



Prevalence of Depression Among Primary Caregivers of Stroke Survivors in Nigeria

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Abstract

Background: Stroke has a great adverse effect not only on the lives of stroke survivors but also on the informal caregivers, as they provide care ranging from assistance in activities of daily living, leading to a high risk of depression and other psychological morbidities.

Objectives: This study explored the prevalence of depression and associated factors among primary caregivers of stroke survivors in Nigeria.

Methods: A cross sectional survey on the prevalence of depression among primary caregivers of stroke survivors was conducted at selected hospitals in Maiduguri, Nigeria. A sample of convenience was used to recruit participants in this study. The Beck depression inventory was used to screen for depression. Data form and patients folders were used to obtain socio-demographics and clinical characteristics of participants and stroke survivors.

Result: A total of 115 primary caregivers participated, out of which 53% were male and 47% were female. The mean age and overall beck depression inventory score were 30.78 ± 9.66 and 15.42 ± 7.84 , respectively. The overall prevalence of depression was found to be 46.1%. Type of stroke ($P = 0.03$) and post stroke duration ($P = 0.02$) of stroke survivors cared for was found to be associated with depression among caregivers of stroke survivors.

Conclusions: Caring for the patients with stroke presents increased in the psychological impact of caregiving for stroke survivors, it is therefore recommended that information, education, and support should be provided to primary caregivers as they are key in sustaining rehabilitation gains and long term overall well-being of stroke survivors.

Keywords: Depression, Caregivers, Stroke

1. Background

Globally, stroke has been reported as one of the leading causes of mortality and disability (1). Every year, about 15 million of the world population suffers from stroke, out of which around 33% die and 33% become disabled permanently (2). It is projected in the next 15 years that a great majority of stroke incidence will occur in people living in low and middle-income countries like to Nigeria (3). In 2005, deaths, as a result of stroke in low-income and middle-income countries, were 57 million with a mortality in Nigeria reported as 126 per 100,000 (4). Stroke is a long-standing and debilitating condition that has a profound negative influence on not just the sufferers, but also on their families and distort to varying degree activities

of daily life such as self-care, employment, and leisure of the sufferers (5). Stroke has a great influence not only on stroke survivors, but also on their caregivers (6). Primary caregivers are the individuals who take cardinal care for someone who cannot care for themselves, usually a family member or friend following the onset of a debilitating illness (7). The burden of long-term care for stroke survivors, as a result of stroke, are largely undertaken by the primary caregiver, which in the most instance is a family member of the patient; this could also eventually impoverish the family due to reduced working hours in income generating activities (8). Caregivers of stroke can therefore be considered the 2nd victim of the disease, as they are often not supported by the health system or integrated into the rehabilitation process (9). The burden of caring for stroke sur-

vivors place the caregivers at risk of psychological morbidity (10).

Depression is a disorder characterized by sadness, loss of interest in activities, and decreased energy (11) and has been widely explored among primary caregivers, especially among females and adolescents (12). The prevalence of depression is reported to be in preponderance among caregivers of stroke patients than in stroke survivors, with prevalence among stroke survivors ranging from 30% - 52% of depression in stroke caregivers (13).

Pooled global prevalence of depressive symptoms among caregivers of stroke survivors is estimated to be 40.2% (14) in 2016. In a Finnish study conducted by Berg and colleagues, the prevalence of depression among caregivers of stroke survivors was reported to be between 30% - 33% (15). Also, 33.57% to 42.16% of all caregivers were depressed as reported in an Iranian population (16). In a survey in a Chinese population, 71% of stroke caregivers was reported to have experienced depressive symptoms (17).

In Nigeria, there has been growing concern about the burden of stroke and stroke-related side effects in different parts of the country among hospital and community in-dwelling population groups (18-20). There is, however, growing documentation of the caregiving burden, poor caregiver outcomes, lack of caregiver support, and equivocal success aimed at ameliorating the caregiving burden, which may affect mental health (21). Hence, the emphasis in stroke rehabilitation needs to shift from patient-focused approach to a holistic combined patient-caregiver-focused approach, which is necessary due to the fact that primary caregivers are central in sustaining rehabilitation gains of stroke survivors (21).

However, there seems to be a paucity of regional data on the prevalence of depression among primary caregivers of stroke survivors in north eastern Nigeria. With the foregoing in mind, this study was conceived to identify the prevalence and associated factors of depression among primary caregivers of stroke survivors.

2. Methods

2.1. Participants

The participants for this study were primary caregivers of stroke survivors attending physiotherapy clinics at selected hospitals in Maiduguri, North-eastern Nigeria.

2.2. Inclusion and Exclusion Criteria

The inclusion criteria of participants into this study include: caregivers of stroke survivors ability to verbally communicate in the English language and caregivers of stroke survivors that actively participate in caregiving of the stroke survivor for at least 6 hours weekly. Caregivers

of stroke survivors who were less than 18 years and ≥ 65 years as well as caregivers with a physical disability were excluded from this study.

2.3. Study Design

This study was a cross-sectional survey of primary caregivers of stroke survivors attending physiotherapy clinics at selected hospitals in Maiduguri, Nigeria. A sample of convenience was used to recruit caregivers of stroke survivors from the selected study centers in this study.

2.4. Study Setting

This study was conducted at the University of Maiduguri Teaching Hospital (UMTH), State Specialist Hospital Maiduguri, and the Umaru Shehu Ultra-Modern Hospital Maiduguri, North-eastern Nigeria.

2.5. Instrumentation

2.5.1. The Beck Depression Inventory:

Beck depression inventory (BDI) was used to screen depression among participants.

BDI is a 21-item, self-report rating inventory that measures symptoms and behaviour of depression (22) using a four-point scale, which ranges from 0 (symptoms not present) to 3 (symptoms very intense). Completion time for the BDI is approximately 10 minutes. The BDI consists of systematically structured questions that assess mood, pessimism, and sense of failure, self-dissatisfaction, guilt, punishment, self-dislike, self-accusation, suicidal ideas, crying, irritability, social withdrawal, body image, work difficulty, insomnia, fatigue, appetite, weight loss, bodily preoccupation, and loss of libido. Items 1 to 13 assess symptoms that are psychological in nature, while items 14 to 21 assess physical symptoms peculiar to depression. Scores from 0 to 10 represent normal, scores from 11 to 17 indicates mild mood disturbance, scores from 17 to 20 indicate borderline clinical depression, scores from 21 to 30 indicate moderate depression, scores from 31-40 indicates severe depression, and scores over 40 indicates extreme depression. The BDI has also shown high construct validity with the medical symptoms it measures. Internal consistency for the BDI ranges from 0.73 to 0.92 with a mean of 0.86 (20). The BDI demonstrate high internal consistency with alpha coefficients of .86 and .81 for psychiatric and non-psychiatric population (23).

2.5.2. Data Form

Participant data form was used to collect information about socio-demographic characteristics of the caregivers

of stroke survivors. The form was developed by the researcher and was used to obtain information on participant' age, gender, occupational status, marital status, educational status, and also the relationship with the stroke survivor.

2.5.3. Patients Hospital Case Folder

The patients' (stroke survivors) hospital case folder was used to obtain information about the clinical characteristics of the stroke survivors. Clinical data of stroke survivors obtained included post-stroke duration, side of stroke affectation and type of stroke.

2.6. Data Collection Procedure

Ethical Research Committee of the University of Maiduguri Teaching Hospital gave approval for the study. The permission of the departments of physiotherapy at the selected hospitals was also sought and obtained. The informed consent form was signed and obtained from all of the subjects. Study data form and Beck depression inventory were administered to the participants that met the inclusion criteria of the study to complete at the selected sites and the researcher obtained patients clinical characteristics from the patients' folders.

2.7. Data Analysis

Descriptive statistics of mean, standard deviation, frequency, and percentages were used to summarize the data. Chi square test was used to assess the difference in prevalence of depression among participants. This data summary was performed utilizing statistical package for social sciences (SPSS), (Windows version 20.0).

3. Results

A total of 136 caregivers of stroke survivors that met the inclusion criteria for this study were approached to participate in this study. However, a total of 115 caregivers of stroke survivors consented to participate in this study. The overall depression prevalence rate of informal caregivers of stroke was 46.1%. The mean age of the caregivers that participated in this study was 30.78 ± 9.66 years (age range= 19 - 59 years). A total of 53% of the caregivers were male while 47% were females. Of the stroke survivors, 76 caregivers were children, 16 caregivers were siblings of the stroke survivor, 5 caregivers were a spouse, and 7 caregivers were friends of stroke survivors (Table 1).

A total of 32 caregivers reported to be normal, 30 reported mild mood disturbance, 20 caregivers reported borderline clinical depression, 29 reported moderate depression, and 4 reported severe depression. None of the caregivers reported extreme depression (Table 2).

Table 1. Socio-Demographics Characteristics of Participants and Clinical Factors of Their Stroke Survivors (n = 115)

Variable	No. (%)
Age, y	
19 - 35	86 (74.8)
36 - 55	27 (23.5)
≥ 55	2 (1.7)
Gender	
Male	61 (53.0)
Female	54 (47.0)
Employment status	
Employed	34 (29.6)
Unemployed	38 (33.0)
Student	43 (37.4)
Educational Status	
Primary	6 (5.2)
Secondary	17 (14.8)
Tertiary	65 (56.5)
Quranic	21 (18.3)
None	21 (18.3)
Relationship with stroke survivor	
Child	76 (66.1)
Sibling	16 (13.9)
Spouse	5 (4.3)
Friend	7 (6.1)
Others	11 (9.6)
Side of affectation	
Left	63 (54.8)
Right	52 (45.2)
Type of stroke	
Ischaemic	70 (60.9)
Haemorrhagic	45 (39.1)
Post-stroke duration, mo	
19 - 12	85 (73.9)
13 - 24	18 (15.7)
> 25	12 (10.4)

Gender ($P = 0.24$), age ($P = 0.32$), employment status ($P = 0.28$), educational level ($P = 0.73$), the relationship of care-giver with the stroke survivor ($P = 0.42$), and stroke survivors' sides of affectation ($P = 0.69$) was found to not be associated with depression of caregiver of stroke. However, type of stroke ($P = 0.03$) and post stroke duration of the stroke survivors ($P = 0.02$) cared for was found to be as-

Table 2. Prevalence of Depression Among Caregivers of Stroke Survivors (n = 115)^a

Type of Depression	No. (%)
Normal	32 (27.8)
Mild mood disturbances	30 (27.1)
Borderline clinical depression	20 (17.4)
Moderate depression	29 (25.2)
Severe depression	4 (3.5)

^aNormal and mild mood depression = Considered as not depressed.

sociated with depression among caregivers of stroke survivors (Table 3).

4. Discussion

The success of the rehabilitation process after a stroke involves supportive caregivers who provide direct assistance. Caregiver burden is a multidimensional construct, which involves not only objective burden (caregiving tasks and time), but also the caregivers' subjective report of the care they provide in terms of emotional cost of caregiving involvement hence needs to be integrated into the rehabilitation process.

In our study, the overall depression prevalence rate of informal caregivers of stroke was 46.1%. One-fourth of the caregivers of stroke survivors had moderate depression and 3.5% reported severe depression, which was contrary to the findings of a study in Ghana by Abeasi and Osafu (24) where 84.0% caregivers reported mild mood disturbance, 12.0% borderline depression, 4.0% moderate depression, and none reported severe depression. However, our study was consistent with other studies (25, 26) that reported a higher prevalence of depression among caregivers of stroke survivors. In our study population, half of the caregivers were children of the stroke survivor and are often fraught with social isolation and stigma associated with taking care of the disabled person in our milieu and have little or no leisure time, hence predisposing the caregiver to decline in mental health. In addition, it is possible dissatisfaction from financial lack as a result of not engaging in a paid job caused by disability of stroke to the survivor and the inability of the caregiver to engage fully in income generating activity as a result of the caregiving demands may also have contributed to the high preponderance of depression among the caregivers of stroke survivors in our study. However, the previous study has reported financial constraint to have a significant positive relationship with depression (24).

The sociodemographic characteristic of the caregiver of stroke survivors in our study (gender, age, employment status, educational level, relationship with the stroke

survivor, and depression) was not significantly associated with depression. This finding is in agreement with previous studies that reported gender (27), age (24), employment status (28), and educational level of caregivers of post stroke survivors (29) was not associated with depression amongst caregivers of stroke.

Post stroke duration of stroke survivor had a significant association with depression of caregivers of stroke survivors. In our study, caregivers of stroke survivors in the early phase of recovery had a higher preponderance of depression. This observation is not surprising due to the fact that the neurological recovery of stroke patients has been reported to significantly improve within the 3-week period immediately after a stroke, and the functional recovery may continue to improve up to 18 months after stroke (30). Hence stroke patients who are at different phases of stroke recovery after a stroke generally have different severity and manifestation of neurological deficits as well as different levels of functional impairments (31-33), translating to diverse needs for caregiving and demand on the caregiver. Furthermore, at the early phase of caregiving for stroke survivors, caregivers are not prepared for the role of caregiving and hence not well adjusted for the role of caregiving, which often has psychological implications for the caregiver. (34). This corroborates a study by Berg and colleagues that reported the stronger presence of depressive symptoms among caregivers of stroke survivors at the acute phase of a stroke (15).

In addition, the type of stroke was shown to have a significant association with depression in our study. In our study ischaemic stroke patients' caregivers were observed to have a higher prevalence of depression. This is not unanticipated as it has been reported in the literature that patients with haemorrhagic stroke have shown better neurological and functional prognoses than ischaemic stroke survivors (35). The poor functional prognoses in ischaemic stroke survivors will result in more functional limitation that necessitates much dependence and assistance from the caregivers (36) precipitating long-term and more demanding care, which impoverishes the caregivers both physically and psychologically (8) making them vulnerable to depression.

4.1. Conclusions

There is therefore a need for a paradigm shift in the rehabilitation of stroke survivors to include caregivers. Coping strategies and education of caregivers aimed at ameliorating the burden of caring for the stroke survivor should be part of the rehabilitation process. Further studies on the prevalence of depression among primary caregivers of stroke survivors in different regions of Nigeria is needed. In addition, a future study on effective strategies capable of

Table 3. Chi-Square Test for Difference in the Prevalence of Depression Among Participants

Variable	Depressed	Non-Depressed	χ^2	P Value
Gender			1.362	0.24
Male	25 (41.1)	36 (59.0)		
Female	28 (51.9)	26 (48.1)		
Age			2.282	0.32
19 - 35	42 (48.0)	44 (51.2)		
36 - 55	11 (40.7)	16 (59.3)		
> 55	0 (0.0)	2 (100)		
Employment status			2.567	0.28
Employed	12 (35.3)	22 (64.7)		
Unemployed	18 (47.4)	20 (52.6)		
Student	23 (53.5)	20 (46.5)		
Educational level			2.029	0.73
Primary	2 (33.3)	4 (66.7)		
Secondary	8 (47.1)	9 (52.9)		
Tertiary	31 (47.7)	34 (52.3)		
Qur'anic	8 (38.1)	13 (61.90)		
None	4 (66.7)	2 (33.3)		
Relationship with stroke survivors			3.906	0.42
Child	35 (46.1)	41 (53.9)		
Sibling	9 (56.2)	7 (43.8)		
Spouse	3 (60.0)	2 (40.0)		
Friend	3 (60.0)	6 (85.7)		
Others	5 (45.5)	6 (54.5)		
Post-stroke duration, mo			7.477	0.02**
1 - 12	33 (38.8)	52 (61.2)		
13 - 24	11 (61.1)	7 (38.9)		
≥ 25	9 (75.0)	3 (25.0)		
Side of affectation			0.151	0.69
Left	28 (44.4)	35 (55.6)		
Right	25 (48.1)	27 (51.9)		
Type of stroke			4.840	0.03**
Ischaemic	38 (54.3)	32 (55.6)		
Haemorrhagic	15 (33.3)	30 (66.7)		

^aValues are expressed as No. (%).

appreciably reducing the prevalence of depression among primary caregivers of stroke survivors is also urgently required.

4.2. Limitation of Study

An important limitation of this study was the non-probability sampling technique utilized in recruiting par-

ticipants, which could have resulted in selection bias and may have negatively affected the generalizability of findings. Also, our study did not put into consideration the severity of the disability of stroke survivors and the presence or absence of other disabling conditions such as musculoskeletal problems (not as a result of the stroke) among stroke survivors in this study, which may negatively affect

the dependence of stroke survivors on their care-giver.

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Footnote

Conflict of Interest: The authors declare that they have no conflicts of interest.

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