

# Development and Initial Validation of the Stroke Specific Perceived Stress Scale (SSPSS)

A.Ligi. K.O<sup>1</sup>, B.Dr. Molly John<sup>2</sup>

<sup>1</sup> Associate Professor, St. James College of Nursing, Chalakudy, Affiliated to Kerala University of Health Sciences

<sup>2</sup> Professor & HOD Amala College of Nursing, Thrissur

**Abstract- Background:** Stroke survivors face unique physical, emotional, and social stressors not adequately captured by existing tools. The Stroke-Specific Perceived Stress Scale (SSPSS) was developed to address this gap and provide a tailored assessment of stress in this population.

**Materials and Methods:** The SSPSS was developed using a systematic process involving literature review, qualitative interviews, and expert validation. A cross-sectional study recruited 270 stroke survivors aged 38–80 years with a modified Rankin Scale score of 2–4. Psychometric analyses assessed the scale’s reliability and validity.

**Results:** The SSPSS demonstrated excellent internal consistency (Cronbach’s alpha = 0.96). Scores, ranging from 1 to 108, were categorized as low (1–36), moderate (37–72), and high stress (73–108). Significant correlations with established psychological measures confirmed its construct validity.

**Conclusion:** The SSPSS is a reliable and valid tool for assessing stress in stroke survivors. It facilitates targeted interventions in clinical practice, contributing to improved rehabilitation outcomes. Further research to explore its factor structure and cross-cultural applicability is recommended.

**Keywords:** Stroke, Perceived Stress, Scale Development, Rehabilitation, Psychometrics

## INTRODUCTION

Stroke remains a leading cause of disability, leaving survivors with complex physical and emotional challenges. Psychological stress, common in this population, adversely affects recovery and quality of life. Current generic stress scales fail to address stroke-specific concerns such as mobility limitations, changes in family roles, and social isolation. To fill this gap, we developed the Stroke-Specific Perceived Stress Scale (SSPSS), a 27-item tool designed to capture the multidimensional nature of stress in stroke survivors.

This paper presents the development process, initial validation, and psychometric evaluation of the SSPSS.

## MATERIALS AND METHODS

### Scale Development

The SSPSS was developed using a systematic process that involved a comprehensive literature review, qualitative interviews with stroke survivors, and expert validation. The scale consists of 27 items covering three key dimensions of stress: physical, emotional, and social. Each item is rated on a 4-point Likert scale (1 = never, 4 = always), with higher scores indicating greater perceived stress.

### Participants

A total of 270 stroke survivors were recruited from hospitals and rehabilitation centers. Participants were selected based on their disability level as measured by the modified Rankin Scale (scores 2–4), indicating mild to moderate disability. Participants were aged between 38 and 57 years.

### Psychometric Analysis

Reliability was assessed using Cronbach’s alpha. Content validity was evaluated by a panel of experts to ensure the scale covered the relevant stressors specific to stroke survivors. The scale was administered once to all participants to evaluate internal consistency and construct validity.

## RESULTS

### Reliability

The SSPSS demonstrated excellent internal consistency with a Cronbach’s alpha of 0.96, indicating that the scale reliably measures perceived stress in stroke survivors. The reliability of individual items ranged from 0.957 to 0.961.

### Stress Categorization

The total score on the SSPSS ranged from 1 to 108, with scores categorized into three stress levels: low stress (1–36), moderate stress (37–72), and high stress (73–108). The majority of participants reported moderate stress, reflecting the significant psychological burden experienced by stroke survivors.

### Construct Validity

The SSPSS demonstrated strong convergent validity, with significant correlations between SSPSS scores and established measures of depression and anxiety. These correlations suggest that higher perceived stress is linked to worse psychological outcomes, such as increased depressive symptoms and anxiety.

## DISCUSSION

### Key Findings

The SSPSS is a novel, reliable tool for assessing stress specific to stroke survivors. It captures the multidimensional nature of stroke-related stress, including physical limitations, emotional instability, and social isolation. The high Cronbach's alpha ( $\alpha = 0.96$ ) indicates that the scale is internally consistent and reliable for use in both clinical and research settings.

### Implications for Clinical Practice

The SSPSS can be used to screen stroke survivors for high levels of stress and identify those who may need psychosocial support. Clinicians can use the scale to tailor rehabilitation programs based on specific stress domains, such as focusing on physical rehabilitation, emotional counseling, or social reintegration. Monitoring stress levels throughout recovery can help track patient progress and adjust interventions accordingly.

### Limitations

While the SSPSS shows strong reliability and validity, there are some limitations. The scale was not subjected to factor analysis, which would help confirm its multidimensional structure. Future studies should include factor analysis to further validate the scale's construct and explore its potential subdomains. Additionally, the scale was tested on a specific demographic, and its applicability to younger stroke survivors or other cultural populations needs further exploration.

### Future Research

Future research should focus on factor analysis to explore the underlying dimensions of the SSPSS and validate its use across diverse populations. Longitudinal studies are also needed to track changes in stress levels over time and assess the long-term impact of stress on stroke recovery.

## CONCLUSION

The Stroke Specific Perceived Stress Scale (SSPSS) is a reliable and valid tool for assessing stress in stroke survivors. This tool provides valuable insights into the psychological burden of stroke recovery and offers clinicians and researchers a comprehensive measure of perceived stress. Further validation through factor analysis and cross-cultural studies will enhance its applicability and strengthen its role in improving stroke rehabilitation outcomes.

## REFERENCE

- [1] American Heart Association (AHA). (2021). Heart Disease and Stroke Statistics—2021 Update: A Report From the American Heart Association. *Circulation*, 143(8), e254-e743. <https://doi.org/10.1161/CIR.0000000000000950>.
- [2] Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal, and Coping*. Springer Publishing.
- [3] Hackett, M. L., & Pickles, K. (2014). *Part I: Frequency of Depression after Stroke: An Updated Systematic Review and Meta-Analysis of Observational Studies*. *International Journal of Stroke*, 9(8), 1017-1025. <https://doi.org/10.1111/ij.s.12357>
- [4] Shah, S., & Robinson, K. M. (2020). Measuring Psychosocial Stress in Stroke Patients: A Review of Available Tools. *Journal of Stroke & Cerebrovascular Diseases*, 29(12), 105406. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2020.105406>.
- [5] Hafsteinsdóttir, T. B., Vergunst, M., Lindeman, E., & Schuurmans, M. (2011). Educational Needs of Patients with a Stroke and Their Caregivers: A Systematic Review of the Literature. *Patient Education and Counseling*, 85(1), 14-25. <https://doi.org/10.1016/j.pec.2010.07.046>
- [6] Carod-Artal, F. J., & Egido, J. A. (2009). Quality of Life After Stroke: The Importance of a Good

Recovery. *Cerebrovascular Diseases*, 27(Suppl. 1), 204-214. <https://doi.org/10.1159/000200461>

[7] Katon, W. J. (2011). Epidemiology and Treatment of Depression in Patients with Chronic Medical Illness. *Dialogues in Clinical Neuroscience*, 13(1), 7-23. <https://doi.org/10.31887/DCNS.2011.13.1/wkaton>

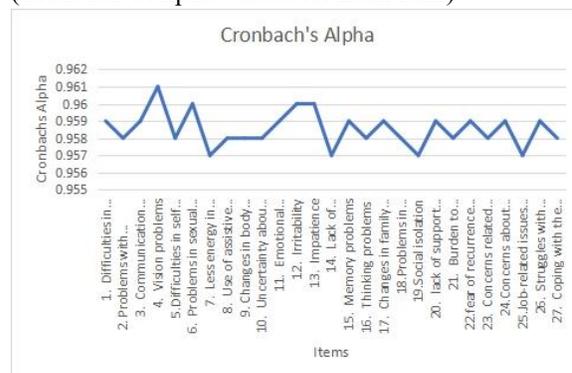
[8] Northcott, S., Moss, B., Harrison, K., & Hilari, K. (2016). A Systematic Review of the Impact of Stroke on Social Support and Social Networks: Associated Factors and Patterns of Change. *Clinical Rehabilitation*, 30(8), 811-831. <https://doi.org/10.1177/0269215515602136>

[9] Lohse, K. R., Lang, C. E., & Boyd, L. A. (2014). Is More Better? Using Metadata to Explore Dose-Response Relationships in Stroke Rehabilitation. *Stroke*, 45(7), 2053-2058. <https://doi.org/10.1161/STROKEAHA.114.004695>

[10] National Institute of Neurological Disorders and Stroke (NINDS). (2020). Post-Stroke Rehabilitation Fact Sheet. <https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Fact-Sheets/Post-Stroke-Rehabilitation-Fact-Sheet>

The SSPSS consists of 27 items. Each item is scored on a 4-point Likert scale ranging from 1 (never) 2(Sometimes) 3(Often) to 4 (Always). The total score can range from 1 to 108, with higher scores indicating greater perceived stress. Scores ranging from 1- 36 would be considered low level of stress, 37-72 would be considered moderate level of stress and 73- 108 considered as high level of stress.

Figure 1: Reliability of Individual Items in the SSPSS (Cronbach's Alpha Values for Each Item)



SI no.	Statements	Scoring			
		1	2	3	4
1	Difficulties in mobility				
2	Problems with upper extremity functions				
3	Communication problems				
4	Vision problems				
5	Problems in self care				
6	Problems in sexual life				
7	Less energy in activities of daily living				
8	Use of assistive devices				
9	Changes in body image				
10	Uncertainty about the future				
11	Emotional instability				
12	Irritability				
13	Impatience				
14	Lack of independence				
15	Memory problems				
16	Thinking problems				
17	Problems in concentration				
18	Changes in family roles and responsibilities				
19	Social Isolation				
20	Lack of support from others				
21	Burden to the caregivers				
22	Fear of recurrence of stroke				
23	Concerns related to the cost of rehabilitation and care.				
24	Concerns about treatment outcome				
25	Job-related issues due to disability				
26	Struggles with medication and rehabilitation adaptation				
27	Coping with the emotional toll of living with a chronic illness				

Table 1: Stroke Specific Perceived Stress Scale (SSPSS)