

Stroke Types, Risk Factors and their Prevalence in Sudan from October to December 2019

Tagwa Kamil SeedAhmed Ali* and Alaa Tajeldeen Habeeb Abdallah

University of Khartoum, Sudan

*Corresponding Author: Tagwa Kamil SeedAhmed Ali, University of Khartoum, ALSahafa, Khartoum, Sudan.

Received: July 23, 2022; Published: July 25, 2022

Abstract

Stroke is classically characterized as a neurological deficit attributed to an acute focal injury of the central nervous system. There are two major kinds of stroke: ischemic stroke and Hemorrhagic stroke. Sudan is one of the developing sub-Saharan African countries. According to the World health organization (WHO), a better understanding of stroke risk factors in low and middle-income countries is needed. This study was aimed to assess stroke types, risk factors and their prevalence among Sudanese adults stroke patients in Khartoum and Omdurman localities, Khartoum state, Sudan from October to December 2019. In this observational descriptive, cross-sectional hospital based exploratory study we found 54% of the study population were males, 46% were females, 57% on the age group ranged (61 - 80) years and 55% of the stroke patients had hemorrhagic stroke. Majority of the patients presented with weakness and numbness in arm, face and leg it was the commonest presentation, and it was mostly unilateral, followed by sudden problem in talking and expressing words, quick onset of dizziness and loss of balance. Hypertension was found to be the most prevalent risk factor with 44% of the patients, 21% of the patients were having diabetes mellitus. The increasing burden of stroke in developing countries like Sudan forms a challenge to the health care system and the community as a whole. Given that stroke is a top priority global issue, the ministry of health should begin putting a strong emphasis on community education regarding risk factors for stroke as well as recognition of stroke associated symptoms, prognosis, and outcome.

Keywords: Stroke; Risk Factors; Prevalence; Sudan

Abbreviations

WHO: World Health Organization; BMI: Body Mass Index

Introduction

Stroke is classically characterized as a neurological deficit attributed to an acute focal injury of the central nervous system (CNS) by a vascular cause, including cerebral infarction, intracerebral hemorrhage (ICH), and subarachnoid hemorrhage (SAH) and is a major cause of disability and death worldwide. There are two major kinds of stroke: ischemic stroke and Hemorrhagic stroke. About 87% of strokes are ischemic, the rest being hemorrhagic. According to WHO annually, 15 million people worldwide suffer a stroke. Of these, 5 million die and another 5 million are left permanently disabled, placing a burden on family and community. Risk factors for stroke can be classified as modifiable and non-modifiable. Age, sex, family history and race/ethnicity, are non-modifiable risk factors; while hypertension, smoking, diet and physical inactivity are among some of identified modifiable risk factors [1].

Citation: Tagwa Kamil SeedAhmed Ali and Alaa Tajeldeen Habeeb Abdallah. "Stroke Types, Risk Factors and their Prevalence in Sudan from October to December 2019". *EC Cardiology* 9.6 (2022): 12-16.

Sudan is one of the developing sub-Saharan African countries. During the last four decades, the stroke incidence in low and middle-income countries has more than doubled. Stroke is the second-leading global cause of death behind heart disease in 2013 and is a major cause of permanent disability. Stroke in sub-Saharan Africa has put a high strain on the economic and still little information has been provided regarding the risk factors, burden, and the clinical presentations of stroke among the African population. According to the World health organization (WHO), a better understanding of stroke risk factors in low and middle-income countries is needed. The ministry of health and hospital staff will pay more attention to these risk factors now that they are aware of how frequently they occur in adult Sudanese patients. This will allow them to develop strategies to control these risk factors, eliminate them if possible, and manage them to prevent stroke. And as a result, stroke incidence will decrease.

Aim of the Study

This study was aimed to assess stroke types, risk factors and their prevalence among Sudanese adults stroke patients in Khartoum and Omdurman localities, Khartoum state, Sudan from October to December 2019.

Materials and Methods

This is observational descriptive cross-sectional hospital based exploratory study.

Study setting: Sudan, Khartoum state, Khartoum and Omdurman localities, the data was collected from Omdurman teaching hospital which is located in Alshuhada, established in 1898 and Ibrahim Malik hospital which is located in Alsaafa sharig established in October 1977.

Study population: The targeted population was adults stroke patients, in Omdurman teaching hospital, and Ibrahim Malik hospital admitted in the period between October to December 2019. Severely ill stroke patients and patients who refuse to participate were excluded.

Using cluster sampling, the data was collected from a total of 100 stroke patients, who were present at the time of data collection. (According to our time availability, resources and our country circumstances at that time). The data was collected by Interviewing using structured close ended, self-administered questionnaire. Data also obtained from history taking, physical examination, and investigations and medical records.

The variables were: Hypertension, diabetes, dyslipidemia, obesity, smoking, heart diseases among stroke patients.

Data was entered and encoded manually and was analyzed by (SPSS) software version 20. Tables and charts were used to represent the data.

Ethical approval was obtained from ministry of health general manager, the researchers respected the respondent autonomy and confidentiality and a verbal consent was taken after informing them with the objectives of the research.

Results

An observational cross-sectional study about stroke risk factors and their prevalence in Ibrahim Malik and Omdurman teaching hospitals in Sudan was conducted Over a period of 3 months, from October to December 2019. A total of 100 stroke patients were interviewed, out of the 100 patients 46% were females while 54% were males, 57% on the age group ranged (61 - 80) years, 55% of the stroke patients were having hemorrhagic stroke, while 45% were having ischemic stroke, as shown in figure 1.



Figure 1: Shows the type of the stroke among adult stroke patients in Ibrahim Malik and Omdurman teaching hospitals in 2019, n = [100].

91% of the stroke patients presented clinically by weakness and numbness in face, arm or leg. Hypertension was found to be the most prevalent risk factor with 44% of the patients. 21% of the patients were having diabetes mellitus, 13% were having hyperlipidemia. 7% of the stroke patients are current smokers and 9% are former smokers, of them 56.2% were smokers for a duration range from [1 - 30] years, and 43.8% with a range of [31 - 60] years, 93.7% smoke in a range of [1 - 2] packs per day and 6.3% smoke in a range of [3 - 4] packs per day. 3% were alcoholic, 15% were overweight with BMI of (25 - 40).

The risk factor	The percentage
Previous transient ischemic attack	27%
Heart diseases	16%
Sleep apnea	14%
Atherosclerosis	10%
Heart surgery	3%
Family history of stroke	16%

Table 1: Shows distribution of stroke risk factors among adult stroke patients in Ibrahim Malik and Omdurman teaching hospital in 2019, n = 100.

Regarding the symptoms of stroke 91% of the stroke patients presented clinically by weakness and numbness in face, arm or leg and this presentation was bilateral in 7% of the patients and unilateral in 93% of the patients.

Discussion

In this study higher percentage of stroke was found among the male gender 54%. This is similar to studies conducted in Lebanon 55.1% [2], Ethiopia 62.9% [1], this may be due to high cigarette smoking and alcohol consumption in males and lack of active vascular

protection by estrogen. But In opposite to study done in Kenya in which the female is predominant this may be due to higher use of contraceptive pills by females. The range of the affected age groups was the same as the other studies done in Sudan India, Nigeria and Saudi Arabia. These observations were explained by reduced life span and a smaller proportion of elderly population in tropical countries [3]. In our study more than half of the patients 55% were having hemorrhagic stroke and the remaining were having ischemic stroke this consistent with other study done in Sudan where hemorrhagic stroke was 41.3%, stating that hemorrhagic stroke has more dramatic and critical clinical presentation [4], in the opposite to a study done in Ethiopia 51.7% patients had ischemic stroke [1].

Majority of the patients presented with weakness and numbness in arm, face and leg it was the commonest presentation and it was mostly unilateral, followed by sudden problem in talking and expressing words, quick onset of dizziness and loss of balance. In the opposite of other study done in Ethiopia in which the headache is the most common 75% followed by aphasia 60% and hemiparesis 53.4% [1], this may be due to higher prevalence of ischemic stroke on those population which is commonly associated with headache more than hemorrhagic stroke which is common in our study.

In this study hypertension, diabetes, hyperlipidemia and smoking were the most prevalent risk factors for stroke. Hypertension was the most prevalent risk factor similar to study done in Kenya [3] and Lebanon [2]. Diabetes was the second most prevalent risk factor due to the sedentary life style, in contrast to study conducted in Kenya [3] in which alcohol abuse was second this could be attributed to different religious background. Hyperlipidemia was less prevalent in our stroke patients compared to 28% in a study done in Beirut [2], this may be due to high socioeconomic status of individuals in this country and having diet rich in fats. Our study Showed that more than one quarter were having previous transient ischemic attack, similar to study done in Kenya, because history of previous stroke predisposes to recurrent stroke incidences [3]. Considering other risk factors, in our study family history of stroke was 16%, heart diseases prevalence was 16%, sleep apnea prevalence was 14%, atherosclerosis was 10% and heart surgeries was 3%.

Conclusion

The increasing burden of stroke in developing countries like Sudan forms a challenge to the health care system and the community as a whole. Majority of the patients were male, older age, among the respondent hemorrhagic stroke was more prevalent and the most common presentation was hemiplegia/hemiparesis. The most common risk factors identified was hypertension then followed by diabetes and other risk factors.

Recommendation

Given that stroke is a top priority global issue, the ministry of health should begin putting a strong emphasis on community education regarding risk factors for stroke as well as recognition of stroke associated symptoms, prognosis, and outcome. Men need to be urged to quit smoking and exercise more since they are more likely to have a stroke. Additionally, as strokes are thought to occur more commonly in adults over the age of 60, it is important to address the risk factors for stroke. Early detection and treatment are crucial because they can enhance outcomes, promote consistent and ongoing follow-up and reduce impairment when appropriate treatments are used. Health care provider education on basic intervention techniques in areas without access to sophisticated diagnostic tests. In order to raise awareness of the risk factors, comprehend the difficulties that a community or economy may encounter due to a stroke, and to screen for and control the risk factors, social media and policymakers must also contribute. In order to avoid the development of stroke, these risk factors must be identified by screening and diagnosis at primary health facilities, followed by care and ongoing follow-up especially for diabetes and hypertension and the introduction of physical activity into the Sudanese way of life.

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Volume 9 Issue 6 August 2022

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