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Assessment of Quality of Life and Incidence of Depression in Post Stroke Patients

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ABSTRACT

Depression is a common illness worldwide. Social, psychological and biological factors can lead to depression. Chronic illness among the elderly is a significant reason affecting mental health. Often it is not diagnosed correctly. An observational study was conducted to assess the quality of life and the incidence of depression in post-stroke patients. Subjects were recruited to the study by investigations during ward/OP visits. The subjects were briefed about the study, and informed consent was obtained. Data were collected using various study tools and analyzed statistically by computing proportion for all qualitative data and mean, standard deviation, median, the interquartile range for quantitative data. A total of 50 subjects were enrolled in the study based on inclusion and exclusion criteria. Severe cognitive impairment was revealed in 14% of the patients. The burden of depression and severity was evaluated using Patient health questionnaire-9 and Hamilton depression scale, respectively. It was found that 22 subjects (44%) had moderate depression, while 2 (4%) had severe depression. The functionality of the subjects was measured and found that 18% of subjects were 'dependent' on their caregiver. SSQOL assessment showed the lowest score in the domains 'work & productivity' and 'energy". As much as treating the etiological factors of stroke, dealing with the mental aspect of stroke is necessary. Assessing and treating post-stroke depression is essential to reduce the morbidity and mortality of patients. Hence, early assessment and management of mental health after stroke is necessary to prevent a chance of developing another stroke.

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INTRODUCTION

Depression is a common illness that could occur due to various factors, including chronic illnesses such as cancer, heart diseases, diabetes, among others. The chronic disease condition could decrease the quality of life and functionality of the patient, and that could get worse if the patient also suffers from depression. Assessment of depression is often not a part of the diagnosis and management of chronic disorders. This often leads to under diagnosis of depression, thereby worsening the outcomes in the management of the chronic disorder, as well (Chemerinski *et al.*, 2001). Major depres-

sion is experienced by about one third of stroke survivors, and in most cases, the symptoms appear within three months (Das *et al.*, 2010; Kotila *et al.*, 1998). According to the American Stroke Association, more women suffer from post-stroke depression (PSD) compared to men. PSD can be either due to social, psychological and economic stresses that rises after a stroke or can be due to disruption of neural circuits which are involved in mood regulation. An association between specific lesions in the left anterior and basal ganglia and occurrence of post-stroke depression has been proposed by several studies (Singh *et al.*, 2000).
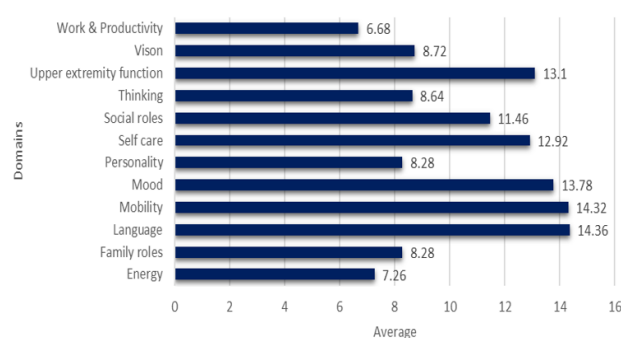

Figure 1: Stroke specific quality of life assessment.

Managing PSD is important as it increases the chance of developing another stroke leading to a further decrease in the quality of life of patients. Stroke survivors experience significant depression that affects cognitive function, physical movement and lead to a common effect on recovery and survival (Robinson *et al.*, 1983). Post-stroke depression majorly affects the quality of life, thereby leading to an increased mortality rate. The onset of PSD could be within a month or maybe more than a year after stroke. The difference in onset is due to the biological changes in the brain following stroke and changes in the personality and mood that occur over time (Sinyor *et al.*, 1986). This could be because of their limitation in physical and mental ability. One of the most challenging things the patient has to face is being entirely or partially dependent on a caregiver. Hence, PSD becomes an extra burden in the patient's daily life. As results support from family and friends becomes an essential coping measure. The data on the incidence of PSD severely lacks in India, and this work assesses the incidence of PSD and the quality of life in patients having PSD.

Aims and Objectives

Aim: To assess the quality of life and the incidence of depression in post-stroke patients.

Objectives: The objectives of the present study were

1. To assess the incidence of post-stroke depression.

2. To assess the quality of life in stroke patients.

3. To find the degree of post-stroke functionality.

MATERIALS AND METHODS

This observational study was conducted at a 500 bedded teaching hospital in Bengaluru, in the department of General Medicine. The Institutional Ethics Committee approved the study. The study included patients over the age of 18, who had a stroke in the immediate past two years but not having a previous diagnosis of mental health disorders. Only subjects willing to participate in the study and able to provide informed consent were included in the study.

Data was sourced through personal interviews and review of medical records. The mental status of the patient was assessed using a Mini-Mental Status Examination (MMSE). Patient Health Questionnaire 9 (PHQ-9) was used as a tool to screen for depression, and patients with depression were further evaluated using Hamilton Depression Rating Scale (HAM-D) (Kearins and Luciano, 2015). Stroke specific quality of life scale (SS-QOL) was used to assess health-related quality of life of the participants.

The data thus collected were entered into Microsoft Excel and analyzed statistically by computing proportion for all qualitative data and mean, standard deviation, for quantitative data. Statistical tests were considered significant at a p-value of <0.05.

RESULTS AND DISCUSSION

The study included a total of 50 patients with an average age of 56.04±11.33 years. Most of the subjects were in the age group 45-55 years, accounting for 72% of the total study population. Majority of the participants were males (78%). The most common presentation was Ischemic stroke (92%). Left side hemiplegia was present in 23 patients (46%) while 25 patients (50%) came with right side hemiplegia. Quadriparesis (Bilateral hemiplegia) was seen in 4% of the subjects.

The study found that nine subjects (18%) had a total dependency on their family members for performing activities of daily life and an equal number of subjects did not have any dependency. Severe dependency was seen in 6 subjects (12%). Functionality assessment is depicted in Table 1.

Stroke specific quality of life showed that study population scored highest in the domain 'language,' i.e.

Table 1: Barthel Index assessment on functionality

Functionality	Score Distribution	No. of patients	Percentage
Total dependency	0-19	9	18
Severe dependency	20-39	6	12
Moderate dependency	40-59	11	22
Slight dependency	60-79	15	30
No dependency	80-100	9	18

Table 2: Quality of life assessment

Domain	Max score	Mean	Standard deviation	Mean percentage
Energy	15	7.26	3.19	48.4
Family roles	15	8.28	2.87	55.2
Language	20	14.36	5.95	71.8
Mobility	30	14.32	7.38	47.73
Mood	20	13.78	5.37	68.9
Personality	15	8.28	3.18	55.2
Self-care	20	12.92	6.15	64.6
Social roles	20	11.46	4.66	57.3
Thinking	15	8.64	3.31	57.6
Upper extremity function	20	13.1	5.96	65.5
Vision	15	8.72	3.49	58.13
Work & productivity	15	6.68	2.83	44.53

Table 3: Patient health questionnaire-9 results

Diagnosis of depression	Total score	No. Of patients	Percentage
None	0-4	1	2
Mild depression	5-9	14	28
Moderate depression	10-14	22	44
Moderately severe	15-19	11	22
Severe depression	20-27	2	4

14.36±5.95. Least score is observed in the domain 'work & productivity' (6.68±2.83), followed by 'Mobility' (14.32±7.38) and 'Energy' (7.26±3.19) as shown in Figure 1. The domain 'Social roles' showed a mean score of 11.46±4.66078 and 'Self-care' 12.92±6.15726. A detailed assessment of the stroke-specific quality of life is depicted in Table 2 in the form of Mean and Mean percentage. Mean percentage is calculated as Mean/Max score ×100.

Correlation analysis was done between the domains of SSQOL. A strong positive linear relationship was found between the domain 'Mood' and 'Social role' with a correlation coefficient (r) +0.8. Mini-Mental Status Examination (MMSE) showed that seven patients (14%) included in the study had severe cognitive impairment, 18 (36 %) had moderate cognitive impairment and 16 (32 %) had mild cognitive impairment.

Patient Health Questionnaire-9 was used for screening depression. It was found that 2 (4%) had severe depression, 11 (22%) had severe depression, and 22 (44%) had moderate depression. Only one patient did not have any symptoms of depression. Out of the remaining 49 subjects, the Hamilton depression rating scale was further used for screening of severity of depression.

It was observed that 4 (8%) subjects were suffering from severe depression and 8 (16%) had moderately severe depression. According to HDRS, observed that 4 (8%) subjects were suffering less than mild. Hence, they were categorized as 'None' Table 3.

A simple linear regression between the functionality score obtained using the Barthel index and depression scores obtained from HDRS was performed. A significant regression equation was found

(F (1, 48) = 4.24, p < 0.044), with an R^2 of 0.08. Subjects depression score found to be 17.595-0.052 (functionality score). It was found that for every unit increase change in functionality, there will be a 0.052 decrease in depression score.

On the application of Pearson Correlation between depression and age, it was found that there was a weak positive relation between PHQ 9 scores and age (r-value 0.15) that was statistically not significant (p-value 0.2885). However, a statistically significant moderate positive relation was found between HAM-D scores and age (0.34, p<0.05). This implies that the incidence of depression is higher with the increase of age.

The mean age of study subject was 56.04±11.33 years which was similar to the mean age 61.15±8.6 years in the study conducted by Iranmanesh and Vakilian (2009). Among the subjects enrolled for this study, most of them belonged to the age group 45-55 years, whereas a study conducted by Alajbegovic et al. (2014), showed that most of the patient were in the age group 50-60 years. A moderate positive relation was found between depression score and age, implying the incidence of depression is higher with the increase of age.

The quality of life of the patient was assessed which showed that the study population scored lowest in domain 'work and productivity,' i.e. 44% indicating that work and productivity was the most affected domain in the study. A strong positive linear relationship was found in the domain 'mood' and 'social role' with a correlation coefficient of 0.83. A similar result was obtained in the study conducted by Cruz-Cruz et al. (2013). In this study, a high degree of disability in activities of daily living (ADL) was observed. This was much as same as the results obtained in a study conducted by Rajashekaran et al. (2013). The same study also showed that cognitive impairment (MMSE scores <24) was almost equally distributed in the study population, which is similar to the present study.

The screening of severity of depression was performed and found that two subjects (4%) were severely depressed, 11 subjects (22%) were moderately severely depressed, and most of the patients 22 (44%) were moderately depressed. It showed a well-distributed score and performed well as a brief screener for PSD, regardless of age or gender. A similar result was obtained in a study conducted by Williams et al. (2004). The severity of depression was assessed and found that about 44% of the subjects had moderately severe depression, and about 8% of the subjects had significant depression. In contrast to our study, a study by Aben et al. (2002) had found that about 23.3% of subjects had significant depression.

Correlation between the functionality score and depression score revealed that for every unit increase in functionality, there would be a 0.052 unit decrease in depression score. A similar association was made in the study by Ezema et al. (2019), which found that Post-stroke depression was associated with a low level of functional Independence in ADL by using Chi-square test. Stroke specific quality of life showed that 'work & productivity' domain was most affected (80%) in right-handed patients with right hemiplegia whereas 'energy' domain was most affected (95%) in patients who were right-handed with left hemiplegia. The least affected domain was 'self-care,' i.e. 56% of the right-handed patients with right hemiplegia.

CONCLUSION

Findings in the present study support the need to pay closer attention to the psychological needs of stroke survivors to improve well- being. The present study shows that depression is mainly dependent on functionality. This suggests that attention should be paid in addressing PSD in stroke patients to help them regain their functional independence as much as possible. The main treatment goals of acute stroke are to conserve the neurological functions of the brain and prevent the long-term disabilities, prevent complications of the attack, prevent stroke recurrence and to improve the patient's cognitive functions. The present guidelines for the treatment of stroke are only addressing the etiological aspect of stroke. Therefore, the mental aspect of stroke must also be considered in the guideline. As assessment of PSD in stroke survivors will have a significant impact on the physician, clinical decision-making such as referring to a psychologist or some informal psychotherapy for patients as well as the caregivers. The study was conducted in a single city, and the sample size was less.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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