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DEPRESSION AND DISABILITY AMONG STROKE SURVIVORS IN MAIDUGURI, NIGERIA

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ABSTRACT

Introduction: This study assessed the association of depression and disability among one hundred and ninety one (191) stroke survivors, noting that depression is one of the most common neuropsychiatric disorders occurring after stroke with its antecedent disabilities in individuals afflicted by stroke because of its association with a spectrum of complications ranging from physical, cognitive, social and/or role-functioning impairment and it significantly alters lives of survivors and their families. **Aims:** To examine the association between demographic variables, depression, and disability among stroke survivors, and also determine the extent to which psychopathology contributes to impairments in the survivors. **Methodology:** This is a cross-sectional study, accidental sampling technique was used to select 191 hypertensives outpatients with or without diabetes with CVA from State Specialist Hospital Maiduguri, Borno State, Nigeria, age ranged from 18-95 years and had a stroke at least two months prior were interviewed with depression module of the structured clinical interview for DSM IV axis one disorders (SCID), Hamilton depression scale (HDS) and Brief disability questionnaire (BDQ). **Result:** The prevalence of depression was 52.9% and 87.4% of the stroke survivors had a severe disability. Depression among the survivors was associated with shorter duration of CVA of less than a year ($\chi^{2}(2) =22.230$; P=0.000). There was a significant association between younger age and depression ($\chi^2 (2) =12.515$; P=0.002). **Conclusion:** The findings revealed the significance and association of depression and disability among stroke survivors. Therefore there is need to integrate post stroke psychological, psychiatric and psychosocial interventions to this susceptible group to facilitate their rehabilitation and improve their psychological well-being and recovery.

KEYWORDS: Depression, Stroke and Disability.

INTRODUCTION

Stroke remains one of the major chronic illnesses with a major public health problem worldwide that healthcare organizations will need to address for the next several decades. This is because it can affect virtually all human functions and unlike other disabling conditions, the onset of stroke is sudden, leaving the individual and family ill-prepared to deal with its sequelae.[1] It is the third most common cause of death, after heart disease and cancer in the United States of America and many industrialized countries.[2] Estimates by the World Health Organization (WHO) in 1999, indicated that cerebrovascular disease was the second leading cause of death Worldwide.[3]

Stroke is a major stressful event for the sufferers, physically, emotionally and economically. Although it varies in severity, the impact of these stress upheavals tends to endure throughout the acute periods and even the subsequent rehabilitation.[4]

House et al[5] reported that following a stroke, patients tend to develop a wide variety of emotional disorders which include anxiety, agoraphobia, and depression. Other less clearly delineated types of adjustment reactions found by House include irritability, social withdrawal, excessive concern about dementia or recurrence and a range of "non-specific" physical symptoms. Lambo[6] reported that the occurrence of a psychiatric disturbance in cerebrovascular disorders seen in Africans may be precipitated by associated factors like malnutrition, avitaminosis, and recurrent malaria infection.

Depression is one of the most common neuropsychiatric disorders occurring after stroke.[7] Depressive symptoms are frequent and are likely to prevail longer at follow-up times. The symptoms were associated with stroke severity and functional outcome as from two months onward.[8] Depression is an important consequence and a

frequent companion of stroke, influencing its recovery.[9,10] and it affects about one third to two third of stroke survivors.[11] The frequency of depression after stroke has been reported across different studies. The pooled estimate in Australia indicates that depressive symptoms are present in 33 % of cases of all stroke survivors at any time during follow up.[12] Similarly, in another study from southwestern Nigeria, the prevalence rate of depression in cerebrovascular disease was 33%.[13]

Depression is one of the leading causes of disabilities in individuals afflicted by a stroke because of its association with a spectrum of complications ranging from physical, cognitive, social and/ or role-functioning impairment,[14] and it significantly alters lives of survivors and their families.[11] However, it is not only a hindering barrier for the individual alone but also a significant problem globally.

According to the World Health Organization, in the year 2000, depression was the fourth highest determinant of the global burden of diseases, accounting for 4.5% when measured in its metric known as the Disability Adjusted Life Years (DALY). Major depression is also the second leading cause of disability, as it accounted for 12.1% of Years Lived with Disability (YLD) in Europe and North America and it has been estimated that depressive disorders will be the leading cause of disabilities in the low-income regions of the globe by the year 2020.[15]

This study will unravel the association between depression, demographic variables, and disability among stroke survivors, as well as to determine the extent to which psychopathology contributes to impairments in the patients, so as to proffer recommendations that might improve post-stroke adjustments of these patients in this environment.

MATERIALS AND METHODS

Research Design and Setting
This is a cross-sectional descriptive study of hypertensives with or without diabetes who were outpatients with cerebrovascular disease (CVD) utilizing the accidental sampling techniques. It was conducted at the department of medicine of the State Specialist Hospital Maiduguri, Nigeria.

Participants and Procedure
A total of 234 patients were initially recruited but 43 were excluded for various reasons: Seventeen had complications of HIV infections and could not give adequate history as a result of impaired cognition, 10 had a history of previous transient ischaemic attack (TIA) and sixteen (16) had declined to participate in the study for personal reasons. Finally, 191 clients were interviewed who had a minimum of two months history of stroke with the residual neurological deficit. Inclusion criteria: The patients must be 18 years and above who were hypertensive with or without diabetes and had a

stroke at least two months prior to the interview and who had a residual motor neurological deficit. Exclusion criteria: Patients who refused consent, who had a history of neurological illness before stroke, those with previous history of stroke, patients who do not understand Hausa or English languages (the languages the researchers could communicate with the clients), those who were very ill and/or aphasic and could not respond to questionnaires and those with HIV, because their stroke couldn't be differentiated from being cerebrovascular or non-cerebrovascular in origin since most patients could not have a CT investigation to identify the location of the lesion in the brain due to its financial implication.

The study was carried out in clinics. Each consecutive patient with a diagnosis of stroke who fulfilled the inclusion criteria for the study and consented verbally and in writing to the interview was seen alone in a private room at the clinic, while waiting for consultation or immediately after consultation. The researchers had earlier informed all nursing heads of the clinics concerned to solicit their cooperation. The questionnaires were self-administered if the respondent had sufficient ability for self-administration or it was administered by researchers where the patients had difficulty writing. Those respondents who do not understand English language had their interview conducted in Hausa language.

Study Design and Sampling Technique
This is a cross-sectional study of hypertensive out-patients with or without diabetes with cerebrovascular disease (CVD) utilizing accidental sampling techniques.

Procedure
The study was carried out at the clinics. Each consecutive patient with a diagnosis of stroke, who fulfilled the inclusion criteria for the study, and consented verbally and in writing to the interview was seen alone in a private room at the medical outpatient's clinics while waiting for consultation or immediately afterward. The researchers had earlier informed all Nursing heads of the outpatient clinics concerned to solicit their cooperation. Hence the researchers were contacted on phone whenever a patient with stroke reports at any of the clinics because there was no specific clinic for stroke patients. With this arrangement, all patients with stroke who attended the clinics and who fulfilled the inclusion criteria were seen within the study period. The questionnaires were self-administered if the respondent has sufficient ability for self-administration or administered by the researchers, where the patients had writing difficulties. Those respondents, who did not understand English language, had their interview conducted in Hausa. The study lasted for three (3) months, with interviews strictly conducted during clinic hours from 9:00 am to 2: 00 pm, five times weekly and lasted for thirteen weeks. On the average, three to four (3-4) patients were interviewed per day for forty-five minutes duration each.

Sample Size

The minimum sample size was computed using a prevalence of 32.6% of a similar study in Ibadan, South-Western Nigeria among stroke patients,[16] 95% confidence interval with a corresponding critical value (Z) of 1.96 and 0.05 degree of precision was used. This yielded a minimum sample size of 338 respondents.

However, n = 338 sample size for population >10, 000 but When 'N' (entire population) is less than 10, 000, the required sample size will be smaller. In such case, a final sample estimate (nf) was calculated and based on the computations, a sample size of 187.29 was required. However, it was increased by 20% to 234 to allow for possible attrition and dropouts, and to improve on the significance of the study.

Ethical Consideration

Ethical clearance was obtained for this study from the State Specialist Hospital Maiduguri Ethical Committee, and permission was taken from consultants and doctors managing the patients.

Instruments

These comprise of three sections

Section A: was an anonymous sociodemographic questionnaire designed by the authors that sought for variables like age, gender, marital status, sex, educational background and occupational status.

Section B: Structured Clinical Interview for Axis-1 DSM-IV Disorders (SCID)

This is an interviewer-administered semi-structured interview schedule for making an axis-1 diagnosis according to the fourth (4th) edition of the Diagnostic and Statistical Manual (DSM-IV) of the American Psychiatrist Association.[17] It comprises the following modules; Mania, Depression, Psychosis, Substance abuse disorders, Somatization disorders, Eating disorders and Adjustment disorders.[18] Module 8 which focuses on major depressive disorder was used for this study. A test-retest reliability were reported for most of the major disorders, with kappa values for current and lifetime diagnoses in the patient samples were above .60 with an overall weighed kappa value of .61 for current and .68 for lifetime diagnosis.[19] In this study, the instrument was translated to Hausa using the iterative back translation method and was used for patients who do not understand English.

Section C: The Hamilton Depression Scale (HDS)

This is an observer-rated scale for rating the severity of depression in subjects already diagnosed with depression. In the 17-item version, eight items are defined from 0-2 and nine items are defined from 0-4. HDS has an intra-class correlation coefficient of 0.86 indicating an adequate inter-observer correlation [20]. Latent structure analysis shows that items 1,2,7,8,10 &13 of the HDS constitute an interval scale for the severity of the depression.[21] When all 17-items are used, the cut-off scores are: 0-7 = no depression, 8-14 = mild depression, 15-18 = moderate depression, ≥19 = severe depression.[19] In Nigeria, HDS has been used to measure the therapeutic response to antidepressant medication.[21] In this index study, the instrument was translated to Hausa using the iterative back translation method and was used for patients who do not understand English.

Section D: Brief Disability Questionnaire (BDQ)

It is a World Health Organization adapted questionnaire for assessing how physical impairment affects daily activities. It is a standard questionnaire that contains eight questions of two parts: BDQ (part 1) and BDQ (part 2). BDQ (part 1) consists of items 1-6. It measures how physical disability affects the patient's ability to function in areas such as walking a long distance, lifting heavy objects, climbing stairs, bending, bathing, etc. It also examines whether patients had to cut down or stopped activities, had decreased motivation or personal efficiency or experienced deteriorations in their social relations.[23] The possible scores on each of these items are 0 (not at all), 1 (sometimes or a little) and 2 (moderately or definitely). The possible total score ranges from 0 to 22. BDQ (part 2) consists of items 7 and 8. The number of days in a month when patients were incapacitated and thus unable to complete their usual activities is recorded under item 7, while in item 8 it is the number of days in the month when the patient was confined to bed all day because of the severity of feeling unwell. The score for the disability day score ranges from 0 and 30 days. The scores are categorized into severity of disability. The levels and corresponding BDQ scores are: A score of < 2 = no disability, 3-4 = mild disability, 5-9 = moderate disability and 10 > = severe disability. This instrument was also translated to Hausa using the iterative back translation method and was used for patients who do not understand English.

Analysis

The data obtained was cleaned and coded where appropriate and entered into the Statistical Package for Social Sciences (SPSS) version 11.0 with the assistance of a biostatistician. Socio-demographic variables were presented in frequency tables with appropriate summary statistics. Chi-square was used to examine the association between.
i. Depression and side of CVA,
ii. Depression and duration of CVA iii Depression and level of disability.

Level of significance for inferential statistics was set at p<0.05, two-tailed.

RESULTS

Table 1: Socio-Demographic Characteristics of the Patients.

Socio-demographic Characteristics	No of respondents (N=191)
Age (Mean age = 50.14±16.05) <35	42(22.0%)
36 – 65	110(57.6%)
>65	39(20.4%)
Gender	
Male	117(61.3%)
Female	74(38.7%)
Marital Status	
Single	10(5.2%)
Married	146 (76.4%)
Widowed	18(9.4%)
Separated	11(5.8%)
Divorced	6(3.1%)
Education	
Primary & below	124(64.9%)
Secondary	38 (19.9%)
Tertiary	29 (15.2%)
Occupational status	
Unemployed	100 (52.4%)
Employed	91 (47.6%)

Table 1 shows the socio-demographic characteristics of stroke survivors. Their ages ranged between 18 and 95 years, with a mean age (SD) was 50.14 (16.05) years. One hundred and seventeen (61.3%) were males while 74(38.7%) were females. One hundred and twenty four (64.9%) had primary or below, 38(19.9%) had secondary while 29(15.2%) had tertiary education respectively.

Ten (5.2%) of the survivors were single, 146(76.4%) married, 18(9.4%) widowed, 11(5.8%) separated, while 6(3.1%) were divorced. One hundred (52.4%) were unemployed while 91(47.6%) were currently employed.

Table 2: Distribution of the association between depression, duration of CVA, side of CVA and age of the survivors.

Duration of CVA	No of respondents	Depressed n (%)	Non-depressed n (%)	Statistic
<1year	92	81(65.3%)	43(34.7%)	
1-2years	30	10(33.3%)	20(66.7%)	$\chi^2 (2)=22.230$
>2years	37	10(27.0%)	27(63.0%)	P=0.000
Total	191	101(52.9%)	90(47.1%)	
Mean 1.364years		**0.951**	**1.828**	**t=3.098**
S.D. 1.998		**1.775**	**2.138**	**p=0.002**
Side of CVA				
Right	101	53(52.5%)	48(47.5%)	
Left	90	48(53.3%)	42(46.7%)	$\chi^2(1) =0.014$
Total	191	101(52.9%)	90(47.1%)	P =0.906
Age of survivors (years)				
<35	42	31(73.8%)	11(26.2%)	
35-65	110	47(42.7%)	63(57.3%)	$\chi^2(2)=12.515$
>65	39	23(59.0%)	16(41.0%)	P=0.002
Total	191	101(52.9%)	90(47.1%)	
Mean age	**50.14**	**48.17**	**52.34**	**t =1.805**
S.D.	**16.054**	**17.517**	**14.003**	**P =0.073**

Table 2 shows the association between the duration of cerebrovascular accident and depression among the patients. Eighty one (65.3%) of the 92 patients with <1year duration of CVA were depressed, while, 10 (33.3%) of the 30 patients with between one and two years duration of stroke were depressed and 10 (27.0%) of those with stroke durations of above 2years were depressed with a statistically significant relationship between duration of the CVA and depression among the

patients with stroke ($\chi^2 (2) =22.230$, p =0.000). The highest prevalence of depression was among the most recent stroke victims.

The duration of the stroke for all survivors ranged from 2 to 156 months with a mean of 1.364years (SD =1.998). The mean stroke duration among depressed survivors was 0.951(SD 1.775) years compared with the non-

depressed patients' mean duration of 1.828 (SD 2.138) months. The difference was statistically significant (t =3.098, p=0.002).

The age of the survivors ranged from eighteen (18) to ninety-five (95) years with a mean age of 50.14 (SD 16.054) years. Thirty-one (73.8%) of the 42 survivors aged less than 35 years were depressed, while the prevalence of depression among survivors in the age groups 36-65years was 42.7% and those > 65years was 59.0%. The differences were statistically significant (χ^2 (2) =12.515; p=0.002) with the highest prevalence among those less than 35years. However, there was no statistically significant difference between the mean (SD)

ages of the depressed and the non-depressed subjects (t=1.805; p=0.073).

Table 3: Distribution of Level of disability of the survivors.

Clinical variables	All subjects N = 191
Mild Disability	3(1.6%)
Moderate Disability	21(11.0%)
Severe Disability	167(87.4%)

Table 3 shows the level of disability experienced by the patients as measured by the BDQ was severe among 167 (87.4%), moderate in 21 (11.0%) and mild in 3 (1.6%).

Table 4: Distribution of the association between depression and level of disability among the survivors.

Disability	No of respondents	Depressed n (%)	Non-Depressed n (%)	Statistic
Mild Disability	2	0(0%)	3(100%)	
Moderate Disability	21	11(52.4%)	10(47.6)	χ^2 (2) =3.47
Severe Disability	167	90(53.9%)	77(46.1%)	P =0.137
Total	191	101(52.9%)	90(47.1%)	

Table 4 shows the findings on level of disability among the survivors. Among the 167 survivors with severe disability, 90(53.9%) were depressed while 11 (52.4%) of those with a moderate disability were depressed, and none of the 3 with a mild disability were depressed.

There was no statistically significant relationship between the level of disability and depression among the patients (χ^2 =3.47, P =0.137).

DISCUSSION

In this study, 52.9% of the stroke survivors assessed met the DSM-1V diagnostic criteria for depression. This finding was in line with an Australian based study which indicates that depressive symptoms are present in 33 % of cases of all stroke survivors at any time during follow up.[12] However, the prevalence of depression found was higher than 32.6% and 33% found in southwestern Nigeria.[13,16] The finding of this study is higher than the average prevalence reported by previous studies among stroke survivors.[12,16] The higher prevalence found in this study may be related to patient's pre-existing personal psychosocial difficulties which may have an important influence on the development of depression after stroke because of the study location. Those that were aged <35years had a significantly higher prevalence of depression compared to the older age groups. This finding of higher vulnerability to depression among younger patients with stroke disagreed with previous study that there was no association between respondent's age and depression.[24]

The association between sex and depression was not statistically significant; this result is contrary to the finding of previous study; depressive symptoms were present among stroke patients and patients with marked

symptoms had a more neurological impairment and were more likely to be female.[24]

This study found significantly higher prevalence of depression among those with duration of stroke ≤ 6months, and a progressive decrease of the prevalence of depression as the duration of the stroke increases. This finding was in tandem with a similar study who reported that the location of the lesion was a stronger determinant for PSD.[25]

The present study did not find any association between site of stroke and prevalence of depression. This finding concurred with the previous studies that could not establish any association between lesion location and depression.[26,27]

More than eighty-seven percent of the survivors were severely disabled in this study. Also, this study supported the finding of Badaru, Ogwumike and Adeniyi.[28] that stroke severity and disability are important predictors of depression among Nigerian stroke survivors.

CONCLUSION AND RECOMMENDATIONS

The high prevalence of depression among this cohort of survivors' with stroke especially among the younger age and the recent onset of stroke indicate that depression is under-recognized in survivors'. These high levels of depression might be as a result of many factors such as shock, denial, grieving, anger, nature of the illness (chronic), financial implications of treatment and rehabilitation.

Stroke survivors that were depressed were observed only amongst those with either moderate or severe level of disability with a greater number of severe disabilities having a greater percentage of the depressed. The

association between depression and disability may reflect lingering physical impairment with its antecedent effect on inability to carry out activities of daily living.

Disability after stroke was unfavorable because at the time of the stroke the survivors were still full of energy and ready to explore more in life but unfortunately this is when the stroke hit and limits their capacity to achieve more and fulfill their dreams in life.

A study like this is incomplete without its own limitation; lesion location was determined by clinical presentation and judgment of the treating consultants. This gross hemispheric lesion localization in the absence of more sophisticated CT scan, MRI and PET will increase the chances of including other non CVA disorders presenting with hemiplegia and thus affecting the results.

In view of the above findings, it is recommended that healthcare providers should concentrate more on younger, single and severely disabled survivors because it has been established that depression is more in this categories of people as a result of many factors such as early occurrence of stroke when the individual has not achieved much to cater for the burden, poor social support at both primary, secondary and tertiary level.

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