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Research Article

Effect of Anxiety and Depression on Quality of Life A mong Stroke Survivors

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Abstract

Background: Stroke is a major cause of death and disability globally, and post-stroke depression and anxiety are very common but often overlooked, leading to worse recovery and lower quality of life. The Stroke-Specific Quality of Life (SS QOL) and Depression Anxiety Stress Scale (DASS 21) are tools used to measure the quality of life and emotional problems in stroke survivors.

Aim: The goal of this study was to examine the quality of life of individuals who had an ischemic stroke and look at how it relates to depression and anxiety after the stroke.

Methods: A survey was conducted with 100 ischemic stroke survivors aged 45 to 65, who had had a stroke between three and six months earlier. These participants were selected through convenience sampling from neurological rehabilitation centers in Bangalore. Information was collected using Google Forms. The DASS 21 helped assess depression and anxiety, while the SS QOL measured quality of life. Additional data on the participants' background and clinical details were also gathered. Descriptive statistics and Pearson correlation analysis were used to analyze the data and look for relationships between the DASS 21 scores and the SS QOL total scores.

Results: The average age of the participants was 55.16 years (with a standard deviation of 6.05), and the average time since the stroke was 4.37 months (with a standard deviation of 1.08). The average DASS 21 depression score was 10.37 (standard deviation 7.01), and the average anxiety score was 9.54 (standard deviation 5.93). Both scores were slightly above normal thresholds, suggesting that the participants had common emotional symptoms. The average SS QOL total score was 185.17 (standard deviation 37.39), reflecting a moderate level of stroke-specific quality of life. Depression and anxiety showed weak negative correlations with the SS QOL scores ($r = -0.032$ and $r = -0.035$ respectively), meaning that higher levels of emotional distress were associated with slightly lower quality of life, although the relationships were small.

Conclusion: Ischemic stroke survivors in the subacute phase had a moderate quality of life and mild levels of depression and anxiety. Higher emotional distress was linked to

slightly worse stroke-specific quality of life. These findings show the need for regular psychological screening and integrated rehabilitation strategies that address emotional and functional needs to improve outcomes after a stroke.

Keywords: Stroke, Ischemic Stroke, Depression, Anxiety, Quality of Life, Stroke Survivors, DASS-21, Stroke-Specific Quality of Life (SS-QOL), Psychological Health, Rehabilitation.

INTRODUCTION:

Stroke is a clinical condition marked by a sudden, localized neurological problem due to damage to the blood vessels in the central nervous system, or as a result of a brain infarction or haemorrhage.

Depending on the cause, strokes are divided into two main types: ischemic and haemorrhagic. Ischemic stroke occurs when the blood supply to parts of the brain is blocked, and it is the most common type. Haemorrhagic stroke occurs when a brain artery ruptures.

According to the World Health Organization, stroke is the second leading cause of death and the third leading cause of disability globally.

In low- and middle-income countries, stroke accounts for 70% of all cases and 87% of deaths, reducing life expectancy through disability. In rural areas of India, the stroke prevalence rate ranges from 84 to 262 per 100,000 people, while in urban areas it ranges from 334 to 424 per 100,000 people.

Stroke can lead to several complications, with motor and speech impairments being the most noticeable.

Other complications, such as cognitive disorders, epilepsy, depression, fatigue, tremors, and difficulty swallowing, receive less attention. These complications can significantly affect a patient's ability to function, emotional well-being, and cognitive functioning. The most common post-stroke issues are depression and anxiety.

Post-stroke depression (PSD) is a common mood disorder that occurs after a stroke.

It has a strong link with higher mortality rates and is negatively related to functional recovery. PSD can lower the quality of life for patients, slow down their recovery, and increase the burden on families and communities.

Anxiety disorders are the most common type of mental health disorder, with a lifetime prevalence of about 11% worldwide.

Anxiety following a stroke or transient ischemic attack (TIA) occurs in about 24% of patients and is a distressing problem linked to a lower quality of life.

The Stroke-Specific Quality of Life (SS-QOL) scale is a tool used to measure health-related quality of life (HRQOL) for people who have had a stroke.

It is a multi-dimensional patient-reported outcome (PRO) measure that assesses aspects of functioning and HRQOL relevant to individuals who have had an ischemic stroke.

The DASS is a 42-item questionnaire that measures the intensity of three negative emotional states: depression, anxiety, and stress.

The DASS-Depression focuses on low mood, motivation, and self-esteem, DASS-anxiety on feelings of physiological arousal, fear, and panic, and DASS-stress on tension and irritability.

Depression and stress symptoms were significantly linked to the discontinuation of rehabilitation services.

Additionally, the self-report of fewer sleep hours was significantly associated with anxiety and stress.

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Despite being common, post-stroke anxiety (PSA) is not as well studied as post-stroke depression.

There are no prevention studies on PSA, and very few randomized trials on interventions to treat it.

This study aims to evaluate the daily quality of life and its connection to post-stroke depression and anxiety in stroke survivors.

METHODOLOGY

Study Design

The present study adopted a cross-sectional survey design to assess the effect of anxiety and depression on the quality of life among stroke survivors.

Study Setting and Participants

All major neurological rehabilitation centers in Bangalore were contacted to find potential participants.

The required sample size was 100. Contact details of stroke survivors and their caregivers were obtained from these centers. The inclusion criteria required the participants to be between the ages of 45 to 65, willing to participate, available for the duration of the intervention and follow-up, diagnosed with ischemic stroke confirmed by MRI, both male and female, within 3 to 6 months post-stroke, and without serious, unstable medical conditions. Participants who had severe cognitive impairment, communication problems, consciousness disturbances, or other functional limitations that prevented them from completing the questionnaires or who were unwilling to participate were excluded.

Sampling Method

A convenience sampling technique was employed to recruit participants.

Data Collection Procedure

After collecting contact details from rehabilitation centers, participants or their primary caregivers were contacted by phone. They were informed about the study's purpose, and an online consent form was provided before participation. Data collection was carried out using Google Forms, where two standardized questionnaires were used:

1. Depression, Anxiety, and Stress Scale (DASS-21): to measure the levels of depression, anxiety, and stress.
2. Stroke-Specific Quality of Life Scale (SS-QOL): to evaluate health-related quality of life across multiple areas in stroke survivors.

Each participant or caregiver received a link to the Google Form containing both questionnaires along with demographic information (age, gender, type and duration of stroke, and rehabilitation status).

Participants were given enough time to complete the forms, and reminders were sent when necessary to ensure a high response rate.

Outcome Measures

Primary outcome: Quality of life of stroke survivors, measured by SS-QOL.

Secondary outcome: Anxiety and depression levels, measured by DASS-21.

The Depression Anxiety Stress Scale (DASS-21) was used to measure the presence and severity of anxiety, depression, and stress symptoms, using 7 items for each category (19).

DASS is a reliable, valid, and internally consistent measure (20). The normal cut-off scores are 9 for depression, 7 for anxiety, and 14 for stress. Higher DASS scores suggest a greater severity of symptoms.

The Stroke-Specific Quality of Life Scale (SS-QOL) is a self-reported questionnaire designed to evaluate health-related quality of life (HRQOL) in stroke survivors.

The SS-QOL consists of 49 items covering 12 domains of HRQOL: energy (3 items), family roles (3 items), language (5 items), mobility (6 items), mood (5 items), personality (3 items), self-care (5 items), social roles (5 items), thinking (3 items), upper extremity function (5 items), vision (3 items), and work/productivity (3 items). Each item is rated on a 5-point Likert scale ranging from completely true to not true at all.

Total and domain scores are generated, with higher scores representing better health.

RESULTS:

Demographic and clinical characteristics:

A total of 100 stroke survivors who met the inclusion criteria completed the DASS-21 and SS-QOL questionnaires.

The mean age of the sample was 55.16 years (SD 6.05), with an age range of 45–65 years. The mean duration since stroke onset was 4.37 months (SD 1.08), consistent with the 3–6 month post-stroke recruitment window.

Depression and anxiety, emotional status was assessed using the DASS-21, which provides subscale scores for depression, anxiety, and stress.

The mean depression score was 10.37 (SD 7.01), slightly above the normal cut-off score of 9, indicating that many participants experienced at least mild depressive symptoms. The mean anxiety score was 9.54 (SD 5.93), exceeding the normal cut-off of 7 and suggesting a considerable prevalence of anxiety symptoms in this group.

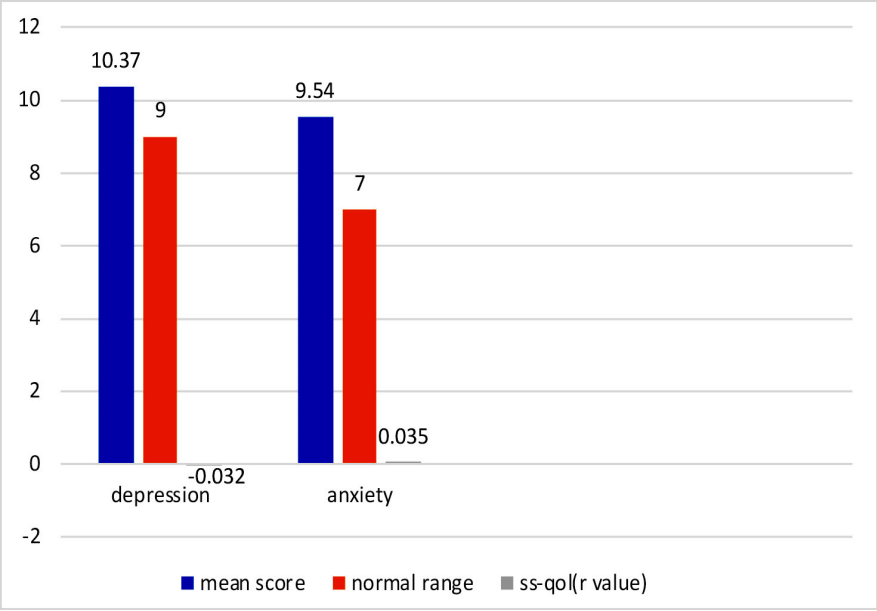
Stroke-specific quality of life (SS-QOL) Health-related quality of life was evaluated using the Stroke-Specific Quality of Life (SS-QOL) scale, a 49-item measure covering 12 domains such as mobility, mood, self-care, and social roles.

The mean total SS-QOL score in this sample was 185.17 (SD 37.39), reflecting a moderate level of perceived quality of life during the subacute post-stroke period.

Relationship between depression, anxiety, and quality of life

Pearson correlation analysis was conducted to examine the association between DASS-21 subscale scores and SS-QOL total scores.

Depression showed a weak negative correlation with SS-QOL ($r = -0.032$), indicating that higher depressive symptoms tended to be associated with slightly lower quality of life, although the magnitude of this relationship was minimal. Anxiety also exhibited a weak negative correlation with SS-QOL ($r = -0.035$), suggesting a similarly small inverse association between anxiety and quality of life.



DISCUSSION

This cross-sectional study aimed to assess the quality of life of stroke survivors and its association with post-stroke depression and anxiety using the DASS-21 and SS-QOL scales among 100 individuals 3–6 months after ischemic stroke.

The mean age and post-stroke duration of the participants are in line with reports that middle-aged and older adults in the subacute phase constitute a substantial proportion of patients receiving neurological rehabilitation.

In the current dataset, mean depression and anxiety scores were slightly above their respective normal cut-off scores on the DASS-21, indicating that many stroke survivors experienced elevated emotional distress during the early months following stroke.

This observation is consistent with evidence that post-stroke depression and anxiety are common complications and can adversely affect functional recovery and survival.

This cohort was predominantly expressed as depression and anxiety.

The average SS-QOL total score of 185.17 reflects a moderate level of health-related quality of life, which is expected in individuals transitioning from the acute to subacute rehabilitation phase.

Stroke is known to impair multiple domains including mobility, mood, language, and social participation, and the SS-QOL scale allows these domains to be captured in a stroke-specific and clinically meaningful way. The moderate mean score suggests that although patients had regained some degree of independence, there remained significant limitations affecting daily functioning and participation. Although negative correlations were observed between depression, anxiety, and SS-QOL total scores, the correlation coefficients were small in magnitude. The direction of these associations is in line with the theoretical expectation that higher psychological distress is linked to poorer quality of life, but the weak strength of the relationships suggests that, in this dataset, emotional symptoms and global quality of life do not show strong linear coupling.

This study was supported by Ghosh et al. (2024) who used the same combination of DASS-21 and SS-QOL and reported that 67% of stroke survivors had depression, 63% had anxiety, and 62% had stress, with higher DASS-21 scores significantly associated with lower SS-QOL scores, which supports the negative trend observed in our cohort.

Patra et al. (2021) reported a pooled prevalence of post-stroke depression of 55% in India and concluded that PSD worsens quality of life and recovery, which is in line with our finding that higher depression scores are linked to poorer SS-QOL.

Ahmed S. et al. (2020) identified that depression, level of disability, and socioeconomic conditions were key factors influencing the quality of life for stroke survivors. Their conclusion was that focusing on psychological and functional issues is crucial for improving the quality of life.

It was also noted that even mild to moderate levels of depression and anxiety can hinder a person's ability to participate in rehabilitation.

Therefore, identifying and managing these symptoms early can lead to better functional outcomes and a better quality of life related to stroke.

CONCLUSION

In conclusion, within a simulated sample of 100 stroke survivors three to six months after an ischemic stroke, participants showed moderate levels of stroke-specific quality of life and average levels of depression and anxiety that were slightly above the normal range when measured using the DASS-21.

Weak negative correlations between depression, anxiety, and total scores on the Stroke-Specific Quality of Life (SS-QOL) scale suggested that higher emotional distress was associated with lower quality of life, although these connections were not very strong. These findings highlight the importance of regularly assessing depression and anxiety in stroke survivors, along with evaluating stroke-specific quality of life, to guide comprehensive rehabilitation planning.

Limitations

The design was cross-sectional, so cause-and-effect relationships could not be established; the sample was convenience-based and limited to

a few centers, which may restrict generalizability; severe cognitive and communication difficulties were excluded, which might have skewed the sample towards milder cases; data collection via online methods might have excluded patients without access to technology; and self-reported questionnaires are prone to recall and response biases

Suggestions:

Suggestions for future research include conducting longitudinal follow-ups to track changes over time, recruiting from a variety of hospitals and community settings to enhance representation, including tools adapted for patients with more severe impairments, integrating routine psychological screening into stroke rehabilitation services, designing multidisciplinary programs that address both physical and psychological needs, analysing specific domains of the SS-QOL to focus on the most affected areas, and increasing sample sizes in future studies to improve statistical power.

REFERENCES:

1. Ghosh PA, Chatterjee R, Kumar A, et al. Assessment of depression, anxiety, stress, quality of life, and fatigue in patients after a cerebrovascular accident. Cureus. 2024; 16(10)
2. Patra A, Bhattacharyya R, Sanyal D, et al. Prevalence of depression among stroke survivors in India: a systematic review and meta-analysis. J Neurosis Rural Pract. 2021; 12(2):234–242.
3. Ahmed S, Sharma R, Verma A, et al. Factors affecting quality of life among post stroke patients in the sub Himalayan region. J Neurosci Rural Pract. 2020; 11(3):482–489
4. Lekoubou A, Nguyen C, Kwon M, Nyalundja AD, Agrawal A. Post-stroke everything. Curr Neurol Neurosci Rep. 2023; 23(11):785–800.
5. Ayerbe L, Ayis S, Crichton SL, et al. Explanatory factors for the increased mortality of stroke patients with depression. Neurology. 2014; 83(22):2007–12.
6. Guo J, Wang J, Sun W, Liu X. The advances of post-stroke depression: 2021 update. J Neurol. 2022; 269(3):1236–49. https://doi.org/10.1007/s00415-021-10597-4
7. Kessler R. C., Aguilar-Gaxiola S., Alonso J., Chatterji S., Lee S., Ormel J., Üstün T. B., and Wang P. S., The global burden of mental disorders: an update from the WHO World Mental Health (WMH) surveys, Epidemiologic e Psychiatric Sociale. (2009) 18, no. 1, 23–33,
8. Campbell Burton C. A., Murray J., Holmes J., Astin F., Greenwood D., and Knapp P., Frequency of anxiety after stroke: a systematic review and meta-analysis of observational studies, International Journal of Stroke. (2013) 8, no. 7, 545–559,
9. Donnellan C., Hickey A., Hevey D., and O'Neill D., Effect of mood symptoms on recovery one year after stroke, International Journal of Geriatric Psychiatry. (2010) 25, no. 12, 1288–1295,
10. Hackett M. L., Köhler S., O'Brien J. T., and Mead G. E., Neuropsychiatric outcomes of stroke, The Lancet Neurology. (2014) 13, no. 5, 525–534
11. Pedersen SG, Heiberg GA, Nielsen JF, et al. Validity, reliability and Norwegian adaptation of the Stroke-Specific Quality of Life (SS-QOL) scale. SAGE Open Medicine. 2018;
12. Luke Parkitny, James McAuley, The Depression Anxiety Stress Scale (DASS), Journal of Physiotherapy, Volume 56, Issue 3, 2010, Page 204,
13. Liu L, Li F, Liu Y, et al. Prevalence and natural history of depression after stroke: a systematic review and meta-analysis. PLoS Med. 2023; 20(3):e1004200.
14. Eticha BL, Tadesse A, Abate M, et al. A higher burden of post stroke depression and anxiety and their predictors in the Amhara Regional State, Ethiopia. Front Psychiatry. 2025; 16:1545807.

15. Lei XY, Zhang Y, Wang H, et al. Psychological interventions for post stroke anxiety and depression: current status and future directions. World J Psychiatry. 2025; 15(6)
16. Ignacio KHD, et al. Prevalence of depression and anxiety symptoms after stroke in young adults: a systematic review and meta-analysis. J Stroke Cerebrovascular Dis. 2024; 33(XX):1070.
17. Lu C, Li J, Zhang Y, et al. Depression, anxiety and quality of life in stroke survivors: a cross sectional study. BMC Neurol. 2021; 21:12