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Knowledge and perception of stroke among adults in Osogbo, Nigeria

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Summary

Stroke is a major cause of neurological admission in Nigeria. Its prevention has been reported to be dependent on public knowledge of stroke warning signs and risk factors. Ignorance of stroke risk factors and inability to control such risk factors may contribute to high prevalence of stroke among blacks. This cross-sectional descriptive study therefore investigated knowledge and perception of stroke among adults living in Osogbo, Nigeria. Multistage sampling technique was used to select a sample of 900 adults aged between 18 and 80 years as at their last birthday. Data were collected using a pretested modified version of instrument used in a previous study. Data collected from the final survey instrument were analyzed using both descriptive and inferential statistics. A total of 900 adults with male to female ratio of 1.4:1 and mean age 43.6±17.63 years participated in this study. Four hundred and seven (45.2%) of the interviewees reported that they were hypertensive. Heart was incorrectly identified by 54% of the respondents as injured organ during stroke. Majority (83.0%) of the respondents indicated that stroke was preventable whereas only 37.1% of them were aware of stroke recurrence. The most common stroke risk factors listed by the respondents were hypertension (78.2%) stress (59.9%) and old age (58.3%). Stroke survivors were perceived by 68.7% of the respondents as being able to return to activities of daily living but with diminished quality of social life. Knowledge of stroke warning signs and risk factors was good among the respondents. However, their baseline knowledge about stroke was poor. Stroke survivors were perceived as being unable to return to pre-stroke's quality of social life. Development of educational strategies to enlighten the public about stroke is therefore recommended.

Keywords: *Knowledge, perception, stroke risk factors and warning signs*

Résumé

L'arrêt cardiaque est la cause majeure de l'admission neurologique au nigeria. Sa prévention a été rapporté dépendent sur la connaisance publique des signes précoces et des facteurs à risque. L'ignorance des facteurs à risque de l'arrêt cardiaque et l'inhabilité de contrôler ces facteurs peuvent contribuera un taux élevée de cette condition parmi les pays noire. Cette étude descriptive investiguait la connaissance et la perception de l'arrêt cardiaque parmi les adultes vivant à Osogbo au Nigeria. La technique de multiple étape était utilisée pour sélectionner neuf cent adultes agés de 18 à 80 ans. Les données étaient collectées à l'aide de la statistique descriptive et l inferentielle. La proportion de male et femelle était de 1.4:1 avec une moyenne d'age 43.6 ± 172 ans. Quatre cent sept (45.2%) des sujets étaient hypertendues. Le cœur n'était pas en bon état chez 54% des participants. La majorité des participants (83%) indiquaient que cette maladie était prevenable alors que 37.1% étaient informé de l'incidence de la maladie. Le risque commun de l'arrêt cardiaque chez la plupart des participants était l'hypertension (78.2%), stress (59.9%) et la vieillesse (58.3%). Les survivants de l'arrêt cardiaque étaient perçu chez 68.7% des participants comme étant capable de retourner aux activités journaliérs avec une réduction de la qualité de la vie sociale. En conclusion, la connaissance des signes précoces étaient significative chez les participants cependant les connaissances de base de cette maladie étaient faible. Les survivants étaient incapable de retourner à leur qualité de vie sociale d'avant. Ainsi le développement des stratégies pour illuminer le public de cette maladie est recommandé.

Introduction

Stroke is a common cause of death and the leading cause of neurological disability in the adult population. [1,2]. In the United States of America, more than 700,000 annual incidences of stroke and 4.4 million stroke survivors has been documented [3]. In Africa, stroke accounts for 0.9 - 4 % of hospital admissions, 4 - 9% of total hospital death and 6.5 -41% of neurological admissions [4]. In a community-based study in Southern Nigeria, stroke prevalence was recorded as 0.7 per1000 of the population [5].

In Nigeria, the incidence of stroke has been reported to be on the increase [6, 7]. Moreover, the extended hospitalization and subsequent inability to return to work are of great burden not only to the caregivers and their family but also the society as a whole [8]. Studies from Nigeria have shown that majority of stroke patients were aged between 41 and 70 years old [4, 8]. This, however, was at variance with findings among Caucasians where majority of stroke patients were aged 75 and above [9, 10]. Ignorance of stroke risk factors and inability to control

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such risk factors among black have been suggested as reason for the high prevalence of stroke among this population [8].

Prevention remains the best approach to reduce the burden of stroke [11, 12]. Primary stroke prevention aims at identifying risk factors for stroke in individuals and instituting treatment and lifestyle modification to control these risk factors. [13].The success of these primary preventive measures has been reported to be dependent on public knowledge of stroke warning signs and risk factors [9, 14]. A number of studies in developed countries have shown that the baseline knowledge about stroke among patients and in the community at large was poor [14-16]. Beecker *et al* [15], prior to a community based education campaign on stroke in King County, U.S.A., reported that only 45.2% of the participants knew that brain is the injured organ during stroke.

Educational strategies developed to provide information on stroke risk factor control and the benefit of early hospital presentation of stroke prone individuals or stroke patients can be used to increase public awareness of stroke [15, 17]. Such preventive measures may not be feasible unless effort is made to have data on current level of knowledge and perception about stroke in a community. There is, however, paucity of literature on knowledge and perception of stroke in Nigeria as most of the published studies on knowledge and perception of stroke were carried out in western countries. We, therefore, investigated knowledge and perception of stroke among adults in Osogbo, Nigeria.

Materials and methods

The study population included 900 adults living in Osogbo selected by a multi-stage sampling technique. The first stage involved random selection of 12 out of 23 wards that constituted Osogbo town. The second stage involved random selection of five streets in the early selected wards. The third stage involved selection of 15 adults in the selected streets. A sample of seventy-five eligible adults was thus selected from each ward. The study population consisted of adults aged between 18 years and 80 years at their last birthday that had no previous history of stroke / TIAs and were not hospital workers.

A 31-item close-ended researcher administered questionnaire, a modified version of survey instrument developed by Yoon *et al* [18] to evaluate knowledge and perception of stroke in an Australian urban population was used for this study. The instrument was modified and expanded to accommodate perception of stroke among adults within the socio-cultural context of a Nigerian semi-urban population. The modified instrument was translated into Yoruba Language by an expert and pre-tested on ten adults in each of the five randomly selected wards in Ede North local government area, a town with similar demographic characteristics as Osogbo. The contents and wordings of the questionnaire were further modified as some items were found to be poorly understood by the participants. The questionnaire consisted of three sections to obtain the following information:

- Demographic characteristics of the respondents
- Baseline knowledge about stroke and perceived possible level of recovery from stroke
- Knowledge about stroke warning signs, risk factors and symptoms, planned response to an event of stroke, concern about possibility of having stroke and sources of stroke knowledge.

For the purpose of this study, a good knowledge of stroke risk factors was given if the individual could identify 5-10 risk factors, fair knowledge 2-4 risk factors and poor knowledge at least 1 risk factors. Ethical approval for the study was obtained from the University of Ibadan / University College Hospital Joint Review Committee before the commencement of the study. The rationale behind the study was explained to the participants and informed written consents were obtained before enrolling them in the study. They were assured of the confidentiality of information given.

Descriptive statistics of mean and frequency percentages were used to summarize and present data on respondent's demographic variables and stroke related knowledge and perception. The chi square test was used to test the significance of associations among multivariate relationship of components of stroke related knowledge (knowledge of at least one or more established stroke risk factors and warning signs, knowledge of stroke preventions among others) demographic characteristics, planned response to an event of stroke and self-reported stroke risk factors. All tests of hypothesis were two tailed with a type 1error (á) set at 0.05.

Results

A total of 900 adults consisting of 529 males and 371 females aged between 18 and 80 years participated in this study. The respondents mean age was 43.6 ± 17. 63 years. Other demographic characteristics of the respondents are as shown in table 1.

With respect to assessment of the knowledge of organ involved in causes of stroke, 53.9% of the respondents identified heart as the main organ of injury during stroke. Liver and kidney were identified by 3% of the respondents; brain by 24.1% and 104 (11.6 %) respondents could not trace injured organ during stroke to any of the listed organs. The majority (83.3%) of the respondents indicated that stroke was (slightly, to some extent and totally) preventable. Three hundred and forty one respondents (37.9 %) indicated the possibility of having stroke more than once whereas 30.7% believed that an individual could only have stroke once. Two hundred and eighty three respondents (31.4 %) did not know if one

could have stroke more than once. Only 379 (44.1%) respondents were aware that stroke could be prevented if early treated. Over two third of the respondents opined that stroke survivors will be able to carry out activities of daily living such as dressing (73.0%) and making use of toilet (68.7%). However, more than half of the respondents believed such individuals would neither be able to discharge their duties at their place of work nor drive their car.

The majority of the respondents were aware of stroke risk factors (80.1%) and stroke warning signs (76.9%). The most common risk factors for stroke identified by respondent were hypertension (78.2%), stress (59.9%) and old age (58.3%) respectively. However, lack of exercise and obesity were less recognized as stroke risk factors as shown in table 2. The respondents' knowledge of stroke warning signs is as presented in table 3. Knowledge of stroke risk factors was found to be associated with age (P=0.000) and educational status (P=0.018) (Table 4). Knowledge of established warning signs of stroke was associated with educational status.

Table 1: Demographic characteristics of the respondents

Demographic characteristics	Number (%)
Sex	
Male	529 (58.8)
Female	371 (41.2)
Marital status	
Single (Never married)	261 (29.0)
Married	478 (53.1)
Divorced	34 (3.8)
Separated (Not divorced)	66 (7.3)
Widowed	61 (6.8)
Tribe	
Yoruba	807 (89.7)
Non-Yoruba	93 (10.3)
Highest Completed Educational level	
Never attended school	82 (9.1)
Primary school	94 (10.5)
Junior Secondary School	101 (11.2)
Senior Secondary School	281 (31.2)
Tertiary Institution	342 (38.0)
Religion	
Christianity	492 (54.7)
Islam	404 (44.9)
Others	4 (0.4)
Age group (years)	
Teenagers < 20	19 (2.1)
Young adults (20 – 39)	521 (46.7)
Middle aged adults (40 – 59)	233 (25.9)
Elderly /Aged (60 – 80)	227 (25.3)

(N=900)

Table 2: Respondents' knowledge of stroke risk factors (n = 900)

Stroke risk factors	*Response n (%)
Old age	525 (58.3)
Hypertension	704 (78.2)
'Diabetes	313 (34.8)
Cigarette smoking	406 (45.3)
Heart disease	506 (56.2)
Alcohol	503 (55.9)
Atherosclerosis	189 (21.0)
High cholesterol	217 (24.1)
Obesity	107 (11.9)
Genetics (Heredity)	213 (23.7)
Stress	539 (59.9)
Lack of exercise	167 (18.9)
Poor hygiene	104 (11.6)
Headache or migraine	151 (16.8)
Cancer	56 (6.2)
Use of oral contraceptives	38 (4.2)
Bad diet	80 (8.9)
Tremor	14 (1.6)
Others	6 (0.7)
I do not know	67 (7.4)

**Responses added up more than 900 as there were multiple responses.*

Table 3: Respondents' knowledge of stroke warning signs (n = 900)

Stroke warning signs	*Responses n (%)
Dizziness	111 (12.3)
Blurred and double vision, loss of vision in	215 (23.9)
Headache	262 (29.1)
Sudden difficulty in speaking, understand or reading	294 (32.7)
Chest pain/chest tightness	124 (13.8)
Nausea/Vomiting	27 (3.0)
Tiredness	267 (29.7)
Fever / Sweating	80 (8.9)
Shortness of breathe	246 (27.3)
Numbness, tingling sensation, dead sensation of	
Any part of body	389 (43.2)
One side of body	502 (55.8)
Weakness of	
Any part of body	402 (44.7)
One side of the body	454 (50.4)
Paralysis of	
Any part of body	323 (35.9)
One side of the body	436 (48.4)
Fainting blackout collapse	93 (10.3)
I do not know	111 (12.3)

**Responses added up more than 900 as there were multiple responses.*

Table 4: Association between respondents' knowledge of established stroke warnings signs, risk factors and their educational levels

Educational Levels	Stroke Risk Factors							Stroke Warning Signs						
	Good	Fair	Poor	Total	X^2	P	Comment	Good	Fair	Poor	Total	X^2	P	Comment
NFE	31	28	22	81	18.523	0.018	S	29	29	23	81	28.930	0.000	S
	11.7%	6.8%	11.2%	9.3%				8.4%	8.8%	11.9%	9.3%			
PSC	25	49	20	94				33	27	34	94			
	9.5%	12.0%	10.2%	10.8%				9.5%	8.2%	17.6%	10.8%			
JSSC	41	37	20	98				48	30	20	98			
	15.5%	9.0%	10.2%	11.3%				13.8%	9.1%	10.4%	11.3%			
SSSC	63	131	67	261				87	112	62	261			
	23.9%	32.0%	34.0%	30.7%				25.1%	33.8%	32.1%	30.0%			
TE	104	165	68	337				150	133	54	337			
	39.4%	40.2%	34.5%	38.7%				43.2%	40.2%	28.0%	38.7%			
Total	410	410	197	871				347	331	193	871			
	100.0%	100.0%	100.0%	100.0%				100.0%	100.0%	100.0%	100.0%			

Key: *NFE* = *No Formal Education*; *PSC* = *Primary School Certificate*; *JSSC* = *Junior Secondary School Certificate*; *SSSCE* = *Senior Secondary School Certificate*; *TE* = *Tertiary Education*

Good = *Knowledge of 5 – 10 Stroke Risk Factors*; *Fair* = *Knowledge of 2 – 4 Stroke Risk Factors*; *Poor* = *Knowledge of at least one Stroke Risk Factors*; *S* = *Significant at a level ≤ 0.05*

Table 5: Respondents' planned response to an event of stroke (n = 900)

Planned responses	n (%)
Call general practitioner / family doctor	314 (34.9)
Ask family members or relatives to help	122 (13.6)
Go to chemist for advice or medication	110 (12.2)
Self medication	45 (5.0)
Ask friends or neighbours for help	99(11.0)
Visit alternative healthcare providers (Herbal medicine, traditional healers)	200(22.2)
Visit community health centre (General Hospital)	202 (22.4)
Seek spiritual healing (prayer)	331 (34.6)
Inviting a physiotherapist	274 (30.4)
Others	75 (8.3)

**Responses added up more than 900 as there were multiple responses.*

Key: *n = Frequency*; *% = Percentage*

Table 5 presents respondents' planned responses to an event of stroke. The most common sources of information on stroke reported by respondents were doctors (28.0 %), hospital personnel (29.7 %) and electronic media (18.6 %). However, less than one tenth of the respondents listed family members (5.0 %) and Newspapers (8.0 %) as their sources of stroke knowledge.

The majority (95.5%) of the respondents reported no or low lifetime chance of developing stroke. Only 22 (2.5%) respondents reported a high lifetime chance of developing stroke while 21 (2.5%) respondents believed they had moderate chance of developing stroke. Similarly when asked if the respondents were concerned about the possibility of having stroke in the last twelve months, more than three quarter (87.5%) of them had never been bothered about stroke.

Discussion

Hypertension was the most common stroke risk factors identified by our respondents. Our finding was in agreement with previous studies [18, 19] on assessment of public knowledge of stroke in an Australian urban population. This further confirmed earlier submission by Osuntokun [6] that hypertension in the Nigerians predispose to a high frequency of cerebrovascular disease other than mainly cerebral athterosclerosis that was less identified by our respondents. There is therefore a need for public education on stroke with a view to modifying hypertension and other stroke risk factors among the study population. Denial and unwillingness to associate with stroke which was perceived as disease of the unfortunate could be the reason why the majority of the respondents reported that none of their close relatives have had stroke. A large number of people will not want stroke to be traced to their family so as not to hinder their children particularly their daughters from getting married.

More than half of the respondents wrongly indicated heart as an injured organ during stroke. Similarly, only one third of the respondents were aware of stroke reoccurrence. These findings were in

agreement with poor public baseline knowledge about stroke in western countries earlier reported in previous studies [14-16]. Association of stroke with heart disease by the respondents in this study might have been informed by the prevalent local belief that the heart is a major organ of thinking and therefore "too much thinking" and stress over challenging issues of life could cause stroke. Awareness of stroke risk factors and warning signs in this study was better than that of the previous findings by Samsa *et al* [20] and Gupta and Thomas [17]. Better recognition of stroke risk factors and warning signs particularly hypertension could be as a result of information acquired through healthcare professional and through educational programme on electronic media. However, more than half of the respondents mistook numbness or weakness of any part of the body as stroke warning signs and symptoms. This may imply that identifying stroke symptoms may be confusing as earlier reported by Yoon and Byles [16].

Respondents' action of calling a general practitioner was meant to rush stroke patients to general hospital where they thought a medical doctor will be available to attend to stroke patients. This up held the opinion of 46% of 1000 persons in South Korea who through an open-ended interview responded that visiting hospital is the most important method of treatment for stroke [21]. The belief among the respondents that orthodox medicine should be complemented with spiritual healing (prayers) or alternative healthcare medicine (herbal medicine, traditional healers) might have been a reflection of religious and cultural make up of the study population. The choice of calling a physiotherapist in response to an event of stroke could be linked to increased awareness of the prominent role of physiotherapy in stroke management particularly domiciliary care of stroke patents.

The negative response of the majority (> 80%) of the respondents to the possibility of having stroke in the last 12 months and their lifetime chance of having stroke apparently portrayed denial of being at risk for stroke. This upheld the findings of Yoon *et al* [18] among Australian urban population. Respondents' denial could be largely traced to the prevailing and prominent opinion that stroke is a dreadful and unfortunate illness that attacks its victims forcefully until they fall down and are immobile.

The outcome of this study revealed that high proportion of the respondents depended more on health personnel than interpersonal relationships for information on stroke. This is at variance with the findings of Yoon *et* al [18] in which majority of the participants relied on general life experiences of friends and family members as their primary source of stroke knowledge. Our findings may imply that healthcare givers stand a better chance of reaching the study population with stroke information than other sources. Moreover that higher proportion of the respondents got information on stroke from electronic media Television or Radio (18.6%) than Newspapers (8%) may imply that this population may be better fed with information on stroke through electronic media.

Conclusion

This study showed that there was a good knowledge of stroke warning signs and stroke risk factors whereas baseline knowledge about stroke was poor. Stroke survivors were also perceived as having a good chance of returning to activities of daily living but with diminished quality of social life. Also, there was high level of apathy and denial of being at risk for stroke. We therefore recommend development of educational strategies through which knowledge of stroke can be improved in our society. This will encourage early hospital presentation of stroke prone individuals. Health care givers should be acquainted with areas of knowledge deficit and wrong perception about stroke in their respective communities as this will enable them to educate patients with stroke or stroke prone individuals and their carers better on issues relating to prevention, management and rehabilitation of stroke.

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