

Comparative Study of Restricted Activities Days in Hypertension Induced Stroke Versus Non Hypertension Induced Stroke: the Role of Lifestyle.

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Abstract

Hypertension induced stroke has been reported as a major cause of death and neurological disability in adults. The aim of the study was to determine the relationship between restricted activities days in hypertension induced stroke patient cases versus non hypertension induced stroke patients cases of hypertensive elderly people admitted in selected healthcare facilities in Aba south L.G.A, Abia state. The study design was across sectional analytical study design on hypertension induced stroke cases where the data was collected from patients on the information of risk factors. The sampling technique adopted is multistage sampling technique. A total of 120 participants comprising of 70 males and 50 females were recruited for the study and the collected data was analyzed using descriptive statistical analysis and the results were presented in frequency tables. The results of the study showed that the most strongly risk factors of hypertension induced stroke were smoke with 67(55.8%), alcoholic drink with 98(81.7%), salt intake with 82(68.3%) and lack of exercise has 57(47.5%). There were significant relationships between the hypertension induced stroke and risk factors within the study (current smokers have 1.012 times higher odds (95%CI=0.000 to 7.581E+09) to develop stroke due to hypertension, current drinking have 1.03 times higher odds (95%CI=0.000 to 2.994E+22) to develop stroke due to hypertension). In conclusion, information got from the study was collated and proved significant relationship between risk factors such as smoke, alcoholic drink, salt intake and lack of exercise and occurrence of restricted activity day in hypertension induced stroke. Therefore, there is a need to create awareness on the risk factors that can lead to the occurrence of hypertension induced stroke.

Keywords: Hypertension, hypertension induced stroke, Life style, Aba South L.G.A., Abia State.

INTRODUCTION

Hypertension also known as high blood pressure is one of the most common worldwide diseases afflicting human and is a major risk factor for stroke, myocardial infarction vascular disease and chronic kidney disease. It is a long term medical condition in which the blood pressure in the arteries is persistently elevated (Naish, 2014). Hypertension affects approximately one billion

people globally and 340 million of people suffering from it are from economically developing countries and the number is expected to increase to around 1.56 billion people by the year 2025 with about 7.1 million individuals dying each year from hypertension (Chobanian *et al.*, 2003). Hypertension is a main cause of death in adult populations and cardiovascular diseases such as ischemic heart disease and stroke (Adika *et al.*, 2011). The relationship between blood pressure (BP) and risk of cardiovascular events is continuous, consistent and independent of other risk factors. The higher the BP, the greater the chances of myocardial infarction, heart failure, stroke and kidney diseases. The presence of each additional risk factor, such as dyslipidaemia, diabetes mellitus or smoking status, compounds the risk. Hypertension is the major risk factor for cardiovascular morbidity and mortality in the elderly population (Selvarajah *et al.*, 2013).

The incidence of hypertension increases with advancing age to the point where more than half of people 60–69 years of age and approximately three-quarter of those 70 years of age and older are affected (Burt *et al.*, 1995). The age-related rise in Systolic Blood Pressure is primarily responsible for an increase in both incidence and prevalence of hypertension with increasing age (Franklin *et al.*, 1997). Geographic location plays an important role in incidence and prevalence of hypertension. Several studies attest to rural versus urban differences in blood pressure levels throughout sub-Saharan Africa (Onwuchekwa *et al.*, 2012). The reported incidence of hypertension in rural studies in the 1970s and 1980s was generally low (Seedat, 2000). In a recent study of Port Harcourt, the urban capital city of Rivers State, Nigeria, incidence of hypertension was 40.8%. Such changes are probably the result of acculturations which can be expected to proceed at different rates in different communities. It is thought that urban societies have higher rates of hypertension when compared with the rural areas (Onwuchekwa *et al.*, 2012). Reasons offered for rural - urban differences in hypertension include change in diet with higher salt and calorie intake and reduced potassium intake (Opie and Seedat, 2005). Other factors include sedentary life style and more psychosocial stress which are worse in urban dwellers. Even though the cause of most hypertension either among the elderly, children, during pregnancy is not known, some people have risk factors that give them greater chance of getting hypertension (Longe and Blanch field, 2002). Many of these risk factors can be changed to lower the chance of developing hypertension or as part of a treatment program to lower blood pressure. Risk factors for hypertension include age, marital status, geographic location (urban/rural), obesity, inactive lifestyle and heavy alcohol consumption (Longe and Blanch field, 2002; Chobanian *et al.*, 2003). However, the present study shall focus on risk factors influencing or predisposes one to getting hypertension induced stroke such as life styles. Since hypertension induced stroke poses a risk to the life and wellbeing of the elderly, it requires urgent attention.

Hypertension induced stroke refers to consistent high blood pressure that is greater than 140/90 mmHg, lasting for more than 24 hours leading to damaging and narrowing of the blood vessels in the brain and raised risk of the blood vessels becoming blocked or busted. It is therefore necessary to examine the risk factors of hypertension induced stroke in the elderly adults. The risk factors according to Abanobi, 2004 mean an antecedent event or condition whose presence or occurrence is positively associated with an increased probability that disease will develop later or that the prognosis of an existing disease condition will worsen. Blood pressure is the most

consistent and powerful predictor of stroke and is also the most important modifiable cause of Stroke. The poor are increasingly affected by stroke, because of both the changing population exposures to risk factors and most tragically, not being able to afford the high cost for stroke care. Majority of stroke survivors continue to live with disabilities and the costs of ongoing rehabilitation and long term care are largely undertaken by family members, which impoverish their families (Bansal *et al.*, 1973). In spite recent advances in acute stroke treatment, effective prevention of stroke by means of improved control of risk factors have the greatest potential to reduce the burden of stroke. And also to reduce the economic burden of stroke, a better understanding of risk factors for prevention is mandatory. Numerous risk factors such as hypertension, cigarette smoking, diabetes mellitus, hyper-lipidemia and cardiac disease have been recognized as well-documented modifiable risk factors for ischemic stroke (Straus *et al.*, 2002). Therefore, this study is a comparative study of restricted activities days in hypertension induced stroke versus non hypertension induced stroke: the role of lifestyle.

METHODOLOGY

A cross sectional study design was used and the study area was Aba South Local Government Area in Abia State located in the south-east part of Nigeria. It is an industrial hub of the state, situated in the region known as the South-east geo-political zone 5°06'N and 7°21'E with a land area of 49km² (19sqmi) and population of 423,852 according to the 2006 census of the National Population Commission. The target populations were all hypertensive elderly patients with stroke who had reported at the selected healthcare facilities and were resident in the study area for at least one (1) year prior to the study and were attending Healthcare services in Aba South, L.G.A, Abia State, Nigeria. Multistage sampling technique was employed in selecting the sample size. The study area was first classified into clusters and Aba South divided into four clusters. Then simple random sampling was used to select the healthcare facilities from the cluster. In each cluster, two (2) hospitals were selected (one from the rural and another from the urban area) making a total of 8 healthcare facilities and in each healthcare facilities, 15 patients were selected making a total of 120 patients. They were assessed and given questionnaires for their responses in the selected healthcare facilities systematically based on their medical record roll calls. The instruments for data collection were the sphygmomanometer used in measuring blood pressure (BP) of the participant and a self-developed questionnaire divided into sections relevant to the objectives of the study. The questionnaire was pre-tested and pilot-tested. It was distributed to a small group of respondents (48 patients) similar to those in the target population at Aba South, Abia State. The results of the pilot study were used to make appropriate corrections /adjustments for content and clarity. The reliability of the instrument was also tested using Chrombach Alpha coefficient of Reliability test and a coefficient of 0.704 approximately was gotten and regarded reliable. Informed consent of the participants was sought and the purpose of the study was explained to the participants. Information provided by the participants was treated with confidentiality and participants' anonymity was ensured. The data obtained was analyzed using Statistical Package for Social Science (SPSS) version 20.0. Descriptive statistics was used to

analyze the data and the results were presented in tables and charts using Microsoft Excel 2010. Odd ratio was used to find out the level of association between each risk factors and development of restricted activity days in hypertension induced stroke versus non hypertension induced stroke at 95% confidence interval (C.I).

The odd ratio is given by $OR = \frac{a/b}{c/d} = \frac{axd}{bxc}$

ETHICAL CONSIDERATIONS

The ethical approval was sorted from the Ethical Committee of the clinics from which data were collected. Also approval was received from the Institutional Research Review Committee of the Department of Public Health, Federal University of Technology, Owerri. The study objectives and Methodologies were explained to the participants who agreed to participate and gave their verbal consent. Written consent was also gotten from the Medical director’s/Heads of the various clinics used in the research.

RESULTS

The socio-demographic information of the participants was depicted in the table1; majority 70 (58.3%) of the respondents were male while 50 (41.7%) were female. Out of 120 people assessed; 92 (76.7%) were married followed by 19(15.8%) got divorced/separated while only 9(7.5%) were single. From the result, majority 41 (34.2%) has their main occupation as civil servant followed by traders with 36 (30%) while the least 13(10.8%) were artisan (See table 1).

Table 1: Demographic Information of Respondents

Variables	Frequency	Percentage
Sex of respondents		
Male	70	58.3
Female	50	41.7
Total	120	100.0
Marital status of respondents		
Single	9	7.5
Married	92	76.7
Divorced/separated	19	15.8

Total	120	100.5
Occupation of respondents		
Civil servant	41	34.2
Trader	36	30.0
Artisan	13	10.8
Retire	30	25.0
Total	120	100.0

The table 2 presented the lifestyle of the respondents; 67(55.8%) reported they smoked before diagnosed with hypertension while 53(44.2%) do not smoke. Only 26(21.7%) continue smoking after diagnosed. Only 18(15%) takes 1-2 sticks of cigarette per day and 28(23.3%) takes 2-3 sticks of cigarette per day. Also, 22(18.3%) takes more than 5 sticks of cigarette per day.

Concerning alcoholic drink; 98(81.7%) drank alcohol before diagnosed with hypertension while 22(18.3%) did not drink alcohol hypertension. Only 43(35.8%) continued drinking alcohol after diagnosed with hypertension.

In regards to salt intake; 82(68.3%)takes excessive salt before diagnosed with hypertension while 38(31.7%) do not take excessive salt. Out of 120 people assessed 24 (20%)takes excessive salt after diagnosed with hypertension while 96(80%) did not take excessive saltafter diagnosed with hypertension.

Furthermore, 63(52.5%)engaged in early morning exercise before diagnosed with hypertension while 57(47.5%) did not and 45(37.5%) continued the regular exercise after diagnosed with hypertension. Again, 111(92.5%) takes transport to work while only 9(7.5%) did not.

Table 2: Lifestyle of the Respondents

Statements	Yes	No	Total
Have been smoking before diagnosed with hypertension	67(55.8%)	53(44.2%)	120
Have been smoking after diagnosed with hypertension	26(21.7%)	7(8.3%)	120
Takes 1-2 sticks of cigarette per day	18(15%)	102(85%)	120

Takes 3-5 sticks of cigarette per day	28(23.3%)	92(76.7%)	120
Takes more than 5 sticks of cigarette per day	22(18.3%)	98(81.7%)	120
Have been drinking alcohol before diagnosed with hypertension	98(81.7%)	22(18.3%)	120
Have been drinking alcohol after diagnosed with hypertension	43(35.8%)	77(64.2%)	120
Have been taking excessive salt before diagnosed with hypertension	82(68.3%)	38(31.7%)	120
Have been taking excessive salt after diagnosed with hypertension	24(20%)	96(80%)	120
Have been observing early morning exercise before diagnosed with hypertension	63(52.5%)	57(47.5%)	120
Have been observing early morning exercise after diagnosed with hypertension	45(37.5%)	75(62.5%)	120
Take transport to work	111(92.5%)	9(7.5%)	120

Table 3 showed the relationship between hypertension induced stroke and smoking status of respondents, as the 95%CI do not overlap, it can be stated that never smoked, ex-smokers have 1.000 times lower odds ratio (95%CI=0.000 to 1.172E+20), and current smokers have 1.012times higher odds (95%CI=0.000to 7.581E+09) to develop stroke due to hypertension.

Table 3: Relationship between Hypertension induced Stroke and Smoking status of respondents

Smoking status of	Observed	Analysis					
		Diagnosed of hypertension			Odd Ratio	95% Confidence interval	
		Yes	No	Total		Lower bound	Upper Bound
Current smoker	26	0	26				

respondent	Ex-smoker	67	0	67	1.012	0.000	7.581E+09
	Never smoke	14	13	27	1.000	0.000	1.172E+20
	Total	107	13	120			

Table 4 showed the relationship between hypertension induced stroke and alcohol consumption of respondents, as the 95%CI do not overlap, it can be stated that never drink, not drinking again have 1.00 times lower odds ratio (95%CI=0.000 to 1.39E+078), and current drinking have 1.03 times higher odds (95%CI=0.000to 2.994E+22) to develop stroke due to hypertension.

Table 4: Relationship between Hypertension induced Stroke and Alcohol consumption of respondents.

Observed		Analysis					
		Diagnosed of hypertension			Odd Ratio	95% Confidence interval	
		Yes	No	Total			Lower bound
Alcohol consumption	Current drinking	40	0	40			
	Not drinking again	67	10	77	1.03	0.000	2.994E+22
	Never drink	0	3	3	1.00	0.000	1.39E+078
	Total	107	13	120			

Table 5 showed the relationship between hypertension induced stroke and salt consumption, as the 95%CI do not overlap, it can be stated that don't consumed excessive salt, consumed excessive salt before diagnosed hypertension have 1.011times lower odds ratio (95%CI=0.000 to 1.029E+13), and consumed excessive salt after have 7334.9 times higher odds (95%CI=0.000to 1.679E+10) to develop stroke due to hypertension.

Table 5: Relationship between Hypertension induced Stroke and Salt consumption

Observed		Analysis					
		Diagnosed of hypertension			Odd Ratio	95% Confidence interval	
		Yes	No	Total			Lower bound
Salt consumption	Consumed excessive salt after	82	0	82			
	Consumer excessive salt before	24	0	24	7334.9	0.000	1.679E+10
	Don't consumed excessive salt	1	13	14	1.011	0.000	1.029E+13
	Total	107	13	120			

Table 6 showed the relationship between hypertension induced stroke and physical exercise, as the 95%CI do not overlap, it can be stated that never, engaged in early morning exercise before hypertension diagnosis have 733.9 times higher odds ratio (95%CI=0.000 to 3.22E+099), and engaged in early morning exercise after hypertension diagnosis have 1.000times lower odds (95%CI=0.000to 1.36E+14) to develop stroke due to hypertension.

Table 6: Relationship between Hypertension induced Stroke and Physical exercise

Observed		Analysis					
		Diagnosed of hypertension			Odd Ratio	95% Confidence interval	
		Yes	No	Total			Lower bound
Physical exercise	Engaged in early morning exercise after	63	0	63			
	Engaged in early morning exercise before	44	1	45	1.000	0.000	1.36E+14

Never	0	12	12	733.9	0.000	3.22E+099
Total	107	13	120			

Discussion

The findings from a cross sectional analytical study design on the relationship between lifestyle and restricted activity day in hypertension induced stroke versus non hypertension cases among hypertensive elderly people admitted in selected healthcare facilities in Aba south L.G.A, Abia state, showed that some risk factors such as smoking, excessive salt, exercise and excess alcohol are highly responsible for the restricted activity days in hypertension induced stroke. Although stroke cases are increasing globally, incidence of the disease in Nigeria is more pathetic as experts say it is largely caused by preventable circumstances like hypertension, diabetes, ignorance, poor diet, lifestyle, and intake of alcohol and lack of proper health care facilities (O’Donnel *et al.*, 2010).

The results of this study proved that males are more affected than females which could be that men are more exposed to risk factors like excess intake of alcohol and unusual life style.

Lifestyle changes include weight loss, decrease dietary salt intake, regular exercise and a healthy diet (Poulter *et al.*, 2015). Prevention of hypertension induced stroke depends on population-wide control of known hypertension risk factors. Population-based hypertension prevention strategies would require widely implemented public health measures such as significant alterations to the food supply and effective strategies to significantly augment energy expenditure above current levels.

The findings of the study concerning lifestyle indicates that majority of the patients takes excessive salt before they were diagnosed with hypertension induced stroke and after the diagnosis, very few of them were still taking excessive salt. Therefore, it can be deduced that there is a relationship between restricted activity days in hypertension induced stroke and salt consumption using odd ratio analysis. Smoking can raise BP acutely as half of patients interviewed agreed they smoked before diagnosed with hypertension. However the effect of chronic smoking on BP is less clear. Nevertheless smoking cessation is important in reducing overall cardiovascular risk.

According to Taylor *et al.*, (2011), high salt intake is associated with significantly increased risk of stroke and total cardiovascular disease (Taylor *et al.*, 2011). Evidence from published systematic review and Meta analyses showed that restricting sodium intake in people with elevated blood pressure in the short term leads to reductions in blood pressure of up to 10.5 mmHg systolic and 2 mmHg diastolic. An intake of <100 mmol of sodium or 6g of sodium chloride a day is recommended (equivalent to <1. teaspoonful’s of salt or 3 teaspoonful’s of monosodium glutamate) (Graudal, 1998).

Also, the result was high among patients that drank alcohol before diagnosed with hypertension and alcohol consumption elevates BP acutely. The alcohol consumption was significantly associated with increased risk of stroke. For those who consume alcohol, intake should be

restricted to no more than 21 units for men and 14 units for women per week (1 unit is equivalent to one half-pint of beer or 100 ml of wine or 20 ml of proof whisky). Meta analyses have shown that, interventions to reduce alcohol consumption caused a small but significant reduction (3.3/2 mmHg) in both systolic and diastolic blood respectively (Xin *et al.*, 2001). Hypertensives who are heavy drinkers are also more likely to have hypertension resistant to drug treatment and may result to stroke. The only way to reduce these patients' BP effectively is by reducing or stopping their alcohol intake

Aerobic exercise is more effective than resistance training (e.g., weight lifting). Exercise like walking-jogging can result in a reduction of 13/18 mmHg in SBP/DBP (Petrella, 1998). More recent evidence showed that resistant exercise is effective in lowering blood pressure among normotensives and pre-hypertensives but not among hypertensives (Owen *et al.*, 2010). The findings of this study showed that 52.5% of the patients engaged in early morning exercise before diagnosed with hypertension and 37.5% continued the regular exercise after diagnosed with hypertension which proved the significant difference between the restricted activity days in hypertension induced stroke cases.

Conclusions

The base line information gotten from the study was collated and analyzed and it showed that there are significant relationship between risk factors such as, smoking, intake of alcohol, intake of excessive salt, lack of exercise and occurrence of restricted activity days in hypertension induced stroke. Therefore, the epidemiology of restricted activity days in hypertension induced stroke cases in Aba South; Abia State was high in male when compared to female counterpart in regard to stroke admissions.

Recommendations

Based on the findings of the study, the following recommendations were necessary such as;

1. They should encourage free screening of blood pressure on people of above fifty years of age
2. They should be awareness on the risk factors that can lead to the occurrence of hypertension induced stroke.
3. Government should empower health workers at local level on the equipment for screening of people that are at risk of developing stroke
4. Heavy drinkers and smokers should be encouraged to reduce it in order to avoid the cases of hypertension induced stroke.
5. Clinicians should encourage weight management through an appropriate balance of calorie intake, physical activity, and behavioral counselling.
6. They should be a proper documentation of data on hypertension induced stroke cases so that the policy makers can use of it for health decision purposes

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