

Psychiatric morbidity in stroke patients attending a neurology clinic in Nigeria

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Abstract

Back ground: Stroke produces a wide range of mental and emotional disorders. Neuropsychiatric complications associated with stroke may have negative effects on the social functioning, overall quality of life and the recovery of motor functioning of stroke survivors.

Objective: To determine the prevalence and nature of psychiatric morbidity among stroke patients attending neurology outpatient clinic of the University of Ilorin Teaching Hospital (UIITH), Ilorin- Nigeria.

Methods: All patients with stroke aged 18 years and above at an outpatient neurology clinic in Ilorin, Nigeria were assessed for mental and emotional disorders using the Schedule for Clinical Assessment in Neuropsychiatry (SCAN) over one year (March 2009 to February 2010).

Results: Overall prevalence of psychiatric morbidity was 36.0% (30/83) among 83 patients who constituted the study population. Specific diagnoses recorded were depression (19.2%), generalised anxiety disorder (9.6%), harmful alcohol use (2.4%); dementia, somatoform disorder, phobia and delusional disorder each had a prevalence of 1.2%. Clinical and sociodemographic variables were not significantly associated with psychiatric morbidity.

Conclusion: Psychiatric disorders are often associated with stroke. Identifying and treating stroke patients with these psychiatric co- morbidities could thus help to improve the overall quality of life of these patients.

Key words: Psychiatric, morbidity, stroke patients, neurology, Nigeria

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Introduction

The World Health Organization defines Stroke as "rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer or leading to death with no apparent cause other than of vascular origin¹. Stroke is the most common cause of mortality worldwide and the third most common in developed countries^{2, 3}. Stroke produces a wide range of mental/emotional disorders^{4, 5}. Some of the neuropsychiatric disorders associated with stroke include post stroke depression (PSD), mania, Bipolar disorder, anxiety disorder, apathy without depression, psychotic disorder, pathological affect and catastrophic reaction⁵.

PSD is one of the commonest neuropsychiatric complications associated with stroke. Prevalence rate varies depending on the setting in which the patient was examined. Studies from developed countries have reported prevalence rates of 21.6% for major depression and 20.0% for minor depression in acute rehabilitation hospitals⁶⁻¹², and 24.0% and 23.0% respectively in the outpatient clinics in which duration of stroke varies between 3 months and 3 years^{8, 13-18}. Significant association between lesion location and development of PSD has been reported especially during the first few months following stroke^{8, 19}, and the most frequently associated lesion location is left- anterior lesion⁴. The time since occurrence of stroke appears to be the most crucial variable in determining whether there is increased frequency of mood disorders among patients with injury or dysfunction to the frontal regions of the left hemisphere⁴. In addition, physical disability has significant association with a greater frequency in PSD²⁰. Patients with PSD with left hemispheric lesions have also been shown to have significantly more cognitive impairment on Mini Mental State

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Examination (MMSE) than non depressed patients with similar lesions^{6,21-24}.

There is also significant co morbidity between post stroke anxiety and PSD⁵. Reported prevalence rate ranges from 27.0% to 28.0%^{25, 26}. Anxious-depressed patients had a significantly higher frequency of cortical lesions than did depression only group or control. Depression plus anxiety was found to be associated with left- cortical lesions whereas anxiety alone was associated with right- hemisphere lesion²⁵⁻²⁷. Longitudinal studies of post stroke Generalised Anxiety Disorder (GAD) have shown that functional recovery of patients with stroke was negatively affected by the presence of GAD⁵. It has been suggested that the most probable explanation for this could be that the co- morbidity of PSD and GAD produced a longer duration of depression than PSD alone and this prolonged depression might lead to more profound adverse physical and social functioning outcome⁵.

Another condition associated with stroke is apathy. Apathy is regarded as a morbid negative state affecting free will, intellectual capacity and emotional responsiveness²⁸. Apathy has been associated with depression, older age, cognitive impairment, impairment in activity of daily living (ADL), as well as lesions of the posterior limb of the internal capsule²⁹. Catastrophic reactions, pathological affect, and post stroke psychosis are other disorders that may occur after stroke and probably influence the course of recovery and quality of life⁵.

There is paucity of reports on psychiatric morbidity following stroke in Nigeria, Sub- Saharan Africa and other developing countries, in general. An earlier Nigerian study among stroke patients mainly focused on PSD, in patients whose duration of stroke before presentation in the hospital was 11.3 ± 5.6 months. A prevalence rate of 25.5% for depression (mild depression (9.8%), moderate depression (13.7%) and severe depression (2.0%)) was reported. Also 60.8% of the patients had right sided hemispheric location of the stroke and 39.2% had left sided hemispheric location³⁰. Gautam³¹ in a review article from India (a developing country) reported a prevalence rate of 31.8-35.5% for PSD among stroke patients.

Studies have shown that neuropsychiatric complications associated with stroke may have negative effect not only on the social functioning and overall quality of life of stroke survivors but also on the recovery of their motor functioning as

well^{32,33}. Depression following stroke has been the focus of most research whereas other complications such as anxiety or emotional lability have received relatively little attention⁴. The present study is on psychiatric morbidity among stroke patients attending a neurology outpatient clinic in Nigeria.

Methods

Setting

This study was conducted at University of Ilorin Teaching Hospital (UITH) which is a tertiary health institution owned by the Federal Government. The hospital is located in Ilorin, an urban centre and capital of Kwara state of Nigeria. It is the only tertiary health facility in the state, with a primary catchment area of 2.3 million people³⁴. Referrals to the hospital also come from neighbouring states. Kwara state is located in the north- central zone of Nigeria. The neurology outpatient clinic is an afternoon clinic run every Monday by two consultant neurologists and some resident doctors.

Subjects

All the consecutive stroke patients aged 18 years and above who attended the neurology outpatient clinic and consented to participate during the study period (March 2009 to February 2010) constituted the study population. Diagnosis of stroke was made in these patients by the consultant neurologists following their clinical examination and investigations (no additional neurological diagnosis was made in any of the patients with stroke who constituted the study population by the consultant neurologists). The psychiatric interview consisted of two stages. The first stage involved administration of questionnaire that covered the following areas: sociodemographic variables; extraction of relevant medical history from patients' medical notes. The first stage assessment was handled by 3 trained research assistants. Inter-rater reliability was satisfactory ($K = 0.85$). Any patient with history of a previous mental disorder before onset of stroke was excluded from the study.

The second stage

Clinical psychiatric interview was conducted by 3 consultant psychiatrists using the Schedule for Clinical Assessment in Neuropsychiatry (SCAN), version 2.1³⁵. SCAN is a WHO document intended for use only by clinicians with an adequate knowledge of psychopathology who have taken a course at a WHO designated SCAN training centre. It is a set of instruments and manual aimed at assessing,

measuring and classifying the psychopathology and behaviour associated with the major psychiatric disorders of adult life. The 3 psychiatrists had training in the use of SCAN and inter-rater agreement was high ($K = 0.80$). All eligible patients with stroke were interviewed using SCAN. Psychiatric diagnoses were made based on the criteria of the International Classification of Diseases (ICD-10)³⁶. Ethical approval for the study was obtained from the hospital ethical committee (accredited/ recognised by the National Health Research Ethics Committee-Nigeria (NHREC) which also serves as the Institutional Review Board of the University for Medical Research).

Data analysis

Data were entered and analysed using the Statistical Package for Social Sciences, SPSS 16.0 for windows. Sample means and percentages were calculated and simple frequency distribution for different variables were generated and displaced in tables. Categorical data was compared using chi-square test. The level of statistical significance was set at 5%.

Results

Basic social data

A total 252 patients attended the neurological clinic during the period of the study, out of which 90 (35.7%) had stroke. Seven patients were excluded (5 were too sick to be interviewed while 2 had past history of mental illness before they developed stroke) leaving a total of 83 stroke patients included in the study. This was made up of 37 (44.6%) males and 46 (55.4%) females. The mean age was 60.6 years and range was (60.6 ± 13.2). The age distribution of the patients was as follows: 1 (1.2%) was between 18- 34 years old; 6 (7.2%) between 35-44 years old; 39 (47.0%) were between 45-64 years old while 37 (44.6%) were 65 years or older. Forty-two (50.6%) of the total patients population were Muslims while 41 (49.4%) were Christians. Twenty-nine (34.9%) patients were illiterates; 1 (1.2) had Arabic education; 16 (19.3%) had primary school education; 16 (19.3%) had secondary school education and 21 (25.3%) had tertiary education. Majority of the patients (73.5%) were married; 1 (1.2%) was single; 21 (25.3%) were widowed. Fifty-nine (71.1%) of the patients were employed; 21 (25.3%) were retired and 3 (3.6%) were unemployed (table 1).

Table 1: Sociodemographic characteristics of stroke patients attending UITH neurology clinic (March 2009 – February 2010)

| Variable | Frequency | percentage |
|--------------------------|-----------|------------|
| Gender | | |
| Male | 37 | 44.6 |
| Female | 46 | 55.4 |
| Age(yrs) | | |
| 18- 34 | 1 | 1.2 |
| 35- 44 | 6 | 7.2 |
| 45- 64 | 39 | 47.0 |
| e"65 | 37 | 44.6 |
| Religion | | |
| Christianity | 41 | 49.4 |
| Muslim | 42 | 50.6 |
| Educational level | | |
| Primary | 16 | 19.3 |
| Secondary | 16 | 19.3 |
| Tertiary | 21 | 25.3 |
| Illiterate | 29 | 34.9 |
| Others | 1 | 1.2 |
| Marital Status | | |
| Single | 1 | 1.2 |
| Married | 61 | 73.5 |
| Widow | 21 | 25.3 |
| Occupation status | | |
| Employed | 59 | 71.1 |
| Retired | 21 | 25.3 |
| Unemployed | 3 | 3.6 |

Prevalence of psychiatric disorders

A total of 30 psychiatric cases were identified during the second stage of psychiatric assessment, giving overall psychiatric morbidity rate of 36.0% (table 2). Depression (19.2%) was the most frequent diagnosis in the study population (mild depression (4.8%), moderate depression (8.4%), and severe depression (6.0%)). Others included generalised anxiety disorder (9.6%), harmful alcohol use (2.4%). Dementia, somatoform disorder, phobia and delusional disorder each had 1.2%. For the 4 cases of mild depression; 2 had left hemispheric stroke, 1 had right hemispheric stroke and 1 had lacuna stroke. For the 7 cases of moderate depression; 4 had left hemispheric stroke, 2 had right hemispheric stroke and 1 had lacuna stroke. Also for the 5 cases of severe depression; 3 had left hemispheric stroke while 2 had right hemispheric stroke. Out of the 8 patients who had generalised anxiety disorder, 3 had left hemispheric stroke, and 5 had right hemispheric

stroke. There were 2 cases of Harmful alcohol use; 1 had left hemispheric stroke while the other one had right hemispheric stroke. The remaining cases (somatoform disorder, delusional disorder, phobia and dementia) all had left hemispheric stroke. The laterality of stroke ($\chi^2 = 4.212$; $P = 0.239$), physical disabilities resulting from stroke ($\chi^2 = 2.467$; $P = 0.651$), and being hypertensive ($\chi^2 = 0.123$; $P = 0.726$) or diabetic ($\chi^2 = 0.225$; $P = 0.635$) were not significantly associated with psychiatric morbidity (table 3). Also the patients' age ($\chi^2 = 0.634$; $P = 0.889$), marital status ($\chi^2 = 1.054$; $P = 0.59$), educational status ($\chi^2 = 4.297$; $P = 0.367$), gender ($\chi^2 = 0.399$; $P = 0.528$), religion ($\chi^2 = 0.291$; $P = 0.589$), occupation ($\chi^2 = 2.394$; $P = 0.495$) and duration of illness ($\chi^2 = 3.95$; $P = 0.267$) were not significantly associated with psychiatric morbidity (table 4).

Table 2: Prevalence of psychiatric disorders in stroke patients attending UITH neurology clinic (March 2009- February 2010)

| Psychiatric diagnosis | Frequency | % |
|------------------------------|-----------|------|
| Depression | 16* | 19.2 |
| Generalised anxiety disorder | 8 | 9.6 |
| Harmful alcohol use | 2 | 2.4 |
| Somatoform disorder | 1 | 1.2 |
| Phobia | 1 | 1.2 |
| Delusional disorder | 1 | 1.2 |
| Vascular dementia | 1 | 1.2 |
| Total | 30 | 36 |

*Mild depression= 4 (4.8%), moderate depression=7 (8.4%), severe depression= 5 (6.0%)

Table 3: Comparison of clinical variables of stroke patients with psychiatric morbidity and stroke patients without psychiatry morbidity attending UITH neurology clinic (March 2009- February 2010)

| Clinical variables | Stroke patients with psychiatric morbidity N= 30 (%) | Stroke patients without psychiatric morbidity N = 53 (%) | X ² | P value |
|-------------------------------|---|---|----------------|---------|
| Neurological diagnosis | | | | |
| Left hemispheric stroke | 17 (56.7) | 30 (56.6) | 4.212 | 0.239 |
| Right hemispheric stroke | 11 (36.6) | 22 (41.5) | | |
| Lacuna stroke | 2 (6.7) | 0 | | |
| SAH | 0 | 1 (1.9) | | |
| Physical disability | | | | |
| No disability | 0 | 2 (3.8) | 2.467 | 0.651 |
| Left hemi paresis | 12(40) | 18(34) | | |
| Right hemi paresis | 15(50) | 26 (49) | | |
| Expressive dysphasia | 3 (10) | 5 (9.4) | | |
| Facial nerve palsy | 0 | 2 (3.8) | | |
| Hypertension | | | | |
| Yes | 21 (70) | 39 (73.6) | 0.123 | 0.726 |
| No | 9 (30) | 14 (26.4) | | |
| Diabetes | | | | |
| Yes | 4 (13.3) | 9 (17.0) | 0.225 | 0.635 |
| No | 26 (86.7) | 44 (83.0) | | |
| Alcohol use | | | | |
| Yes | 5 (16.7) | 3 (5.7) | 1.588 | 0.208 |
| No | 25 (83.3) | 50 (94.3) | | |
| Cigarette smoking | | | | |
| Yes | 1 (3.3) | 3 (5.7) | 0.226 | 0.634 |
| No | 29 (96.7) | 50(94.3) | | |

SAH - Subarachnoid haemorrhage

Table 4: Comparison of stroke patients with psychiatric morbidity and stroke patients without psychiatry morbidity on sociodemographic variables (March 2009- February 2010).

| Demographic characteristics | Stroke patients with psychiatric morbidity N=30 (%) | Stroke patients without psychiatric morbidity N = 172 (%) | X ² | P value |
|-----------------------------|---|---|----------------|---------|
| Age (yrs) | | | | |
| 18-34 | 0 | 1 (1.9) | 0.634 | 0.889 |
| 35-44 | 2 (6.6) | 4 (7.5) | | |
| 45-64 | 14 (46.7) | 25 (47.2) | | |
| >64 | 14 (46.7) | 23 (43.4) | | |
| Marital status | | | | |
| Single | 0 | 1 (1.9) | 1.054 | 0.59 |
| Married | 21 (70.0) | 40 (75.5) | | |
| Widow | 9 (30) | 12 (22.6) | | |
| Educational status | | | | |
| Illiterate | 10 (33.3) | 19 (35.8) | 4.297 | 0.367 |
| Primary | 3 (10.0) | 13 (24.5) | | |
| Secondary | 7 (23.3) | 9 (17.0) | | |
| Tertiary | 10 (33.3) | 11 (20.8) | | |
| Others | 0 | 1 (1.9) | | |
| Gender | | | | |
| Male | 12 (40) | 25 (47.2) | 0.399 | 0.528 |
| Female | 18 (46.7) | 28 (52.8) | | |
| Religion | | | | |
| Christian | 16 (53.3) | 25 (47.2) | 0.291 | 0.589 |
| Muslim | 14 (46.7) | 28 (52.8) | | |
| Employment status | | | | |
| Employed | 18 (60.0) | 41 (77.3) | 3.221 | 0.2 |
| Retired | 11 (36.7) | 10 (18.9) | | |
| Unemployed | 1 (3.3) | 2 (2.8) | | |
| Duration of Illness | | | | |
| <1year | 18 (60.0) | 31 (58.5) | 3.95 | 0.267 |
| 1-5 years | 9 (30.0) | 19 (35.8) | | |
| 6-10 years | 1 (3.3) | 3 (5.7) | | |
| >10 years | 2 (6.7) | 0 | | |

Discussion

The prevalence of psychiatric morbidity recorded in this study was 36.0%. This prevalence is higher than prevalence of 9.1% reported by Williams et al³⁷, similar to 36.6% reported by Almeida et al³⁸, but lower than 49-54.7% reported by other researchers³⁹⁻⁴⁰. All the other reports were from the developed countries. Methodological differences and the settings under which the studies were conducted could have partly accounted for the wide variations in prevalence rates from the different studies. For instance, a prevalence of 9.1% was obtained by extracting data from the United States Department of Veterans Affairs administrative database; no structured

interview was conducted and stroke patients who died within 30 days of their index stroke from the commencement of the study were excluded from the study. Patients who had diagnosis recorded against their names could have been those with severe illness and under diagnosis would therefore have accounted for the low prevalence rate reported³⁷. On the other hand, Almeida et al³⁸, in a study conducted in Western Australian among stroke patients, prospectively followed up the patients for 2 years following the index stroke and recorded a psychiatric morbidity rate of 36.6%. Also, Beghi et al³⁹ in a study from Italy conducted over a period

of one year, used a number of diagnostic instruments such as Mini Mental State Examination, the Hamilton Rating Scale for Depression and Anxiety, the Modified Overt Aggression Scale and the Structured Clinical Interview for DSM-IV-TR, and obtained a prevalence rate of 49%. In the study where a high prevalence rate of 54.7% was obtained, psychiatric morbidity was measured by using the 28-item General Health Questionnaire (GHQ-28) ⁴⁰. Direct comparison with psychiatric morbidity studies conducted among stroke patients in Nigeria is impossible because of the paucity of this kind of study in the population of patients with stroke. The only available study was designed to establish only the prevalence of PSD and risk factors for PSD among stroke survivors ³⁰.

The specific psychiatric morbidity diagnoses reported in this study include 19.2% for depression, 9.6% for GAD, 2.4% for Harmful alcohol use and 1.2% each for somatoform disorder, phobia, delusional disorder and vascular dementia. Studies from the developed countries that focused mainly on PSD or post stroke anxiety disorder have reported prevalence rates of 20% to 40% for depression ^{7, 8, 20, 41} and 20% to 30% for GAD ^{25, 26}. The prevalence rates reported for both depressive disorder and anxiety disorder in this study are lower compared to those reported from studies that had as its main focus PSD or post stroke anxiety disorder. However, there are a few other studies that reported on 3 or more psychiatric disorders in stroke patients and such studies can be said to be more comparable to this study in terms of diagnoses reported and their percentages³⁷⁻⁴⁰. Williams et al ³⁷ in a national cohort study of patients with primary diagnosis of ischaemic stroke discharged from any Veterans Affairs (VA) medical centre all over America, reported 2.8% for substance abuse, 1.5% for anxiety disorders, 0.5% for schizophrenia, 0.4% for personality disorders and 0.3% for affective disorders. In another study from a developed country (Western Australian)³⁸, alcohol related disorders accounted for 16.2%, dementia 12.1%, delirium 7.6%, psychotic disorders 6.7%, depression or dysthymia 5.5% and other mental health disorders 4.2%. In an Italian study³⁹, depression accounted for 27% (mild depression 14.6%, moderate depression 4.9%, severe depression 7.2%), anxiety disorder 12% and personality disorders 10.2%. Post traumatic stress disorder has also been reported as a co-morbid disorder of stroke and it accounted for 23.1% with other co-morbid psychiatric disorders accounting

for 54.7% ⁴⁰. The reported specific prevalence of 19.2% for depression in the present study is also slightly lower than that of 25.5% reported to be depressed by Oladiji et al ³⁰ among stroke survivors in the only previous Nigerian study. What is common between our finding and that from developed countries is that there are a number of important co-morbid psychiatric disorders of stroke that deserve as much attention that has been given to PSD in the past years. It has also been suggested that the co-morbidity of PSD and GAD produced a longer duration of depression than PSD alone and this prolonged depression might lead to more profound adverse physical and social functioning outcome ⁵. It has been previously reported that early identification and treatment of these disorders will help to improve stroke outcome^{4, 5, 41, 42}. In addition, a higher 3- year mortality risk has been reported for patients with PSD and other psychiatric disorders after hospitalization for stroke ³⁷, while another study also found post stroke psychosis to be associated with increased 10- year mortality ³⁸.

The patients' age, marital status, educational status, gender, religion, occupation and duration of illness were not significantly associated with psychiatric morbidity in this study. Also the laterality of stroke, physical disabilities resulting from stroke, and being hypertensive or diabetic were not significantly associated with psychiatric morbidity. This finding is similar to that of Beghi et al ³⁹, a study from a developed country that reported no significant association between psychiatric disorders and sociodemographic and clinical variables. However, this is in contrast to some other studies which reported significant association between lesion location and development of PSD ^{8, 19}. Possible explanation for this disparity could be the duration of the stroke (laterality effects are present only during the acute stroke period, and studying patients several months or several years after stroke has led to failure to find laterality effects) ^{5, 43}. Other reasons that could account for the disparity are methodological differences, diagnostic criteria used and sensitivity of imaging technique used to ascertain lesion location ⁴³. The most frequently associated lesion location in studies that have found an association is the left-anterior lesion ⁴. Also, pure anxiety disorder has been found in some studies to be associated with right-hemispheric lesions while a mixture of anxiety/depression has been found to be associated with left-hemispheric lesions ²⁵⁻²⁷. Physical disabilities were

also not found to be significantly associated with psychiatric morbidity in the present study. However, it has been reported in some other studies that physical disability has significant association with PSD²⁰. Future psychiatric studies of stroke patients in Nigeria and other developing countries using larger sample sizes and a multicentre design would help to further elucidate these issues.

Conclusion

The present study has shown that a number of psychiatric co-morbidities are associated with stroke. Identifying and treating patients with these psychiatric co-morbidities could thus help to improve the overall quality of life of these patients. In addition, further studies of psychiatric morbidity in stroke populations in Nigeria and other developing countries are urgently needed in order to allow for cross-cultural comparison of rates of disorders and associated factors and also for development of preventive strategies.

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