Knowledge of Stroke Among At Risk Persons: A Survey of Patients At A Tertiary Hospital in Calabar, Southern Nigeria

Oparah, Sidney K.[1*],Uhegbu, Vincent M.[1],Etokidem, Aniekan J.[2]

[1]Department of Internal Medicine, University of Calabar, Nigeria
[2]Department of Community Medicine, University of Calabar, Nigeria
Corresponding author: [*]Oparah, Sidney K

Abstract:
Background:*Stroke is a leading cause of global morbidity and mortality. Increased awareness of stroke helps to promote adoption of healthy lifestyles and other stroke prevention measures The aim of this study was to assess the knowledge of stroke among persons diagnosed with cardiovascular risk factors at the University of Calabar Teaching Hospital; a tertiary in southern Nigeria.*
Methods:*We conducted a survey among persons diagnosed with diabetes mellitus and systemic hypertension, who presented at the adult outpatient clinics of the University of Calabar Teaching Hospital in Calabar, Nigeria, over a three month period. In addition to data on demographics, we assessed the respondents` knowledge of stroke symptoms, risk factorsand preferred action following onset of stroke; using an interviewer administered questionnaire.*
Results:*There were 148 respondents, comprising of 68 (45.9%) male and 80 (54.1%) female participants, with a mean age of 54.3 years. Twenty eight (16.9%) of the respondents had good knowledge of stroke. Seventy three (49.3%) and 35 (23.6%) of the respondents had good knowledge of stroke risk factors and stroke symptoms, respectively.Possessing a tertiary level of education was the identified predictor of good knowledge of stroke.*
Conclusion:*This set of at risk respondents had poor knowledge of stroke. Being well educated was a determinant of good knowledge of stroke. There is need for effective public health education to fill the identified gap in knowledge.*
Keywords:*Awareness,Knowledge, risk factors, strokesymptoms*

I. Introduction

Stroke is a leading contributor to morbidity and mortality globally [1,2]. It is projected that new cases of stroke will increase to 23 million by 2030, with an estimated stroke related deaths of 7.8 million in the same year, in the absence of effective public health efforts to curtail the menace [3,4].The burden of strokein developing countries is progressive, with these countries estimated to have about seven fold the disability adjusted life years lost in the developed world [5,6].This is readily evident in the sub-Saharan Africa region, as it has been reported that deaths from cardiovascular diseases such as stroke and heart attack for Africans exceed the rate for other ethnic groups [7,8].Despite this worrisome trend in stroke cases, the public health response in many African nations have remained sub optima [9,10].In resource constrainedcountries, stroke exacts huge demands on scarcely available healthcare resources.[11]Hence, efforts should be channeledtowards preventive measures as a means of mitigating the impact of stroke, considering thatidentified risk factors for stroke are amenableto lifestyle modification [10,11,12].As such, the need for enhanced public awareness of stroke risk factors and symptoms, in addition to the appropriate line of action in the event of stroke onset, cannot be over emphasized.

Sequel to the above submission, persons living with medical conditions regarded as risk factors for stroke are expected to be robustly knowledgeable about stroke, on the basis of their anticipated health interests. In Nigeria, such high levels of awareness are expected from persons living with hypertension and diabetes mellitus, which are among the top common modifiable risk factors for stroke [12,13]**.** However, studies conducted in other locations have revealed poor knowledge of stroke among persons at great risk of stroke as well as in the general population [14,15,16]**.** Even acute stroke patients are not exempted from the observed ignorance concerning stroke [17]**.**

In this study, we conducted a survey on the knowledge of stroke among patients with systemic hypertension and diabetes mellitus, to ascertain the level of stroke knowledge among such high risk persons in our locality.

II. Subjects And Methods

This survey was conducted,over a period of three months, at the University of Calabar Teaching Hospital in the city of Calabar;a major tourist destination located in the south eastern region of Nigeria. The last national population census puts the total population of Calabar at 371,122 [18].The study was conducted in agreement with the Helsinki declaration of 1975, as revised in 1983. Respondents were drawn from consenting patients aged 18 years and above receiving outpatient clinical care at the weekly diabetes and cardiology clinics of the University of Calabar teaching hospital, Calabar. Those diagnosed with systemic hypertension and diabetes mellitus, representing the most common modifiable risk factors for stroke in the locality, were included in the survey. Persons who did not fully complete the survey instrument were excluded from the study in addition to persons who declined to take part in the survey. The survey centered on awareness of stroke risk factors, stroke symptoms and the preferred action to adopt following onset of stroke.

The survey instrument comprised of a structured intervieweradministered questionnaire with sections on demographic characteristics of participants and assessment of stroke knowledge. Respondents who had at least a tertiary level of education were classified as being well educated, whereas those who did not have more than secondary education were classified as not being well educated.Respondents who had suffered stroke or has a family member who suffered from stroke were classified as having prior experience with stroke.

The section on stroke knowledge was adapted from the instrument employed by Weltermann et al.,in a similar study, to evaluate knowledge of stroke [19].Respondents were asked to list up to five each of stroke risk factors and symptoms, in addition to stating the appropriate action to take following the onset of stroke symptoms. A respondent was considered to have a good knowledge of stroke risk factors if at least; two risk factors for stroke were correctly listed. Similarly,one is considered to have a good knowledge of stroke symptoms if at least,two stroke symptoms were correctly listed. A respondent was regarded to have a good knowledge of stroke if he or she possessed a good knowledge of stroke symptoms, a good knowledge of stroke risk factors,in addition to affirming that immediate transfer to a hospital is the appropriate line of action following onset of stroke symptoms.Furthermore, the respondents were asked to identify their main source of information on stroke. Data was analysed using SPSS version 22 statistical package. Means and standard deviation (SD) were used for continuous variables, and simple proportions were used for categorized data. Student's t test and multivariate analysis were used to compare numerical variables and identify predictors of good stroke knowledge, respectively. The level of significance was set at $p < 0.05$.

III. Results

There were 148 respondents comprised of 68 (45.9%) males and 80 (54.1%) females. The mean age of the respondents was 54.3 years (SD = 12.76). Seventy six (51.4%) of them were well educated whereas 72 (48.6%) were not well educated. Eighty one (54.7%) of the respondents were diagnosed with diabetes mellitus and 67 (45.3%) of them had systemic hypertension. See table 1Twenty five (16.9%) of the respondents possessed a good knowledge of stroke. Eight (11.8%) of the male respondents had good knowledge of stroke compared to seventeen (21.3%) of their female counterparts (p = 0.125). Nineteen (25%) of the well educated respondents displayed good knowledge of stroke compared to six (8.3%) of those who were not well educated (p = 0.008). Nine of the 68 respondents with systemic hypertension had good knowledge of stroke compared to 16 of the 80 diagnosed with diabetes mellitus (p = 0.307).Multivariate analysis identified being well educated as the predictor of good knowledge of stroke(p = 0.011); age of respondents (p = 0.566); female gender (p = 0.184); prior experience with stroke (p = 0.781)

A good knowledge of stroke risk factors was shown by 73 (49.3%) of the respondents whereas 75 (50.7%) had poor knowledge of stroke risk factors. The mean number of listed stroke risk factors was 1.89 (S.E = 0.162) and 1.36 (S.E = 0.164) for the well educated and not well educated respondents, respectively, with an overall mean number of listed stroke risk factors at 1.64 (S.E = 0.119); p = 0.024.Thirty five (23.6%) of the respondents had good knowledge of stroke symptoms, whereas 113 of them (76.4%) had poor knowledge of stroke symptoms. The mean number of listed stroke symptoms was 1.11 (S.E = 0.119) and 0.58 (S.E = 0.086) for the well educated and not well educated respondents, respectively, with an overall mean number of listed stroke risk factors at 0.85 (S.E = 0.078); p = 0.001.A hundred and thirty (87.8%) of the respondents agreed that the appropriate action to take following onset of stroke symptoms is to immediately transfer the affected person to a hospital.The top main sources of information on stroke for the respondents include; health workers (46%), friends and relatives (26.4%) and news media (16.2%). The internet serves as the main source of information for 2.7% of the respondents, whereas the remaining 9.5% of the respondents obtain information on stroke from other sources.

Tables
Table 1. Demographic characteristics of the respondents

Parameter	Male (n = 68)	Female (n = 80)	Total (N = 148)	p- value
Age (in years)				
Mean age (SD)	55.1 (12.85)	53.5 (12.71)	54.3 (12.75)	0.455
Age range	29 – 83	21 – 84	21 – 84	
Level of Education				
Primary	14	18	32	
Secondary	22	18	40	0.136
Tertiary	30	34	64	
Postgraduate	2	10	12	
Marital status				
Never married	6	2	8	
Married	57	64	121	0.096
Divorced	0	2	2	
Widowed	5	12	17	
Medical morbidity				
Diabetes mellitus	33	48	81	0.162
Systemic hypertension	35	32	67	

SD = Standard deviation

IV.   Discussion

The study demonstrated a poor knowledge of stroke among these respondents drawn from individuals accessing orthodox medical treatment for systemic hypertension and diabetes mellitus; widely identified to be among the most common stroke risk factors. These findings corroborate reports from high and low income countries which reveal inadequate knowledge of stroke in the general population and in persons at high risk of stroke [15,16].Our observations mirrors the outcome of an earlier study conducted in the western region of Nigeria, favoring the stance that poor knowledge of stroke is a widespread trend in the country [14].The extent of deficiency is better appreciated when one reckons that both studies were conducted on urban dwelling populations, perceived to be more health conscious and better enlightened than their rural dwelling compatriots;a privilege which can be ascribed to favorably skewed access to better healthcare resources and robust means of information acquisition.Efforts should be made, as part of public health measures to reduce the burden of stroke, to improve public awareness of stroke; especially in developing nations knownto bear a greater burden of the stroke menace, in the face of existing challenges posed by poor economic profiles with the attendant constraints on the capacity of available health resources [3,6,20].Such strategies should incorporate the promotion of health support groups; known to be rich sources of public education and information on disease conditions [21,22].The case for utilizing such health support groups is strengthened by reports of good knowledge of stroke among members of stroke support groups [19].Effective public education designed to raise awareness of stroke risk factors and foster adoption of healthy lifestyles, should emphasize on curtailing modifiable stroke risk factors such as; sedentary lifestyle, smoking, unhealthy diets, obesity, diabetes mellitus and systemic hypertension, currently plaguing the African continent with consequent increase in the stroke burden [9,23,24].

We reckon that the pattern observed among the respondents in our survey,which indicates that higher level of education fosters good knowledge of stroke, is not out of place. Persons with high educational levels have better access to health information, in addition to better reading, comprehension and reasoning skills which promote enhanced knowledge of health related issues [25]. Indeed, it has been demonstrated that higher level of education correlates with increase in the usage of preventive medical care.[26] On the contrary; persons with lower levelof education are less inclined to possess the skills or knowledge to seek or utilize health information [25].Our survey reveals that prior experience with stroke, as defined in our study, did not confer advantage to the respondents regarding the level of stroke knowledge. Studies have shown that even acute stroke patients display poor knowledge of stroke [17]. When the aforesaid is considered in conjunction with our observation that a greater proportion of these respondents, with poor knowledge of stroke, identified health care workers as their main source of information on stroke; the situation highlights the need for greater care in the design, packaging and delivery of needed public health education activities to ensure achievement of desired goals. Moreover, the need for capacity building of health care providers on effective health communication is made glaring.

V. Conclusion

In conclusion, the respondents in our survey displayed a remarkable poor knowledge of stroke, despite living with medical conditions identified as most prevalent stroke risk factors in our environment. There is need for vigorous public health education campaigns to fill the identified gap in knowledge. Promotion of formal education, beyond the basic levels, will positively influence the public health response to the stroke menace as our study identified high level of education as a predictor of good knowledge of stroke.

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