



Yoga as an Integrated Therapy for Stroke Rehabilitation – A Case Study

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ABSTRACT

Background and Purpose: A stroke (cerebrovascular accident) is damage to the brain cells from an interruption of their blood supply due to blockage or rupture of an artery to the brain. It is the second-leading cause of death and long-term disability worldwide. The present study is a case report investigating the effect of yoga therapy in addition to acupressure and physiotherapy on activities of daily living and the quality of life of patients after stroke.

Subject and method: It is a single case study of 38-year-old women diagnosed with acute ischemic stroke who have chief complaints of loss of function of the left upper and lower limbs, and hypertension. For better management of stroke and recovery, she was undergoing yoga, physiotherapy, and acupuncture treatment in the CAM department at DSVV. The primary outcome measures were activities of daily living by the Barthel index and quality of life by the stroke-specific quality of life scale. The subject received integrated treatment for 12 weeks consisting of 45-minute, 1-hour yoga sessions 6 days a week, regular physiotherapy in the subject's home, and acupuncture every 2 weeks. The primary outcome data were collected before and after the treatment intervention phase.

Result: The subject had improved Barthel's activity and quality of life score.

Discussion and Conclusion: The results suggest that yoga integrated with other complementary therapies may be beneficial to stroke survivors in rehabilitation.

KEYWORDS: Stroke, Yoga, Acupuncture, physiotherapy, rehabilitation, quality of life, CAM

INTRODUCTION

A stroke (cerebrovascular accident [CVA]) is the sudden loss of neurological function caused by an interruption of the blood flow to the brain. [1] According to the Global Burden of Diseases study in 1990, stroke was the second leading cause of death and disability worldwide.[2] After the stroke, the survivor has to struggle with a physical disability that hinders completing activities of daily living in addition to that a wide range of mental issues such as post-stroke depression, anxiety, and fatigue are common in stroke survivors that put negatively impact quality of life of patient and interfering the stroke recovery process. [3] During the last two decades, no medical treatments have been demonstrated to be effective during the later stroke recovery phase. As a result stroke patients are often interested in exploring complementary and alternative medicine like yoga, physical therapy, and acupuncture treatment approaches for post-stroke recovery.[4] one study suggests that physiotherapy interventions improved motor and mental functions in patients with stroke [5]. Another Complementary alternative medicine (CAM), Acupuncture Traditional Chinese Medicine (TCM) treatment in a narrative review, shows evidence of beneficial effects on poststroke recovery in the domains, including dysphagia, poststroke pain syndrome, insomnia, and spasticity. [6]. Yoga and mindfulness can also be regarded as a main form of alternative medicine therapy [7]. Yoga is one of India's oldest and most extensive psycho-spiritual traditions. It has evolved over 5,000 years to encompass a vast body of moral and ethical precepts, mental attitudes, and physical asanas, pranayama, and mudra bandhas to imply the union of body, mind, soul, and senses. practices that aim to achieve the goal of enlightenment.[8] Yoga therapy is defined as integrating yoga concepts into the therapeutic holistic management of diseases and improving quality of life in both physical and psychosocial domains.[9] There is growing evidence indicating the potential use of yoga in improving an individual's functional status and quality of life post-stroke.[10] This indicates the need to integrate the conventional and traditional systems of medicine to reduce the burden of stroke around the globe. The purpose of this case study was to investigate the effect of integrated yoga therapy with other complementary treatments on activity of daily living and quality of life post-stroke in survivors.



METHOD

The subject was a 38-year-old woman who had an acute ischemic stroke 3 weeks before our study began (table 1.. She had a history of hypertension that began during pregnancy 6 years she had been taking allopathy medicine since that time. After her stroke, she spent 10 days in hospital and was discharged to her home. She resided in an urban environment in an apartment with her husband and 1 small child boy. She visited the CAM dept in DSVV Haridwar on 27-09-2023 and started outpatient rehabilitation treatment including acupuncture and yoga therapy from next day. She has undertaken physiotherapy at home. The questionnaires for pre-data were filled on day 1 after getting consent from her. Before the initiation of the study, she had not received any complementary therapy. The yoga therapy rehabilitation treatment (table 2) along with acupuncture and physiotherapy continued for 12 weeks. After 12 weeks the questionnaires were again got filled by her for post-data collection. She reported improvement in, mood, energy, and mobility (table- 3) After rehabilitation.

Table 1- Case report

Case Description	
Patient Information	Name- X Registration No- 26553 Age- 38 Sex- F Height- 162.5cm Weight- 75kg Marital status- married Occupation- School teacher
Chief complaints	Left side paralysis No movement in the left upper and lower limb Diverted tongue slurred speech
Associated complaints	High blood pressure Insomnia Overthinking Gas and acidity
Previous treatment history	Hypertension allopathy medicine from past 6 yrs.
Family History	Hypertension
History of Present illness	According to patient statement she was suddenly got weakness and difficulty in moving her lower and upper limb with difficulty in speaking and deviation of face towards right at around 6 am in the morning, she woke up with these complaints , afterwards she was admitted by 8.10 am in emergency, around 8.45 am she underwent neuroimaging and diagnosed with stroke. She admitted in AIIMS Rishikesh for 8 days after that discharged on 19-09-2023 and got advised limb and speech physiotherapy. For complementary treatment she came CAM polyclinic at DSVV Haridwar on 27-09-2023.



Physical Examination	Blood Pressure- 122/103 Pulse- 98 Respiratory rate – 19 Temp- 98F
Diagnosis	
MRI NIHSS	Acute Ischemic Stroke Admission- 7, discharge -8.
Treatment For Management	
CAM department DSVV	Acupuncture, Yoga Therapy, Physiotherapy

Table 2- Yoga therapy sessions format

Yoga Practice	Description
Mantra chanting (2-3 mins)	Om chanting three times and gayatri mantra
Asanas (20 - 40 mins)	The patient was instructed joint movements and variety of modified yoga postures related to the week’s theme. The goals were to improve body awareness, flexibility, mobility in joints, neuromusculoskeletal strength endurance, balance, coordination. Week 1-4 (20 mins) : Pawanmuktasana series 1/ joint mobility ,supported movements of left side with right side limbs . Week 5-8 (30 mins) : Pawanmuktasana series 1 / joint mobility without support, chair supported spine movements and utkatasana Week 9-12 (40 mins) : Pawanmuktasana series 1, chakkichalāsana, utkatasana, spine movements, marjariasana, shashankāsana, vakrasana setubandhasana, pawanmuktasana, ardha halāsana , jathara parivartanasana/ supine twist.
Pranayama (15 -20mins)	Diaphragmatic breathing 2-3mins, Anulome vilome (10- 20 rounds), Sheetali (10 rounds), Sheetkari (10 rounds), (10 rounds), Bhramari .The goals were to promote awareness towards breath , mental peace, calmness and reducing bp. Apana vayu mudra during pranayama, meditation)
Mudra	Yoga nidra (once in a week)
Relaxation	Om meditation Anahata chakra meditation
Meditation (10-15mins)	



Table -3: Barthel index of daily living score

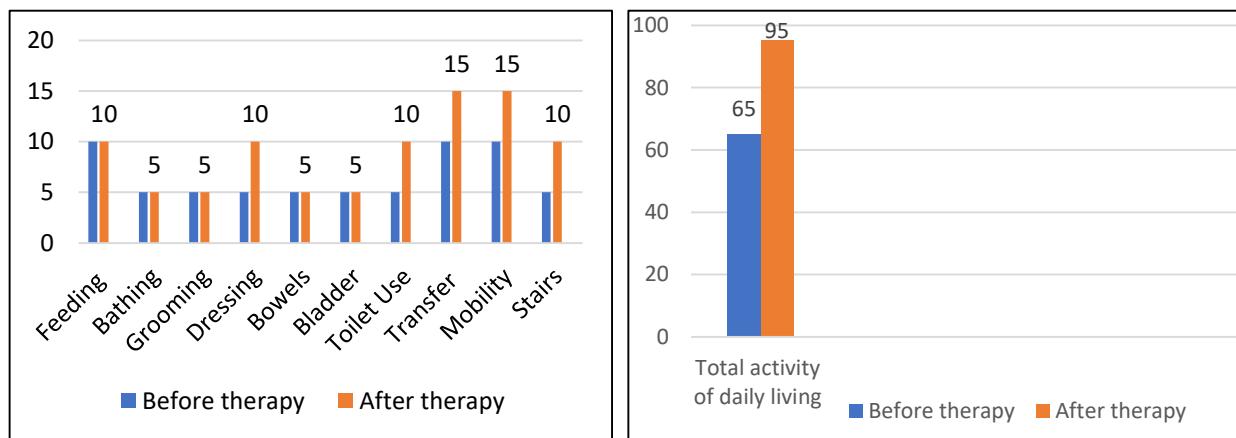
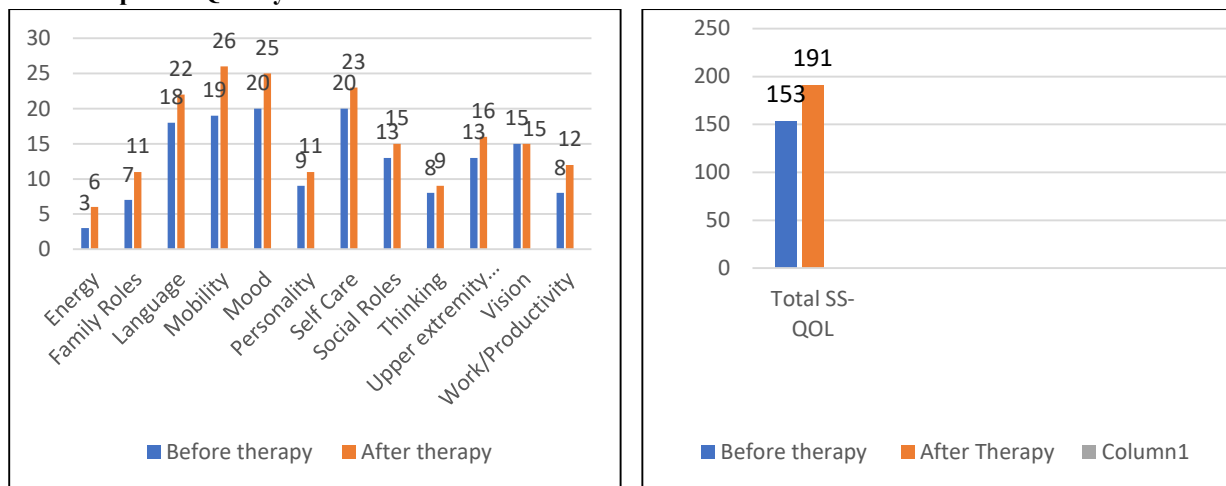


Table -4: stroke specific Quality of life score



RESULTS

The Barthel index

Visual analysis of the BI data revealed in Table 3 improvement in all domains. Overall Barthel score increased from 65 to 95 after treatment which shows significant improvement in activity of daily living.

Stroke specific Quality of life (SS-QOL)

Visual analysis of SS-QOL data revealed in Table 4 improvement in all domains. Overall score increased from 153 to 191 after treatment which shows improved quality of life.

DISCUSSION

This case study can provide researchers with valuable information about stroke patient response to an integrated rehabilitation approach. we believe that this gives insight to researchers and clinicians to do further generalizable experimental research with a large population to understand the therapeutic role of yoga and other CAM in stroke recovery. These results are supported by a pilot study that demonstrated substantial improvement in pain, range of motion at neck and hip, upper limb strength, and 6-min walk scores in patients with chronic stroke with an 8-week Yoga intervention.[11] . One study include Uni-nostril yogic breathing alongside traditional speech therapy has been found beneficial in improving the affect and language abilities of stroke patients[12].



Another study exploring multiple array of symptoms in stroke patients has displayed improvement in quality of life associated with memory, perceived motor function, and perceived recovery[13]. There was a study that showed a significant effect of yoga therapy on balance in post-stroke hemiplegic patients. The yoga group received intervention including asanas for 40 minutes, 4 times a week for 3 weeks. Asanas involving muscle work required for improving balance, in an individual with stroke were included, Ekpadahastasana, Utkatasana, Veerasana, Trikonasana, Tadasana, and Vrukshasana. The results show improvement in the Bergs balance scale (BBS) and Fullerton advanced balance scale (FAB) [14]. A systematic review on The Effectiveness of Yoga Therapy on an Adult, Post-Stroke Population including 9 studies shows that Yoga can have a positive effect on improvements in balance, independence, endurance, trait anxiety, fear of falling, self-efficacy, pain, strength, range of motion (ROM), activity, participation, and quality of life (QoL). [15]. These findings confirm the role of efficacy and importance of yoga in post-stroke rehabilitation programs for better stroke recovery.

CONCLUSION

The study shows that Yoga has the potential to be included as part of patient-centered stroke rehabilitation. Findings show a significant effect of yoga as an integrated therapy in improving performance in activities of daily living and the stroke-related quality of life of patients. This study suggests a need for integrated holistic treatments such as yoga for stroke recovery in addition to conventional treatment. It gives insight into the requirement of Further large-scale methodological trials to establish the effectiveness of yoga as a stroke rehabilitation treatment.

REFERENCES

1. Johnson W, Onuma O, Owolabi M, Sachdev S. Stroke: A global response is needed. *Bull World Health Organ* 2016;94:634.
2. Murray CJ. *Global Health Statistics: A Compendium of Incidence, Prevalence and Mortality Estimates for over 200 Conditions*; 2012.
3. Johnson, W., Onuma, O., Owolabi, M., & Sachdev, S. (2016). Stroke3 Swartz R. H., Bayley M., Lanctot K. L., et al. Post-stroke depression, obstructive sleep apnea, and cognitive impairment: rationale for, and barriers to, routine screening. *International Journal of Stroke*. 2016 doi: 10.1177/1747493016641968. [PubMed]
4. Pandian, J. D., Toor, G., Arora, R., Kaur, P., Dheeraj, K. V., Bhullar, R. S., & Sylaja, P. N. (2012). Complementary and alternative medicine treatments among stroke patients in India. *Topics in stroke rehabilitation*, 19(5), 384–394. <https://doi.org/10.1310/tsr1905-384>
5. Yuan, S., & He, Y. (2019). Effects of physical therapy on mental function in patients with stroke: <https://doi.org/10.1177/0300060519861164>, 48(2), 1–6. <https://doi.org/10.1177/0300060519861164>
6. Cao, Ning, Nguyen, Brian; Li, Stephani, Lamba, Richa, Hafner, Ryan, Li, Sheng, (2020) An Overview of Acupuncture in Stroke Recovery: A Narrative Review. *The Journal of the International Society of Physical and Rehabilitation Medicine* 3(3):p 80-86, DOI: 10.4103
7. J. R. M. Goyeche, "Yoga as therapy in psychosomatic medicine," *Psychotherapy Psychosomatics*, vol.31, no.1–4, pp. 373–381, 1979
8. Feuerstein G. Toward a definition of yoga therapy. *International Journal of Yoga Therapy*. 2000;10:5–10.
9. Ross R. Yoga as a therapeutic modality. In: Weintraub MI, ed. *Alternative and Complimentary Treatment in Neurological Illness*. Philadelphia, Pa: Churchill Livingstone Inc; 2001:75–92.
10. Jasti, N., Reddy, A. V., Ramakrishna, K. K., Bhargav, H., & Kulkarni, G. B. (2022). Role of Yoga in Stroke Management: Current Evidence and Future Directions. In *The Principles and Practice of Yoga in Cardiovascular Medicine* (pp. 253–265). Springer Nature. https://doi.org/10.1007/978-981-16-6913-2_20
11. Schmid AA, Miller KK, Van Puymbroeck M, DeBaun-Sprague E. Yoga leads to multiple physical improvements after stroke, a pilot study. *Complement Ther Med*. 2014;22(6):994–1000.
12. Marshall RS, Basilakos A, Williams T, Love-Myers K. (2013) Exploring the Benefits of Unilateral Nostril Breathing Practice Post-Stroke: Attention, Language, Spatial Abilities, Depression, and Anxiety. *J Altern Complement Med*. 20(3):185–94.



13. Immink MA, Hillier S, Petkov J. Randomized controlled trial of yoga for chronic poststroke hemiparesis: motor function, mental health, and quality of life outcomes. *Top Stroke Rehabil.* 2014;21(3):256–71.
14. Paranjape AA, Gore A. To study effects of yoga therapy on balance in post stroke hemiplegic patients. *Int J Health Sci Res.* 2019; 9(7):135-143.
15. Hogan, B.E. (2016). The effectiveness of yoga therapy on an adult, post-stroke population: A systematic review. *Kevin and Tam Ross Undergraduate Research Prize*. Retrieved from <http://digitalcommons.chapman.edu/undergraduateresearchprize/14>