

Risk factors for stroke in the African populace: need for action

Paul Bolaji

Author Affiliation:

Stroke Fellow, University Hospital
Dorset, Health Education England

Correspondence:

Paul Bolaji Paul.Bolaji@nhs.net

Submitted: November 2023

Accepted: January 2024

Published: February 2024

Citation: Bolaji, Risk factors for stroke in the African populace: need for action, *South Sudan Medical Journal*, 2024;17(1):33-36 © 2024
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DOI: <https://dx.doi.org/10.4314/ssmj.v17i1.7>

ABSTRACT

The burden of stroke cannot be overemphasized especially in low and middle-income countries (LMICs). More than two-thirds of stroke deaths arise from these countries as well as nearly 90% of stroke-related morbidities. Unfortunately, it has been suggested that there might be up to a three-fold increase in stroke incidence and a higher prevalence in Africa in the year 2021. The known risk factors for stroke are similar to those in developed countries: age, hypertension, diabetes mellitus, hypercholesterolaemia, and central obesity. These risk factors have often been overlooked in patients who present with stroke in Africa. Other important risk factors for stroke include high salt intake and red meat consumption, low consumption of green leafy vegetables, air pollution, undernutrition in infancy and genetic factors. Possibly the most efficient way of curbing the impact of stroke in Africa is to address the risk factors. The aim of this article is to shine some light on these risk factors in sub-Saharan Africa and proffer some solutions to address the menace of stroke.

Key words: stroke, risk factors, non-communicable diseases, Africa

Introduction

Richard Walker gave a memorial lecture in 2021 on the burden of stroke in Africa, in honour of a foremost neurologist in Africa, Prof Benjamin Osuntokun. He concluded that “the most important challenge is to improve primary prevention for which improving diagnosis and control rates for hypertension is the number one priority”.^[1]

Stroke is the most common cause of disability, dementia, and death worldwide and is associated with a significant economic cost to individuals and the populace.^[2] While stroke mortality seems to be on the decline globally in the last 30 years, the stroke burden appears to be rising in low and middle-income countries (LMICs). It has been suggested that there might be up to a three-fold increase in stroke incidence and a higher prevalence in Africa in the year 2021.^[2] Between 1970 and 2010, 70% of stroke deaths and 87% of disabilities occurred in LMICs with Africa representing a high proportion.^[3]

Africa is experiencing a proportional change from communicable diseases to non-

communicable diseases. In a recent systematic analysis, stroke, with meningitis and migraine, was the main cause of disability-adjusted life years in all parts of Africa.^[4] This increase in non-communicable diseases, especially cerebrovascular and cardiovascular diseases, has been linked to risk factors unique to the African population such as dietary habits including high salt intake and reduced intake of green leafy vegetables,^[5] environmental pollution,^[6] HIV,^[7] and Sickle Cell Disease. Other well-recognised risk factors remain in African populations: age, hypertension, diabetes mellitus, dyslipidaemia, obesity, smoking, alcohol consumption, sedentary lifestyle, and atrial fibrillation.^[2] With increasing stroke research in Africa, there are now emerging risk factors from genomic studies in sub-Saharan Africa that have shown associations between ischaemic stroke and IL 6, CDKN2A/2B and APOL1-(SIREN).^[8]

Management of patients with stroke is a major challenge in LMICs. The average time from the onset of symptoms and signs to arrival in a healthcare facility in Western countries is about 140 minutes compared to 31 hours in Africa.^[9] However, it is worthy of note that there have been encouraging improvements in stroke care, especially in Southern and Northern Africa. Good leadership, governmental support and stroke awareness have given an impetus to this change. Improvement of stroke care is nevertheless slow, complex, and multifaceted. Hence, addressing stroke risk factors might be easier leading to a reduction in stroke epidemics.

Risk factors for stroke in Africa

Age is a major risk factor for stroke. The African populace has a lower mean age compared to western countries. One study^[7] has shown that the mean age of stroke patients was ten years lower than in the USA. This lower age in Africa has a devastating effect at the peak of productive life.

Hypertension is the major modifiable risk factor for stroke in Africa.^[10] Half of the people aged 25 years and above have hypertension: a ticking time bomb. It is alarming that more than 75% of patients with hypertension are either unaware or do not have treatment for hypertension.^[11] In addition only about 5% of known hypertensives have their blood pressure controlled within the target range.^[11] The reason for the burden of hypertension has been linked to ethnicity, high salt consumption, westernised diet, and emerging risk factors such as air pollution.^[8]

Diabetes mellitus is a further important risk factor for stroke in Africa; 80% of patients with diabetes live in

LMICs. There is likely to be many undiagnosed patients with diabetes and pre-diabetes.^[12]

Other risk factors, such as dyslipidaemias, central obesity, and atrial fibrillation, are increasing in incidence in Africa.^[2] Transient Ischaemic Attacks (TIA) and previous strokes are known risk factors for strokes in Western literature. However, there seems to be a paucity of African studies related to TIA. This is likely because it is underdiagnosed.

Detrimental lifestyles prevalent in Western societies are now growing rapidly in Africa, further contributing to the increased incidence of stroke. Smoking, a sedentary lifestyle, greater access to transport and less physical exercise were part of the ten modifiable risk factors in the INTERSTROKE Study in Africa.^[2]

There are also risk factors commonly associated with stroke in some African studies. High salt intake, red meat consumption, lack of green leafy vegetables and increased stress have been increasingly linked to stroke incidence and prevalence in Africa.^[2] Sickle cell disease and HIV/AIDS are also known risk factors for stroke in the African population.^[2] Sickle cell disease is a common cause of stroke in young patients in the African Population.^[2,6] This is because of the vaso-occlusive events in the circle of Willis in the brain. HIV/AIDS has also been reported as a risk factor for stroke in countries with a high burden of the disease in Africa.^[7,13]

Awareness of additional risk factors for stroke in Africa is emerging. Genomic studies are indicating links to stroke. In Northern Africa, polymorphisms in multiple genes such as APOE IL1, IL-1B, PPARD and many more candidate genes have been elucidated.^[8] A large African cohort study has revealed links with variants of IL6, APOL 1 and CDKN2A/2B.^[8] Air pollution, especially in urban areas, and infant undernutrition and stress are other issues requiring attention.^[2]

Targeting the risk factors for stroke in Africa

Hypertension and diabetes remain the major risks for stroke in Africa. Effectively targeting these chronic diseases has the potential to mitigate the stroke epidemic.

A “call-to-action” from the World Hypertension League has highlighted the urgency for all African countries to address hypertension with three key goals to accomplish before 2030:

1. 80% of adults with hypertension to be diagnosed in Africa,

2. 80% of all diagnosed hypertensive patients to be treated and
3. 80% of treated hypertensives to have their blood pressure adequately controlled.^[11]

These goals were categorised into four areas:

1. Actions by Government,
2. Action by African health workers,
3. Actions by African communities, individuals, and civil society and
4. Action by African development partners.

There was an emphasis on a top-down approach in terms of national policies and strategic plans for hypertension control including addressing hypertension in all non-communicable disease programmes, increased funding, increased access to primary health care and investment in quality research.^[11] This “call-to-action” is welcomed, but it does not address reasons for undiagnosed hypertension in the African populace. This is important to ensure any initiatives are effective.

Beliefs, attitudes, and behaviours impact healthcare-seeking in Africa.^[14] My colleagues and I recently conducted a survey (unpublished) and noticed that 25% of 57 patients who volunteered to have their blood pressure measured at a black British festival in the United Kingdom had high blood pressure: about 90% of those with high blood pressure were neither previously diagnosed nor treated for hypertension.

Beyond policies and access to healthcare, there is the need for a bottom-up approach to modify prevailing beliefs and attitudes of Africans to their health, and Western Medicine. Africa is a religious and multi-faith-based society and Western Medicine may be viewed with suspicion. A strategy is needed to inform faith leaders that Western Medicine is complementary to their faith, and not in opposition.

Social media is a valuable method to influence beliefs and perceptions about chronic diseases. As weight reduction campaigns are spread on social media, so similarly could the awareness of hypertension be advertised. Celebrities have large numbers of social media followers and, maybe by engaging these individuals, appropriate messages could be broadcast. Blood sugar monitoring campaigns could also be included. It could be that such high-profile people, who themselves have hypertension or diabetes, might be willing to share their experiences in the public domain.

Appropriate weight loss and reduction in salt intake reduce the chances of developing hypertension and hence stroke.^[15] In addition, diets high in red meat and low in green leafy vegetables have been shown to be risk factors for stroke. Therefore, there is a need for effective campaigns about healthy lifestyles. Top-to-bottom and bottom-to-top approaches should drive this crusade through sound policies from primary and secondary stakeholders.

Conclusion

Education about prompt recognition of stroke or TIA as well as awareness of stroke risk factors are essential. Most importantly, there is an urgent need for the World Stroke Organisation (WSO) and the African Stroke Organisation (ASO) to follow the lead of the World Hypertension League regarding the need for stroke prevention in Africa. A “call-to-action” from WSO and ASO with strategic goals is a valuable resource to target those with risk factors for stroke.

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