

# Effect of an Interventional Programme on Post Stroke Depression among Stroke Survivors in a Tertiary Care Centre, Thiruvananthapuram

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## ABSTRACT

Stroke is one of the leading causes of death and disability in India. According to the World Health Organization (WHO), stroke is projected to become one of the leading causes of death and disability worldwide. Post-stroke depression (PSD) affects approximately 32.9%–35.9% of stroke survivors, which is considerably higher than the prevalence of depression in the general population (10%). PSD is associated with cognitive dysfunction, impaired recovery of activities of daily living (ADL), and increased mortality. This study aimed to assess the effect of an interventional programme on post-stroke depression among stroke survivors attending a tertiary care hospital in Thiruvananthapuram. The conceptual framework was based on Betty Neuman's Systems Model.

A quantitative research approach with a one-group pre-test post-test design was adopted. Forty-five post-stroke survivors were selected using consecutive sampling. The study was conducted in the Neurology Outpatient Department and Neuromedicine Ward of Government Medical College Hospital, Thiruvananthapuram. Data were collected using three tools: (1) Socio-demographic and Clinical Data Sheet, (2) Hospital Anxiety and Depression Scale (HADS), and (3) Beck Depression Inventory (BDI). Following the pre-test, participants received an interventional programme consisting of education regarding stroke management and rehabilitation using flash cards, followed by instructions for music therapy. Post-test assessment was conducted three weeks later during follow-up visits.

Among the 45 participants, 91.1% had moderate-to-severe depression during the pre-test, which decreased to 57.8% during the post-test. The mean depression score decreased significantly from  $22.62 \pm 2.79$  to  $18.89 \pm 2.77$  following the intervention ( $p < 0.001$ ). The interventional programme, including music therapy, was effective in significantly reducing post-stroke depression among stroke survivors.

**Keywords:** Stroke; post-stroke depression; music therapy; rehabilitation; intervention.

## INTRODUCTION

Stroke is the third leading cause of death in developed countries after cancer and ischemic heart disease and remains a major cause of long-term disability.<sup>1</sup> Approximately 85% of strokes are ischemic in origin. Hemorrhagic strokes account for 15 % cerebrovascular disorders and are caused by bleeding into the brain tissue, the ventricles, or the subarachnoid space. Patients generally have more severe deficits and a longer recovery time compared to those with ischemic stroke<sup>2</sup>. Stroke is a common medical emergency with an

annual incidence of between 180 and 300 per 100000. Globally 1 in 4 adults over the age of 25 will have a stroke in their lifetime. Annually, 15 million people worldwide suffer a stroke. Of these, 5 million die and another 5 million are left permanently disabled, placing a burden on family and community. According to WHO stroke will become the leading cause of both death and disability worldwide, with the number of fatalities projected to over 20 million and by 2030 to over 24 million a year.<sup>3</sup>

Although stroke effects are unpredictable, mood disorders such as depression, anxiety and pseudo bulbar affect (PBA) are all too common. Studies suggest that experiencing a stroke significantly increases the risk of anxiety, depression, or both.<sup>4</sup> Post stroke depression is associated with poorer recovery, reduced health-related quality of life, and a higher risk of subsequent stroke and mortality. Nurses are the health professionals most in contact with stroke survivors and their families during an acute episode and are therefore key to assessing the presence of clinical depression<sup>5</sup>.

Music therapy has been shown to enhance physical activity, improve emotional well-being, and reduce symptoms of post-stroke depression (PSD). Songs are tools that help to express what patients feel and soothe their loneliness. Music therapy is an effective form of psychological therapy; it can soothe the suppressed emotions of patients and add vitality to the body, while giving them the energy to share their feelings with others<sup>6,7</sup>

Music therapy appears to affect physiological phenomena such as blood pressure, heartbeat, respiration, and mydriasis as well as emotional aspects such as mood and feelings. Clinical studies in adults also demonstrated correlations between the physiological and emotional stimulation effects of music. Although music therapy has been used in rehabilitation to stimulate brain functions involved in emotion, cognition, speech and sensory perceptions, there are few studies with music therapy on mood in post stroke patients.<sup>8,9,10</sup> Hence the study was conducted to assess the effect of an interventional programme on post stroke depression among stroke survivors attending Medical College Hospital, Thiruvananthapuram.

## MATERIALS AND METHODS

The research design adopted for this study was quasi experimental one group pre-test-post-test design which was used to assess the effect of an interventional programme on patient with post stroke depression. After getting approval from the Institutional Ethics Committee of Govt. College of Nursing Thiruvananthapuram the study was conducted in the Neuromedicine Outpatient Department (OPD) and wards of Government Medical College Hospital, Thiruvananthapuram, Kerala, India. The study population comprised patients diagnosed with post-stroke depression aged between 18 and 75 years. Participants who satisfied the inclusion criteria were recruited consecutively. Inclusion Criteria were post-stroke depression patients who were willing to participate, could read Malayalam or English, had normal cognition (Montreal Cognitive Assessment score  $\geq 23$ ), and had a Hospital Anxiety and Depression Scale (HADS) depression score between 11 and 21<sup>11</sup>. Participants with a history of neurological or psychiatric illness, drug or alcohol abuse, hearing deficits, aphasia, and severe depression (Beck Depression Inventory score  $\geq 30$ ) were excluded from the study. A total of 45 participants were included in the study. Sample size was calculated using the formula for paired mean comparison based on findings from a previous study assessing music therapy among stroke patients. Consecutive sampling was employed to recruit eligible participants.

**Interventional programme:** consisting of education regarding stroke management and rehabilitation using flash cards, followed by instructions for music therapy.

**Music therapy:** Three Carnatic ragas—Hindola, Madhyamavathi, and Kalyani—were selected in consultation with a musician. Participants were provided with a list of Malayalam film songs based on these ragas and were asked to select four to five songs from each category. The selected songs were sent to the participants' mobile phones through WhatsApp. Patients were instructed to listen to the songs for thirty minutes thrice daily morning: Hindola, afternoon: Madhyamavathi and evening- Kalyani respectively. Patients were advised to practice this daily for three weeks.

Baseline depression was assessed using the Beck Depression Inventory. Following the pretest, participants received an interventional programme consisting of education regarding stroke management and rehabilitation using flash cards, followed by instructions for music therapy. Participants were advised to follow this regimen daily for three weeks. Morning: Hindola, afternoon: Madhyamavathi and evening- Kalyani respectively. Participants maintained a daily diary and were followed up through telephone calls to ensure adherence. Posttest assessment of depression was conducted after three weeks during follow-up visits using the Beck Depression Inventory. Socio demographic and clinical data were collected using semi structured interview schedule and depression was assessed using the Beck Depression Inventory<sup>12</sup>.

Data were analysed using Statistical Package for the Social Sciences (SPSS). Descriptive statistics including frequency, percentage, mean, and standard deviation were used to summarize demographic and clinical variables. Inferential statistics were applied using paired *t*-test to compare pre-test and post-test depression scores. A *p*-value <0.05 was considered statistically significant.

## RESULTS

Among the 45 participants, 44.4% were aged between 56 and 65 years. Most participants were male (86.7%), Hindu (64.5%), and residing in rural areas (71.1%). All participants were married. Regarding education, 60% had completed high school or above. More than half (51.1%) were unskilled workers, and 75.6% had a monthly income below ₹1000. A substantial proportion of participants reported a history of smoking and alcohol consumption.

**Table1. Distribution of Participants Based on Clinical Data** n=45

Variable	Category	Frequency (n)	Percentage (%)
Type of Stroke	Ischemic	38	84.4
	Haemorrhagic	7	15.6
Duration of Illness	< 1 year	36	80.0
	1–3 years	7	15.6
	> 3 years	2	4.4
Comorbidities	Hypertension	1	2.2
	Dyslipidemia	1	2.2
	Diabetes mellitus + Dyslipidemia	1	2.2
	Diabetes mellitus + Hypertension	1	2.2
	Hypertension + Dyslipidemia	4	8.9
	Diabetes mellitus + Hypertension + Dyslipidemia	37	82.2

Most participants had ischemic stroke (84.4%), while 15.6% had hemorrhagic stroke. The duration of illness was less than one year in 80% of participants. A majority (82.2%) had comorbid diabetes mellitus, hypertension, and dyslipidemia.

**Table 2: Distribution of participants based on severity of depression. n=45**

Depression	Pre test		Post test	
	N	%	n	%
Mild to Moderate (score: 10-18)	4	8.9	19	42.2
Moderate to Severe (score: 19-29)	41	91.1	26	57.8

Before intervention, 91.1% of participants had moderate-to-severe depression, whereas after intervention this proportion decreased to 57.8%.

**Table 3: Effectiveness of an interventional programme on post-stroke depression n=45**

	N	BDI		Paired difference		Paired t test	
		Mean	SD	Mean	SD	t	p
Pre test	45	22.62	2.79	3.733	0.78	32.089	<0.001
Post test	45	18.89	2.77				

The mean pre-test depression score was  $22.62 \pm 2.79$ , which decreased to  $18.89 \pm 2.77$  after the intervention. The mean reduction in depression score was  $3.73 \pm 0.78$ . Paired *t*-test analysis demonstrated a statistically significant reduction in depression scores following the intervention ( $t = 32.089, p < 0.001$ ), indicating the effectiveness of the interventional programme in reducing post-stroke depression.

## DISCUSSION

The present study found that the majority of participants (44.4%) were aged between 56 and 65 years, and most were male (86.7%). Similar findings were reported by Kim et al., who observed a mean age of  $51.7 \pm 13.5$  years among stroke patients receiving music therapy in Korea. Furthermore, 84.4% of participants in the present study had ischemic stroke, whereas 15.6% had hemorrhagic stroke, which is consistent with the global epidemiological pattern of stroke. Chaiyawat et al showed that the proportion of patient with right hemispheric stroke in the interventional group was 60% and of the control group was 40%<sup>8, 13</sup>.

The findings revealed that 91.1% of participants had moderate-to-severe depression before the intervention, which decreased to 57.8% after three weeks of the intervention programme. The mean depression score decreased significantly from  $22.62 \pm 2.79$  to  $18.89 \pm 2.77$  ( $p < 0.001$ ). These findings are consistent with those of Kim et al., who reported a significant reduction in Beck Depression Inventory scores among stroke patients receiving music therapy. Music therapy may improve mood by reducing psychological distress, enhancing emotional expression, promoting relaxation, and increasing motivation for rehabilitation activities<sup>8</sup>.

The observed improvement may also be attributed to the combined effect of structured education regarding stroke management and rehabilitation, along with regular music therapy. Such interventions can enhance patients' coping abilities, self-efficacy, and engagement in recovery activities, ultimately contributing to improved psychological well-being.

A limitation of the present study is that only participants who owned mobile phones with WhatsApp access were included, which may limit the generalizability of the findings.

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## CONCLUSION

The study demonstrated a significant reduction in depression scores among post-stroke survivors following participation in the interventional programme. The mean depression score decreased from  $22.62 \pm 2.79$  during the pre-test to  $18.89 \pm 2.77$  during the post-test ( $p < 0.001$ ). These findings suggest that music therapy, combined with education regarding stroke management and rehabilitation, is an effective intervention for reducing post-stroke depression and may be incorporated into routine stroke rehabilitation programmes.

## REFERENCES

1. Boon NA, Colledge NR, Walker BR. Davidson's Principles & Practice of Medicine. 20<sup>th</sup> ed. Philadelphia: Churchill Livingstone; 2006. pp.1200 <https://share.google/ILXtAnGTPXAF74vIr>
2. Sanford JT. Nursing management stroke. In: Lewis SL, Heitkemper MC, Dirksen SR, editors. Medical surgical nursing: Assessment and Management of Clinical Problems. seventh edition. Missouri: Mosby an imprint of Elsevier, 2007. pp. 1502.
3. Subha PP, Pillai Geethakumari SM, Athira M, Nujum ZT. Pattern and risk factors of stroke in the young among stroke patients admitted in medical college hospital, Thiruvananthapuram. *Ann Indian Acad Neurol.* 2015 Jan-Mar;18(1):20-3. doi: 10.4103/0972-2327.144293. PMID: 25745305; PMCID: PMC4350208.
4. American stroke association. Post stroke mood disorders. Updated 2018, November 21, cited 2019 March3. Available from: <http://www.strokeassociation.org/en/about-stroke>.
5. Chun HY, Whiteley WN, Carson A, Dennis M, Mead GE. Anxiety after stroke: time for an intervention. *International Journal of Stroke.* 2015; Vol.10:655-56.
6. Eum Y, Yim J. Literature and art therapy in post stroke psychological disorders. *Tohoku.J.Exp.Med.* 2015; Vol.235: 17-23.
7. Jayanthi KN, Nagarajaiah. Effect of nursing intervention on anxiety and depression in individuals suffering from stroke. *Nightingale nursing times.* 2011; Vol.6:16-20.
8. Kim DS, Park YG, Choi JH, Im SH, Jung KJ, Cha YA et al. Effects of music therapy on mood in stroke patients. *Yonsei Med J.* 2011; 52(6):977-981. doi:10.3349/ymj.2011.52.6.97712.
9. Laura D, Sylvie J, Aurore S. The effects of music therapy on anxiety and depression. *Ann Depress Anxiety.* 2015; 2(4):1057.
10. Jasemi M, Aazami S, Zabihi RE. The effects of music therapy on anxiety and depression of cancer patients. *Indian journal of palliative care.* 2016 Oct; 22(4):455.
11. Snaith RP. The Hospital Anxiety and Depression Scale. *Health Qual Life Out.* 2003.
12. Beck, A.T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961) An inventory for measuring depression. *Archives of General Psychiatry,* 4, 561-571.
13. Chaiyawat P, Kulkantrakorn K, Sritipsukho P. Effectiveness of home rehabilitation for ischemic stroke. *Neurol Int.* 2009 Nov 16;1(1):e10. doi: 10.4081/ni.2009.e10. PMID: 21577347; PMCID: PMC3093230.