

# PREVALENCE OF POST-STROKE DEPRESSION IN A NIGERIAN SAMPLE

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## **SUMMARY**

**Background:** Post-stroke depression has been identified as a significant problem confronting stroke survivors and imparting negatively on their rehabilitation potential.

**Objective:** The purpose of this study was to investigate the prevalence of post-stroke depression in a Nigerian sample.

**Method:** Participants for this study comprised fifty-one (51) stroke patients receiving physiotherapy rehabilitation in a major tertiary hospital. Inclusion criteria were a diagnosis of cerebrovascular disease with a resultant hemiparesis and intact cognition based on the mini mental state examination. Exclusion criteria were transient ischaemic attack (TIA), pre-morbid history of depressive disorder and disability, as well as aphasia. Each subject's post stroke depression was assessed using the Depression Anxiety Stress Scale-21 (DASS-21), designed to measure the three negative affective states of depression, anxiety and stress. The DASS also assesses dysphasia, hopelessness, devaluation of self, anhedonia, lack of interest and inertia, and permits patients to be classified as depressed or not depressed.

Descriptive and inferential statistics of mean, standard deviation, percentages and chi-squares were used for analysis using the SPSS 14.0 windows version.

**Results:** Thirty-one (31) males and twenty (20) females with a mean age of  $52 \pm 5.9$  years participated in this study. Thirty-one (60.8%) were right hemiplegics while twenty (39.2%) were left hemiplegics. The mean onset of stroke for all the participants was  $11.3 \pm 5.6$  months.

There was no significant difference between the male and female participants ( $p > 0.954$ ), but between right and left hemiplegics ( $P < 0.035$ ). Significant differences were also observed in occurrence of post-stroke depression between the males and the females ( $p < 0.01$ ) and between left and right hemiplegics ( $P < 0.13$ ).

**Conclusion:** The study has established the occurrence of post-stroke depression among Nigerians. It is hereby suggested that post-stroke depression should be taken into consideration in rehabilitating stroke survivors.

**Keywords:** Stroke, post-stroke depression, prevalence, Nigerian subjects

## **INTRODUCTION**

Stroke is a major clinical and public health problem. Ogun et al (2005) reported the incidence of stroke in Nigeria to be as high as 240 in 100,000. Although mortality from stroke is falling in the Western world, morbidity in stroke survivors remains high. A majority of stroke survivors experience significant disability (Bronner et al, 1995) both physical (i.e. hemiparesis and an inability to carry out activities of daily living) and mental (i.e. cognitive impairment and depression) (Jonkman et al, 1998).

Stroke survivors have been found to have significantly impaired quality of life (Jonkman et al, 1998). Clinically significant depressive symptoms are common following stroke. The prevalence of post-stroke depression varies depending on the population studied, the assessment measures used and the definition of depression (House, 1987). There are however no published studies of the prevalence and correlates of post-stroke depression

in Nigeria samples.

With great concern, the WHO has predicted that by 2020, depression will be second only to ischaemic heart disease as a cause of disability worldwide (Peveler et al, 2002). A number of risk factors for depression have been established in non-stroke samples including female gender, previous history and family history. These risk factors and others including the location of cerebral lesion, and extent of post-stroke functional disability have been posited as predictive of depression following stroke. However, studies differ on the relative contribution, if any, of these factors to the risk of depression following stroke (Whyte et al, 2004).

The recognition of depression and those at risk of depression in the medical setting is important as depressive disorders may indirectly adversely affect survival, length of hospital stay, cost of medical care, compliance with therapy, the ability to care for oneself and quality of life (Creed et al, 2002). In stroke survivors, depression may have a direct effect on mortality. Suicidal ideation is known to be common following stroke, occurring in up to 14% of subjects (Lesperance et al, 2002). In this study, we examined the prevalence of depressive symptoms and operationally defined depressive disorder (major depression) in a Nigerian sample of stroke survivors undergoing outpatient rehabilitation.

#### METHOD

Patients for this study were recruited from the stroke patients referred for physiotherapy and those who have been undergoing physiotherapy in the Lagos University Teaching Hospital (LUTH), Idi-Araba, Lagos between January and March 2007. Fifty one patients were recruited for this study. Out of these, thirty one were males and twenty were females. They were within the age range of 40 and 64 years.

Patients included in the study, were those with confirmed diagnosis of cerebrovascular disease with a resultant hemiparesis

Furthermore, ethical approval was granted and informed consent was obtained from the patients. Subjects' cognition was also assessed using mini mental state examination to ascertain that their cognition was unaffected by stroke.

#### POST-STROKE DEPRESSION EXAMINATION

The Depression Anxiety Stress Scale – 21 (DASS-21) was used in this study. The depression anxiety stress Scale – 21 is a short form of Lovibond and Lovibond's (1995) 42-item self report measure of depression, anxiety and stress. The DASS-21 is designed to measure the three negative affective states of depression, anxiety and stress. The depression scale assessed dysphoria (a state of feeling acutely hopeless) hopelessness, devaluation of life, self depreciation, lack of interest or involvement, anhedonia (a state of inability to experience pleasure), and inertia (unwillingness to act).

Using the cut off scores suggested by Lovibond and Lovibond (1995), subjects were categorised as exhibiting normal (DASS score: 0-9), mild (DASS score: 10-12), moderate (DASS score: 13-20), severe (DASS score: 21-27), or extremely severe (DASS score: 28-42) depressive symptoms. The validity and reliability of this instrument has been extensively established in literature (Lovibond and Lovibond, 1995; Daza et al, 2002). In addition to the classification described above, patients with a score of 0-12 on DASS-21 were classified as non-depressed while patients with a score of 13-42 were classified as depressed. Patients that met inclusion criteria aforementioned were assessed for depression using the DASS-21 instrument.

#### DATA ANALYSIS

Descriptive statistics of frequency table, charts, measures of central tendency (mean, median and mode) and measure of variability (standard deviation, etc) were used. The level of significance for all the inferential statistics was set at  $p < 0.05$ . All of these were done using SPSS 14.0 windows version.

#### RESULTS

Fifty-one patients (31 males, 20 females; aged 52.5 + 5.9 years) were evaluated. Thirty one (60.8%) patients were right hemiplegic while 20 (39.2%) were left hemiplegic. The participants had a mean onset of stroke of 11.3 + 5.6 months. Table 1 shows frequency of occurrence of post-stroke depression in the sample studied.

Table 1 shows the distribution of participants with their post-stroke depression scores and score classification. Table 2 shows the comparison of depression scores on DASS-21 by gender and laterality. While there was no significant difference between male and female participants, a significant difference occurred between right and left hemiplegics. Table 3 shows the comparison of depression occurrence by gender and laterality. There occurred significant difference in occurrence of post-stroke depression between male and female participants and between left and right hemiplegics.

**Table 1: Distribution of Participants with Post-Stroke Depression**

Groups	Depressed		Non-Depressed		Total
	N	%	N	%	
All participants	13	25.5	38	74.5	51
Right hemiplegics	10	32.3	21	67.7	31
Left hemiplegics	3	15.0	17	85.0	20
Male	5	16.1	26	83.9	31
Female	8	40.0	12	60.0	20
Patients with less than seven months of onset of Stroke	9	69.2	4	30.8	13
Patients with seven to twelve months of onset of Stroke	2	11.1	16	88.9	18
Patients with more than twelve months of onset of Stroke	2	10.0	18	90.0	20

**Table 2: Comparison of Depression Scores on DASS-21 by Gender and Laterality**

	Groups	Mean+ S.D.	U	P
Gender	Male	10.52 + 5.80	307.00	0.954
	Female	12.30 +10.24		
Laterality	Right	12.75 + 8.11	201.500	0.035*
	Left	8.80 + 6.79		

**Table 3: Comparison of Depression Occurrence by Gender and Laterality**

Gender	Male		Female		Chi-Square	P value
	N	%	N	%		
Laterality	5	16.1	8	40.0	10.286	0.001*
	Right		Left			
	N	%	N	%	Chi-Square	P value
	10	32.3	3	15.0	6.149	0.013*

## DISCUSSION

Out of the 51 participants that completed the study, 13 (25.5%) showed signs of depression (Depression Score on DASS-21: 13-42). Compared with a review carried out by Robert et al. (2005), using data collected from 51 studies, the mean prevalence of post-stroke depression among in-patients in acute or rehabilitation setting was 19.3% for major and 18.5% for minor depression respectively. In community setting the mean prevalence of post-stroke depression was reported to be 14.1% and 9.1% for major and minor depression respectively (Robert et al, 2005). In outpatient studies, mean reported prevalence was 23.3% for major depression and 15.0% for minor depression. This study thus agrees with other studies carried out in out-patient setting. However, nearly all the authors were reported to acknowledge a degree of under-estimation of post-stroke depression (Astrom et al, 1993; Robert et al, 2005). A measure of understanding may also be true for this research as only outpatients were studied and the sample of patients with variation in onset of stroke.

Different factors have been identified as risk factors for post-stroke depression. These include physical disability, stroke severity, cognitive impairment (Robert et al, 2005) past history of depression, social isolation, functional impairment, dysphasia, age (Ouimet et al, 2001), gender, previous stroke (Paolucci et al, 2005) and onset of stroke. Out of all these, gender, and onset of stroke were assessed. Out of the 13 participants that exhibited depressive symptoms, five participants (38.5%) were male and eight (61.5%) were females.

While some researchers have indicated high depression prevalence in women compared with men in general population (Paolucci et al, 2005), others disagree with this (Berg et al, 2003; Spalleta, et al., 2005). However, no apparent reason could be given for this disagreement. Participants with less than 7 months of onset were found to exhibit most depressive symptoms. This result agrees with the report of Aben et al, (2003) that the highest

incidence of post-stroke depression were in the first month following stroke. Aben et al (2003) also reported that 21.6% of patients were depressed in the first month after stroke. They reported that the proportions of post-stroke incidence decreased from 21.6% to 5.1%, 6.0%, 5.6% and 7.1% at 3, 6, 9 and 12 months post-stroke respectively.

This study revealed a significant difference in occurrence of post-stroke depression between right and left hemiplegics. Thus, it was extrapolated that there was very high likelihood that laterality has a relationship with post-stroke depression in the sample. In a review carried out by Singh et al, (1998), 26 original articles were critically appraised. 13 out of the 26 articles met the inclusion criteria; this study disagrees with six of the thirteen that found no significant difference in occurrence of post-stroke depression between right and left hemisphere lesions (Singh et al, 1998). On the other hand, this study also disagrees with some studies that found out that right sided lesions were more likely to be associated with post-stroke depression (Singh et al, 1998). Four studies found that left sided lesions were more likely to be associated with post-stroke depression; this agrees with this study (Starkstein et al, 1998). The reason for this disparity in literature is a matter of heated argument. Similarly, Carson et al (2000) undertook a systematic review between post-stroke depression and laterality. The authors identified 38 reports that found no significant difference in risk of post-stroke depression and sites of the lesion, 2 reported increased risk with left-sided lesions and 7 reported increased risk with right sided lesions.

Several reasons have been given for these differences. According to Robert et al (2005), the main source of bias identified was heterogeneity of study subjects. They also identified that subjects selected from community but not those selected from hospitals or rehabilitation units experienced increased risk of depression with right-sided lesions. Thus, there remains a wide diversity of findings in the studies looking at the relationship between stroke location and depression (Robert et al, 2005).

It can therefore be concluded that occurrence of post stroke depression among Nigerian stroke survivors does not differ significantly from other researches carried out on Caucasians. However, draw up a solid conclusion on the relationship between post-stroke depression and laterality in Nigerian stroke survivors, a longitudinal study might be necessary.

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