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A Study of Prevalence, Predictive Factors and Effect on Quality Of Life in Post Stroke Depression

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ABSTRACT:
Background: Stroke is a disease of increasing relevance in this ageing world. Post stroke depression is an under recognized condition of extreme relevance in rehabilitation of the patient. This study aims to explore the determinants of post stroke depression and its effect on quality of life.
Objectives: To study of prevalence and determinants of post stroke depression and its effect on quality of life.
Materials and methods: One hundred patients attending the medicine outpatient department in Ayaan institute of medical sciences for follow up after acute phase of stroke satisfying the inclusion and exclusion criteria were recruited after taking informed consent over a period of one year. Sociodemographic data including data regarding co-morbidities was collected. Patients were evaluated for presence of depression using ICD 10 and quantified using Hamilton depression rating scale. Functional impairment in stroke patients assessed by Barthel's index whereas quality of life was evaluated using Stroke specific quality of life scale.
Results: Thirty-four per cent patients with stroke had clinical depression. We found low socioeconomic status, female gender, low educational status, and presence of significant functional impairment to be predictors of post stroke depression. Post stroke depression significantly affects the quality of life therefore is an entity of relevance in clinical practice.
Conclusion: Post stroke depression is an important sequalae of stroke which affects the quality of life and significantly affects the rehabilitation of the patients. Early detection and intervention can be the key to successful integration of patients with stroke into the society.
Keywords: cerebrovascular accident, depression, quality of life, rehabilitation, impairment

I. INTRODUCTION:

With ever changing lifestyles and increasing metabolic disorders, stroke has become a leading cause of neurological impairment and disability in a rapidly ageing world[1]. Stroke is the second most leading cause of mortality worldwide and according to the global burden of disease study, eighty-five per cent of the burden is borne by lower middle income countries[2,3]. It is prudent on the part of a clinician to not only evaluate and treat the neurological deficit but to pay attention to the mental wellbeing of the person. Post stroke psychiatric disturbances especially depression[4] is common and causes significant difficulties in rehabilitation of a patient. Various studies have demonstrated the post stroke depression to present in almost every third stroke patient.[4] Roth et al were the first to study the presence of depression in stroke patients[6]. In a study by Folstein et al depression was more prevalent in patients with stroke than in orthopedic patients with same amount of disability.[7]

Studies differ with respect to factors identified to affect post stroke depression. Some studies suggest poor pre stroke functioning, female gender, higher functional impairment, and presence of co morbidities like diabetes mellitus[8,9,12]as potential risk factors for depression after stroke whereas another study conducted in India demonstrated male gender, marital status, nuclear family, living in urban areas to be significantly correlated with depression in stroke survivors[10]. But functional impairment and disability and social support have been strongly correlated to post stroke depression[9,11,12,13].

Stroke patients with depression show far less recovery from impairment than non-depressed patients and are 3.4 times more likely to die within first ten years after stroke.[12] Quality of life in stroke patients is often an afterthought in the management of patients. It is multidimensional including physical, psychological, social, cognitive,

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economic, and functional factors which contribute to the overall rehabilitation of the patient. Presence of post stroke psychiatric disturbances complicates the clinical picture and makes life arduous for the patients.

Effect of depression in stroke patients on quality of life has been demonstrated by studies worldwide. There is a paucity of studies in India studying the correlation of depression in stroke patients and quality of life. This study aims to target that lacuna in the research by studying the prevalence, risk factors and life quality in these patients

II. MATERIALS AND METHODS:

This was a cross sectional study conducted at Ayaan institute of medical sciences and hospital over the period of one year. Patients attending the medicine outpatient department for follow up for stroke were recruited. Inclusion criteria for patients was patients older than forty years, satisfying the WHO criteria for stroke, not acutely ill, oriented to time, place, and person, were able to communicate meaningfully, community based, no other physical illness causing significant disability and were willing to be part of the study.

One hundred fourteen patients were evaluated out of which hundred patients satisfying the inclusion criteria were recruited and interviewed. Exclusion criteria included anybody younger than forty years of age ruling out young stroke, patients with MMSE scores less than 24, global aphasia, presence of memory disturbances as presence of dementia can masquerade as depressive symptoms. Patients with severe substance dependence syndrome were also excluded. None of the patients recruited were currently on treatment for any psychiatric illness.

Patients were interviewed by a qualified psychiatrist and semi structured proforma was used to collect sociodemographic data and co morbidities. CT scan reports were collected and documented. ICD 10[14] was used to diagnose depression and Hamilton depression rating scale[15] was used to quantify the depression. Functional impairment in patients with stroke was assessed by Barthel's index[16] and Stroke specific quality of life was used to assess various domains of life quality[17,18,19]. Stroke specific quality of life scale is an easy to administer test which assesses the patients function in twelve domains with 49 items in which responses are graded by a Likert's system. It can even be self-administered. The psychometric properties of SSQOL have been validated in assessment of stroke patients.[19]

Written informed consent was obtained from all the participants. The institutional ethics committee approval was obtained.

Statistical analysis was done using statistical package for statistical science (SPSS version 17.0 software). Chi square test was used to find the significance of study variables in depressed and non-depressed stroke patients. Independent t test was used to study the relationship of SSQOL scores and depression. P value of 0.05 was deemed statistically significant.

III. RESULTS:

We found that 34% of stroke patients had depression. Mean age of both the groups with depression and non -depressed group was comparable. Of the patients diagnosed with depression five patients had severe depression, nineteen patients had moderate depression and ten patients had mild depression. Depression was significantly higher in female gender, low socioeconomic status, low educational status. There was no statistically significant difference due to presence of diabetes mellitus, systemic hypertension, past and family history of depression. (TABLE 1).

TABLE 1: Relationship of sociodemographic variable with stroke prevalence

Parameter		**Stroke patients without depression**	**Stroke patients with depression**	**P value**
Age	Mean age in years	61.54 ± 12	62.2 ±14.2	0.8141
Gender	Male	42	14	**0.027***
	Female	24	20	
Socioeconomic status	Lower	13	24	**<0.001***
	Middle	52	10	
	Upper	1	0	
Education	Literate	55	19	**0.0031***

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	Illiterate	11	15	
Marital status	Married	44	25	0.581
	Single/widowed	12	9	
Employment	Working	26	25	0.238
	Unemployed/retired	40	9	
Diabetics		38	28	0.567
Hypertension		26	14	0.625
Past history of depression		8	3	0.44
Family history of depression		6	4	0.901

In this study the site of lesion of stroke or type of stroke also didn't affect the presence of depression. Functional impairment in stroke patients was assessed by Barthel's index, showed that the severity and prevalence of depression was positively correlated with the functional impairment and dependence of others (TABLE 2)

Table 2: Relationship of stroke variables and functional impairment with post stroke depression:

VARIABLES		**NO PSD(N=66)**	**PSD (N=34)**	**P value**
Type of stroke	Ischemic	22	6	0.107
	Hemorrhagic	44	28	
Side of lesion	Right sided	42	23	0.825
	Left sided	24	11	
Functional impairment	Totally dependent	3	5	**<0.001***
	Severely dependent	7	20	
	Moderately dependent	22	7	
	Slightly dependent	33	2	
	Non-dependent	1	0	

Quality of life was significantly affected by the presence of depression especially the domains related to energy, family roles, mood, social roles, thinking and work productivity (TABLE 3).

TABLE 3: Stroke specific quality of life in post stroke depression and non-depressed stroke patient

SSQOL	**Non-depressed stroke**		**Depressed stroke**		**P value**
Domains	**Mean**	**SD**	**Mean**	**SD**	
Energy (15)	11.92	1.56	9.42	3.27	**<0.0001***
Family roles (15)	13.12	1.71	11.45	3.18	**0.0017***
Language (25)	24.21	1.06	23.94	2.24	0.4418
Mobility (30)	23.86	7.32	22.63	2.26	0.3443
Mood (25)	21.67	1.79	19.72	4.96	**0.0089***
Personality (15)	12.32	3.92	11.66	4.73	0.486
Self-care (25)	21.37	4.82	19.65	3.36	0.0711
Social roles (25)	21.42	5.7	13.69	3.85	**<0.0001***
Thinking (15)	14.78	0.31	10.98	5.23	**<0.0001***

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Upper extremity function (25)	20.62	7.12	19.48	9.63	0.5218
Vision (15)	13.12	1.68	13.36	1.54	0.4998
Work productivity (15)	13.01	2.6	9.44	1.43	**<0.0001***

IV. DISCUSSION:

The salient findings of this study are high prevalence of post stroke depression around 34% which is very similar to many studies.[20,21] Sociodemographic variables associated with increased prevalence of depression in stroke patients was female gender[20,22], low socio economic status[22], low educational status.[22,23,24]Prevalence of mood disorders especially depression is generally higher in women in general population, that held true for even post stroke depression in our study. The association of low educational status and low socioeconomic status with higher prevalence of depression may be an indicator of poor problem-solving skills and difficult premorbid living conditions. Socioeconomic status also adversely affects as to whether the patient gets adequate post stroke social support and rehabilitation.

Some studies have found post stroke depression to have significant association with diabetes, hypertension, presence previous psychiatric illness and family history [22,23]. We did not find any association between depression in stroke patients and comorbidities as well as past or family history of depression, which was also demonstrated in previous studies[24,25,26]

More than 2/3[rd] of the patients had moderate to severe depression which required a specialist care and proper treatment. Sadly, only two patients out of the thirty-four patients had been referred to a psychiatrist for a referral highlighting the under reporting and under diagnosis of depression in stroke patients.

Stroke variables such as side of lesion and type of stroke were not significantly associated with prevalence of depression in this study. The relationship between the site of lesion on the prevalence of depression is actively debated in the field. Some studies such as Rajasekharan et al[27]found that depression was more prominent in patients with cortical lesions[28] and especially with left sided lesions than right sided lesions. Failure to demonstrate a significant relationship between lesion location and depression in this study can be due to the stringent inclusion criterion of the study and methodological limitations of this study and needs further exploration.

Etiology of post stroke depression must be evaluated by biopsychosocial approach. Multiple biological mechanisms have been postulated for development of post stroke depression. There is empirical evidence suggesting a role of depletion monoaminergic systems[29], Hypothalamus-pituitary-adrenal axis dysfunction[30,31], prefrontal- sub cortical circuit disruption[32,33,34] alteration in the levels brain derived neurotrophic factors[33] and neuroplasticity in post stroke depression. It has also been postulated that it can be reactionary to the loss of function and disability caused by stroke.

Our finding about the effect of functional impairment on depression is reported in many previous studies as well.[35,36,37,38] We find that functional impairment of the patient is the biggest indicator of prevalence of post stroke depression. Poor functional status means lower social interactions, increased disability, poor occupational adjustment and worsening financial conditions in most cases.

The current emphasis of a treating clinician is shifting towards the quality of life of the patient than just recognizing and treating the disease associated. This study demonstrates a strong association between quality of life measured by stroke specific quality of life and depression. Understandably the domains related to energy, family roles, social roles, mood, thinking, and work productivity were affected by the presence of depression. Previous studies with longitudinal follow up have shown that dependence for activities of daily living and occupational impairment affect the quality-of-life significantly[39.]

Some studies showed disability, depression pre-stroke, cognitive impairment, stroke severity and anxiety to be important variables for post stroke depression[37,38]. Lower quality of life, increased mortality and disability are independent outcomes of depression after stroke.[37,38,39]The most important effect of diagnosing and treating post stroke depression with antidepressants[40,43,46] has been change in mortality and quality of life. Post stroke depression is known to cause autonomic nervous system dysregulation therefore contributing to increase long term cardiovascular mortality.[46] it makes recognition of post stroke

depression of paramount importance for the clinician and a public health problem.

V. LIMITATIONS:

Biggest limitation of this study was a small sample size and recruitment of patients from a tertiary care center rather than from the community. This study also ruled out patients with global aphasia therefore bringing about a significant bias regarding the site of lesion[47]. This study fails to longitudinally follow up the patients and evaluates the patients only once. Further this study failed to study the relationship of cognitive dysfunction and post stroke depression which can be an important predictor.[41,42]

VI. CONCLUSION:

Post stroke depression is commonly associated with stroke and account for poor quality of life, increased mortality and make rehabilitation of patients difficult. Low socioeconomic status, female gender, poor functional status after stroke are predictors of post stroke depression. Further studies are required in post stroke depression and response to treatment to bring a paradigm shift in the approach to a patient with stroke.

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