



Letter to the Editor

Response by Sarfo to letter regarding “Patients with hypertension and/or diabetes and incident stroke: A risk assessment”



ARTICLE INFO

Keywords:
Stroke risk
Prospective study
Africa

In response

We sincerely thank Dr. Kawada for his interest in our study titled ‘Incident stroke among Ghanaians with hypertension and diabetes: a multicenter, prospective study’. The aim of our study [1] was to assess the rates and determinants of incident stroke among a prospective, hospital-based Ghanaian cohort with hypertension and/or type 2 diabetes mellitus. In this regard, our study was not designed to “evaluate the risk of hypertension and diabetes for incident stroke” as specified by our correspondents. Rather, we sought to identify factors that increased the propensity for incident stroke among individuals who already had hypertension or diabetes. We found that physical inactivity and previous history of cigarette smoking were independently associated with stroke occurrence in this cohort. Stroke type information was not available, hence it was not possible to isolate the effect of risk factors for the primary ischemic or hemorrhagic stroke types which was recognized as a study limitation. We also accounted for sex in our model and found that although male sex was associated with a heightened risk of stroke occurrence with an unadjusted odds ratio of 2.10 (95% CI of 1.21–3.64), this effect size was attenuated into non-significance in our adjusted models. We found in sensitivity analysis that stage II hypertension was also independently associated with stroke occurrence. Indeed further re-analysis of this cohort has also shown that renal impairment is also associated with incident stroke occurrence [2].

Direct comparisons between our prospective cohort study and the case-control study design of the INTERSTROKE [3] are not possible because of obvious differences in study design and the study populations. With regards to case-control studies in West Africa assessing the dominant risk factors for stroke occurrence, the Stroke Investigative Research and Educational Networks (SIREN) group has recently published their findings. The investigators found eleven (11) dominant modifiable risk factors for stroke occurrence which included hypertension, dyslipidemia, regular meat consumption, central obesity, diabetes mellitus, low consumption of green leafy vegetables, stress, table added salt, cardiac disease, physical inactivity, current cigarette

smoking with 10 out of the 11 factors associated with ischemic strokes and 6 out of the 11 factors associated hemorrhagic stroke [4,5].

The findings of our prospective study [1] and those of the SIREN study highlight the pressing need to improve control of blood pressure among individuals living with hypertension in low-and-middle income countries (LMICs) to avert incident stroke occurrence. In addition to primary prevention, stroke survivors in LMICs are at a heightened risk for future strokes due fragmentary post-stroke clinical services. A study conducted at a comprehensive neurology clinic in West Africa reported that nearly 70% of stroke survivors had their blood pressure on target at 12 months after stroke [6]. Admittedly, neurology clinics may not be widely available in most LMICs due to the paucity of neurologists in these regions. Therefore, the efficacy of interventions that may help improve blood pressure control such as enhancing adherence to anti-hypertensive treatment via mobile health and task-sharing strategies as has recently been demonstrated among Ghanaian stroke survivors [7,8] may be pivotal in the coming decades in a region with a burgeoning epidemic of stroke characterized by a young age of onset and abysmal short- and long-term outcomes [9,10].

References

- [1] F.S. Sarfo, L.M. Mobula, J. Plange-Rhule, D. Ansong, D. Ofori-Adjei, Incident stroke among Ghanaians with hypertension and diabetes: a multicenter, prospective cohort study, *J. Neurol. Sci.* 395 (2018) 17–24.
- [2] F.S. Sarfo, L.M. Mobula, O. Sarfo-Kantanka, S. Adamu, J. Plange-Rhule, D. Ansong, et al., Estimated glomerular filtration rate predicts incident stroke among Ghanaians with diabetes and hypertension, *J. Neurol. Sci.* 396 (2018) 140–147.
- [3] M.J. O'Donnell, S.L. Chin, S. Rangarajan, D. Xavier, L. Liu, H. Zhang, et al., Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study, *Lancet* 388 (2016) 761–775.
- [4] M. Owolabi, F. Sarfo, R. Akinyemi, M. Gebregziabher, O. Akpa, A. Akpalu, et al., Dominant modifiable risk factors for stroke in Ghana and Nigeria (SIREN): a case-control study, *Lancet Glob. Health* 6 (4) (2018) e436–e446.
- [5] Sarfo FS, Ovbiagele B, Gebregziabher M, Wahab K, Akinyemi R, Akpalu A, et al. Stroke among young West Africans: evidence from the SIREN (Stroke Investigative Research and Educational Network) large multisite case-control study.
- [6] F.S. Sarfo, G. Kyem, B. Ovbiagele, J. Akassi, O. Sarfo-Kantanka, M. Agyei, et al.,

<https://doi.org/10.1016/j.jns.2018.12.017>

Received 6 December 2018; Accepted 12 December 2018

Available online 12 December 2018

0022-510X/ © 2018 Published by Elsevier B.V.

- One-year rates and determinants of post-stroke systolic blood pressure control among Ghanaians, *J. Stroke Cerebrovasc. Dis.* 26 (1) (2017) 78–86.
- [7] F. Sarfo, F. Treiber, M. Gebregziabher, S. Adamu, S. Patel, M. Nichols, et al., PINGS (Phone-based intervention under Nurse Guidance after Stroke): interim results of a pilot randomized controlled trial, *Stroke* 49 (1) (2018) 236–239.
- [8] F.S. Sarfo, F. Treiber, M. Gebregziabher, S. Adamu, M. Nichols, A. Singh, et al., Phone-based intervention for blood pressure control among Ghanaian stroke survivors: a pilot randomized controlled trial, *Int. J. Stroke* 1747493018816423 (2018), <https://doi.org/10.1177/1747493018816423> [Epub ahead of print] PMID: 30465630).
- [9] F.S. Sarfo, J. Akassi, D. Awuah, S. Adamu, C. Nkyi, M. Owolabi, et al., Trends in stroke admission and mortality rates from 1983 to 2013 in Central Ghana, *J. Neurol. Sci.* 363 (2016) 217–224.
- [10] F.S. Sarfo, J. Akassi, G. Kyem, S. Adamu, D. Awuah, O.S. Kantanka, et al., Long-term outcomes of stroke in a Ghanaian outpatient clinic, *J. Stroke Cerebrovasc. Dis.* 27 (4) (2018) 1090–1099.

Fred S. Sarfo^{a,b,*}

^a Kwame Nkrumah University of Science & Technology, Kumasi, Ghana

^b Komfo Anokye Teaching Hospital, Kumasi, Ghana

E-mail address: fsarfo.chs@knust.edu.gh.

* Corresponding author at: Kwame Nkrumah University of Science & Technology, Department of Medicine, Neurology Division, Private Mail Bag, Kumasi, Ghana.