

Reducing Stroke Prevalence in Nigeria by Addressing Risk Factors of Hypertension

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Abstract

Due to Nigeria's aging population, stroke prevalence remains a high threat for the country. Although Nigeria has focused on stroke treatment, there is currently a lack of preventative interventions. Management of hypertension and alcohol consumption are two modifiable risk factors that have been found to decrease the risk of strokes but are loosely regulated in Nigeria. The aim of this paper is to review the measures currently in place for preventing strokes in Nigeria and, propose that a reduction in salt consumption and a revision of alcohol consumption policies can work together to reduce the risk of stroke in Nigeria. The paper finds that by addressing risk factors, interventions can effectively and realistically reduce the prevalence of strokes in Nigeria. The next step in Nigeria's public health care should be towards proposing interventions which incorporate the modifiable risk factors of stroke identified in this paper.

Keywords: stroke, sodium, drinking, alcohol, policy

Approximately 15 million people experience stroke worldwide, with two-thirds of individuals dying or being left permanently disabled. (Guilbert, 2003). [A5] Specifically, in Nigeria, strokes are the ninth leading cause of death and require serious interventions as the overall rate of stroke remains high due to the country's aging population (CDC Global Health, 2018)[A6]. High sodium and alcohol consumption remain two common risk factors that put such developing countries at a high risk of hypertension and, ultimately, stroke - each of which can be prevented with healthy lifestyle habits. Numerous cross-sectional studies found that hypertensive people account for approximately a third of Nigeria's population (Adeloye et al., 2014). Hypertension is related to blood sodium levels and is more pronounced in individuals consuming high-sodium diets (Mente et al., 2014). Additionally, nearly 70% of the country's alcohol drinkers have moderate to high-risk levels of high alcohol intake (Lasebikan & Ola, 2016). Consequently, it is essential to propose a solution that can reduce Nigeria's prevalence of stroke by decreasing the risk of hypertension by addressing excessive sodium consumption and harmful alcohol use.

This paper will explore a specific solution that can be implemented to reduce the prevalence of stroke in Nigeria by first evaluating current interventions to prevent stroke, then proposing the solution of reducing salt intake by decreasing consumption of processed foods, and lastly, proposing to decrease alcohol use through the implementation of policies regarding alcohol consumption in Nigeria's public places.

Review of the Literature

Measures Already in Place for Preventing Strokes

A study conducted to assess the efficiency of practices and knowledge regarding stroke at a hospital in Sokoto, Nigeria, found that 87% of study patients had a good understanding of different risk factors of stroke, such as hypertension, unhealthy dietary habits, and physical

inactivity (Arisegei et al., 2018). The same study also found that most patients could correctly identify signs of stroke onset, major body parts affected by stroke, and effective prevention practices (Arisegei et al., 2018).

Although cardiovascular health literacy is high among most Nigerians, there need to be more high-quality studies that explore to what extent the knowledge is applied and practiced (Arisegei et al., 2018). At most, there is evidence of measures that increase public awareness of strokes and overall health literacy, but no specific prevention strategies that induce measurable behavioural change (Arisegei et al., 2018). These measures include providing a platform for stakeholders such as doctors, nurses, and stroke survivors to raise awareness during World Stroke Day and organizing a Walk/Run for Stroke to raise public awareness (Sookram et al., 2015).

Decreasing Sodium Consumption to Reduce Hypertension Prevalence

Not only is the overall sodium consumption in sub-Saharan Africa much higher than the World Health Organization's (WHO's) recommendation but it is also predicted to increase as Nigeria continues to undergo urbanization and increased consumption of processed foods (Oyebode et al., 2016).

Simultaneously, African populations are chemically more salt sensitive than Caucasian and Asian populations, meaning a slight decrease in sodium intake can have significant outcomes (Sofola, 2019). Longitudinal studies which have followed small samples of both hypertensive and normotensive African populations report a low sodium diet to be both effective in maintaining lower targeted blood pressure and a realistic intervention technique as reflected by significant levels of subject participation and completion rates (Gradual et al., 2017). In the small sample size studies conducted in Nigeria, decreased blood pressure in hypertensive patients due to low-sodium diets could be seen in just thirty days (Mezue, 2013).

To catalyze the implementation of interventions that reduce sodium consumption, the WHO has begun to provide technical support to sub-Saharan African countries over recent years (Sookram et al., 2015). For instance, the WHO has helped South Africa create legislation aimed at the food industry to reduce the amount of salt content in foods and has also helped Mauritius request that their bakery owners reduce the sodium content in their bread so that the average salt consumption can consequently be reduced from 10 g/day to WHO's recommendation of <5 g/day (Sookram et al., 2015). Reducing sodium content by creating legislation targeted at the food industry and bakery shops are two potential interventions which have not yet been implemented in Nigeria but can be applied to reduce sodium intake at the population level.

Reducing high alcohol consumption as a risk factor of stroke by policies

High levels and prolonged consumption of alcohol have proven to put individuals at greater risk of developing numerous health issues, including alcohol-caused hypertension. Immediate alcohol consumption creates an acute spike in blood pressure and can cause blood pressure to remain high with binge drinking and long-term heavy drinking (Monico, 2020). Aside from directly causing blood pressure to spike, alcohol also contains high amounts of calories from sugar, which can contribute to unintentional weight gain (Monico, 2020).

Table 1*Prevalence of episodic drinking in Nigerians as of 2016*

Prevalence of heavy episodic drinking* (%), 2016

	Population (15+ years)	Drinkers only (15+ years)
Males	45.4	67.7
Females	12.0	31.8
Both sexes	28.9	55.0

* Consumed at least 60 grams or more of pure alcohol on at least one occasion in the past 30 days.

Note. More than a quarter of the population partakes in heavy episodic drinking with only slightly more than a half of the drinking population being 15 years old or older. Differences between the sexes exist because consumption is more socially acceptable for males (Dumbili & Onyima, 2017). Reprinted from Nigeria, Alcohol Consumption: Levels and Patterns, by World Health Organization, retrieved from <https://apps.who.int/iris/bitstream/handle/10665/274603/9789241565639-eng.pdf> Copyright 2018 by World Health Organization.

Additionally, a qualitative study found that not only are outdoor spots becoming increasingly popular for alcohol consumption but also that those who drink outdoors are at a greater risk of having an alcohol use disorder in comparison to the general population (Lasebikan et al., 2018). The same study specified that places that can facilitate an option for outdoor bars, such as street corners, motor parks, and roadsides, are also popular spots for alcohol consumption in Nigeria (Lasebikan et al., 2018). These popular drinking spots are important concentrated areas in which potential interventions, such as policy changes, can influence a large proportion of consumers efficiently.

Discussion

Though the Nigeria Stroke Reference Group has made efforts to raise overall public awareness and health literacy for the prevention of strokes, there needs to be more evidence indicating consistent and effective population-focused efforts. This suggests that due to Nigeria being a developing country, improper funding and a lack of resources may have limited the

administration of prevention strategies (Kilewo & Frumence, 2015). However, it is imperative to instill more significant measures that target modifiable risk factors and better lifestyle habits because strokes remain within Nigeria's top ten causes of death.

One of the proposed solutions is the reduction of sodium intake to decrease hypertension. This has been proven to be both an effective and realistic strategy to combat stroke prevalence in Nigeria (Mezue, 2013). The increased accessibility of processed foods remains a limitation of reducing overall salt consumption from its current high level of consumption (Oyebode et al., 2016). However, this limitation can be overcome via lifestyle changes. To specify, there is a significant advantage to implementing dietary-related interventions in an African population since African populations are biologically more sensitive to salt; a slight decrease in salt consumption could easily yield a significant reduction in sodium levels and, ultimately, hypertension (Sofola, 2019). In addition, the WHO has already aided South Africa and Mauritius in contacting the food industry to decrease the sodium content in foods, but this has yet to be implemented in Nigeria (Sookram et al., 2015). Decreasing the prevalence of hypertension through the food industry and dietary changes, therefore, can decrease the prevalence of stroke in Nigeria.

Similarly, interventions that target the high consumption of alcohol among Nigerians are another proven proposal to reduce the prevalence of hypertension and, ultimately, stroke-related death and disability (Monico, 2020). Given that a majority of Nigerians enjoy consuming alcohol in outdoor places, a policy to prohibit the consumption of alcohol in public places will help to decrease the consumption and promotion of alcohol (Lasebikan et al., 2018). It is interesting to note the gender imbalance for the consumption of alcohol in numerous studies may be a reflection of a gender bias in the consumption of alcohol in Nigerian culture. This bias may be

parallel to the gender disparity of hypertension as Nigerian males are often significantly at a greater risk of hypertension than females (Akinlua et al., 2015). Perhaps by prohibiting consumption in public areas, an intervention primarily aimed at decreasing alcohol-related stroke prevalence may also indirectly reduce the gender imbalances noted in alcohol use and the manifestation of hypertension. This policy would allow people to continue drinking with some privacy, as most female drinkers may already do so due to the present social resistance of women consuming alcohol (Dumbili & Onyima, 2017). With better lifestyle decisions, hypertension, and stroke prevalence should decrease.

Evaluation of the proposed solutions indicates that they could be successful in providing additional means of stroke prevention in Nigeria. For instance, the WHO catalyzing the reduction of hypertension by creating legislation that asks food companies to decrease the salt content in their products is cost-effective and feasible, as seen by the success of such measures in South Africa and Mauritius (Sookram et al., 2015). Furthermore, creating a policy to prohibit the public consumption of alcohol is also cost-effective. It only requires a few resources or funding, which is vital to consider when implementing preventative health measures in developing countries. In contrast to the current strategies of simple health education about strokes, these proposed solutions are much more specific, effective, and affordable.

Conclusion

The first step of Nigeria's goal to reduce the prevalence of stroke should be to decrease salt consumption and prohibit the public consumption of alcohol to minimize hypertension risk. To do so, policies aimed at the food industry can set acceptable salt content limits, and policies aimed at drinking practices can minimize unhealthy drinking practices. As Nigeria's population ages, greater stroke rates resulting in death and disability can be expected. Therefore, now is an

instrumental time for Nigeria to implement these strategies and prevent a significant spike in the prevalence of stroke. Aside from the consequences of an aging population, Nigeria's overall prevalence of stroke can be expected to decrease as such strategies are implemented and as the availability of resources and funds directed towards modifiable behavioural changes grows.

The next goal of studies should be to identify what preventative measures for stroke, if any, are in place at the population level. This paper's findings are limited in that they apply broadly to Nigeria. Effective changes need to be tailored and precise. Therefore, future studies should build upon this paper's finding that addressing modifiable risk factors of hypertension can decrease the prevalence of strokes, by measuring the receptibility of different subgroups of Nigerians (i.e., females vs males or urban vs rural residents) to apply and practice healthy habits and grow their health literacy. Many individuals know what is healthy for them but struggle with applying the knowledge. Studies should explore different and specific methods of promoting healthy practices more interactively and engagingly, rather than passive promotion so that Nigerians can effectively and realistically practice safe lifestyles to minimize their risk of stroke.

References

- Adeloye, D. (2014). An Estimate of the Incidence and Prevalence of Stroke in Africa: A Systematic Review and Meta-Analysis. *PLoS ONE*, *9*(6). doi: 10.1371/journal.pone.0100724
- Akinlua, J. T., Meakin, R., Umar, A. M., & Freemantle, N. (2015). Current prevalence pattern of hypertension in Nigeria: A systematic review. *PLOS ONE*, *10*(10). <https://doi.org/10.1371/journal.pone.0140021>
- Arisegi, S. A., Awosan, K. J., Oche, M. O., Sabir, A. A., & Ibrahim, M. T. (2018). Knowledge and practices related to stroke prevention among hypertensive and diabetic patients attending specialist hospital, Sokoto, Nigeria. *Pan African Medical Journal*, *29*. doi: 10.11604/pamj.2018.29.63.13252
- CDC Global Health - Nigeria. (2019, July 3). Retrieved from <https://www.cdc.gov/globalhealth/countries/nigeria/default.htm>
- Dumbili, E. W., & Onyima, B. N. (2017). Beyond Leisure: The Role of Alcohol in the Lives of Nigerian University Students. *Substance Use & Misuse*, *53*(8), 1361–1371. doi: 10.1080/10826084.2017.1408652
- Graudal, N. A., Hubeck-Graudal, T., & Jurgens, G. (2017). Effects of low sodium diet versus high sodium diet on blood pressure, renin, aldosterone, catecholamines, cholesterol, and triglyceride. *Cochrane Database of Systematic Reviews*. doi: 10.1002/14651858.cd004022.pub4
- Guilbert, J. (2003). The world health report 2002 – reducing risks, promoting healthy Life. *Education for Health*, *16*(2), 230. Retrieved from

<http://proxy.lib.sfu.ca/login?url=https://www.proquest.com/scholarly-journals/world-health-report-2002-reducing-risks-promoting/docview/2735699610/se-2>

- Kilewo, E. G., & Frumence, G. (2015). Factors that hinder community participation in developing and Implementing Comprehensive Council Health Plans in Manyoni District, Tanzania. *Global Health Action*, 8(1), 26461. <https://doi.org/10.3402/gha.v8.26461>
- Lasebikan, V. O., & Ola, B. A. (2016). Prevalence and Correlates of Alcohol Use among a Sample of Nigerian Semirural Community Dwellers in Nigeria. *Journal of Addiction*, 2016, 1–6. doi: 10.1155/2016/2831594
- Lasebikan, V. O., Ayinde, O., Odunleye, M., Adeyefa, B., Adepoju, S., & Fakunle, S. (2018). Prevalence of alcohol consumption and alcohol use disorders among outdoor drinkers in public open places in Nigeria. *BMC Public Health*, 18(1). doi: 10.1186/s12889-018-5344-6
- Mente, A., O'Donnell, M. J., Rangarajan, S., McQueen, M. J., Poirier, P., Wielgosz, A., Morrison, H., Li, W., Wang, X., Di, C., Mony, P., Devanath, A., Rosengren, A., Oguz, A., Zatonska, K., Yusufali, A. H., Lopez-Jaramillo, P., Avezum, A., Ismail, N., ... Yusuf, S. (2014). Association of urinary sodium and potassium excretion with blood pressure. *New England Journal of Medicine*, 371(7), 601–611. <https://doi.org/10.1056/nejmoa1311989>
- Mezue, K. (2013). The increasing burden of hypertension in Nigeria – can a dietary salt reduction strategy change the trend? *Perspectives in Public Health*, 134(6), 346–352. doi: 10.1177/1757913913499658

Monico, N. (2020, February 28). High blood pressure from alcohol consumption. Alcohol.org.

Retrieved from <https://www.alcohol.org/effects/blood-pressure/#does-alcohol-raise-blood-pressure->

Oyebode, O., Oti, S., Chen, Y.-F., & Lilford, R. J. (2016). Salt intakes in sub-Saharan Africa: a systematic review and meta-regression. *Population Health Metrics*, 14(1). doi:

10.1186/s12963-015-0068-7

Sofola, O. (2019). Salt and blood pressure in Africans. *Physiology News*, (Summer 2019), 42-43.

<https://doi.org/10.36866/pn.115.42>

Sookram, C., Munodawafa, D., Phori, P., Varenne, B., & Alisalad, A. (2015). WHO's supported interventions on salt intake reduction in the sub-Saharan Africa region. *Cardiovascular Diagnosis & Therapy*. doi: 10.3978/j.issn.2223-3652.2015.04.04

World Health Organization. (2018). Nigeria, alcohol consumption: Levels and patterns [PDF].

Retrieved from

https://www.who.int/substance_abuse/publications/global_alcohol_report/profiles/nga.pdf?ua=1



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