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Stroke Survivors' Preference of Herbal Center to Hospital

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ABSTRACT

Proceeding to hospital immediately stroke occurs is important for early intervention that would minimize the consequences of stroke. But most stroke patients in developing countries prefer herbal centers than hospital. Reasons for this attitude have not been established. Two well-trained assistants were used to interview 117 stroke survivors who attended Bebe Herbal Center (BHC), in Nigeria for at least two visits. The survivors self-reported their experiences in hospitals visited and at BHC. Data obtained were analyzed using Independent t-test, Pearson's chi-squared test, on SPSS package version 23. Significant value was set at $p < 0.05$. Results showed the survivors comprised 48.7% males and 51.3% females, with mean age 63.98 ± 10.41 years (range: 40-84 years). Following onset of stroke, 61.5% went firstly to hospital, 21.4% to traditional healing places, and 17.1% to BHC. Eventually all survivors went to BHC and 99.1% said they were satisfied with treatment received at BHC. Seventy-nine (68.1%) said they experienced substantial recovery under one month, 25.9% between 1-6 months. All the survivors who went firstly to hospitals said they received inadequate care from them. None of the hospitals they visited had CT or MRI equipment. Pearson's chi-squared test showed that the impact of stroke had a significant difference between males and females regarding checking of blood pressure after stroke ($\chi^2 = 7.62$; $df = 3$; $P < 0.05$). The inadequate care received from hospitals and the early satisfactory recovery in BHC influence stroke patients in Nigeria to reject going to hospital.

Keywords: hospital, herbal center, stroke

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Introduction

Stroke is an enormous burden to every country, being the leading cause of death and disability.¹ About 16 million first-ever stroke cases occur globally every year, resulting in 5.7 million deaths annually.¹ It ranks as the second cause of death in the world, after ischemic heart disease.² Low-and middle-income countries are worse off, registering about 85% of all stroke deaths, and accounting for 87% of total losses in terms of disability-adjusted years, worldwide.³ The burden of stroke lies in high mortality and morbidity.^{4, 5, 6} Without due intervention, the number of deaths worldwide from stroke may rise as high as 7.8 million in the year 2030.⁷ According to WHO estimate, by the year 2030, 80% of all stroke cases will occur in low- and middle-income countries.⁷ This means that 6.24 million of the estimated deaths from stroke in 2030 will be in these regions. Africa, in particular, records some of the highest rates of stroke worldwide, with an annual stroke incidence rate up to 316 per 100,000, prevalence rate up to 1460 per 100,000 and three-year fatality rate up to 84%.^{8, 9, 10, 11} In Africa, stroke accounts for 4-9% of deaths and between 6.5 - 41% of neurological admissions, according to hospital-based studies.¹² It has been reported that 23% Africans run the risk of stroke in their lifetime;^{13, 14} What an alarming situation? Coming down to sub-Saharan Africa, two-thirds of stroke cases worldwide occur here,^{5, 15} where poverty, malnutrition and communicable diseases also co-exist, exerting their greatest toll.⁴ A holistic approach should be adopted in confronting stroke issues in Africa, particularly sub-Saharan. Nigeria, with a population of over 200 million people is the most populous country in Africa^{16, 17} and has a community prevalence of stroke of about 26-400/100,000, and a crude annual mortality rate of about 700/100,000.¹⁸⁻²² A case fatality rate as high as 40 percent has been documented in Nigeria.²³ It is, therefore, clear that Nigeria requires due attention in sub-Saharan Africa in attempt to stem the tide of stroke in the world.

One of the factors affecting stroke management in Africa is delay or non-presentation at hospital. Time of presentation at hospital is important as delays often result in poor outcome.^{5, 24, 25, 26} Acute stroke has become one of the leading factors of morbidity and mortality, worldwide^{27, 28} Late presentation of acute stroke patients to hospital might be contributive to the increasing incidence of mortality from stroke in the country.²⁹ This delay, for some, is predicated on wrongful belief. In Nigeria, for example, as in most countries of sub-Saharan Africa, most stroke cases would first present to traditional healers or spiritualists before going to hospital while others do not seek medical attention at all.^{30, 31} In Ghana, as in most countries of West Africa, there is a proliferation of herbal centers, which offer non-orthodox medical services for a wide range of diseases, including stroke.³² Thus there is a disdainful trend in sub-Saharan Africa to hospital management of stroke. Early visit to hospital should be within 3 hours for the use of CT and MRI to differentiate ischemic stroke and apply recombinant tissue plasminogen activator (rt-PA).³³ The reasons for delay in hospital presentation in acute stroke cases in Nigeria have not been established. And the best setting is the herbal center as most stroke survivors in Nigeria and sub-Saharan Africa patronize the herbal centers instead of hospitals.^{34, 35} This work investigated why stroke patients in Nigeria prefer herbal centers to hospitals.

Materials and Methods

Setting: This work took place in BHC, an outpatient herbal center located in Umunomo Ihitteafoukwu, a rural community in Ahiazu Mbaize local government area of Imo state, Nigeria. This local government is surrounded by other heavily populated local governments, including Aboh Mbaize, Ezinihitte Mbaize, Obowo, Ihitte/Uboma, Ehime Mbano, Isiala Mbano, and Ikeduru. It is within easy reach from these local governments and from Owerri, the capital of Imo state. There are numerous private and public hospitals, including primary, secondary and tertiary health facilities. Ahiazu

Mbasie has boundary with Aboh Mbaise where there is an international airport. This makes access easy by road and air. The BHC attracts patronage from all parts of Nigeria and beyond. It manages stroke cases, liver, kidney problems. It organizes clinics three times a week, Mondays, Wednesdays and Fridays, and each patient is expected to come for check-up every two weeks. Herbs are used to manage cases.

Investigation: Two well-trained assistants interviewed stroke survivors who had attended BHC for at least two times. The assistants visited BHC on Mondays, Wednesdays and Fridays for 6 months, in order to interview enough survivors. The study was a cross-sectional one and only those present were interviewed. It lasted from June to December 2018. One hundred and seventeen stroke survivors attending BHC were interviewed on their preference of BHC to hospital. The survivors self-reported their experiences in hospitals visited and also in BHC, indicating their satisfaction or otherwise. The structured questionnaire used was validated and contained open-ended questions which the patients responded to without interference or bias. Open-ended questions were:

1. We would like to know you sir?
2. What were you doing at the time stroke occurred?
3. What did you do when you noticed symptoms?
4. What do you think about going to hospital?
5. What do you think about going to BHC?
6. Compare your treatment in hospital with the one in BHC.
7. How often did you check blood pressure, before and after stroke?

From their narrative, the assistants deduced necessary information regarding sex, age, activity when stroke occurred, places visited after stroke, reasons for leaving hospital, recovery in BHC, impression of hospital and BHC, attitude to checking blood pressure before and after stroke. Ethical approval was obtained from the Ethical Committee of the Center for Scientific Investigation and Training, Owerri,

Nigeria. Participants gave oral and written informed consent before data collection.

Data analysis plan

Data obtained were arranged into variables and presented as frequencies and percentages for categorical variables. Independent student t-test was used to compare means of continuous variables; Pearson's chi-squared test for comparing categorical variables between males and females. Data were analyzed using SPSS version 23 package, with significance set at $P < 0.05$.

Results

There were more women (51.3%) than men (48.7%), mean age 63.98 ± 10.14 years (range: 40-84 years). Most survivors (59.8%) were of middle age (55-74 years). Independent t-test showed no significant difference between the ages of men and women. Table shows that at the time stroke happened, about three-quarters of survivors were not engaged in any physical activity (were sleeping or resting), while one-quarter was physically active (driving or walking). When stroke was noticed, majority (61.5%) went firstly to hospital, less than one-quarter (21.4%) went to unorthodox places, including prayer houses, before going to BHC, while less than one-quarter (17.1%) went straight to BHC. Almost all who went firstly to hospital (93.3%) arrived within 6 hours of onset, while few (6.9%) arrived after 6 hours. Computed tomography (CT) scan or magnetic resonance imaging (MRI) test was not used for any survivor. On their assessment of recovery in BHC, almost all but one (99.1%) expressed satisfactory recovery, with regard to speech, ambulation and independence. And this recovery for 67.5% happened under one month while 32.5% had theirs between one and six months of attendance at BHC. All the seventy-two survivors who went firstly to hospital said they were not satisfied with the attention received. Those who went to hospital (37.4%) said it was not a suitable place for stroke management. The sex of the survivors and what they were doing when stroke occurred had no

significant effect on the choice to go to hospital ($P>0.05$).

Before stroke incident, those who didn't check blood pressure every week (occasionally) were most common, followed by those who checked once a week, and least were those who checked twice in a week. An appreciable number (18.1%) did not check blood pressure at all. After stroke, those who checked twice a week were commonest followed by those who checked once a week and lastly those who checked occasionally. A sizeable number (12.8%) still did not check blood pressure before or after.

Pearson's chi-square test showed no significant difference between men and women in checking blood pressure before stroke, but after stroke there was significant difference ($\chi^2=7.62$; $df=3$; $P<0.05$); more women checked once a week than men. Binomial logistic regression showed age was the only variable that had significant association with sex ($OR=3.71$; $df=1$; $CI=.999-1.1085$; $P<0.054$); the older survivors were more likely to seek treatment in a herbal center than hospital.

Table. Experience of stroke survivors with hospital and Bebe Center, Pearson's Chi-Square Test of Association with Sex

Variables	Male(n,%)	Female(n,%)	p
Activity at stroke onset			0.713
Sleeping	18 (15.4)	18 (15.4)	
Resting	24 (20.5)	22 (17.1)	
Physical activity	15 (12.8)	20 (17.1)	
1st place visited after onset			0.247
Hospital	35 (29.9)	37 (31.6)	
Bebe center	07 (6.0)	13 (11.1)	
Others	15 (12.8)	10 (8.5)	
Recovery time			0.454
<1 month	40 (34.2)	39 (33.3)	
1-3 months	12 (10.3)	12 (10.3)	
4-6 months	01 (0.9)	05 (4.3)	
>6 months	04 (3.4)	03 (2.6)	
No recovery	0	01 (0.9)	
After 6 months			
Impression Bebe center			0.38
Very satisfied	19 (16.2)	13 (11.1)	
Satisfied	34 (29.1)	39 (33.3)	
Fairly satisfied	04 (03.4)	07 (6.0)	
Not satisfied	0	01 (0.9)	
Impression hospital			0.49
Not satisfied	51 (43.6)	21 (17.9)	
Not suitable	15 (12.8)	30 (25.7)	
BP check before stroke			0.323
Once/week	11 (9.4)	11 (9.4)	
> once/week	06 (5.1)	11 (9.4)	
Occasional	20 (17.1)	37 (31.5)	
None	6 (5.4)	15 (12.7)	
BP check after stroke			.054*
Once/week	18 (15.4)	12 (10.3)	
>once/week	20 (17.1)	36 (30.8)	
Occasional	09 (7.7)	07 (6.0)	
None	10 (8.5)	05 (4.3)	

* $P<0.05$

Discussion

The interview used open-ended questions in order to give respondents the opportunity to freely express themselves. Using open-ended interview has been shown to be accurate, specific and reliable.^{36, 37} We reported here that stroke occurred during physical activity and inactivity, suggesting it can occur at any event, walking or driving, resting or sleeping. It was further noted that its occurrence was more during physical inactivity than activity. These findings were the first to be reported regarding stroke occurrence. Physical inactivity leads to slowing of blood flow and increased tendency to plaque formation, including clots and increased platelet agglutination.^{38, 39, 40} This may also explain why stroke tends to be higher in the elderly than in the young.⁴¹

Visiting hospital immediately stroke happens is important; and according to consensus statement by the Helsingborg Conference, there should be CT for all patients with symptoms suggestive of stroke.⁴² With the help of CT scan and MRI test, ischemic is differentiated from hemorrhagic. And if ischemic, recombinant tissue plasminogen activator (rt-PA) can be administered to open up clogged arteries, allowing reflow of blood to injured cells, aiding quick recovery of the cells.^{27, 28, 43} We noted in the present work that three-quarters of survivors visited hospitals at onset of stroke. And most of them within 6 hours of ictus. Unfortunately none was in the hospital within 3 hours. As a result none could have received CT scan or MRI test. Besides, none of the hospitals had these facilities, anyway. Reaching hospital within 3 hours of stroke onset gives the stroke patient the opportunity to undertake the neurodiagnostic tests, the opportunity to have rt-PA administered, in the case of acute ischemic stroke. Thrombolytic therapy with rt-PA has long-term benefits.³³ The benefit of intravenous rt-PA for acute ischemic stroke beyond 3 hours from onset is not established.⁴⁴ The situation in the present work where none arrived within 3 hours and where CT and MRI were not available calls

for intense review of commitment towards combatting stroke incidence in Nigeria. Late arrival reported here has also been noted in reports in some other countries. A study of 86 stroke cases in four community hospitals in northern Bavaria, Germany, showed that 59.1% of them reached hospital within 6 hours.⁴⁵ Early intervention for ischemic stroke, minimizes brain damage, reduces impairment, including disability and secondary complications, leading to reduced risk of death.⁴⁶ Unfortunately, in the present report as in previous reports in Nigeria, stroke patients were unable to reach hospital within 3 hours of onset.^{47,48} Late presentation has also been noted in some other developing countries, including Brazil, India and Morocco^{49, 50, 51, 52} This indicates serious problem with time of arrival of stroke patients at hospitals in developing countries and calls for increased awareness of the need for acute stroke cases to visit hospital within 3 hours of onset. This is because some authors in Nigeria attributed late presentation to hospital to poor appreciation of stroke warning signs by victims and relatives.^{29, 48} The present work, however, has noted some other likely factors. It is clear from our findings that the main reason why stroke survivors in Nigeria prefer herbal centers could be as a result of unsatisfactory treatment received from hospitals visited, consequent upon non-availability of CT scan or MRI test. In diagnosing of stroke, as stated before, clinical assessment is confirmed by CT scan or MRI test.^{53, 54} But these hospitals in Nigeria, lacked these neurodiagnostic equipment, and also the experts to administer rt-PA.³¹ Most countries in sub-Saharan Africa also suffer from this lack.⁵⁵ Presently, there are no stroke centers in Nigeria and nowhere rt-PA could be administered for acute ischemic cases. Stroke rehabilitation services are limited to physiotherapy. But some few countries in Africa have acquired stroke units, including South Africa, Ghana, Central Africa Republic, Morocco, and Egypt.^{56, 57} The importance of specialized hospital units for acute care and early rehabilitation of stroke cases

have been emphasized by several authors.^{58, 59,}

⁶⁰ It must be noted that even if survivors in the present work had arrived within 3 hours window to hospitals in Nigeria, none of could have benefitted from CT or MRI and none would have received rt-PA. And this is the major reason for disinterest of stroke survivors in Nigeria from visiting hospitals. It is hoped that government and policy makers in Nigeria will look into the importance of establishing stroke units in the country for better therapy.

We reported here that almost all the survivors expressed satisfaction with treatment received at BHC. Of the 117 survivors investigated, 99.1% self-reported satisfactory recovery while attending BHC. Though their satisfactory recovery could not be quantified scientifically, the fact that some of them had earlier visited hospitals and other places of healing before going to BHC makes their claim genuine. It becomes even more interesting when 67.5% said they achieved their satisfactory recovery within one month of attendance. By 3 months the number of survivors with satisfactory recovery had gone up to 88.1%. And by 6 months all but one survivor had recovered satisfactorily. These developments are noteworthy and should not only stir interest of researchers into herbal techniques but also policy makers into herbal medicine. A retrospective study of 29 stroke patients managed in three different hospitals in Nigeria noted they stayed between 12 to 36 weeks from time of hospital admission after stroke event to discharge⁶¹ Other reports from hospitals where stroke is managed indicated that 20% of cases showed recovery in institutional care within three months. This long stay in hospitals is one reason stroke patients prefer herbal centers in Nigeria^{34, 35} and in some other developing countries.³² Some authors did a systematic review of stroke burden in Africa from 2006 to 2017 and attributed it to poor awareness of stroke signs and symptoms, shortages of medical transportation, health care personnel, and stroke units, and the high cost of brain imaging, thrombolysis, and lack of

outpatient physiotherapy rehabilitation services.⁵² These herbal centers lack physio-therapy services. This is recommended. Due attention to hospitals by creating stroke units and to herbal centers by upgrading services will greatly impact on stroke management and critically reduce consequences and death from stroke.

It was reported here that post-stroke, many survivors checked their blood pressure more frequently than pre-stroke. Checking of blood pressure is very important because hypertension is the most common risk factor for stroke in Nigeria, sub-Saharan Africa, and developing countries.^{29, 35, 62, 63} Yet, there was a good number of survivors in this work who never checked their blood pressure either before or after stroke. There is need for serious stroke awareness education among survivors. Maybe a person-to-person approach will help correct any misgivings keeping some survivors from checking blood pressure. Cases of unrecognized hypertension have previously been reported in works in Nigeria^{31, 35, 64} and outside.⁶⁵ Serious public enlightenment on frequent checking of blood pressure, especially among the high-risk group, should be sustained in order to encourage compliance and prevent stroke recurrence.^{66, 67} It will be useful to know whether increased checking of blood pressure after stroke is associated with increased compliance with prescribed antihypertensive drugs and better outcome. This knowledge will be very useful in strategizing towards stroke prevention among sufferers and non-sufferers alike. This suggests need for serious awareness to post stroke patients to engage in life style changes, especially checking their blood pressure, at least twice a week, to prevention of a second stroke.

When considering other factors that discourage stroke patients from seeking early hospital intervention, cultural beliefs become prominent in Nigeria.³¹ Stroke has been interpreted as a sign of the “gods” or “spirits” being angry.³¹ Public education on risk factors will help diffuse these perceptions and hopefully increase

patients being brought in for early hospital intervention in Nigeria⁴⁶ and other developing countries like Ghana²⁶ India⁵⁰ and China.⁶⁷ The need to disabuse these negative cultural beliefs is clearly demonstrated in the present work in which 38.4 % of survivors never went to hospital. Many in this group believed that stroke was a spiritual affliction, not managed by orthodox medicine. In some parts of India, massaging a patient with pigeon's blood is believed to provide a cure for paralysis.⁵⁰ Others believed in witchcraft, faith healing, homeopathic or ayurvedic India traditional medicine.⁵⁰ Traditional Chinese Medicine has been historically used for stroke treatment and is widely applied today.⁶⁸ The herbal centers and traditional medicine have shown relevance in the management of stroke. Same is the hospital. So there should be synergy between the two delivery systems to effectively combat stroke epidemic in developing countries.⁶⁹

The other plausible reason for reluctance to visit hospital is the cost of managing stroke patients. In-patient post-stroke rehabilitation in Nigeria hospitals is expensive and cannot be afforded by most stroke patients.⁶¹ In India, it was reported that only 1.8% of those qualified to receive rt-PA could afford the cost.⁷⁰ Services at herbal centers, no doubt, are cheap and affordable and provide ready alternative to stroke patients. In earlier demographic studies of survivors who attended BHC, it was reported that there were educated as well as none-educated, rich as well as poor among survivors patronizing the BHC.^{34, 35} It was also noted in these works the existence of many hospitals within the vicinity of the herbal centre but the major complaint against them was lack of relevant diagnostic equipment of CT and MRI. Therefore, absence of relevant facilities in some countries, the cost of the drug, as well as lack of infrastructure in other developing countries that already have the capacity, become important hindrances in the effective utilization of rt-PA.^{50, 71, 72}

Conclusions, Limitations, and Recommendations

The lack of relevant neurodiagnostic equipment and expert personnel in hospitals in Nigeria, coupled with cheap, quick and satisfactory recovery of patients attending herbal centers encourage stroke survivors to prefer herbal centers. Limitations in this study include decline of access to most herbal centers, inability to differentiate types of stroke and inability to state the exact time and quantify recovery. It is important that Government and Policy makers in Nigeria and other developing countries provide CT, MRI, experts and stroke units in hospitals to make them more relevant to stroke therapy.

Author Contributions

PUN, FOO, and CON conceived and designed the study. ECN, PNN, IHO, and NCA organized and interpreted the data. NCO, CCA, KA, and ED wrote sections of the manuscript. PUN wrote the first and final draft of the manuscript. All authors contributed to the manuscript revision, read and approved the submitted version.

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Competing Interests

The authors declare that no competing interests exist in this research.

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