in 142 patients hospitalized for stroke (Togo, 2024).

	Ischemic stroke n (%)	Hemorrhagic stroke n (%)	p-value
0-6	26 (29,9)	16 (29,1)	0,729
6-24	30 (34,5)	17 (30,9)	0,613
24-48	10 (11,5)	14 (25,4)	0,049
48-72	11 (12,6)	3 (5,5)	0,153
72-168	10 (11,5)	5 (9,1)	0,575
Total	87 (100)	55 (100)	

3.4. Risk Period

The 24- to 48-hour risk period was more common in hemorrhagic strokes (Table 4).

Table 4. Determinants of psychosocial triggers in 142 patients hospitalized for stroke (Togo, 2024).

	Exposure n (%)	No exposure n (%)	Odds Ratio (95% CI)	p-value
Type of stroke				0,074
Ischemic	67 (77)	20 (23)		
Hemorrhagic	40 (72)	15 (27,2)		
Sex				
Male	17 (22,7)	58 (77,3)	1	
Female	18 (26,9)	49 (73,1)	0,8 (0,4-1,7)	0,563
Age (years)				
<55	10 (14,1)	61 (85,9)	1	
≥55	25 (35,2)	46 (64,8)	0,3 (0,1-0,7)	0,005
Area of residence				
Urban	23 (24,0)	73 (76,0)	1	
Rural	12 (26,0)	34 (74,0)	0,8 (0,4-1,9)	0,623
Level of education				
Illiterate	5 (31,3)	11 (68,7)	1	

	Exposure n (%)	No exposure n (%)	Odds Ratio (95% CI)	p-value
Primary	5 (21,7)	18 (78,3)	1,5 (0,3-1,9)	0,64
Secondary	19 (23,4)	62 (76,6)	1,0 (0,2-3,8)	0,982
University	6 (27,3)	16 (72,7)	0,9 (0,2-4,3)	0,886

4. Discussion

4.1. Limitations

Our sampling was not random, and patients unable to communicate or who were unstable were excluded. This constitutes a selection bias in the series. The subjective nature of certain triggering factors posed a challenge. However, this study remains of interest because it is the first of its kind in Togo and lays the foundation for future studies with public health implications.

4.2. Patient Profile

From a clinical perspective, the patient profile in our study, in terms of age and sex, is generally consistent with that described in African series, which confirms the representativeness of our sample. The mean age of patients was 55.27 ± 12.6 years. In Lomé Assogba et al. [11] reported a mean age of 59 ± 13.2 years in 2015, while in Ethiopia, Zeneb et al. [12] observed a mean age of 53 years in 2005. Our study found a male predominance, with a male/female sex ratio of 1.1. This trend is consistent with the data reported by Reeves et al. [13], which highlighted a male overrepresentation in cardiovascular diseases, possibly linked to more frequent exposure to risk factors such as occupational stress and a sedentary lifestyle. The vast majority of patients presented vascular FRs, with hypertension at the forefront, suggesting a cumulative effect with triggering factors in the occurrence of strokes.

4.3. Prevalence of Triggering Factors

In the seven days preceding the stroke, 78.5% of patients reporting a triggering factor, acknowledged the existence of a negative emotion. In Wegener's work [14], negative emotions were reported in 9.2% of stroke patients. This difference could be explained by the focus on anger and the failure to consider other aspects of negative emotions such as sadness and arguments in these studies. Koton et al. [15] reported 30% exposure to negative emotions in the 26 hours preceding the occurrence of an ischemic stroke. This result, although similar to ours, remains lower. This could be mainly explained by their choice to limit the risk period to 26 hours. This negative emotion was related to work, finances,

bereavement, and socio-family events. In myocardial infarction and stroke, it is now accepted that negative emotions and physical exercise precipitate the acute event by activating the sympathetic system (vasoconstriction), increasing blood pressure, rupturing the atheromatous plaque and arrhythmia [14].

4.3.1. Work-Related Events

These events were reported in 28.9% of cases, the majority of whom were in the informal sector. Guiraud et al. in France in 2012 estimated this exposure at 11% [16]. Among these events, difficulties with employers/coworkers and changes in the work environment were the most reported. This suggests the need to maintain a friendly atmosphere and a certain stability in the professional environment.

4.3.2. Financial Events

Financial events were reported in 21.1% of cases. Among these events, borrowing money was the most reported. In France, Guiraud found 8% exposure to financial difficulties [16]. This could be explained by the low average income in Togo. These financial difficulties could be due to limited access to social support measures (credit, savings, insurance) which complicates personal financial management and resilience in the event of a crisis [17]. Thus, the fight against stroke also involves improving the population's purchasing power.

4.3.3. Bereavement

Bereavement was reported in 8.5% of patients compared to 22% according to Guiraud [16]. The one-month risk period and the consideration of material grief could be the cause of this relatively higher proportion. Since no one escapes grief, education on managing this period would be beneficial in limiting the risk of stroke.

4.3.4. Socio-Family and Marital Events

Most often, these events involved sadness/depression, the announcement of bad news, or an argument. However, one patient (0.7%) had celebrated a birthday in the seven days preceding their hemorrhagic stroke. Saposnik et al. [18] estimated the prevalence of birthdays at 0.4% in the week preceding a vascular event. The mechanism of occurrence would involve stress, as birthdays can represent psychosocial stress. From a pathophysiological point of view, acute stress

could lead to activation of the hypothalamic-pituitary-adrenal axis and the autonomic nervous system [19]. It has been shown that psychological stimuli (e.g., complex mental task) were good models for the study of acute stress in real life [19]. A complex mental task could lead to an increase in blood pressure, pulse rate [20], lipid levels, hemostasis factors, blood viscosity [21, 22], platelet proteins, epinephrine, norepinephrine [23] and can also lead to transient endothelial dysfunction [24]. Education on stress management by putting events into perspective could limit the risk of stroke.

These various events related to work, finances, bereavement, family and the marital home have also been reported in the Democratic Republic of Congo among stroke patients [25].

4.4. Determinants of Psychosocial Triggering Factors

There was no significant difference observed in the prevalence of triggering factors depending on whether the stroke was ischemic or hemorrhagic. All categories of events studied were implicated in both ischemic and hemorrhagic strokes. There was no specific trigger for stroke. Wegener et al. [14] concluded that triggers were equally associated with both types of stroke, except for physical exertion. Furthermore, gender, area of residence, and education level did not significantly influence the presence of psychosocial triggering factors. Only age determined a higher exposure in patients under 55 years of age. These results are consistent with those of Wegener et al. [14]. At this age, subjects are more involved in active life, potentially experiencing more stress.

4.5. Period at Risk

More than 75% of exposures were reported within 72 hours before the stroke. Koton et al. [15] reported 89.4% of triggers within 24 hours. In contrast, Guiraud et al. [16] found risk periods of up to 6 months. This variation in the risk period from one study to another is actually explained by the search for triggering factors over varying periods from one study to another.

5. Conclusion

This descriptive study shows that at least one psychosocial trigger was found in nearly three-quarters of these patients, the majority of whom were at cardiovascular risk, in the seven days preceding the stroke. Negative emotions related to work and financial problems were the most frequently found. These data could be taken into account to address these psychosocial factors during prevention, thus enhancing current prevention interventions by promoting a comprehensive approach to health. In practice, each awareness-raising session on cardiovascular risk factors should also be an opportunity to address these psychosocial factors.

Abbreviations

CT	Computed Tomography
MRI	Magnetic Resonance Imaging
RF	Risk Factors

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Author Contributions

Kossivi Apetse: Conceptualization, Methodology, Validation, Writing – original draft, Writing – review & editing

Bienvenue Rukengeza: Conceptualization, Data curation, Investigation, Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing

Yannick Wagbe: Data curation, Investigation, Methodology, Writing – original draft

Komla Nyin èvi Anayo: Supervision, Validation, Writing – original draft

Lehleng Agba: Validation, Writing – original draft

Vinyo Kodzo Kumako: Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing

Komi Assogba: Methodology, Supervision

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Conflicts of Interest

The authors declare no conflicts of interest.

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