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Effectivness of shavasana and jacobson's relaxation technique on anxiety in post stroke patients: An experimental study

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Abstract
Introduction: Stroke remains a major healthcare problem. After a stroke, majority patients often experience emotional and behavioral changes. Patients with impaired motor function typically experience a great deal of stress resulting from loss of motor control, pain, inability to perform functional tasks previously performed with ease and loss of control in life decisions. Patient's ADLs may be severely affected, he may experience emotional disturbance, agitation due to disability and in some cases panic attacks.
Objective: To evaluate the effect of Jacobson's relaxation technique and shavasana in reducing anxiety in post stroke patients.
Methods: Thirty-six participants between the age of 40-60 years, with the clinical diagnosis of stroke were selected. Thirty-six participants were divided into two groups, Group-I received Jacobson's relaxation technique (n=18) and Group-II received Jacobson's relaxation technique followed by shavasana (n=18) both the groups were trained for 30 minutes, 3 days a week for 2 weeks.
Results: After 2 weeks of treatment period, Group-II Jacobson's relaxation technique followed by shavasana scored significantly higher with the HADS-A scale with 't' values 11.363 and 14.653 respectively at $p<0.05$ thus proving that result of the study suggests that there is significant difference between pre and post-test in the study when "t" was performed.
Conclusion: The Jacobson's relaxation technique followed by shavasana was more effective in reducing anxiety as compared to only Jacobson's relaxation technique in patients post stoke.

Keywords: stroke, anxiety, yoga, relaxation

Introduction

The World Health Organization (WHO) defines stroke as: "rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer or leading to death, with no apparent cause other than of vascular origin" [1].

Stroke is a major health problem in India. In India, there is a limited access present to reliable morbidity and mortality estimates for stroke owed to certain factors like incomplete death certification, incorrect death classification and uncertainty of etiology in cases of sudden death and multiple co-morbidities [2]. Several population-based surveys that were conducted in various parts of India reveal variations according to geographical regions in the crude prevalence rates. The overall age adjusted prevalence rate for stroke in India estimately lies between 84- 262/100000 in rural and between 334-424/100000 in urban areas [3]. In 2005, an estimated 5.8 million people died from stroke (Cerebrovascular disease). The modified annual incidence per 100000 persons of stroke is 124 in rural area and 145 in urban area [3]. In India incidence of stroke is high in the age group below 50 years of age and also in population having low socio-economic status. Male/female gender ratio in India for stroke is 7:1. The highly probable risk factors are smoking and drinking which are broadly seen more in men [4]. 7 Global load of the disease study shows that out of 9.4 million deaths in India, 619000 were caused due to stroke [5]. 11.2% is the incidence seen in normal individual's emotional disability [6].

Dizziness, communication problems, imbalance and in-coordination, difficulty in swallowing, severe headaches, numbness/weakness are the common clinical features in stroke that result in complete paralysis of one side of the body and loss of consciousness [7]. In clinical settings, a variety of focal deficits are possible including sensory impairments, motor, cognitive, perceptual, and language functions [8]. Motor deficits are marked by paralysis (hemiplegia) or weakness (hemiparesis) [9]. Several stoke patients could possibly show behavioral issues like aggression, anxiety, lack of attention while some of them might have thoughts about their future. Clinical methods of assessment of stroke are primarily based on symptom assessment, neurological examination and then investigations like computerized tomography (CT) Scan, Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET), Transcranial and carotid Doppler, Cerebral angiography, EEG [10].

Anxiety is noticeable between 18% and 25% of individuals post-stroke [11]. Considering stroke affects the brain and our brain controls all our behavior and emotions, after an episode of stroke, majority patients many a times experience emotional and behavioral changes. Injury coming from a stroke may perhaps make a person forgetful, careless, irritable or confused. Stroke survivors may also perceive

anxiety, anger or depression. Patients with impaired motor function generally experience a fair amount of stress derived from loss of motor control, pain, inability to perform functional tasks previously performed with ease and loss of control in taking important life decisions. Individuals suffering from stroke may report ADLs being severely affected. They may experience emotional disturbance and agitation secondary to disability and in some cases panic attacks [12].

Researches done on the relaxation techniques have shown that this simple technique can: increase energy, decrease fatigue as well as increase arousal from a drowsy state. It has also shown an increase in motivation, productivity, and improve decision-making ability. progressive relaxation, guided imagery, deep breathing exercises are practiced as relaxation techniques [13].

One of the goals of relaxation therapy is to advance stress reduction and prompt relaxation. Muscle relaxation, reduced ischemic pain, enhanced awareness of emotional state and memory, increased energy level, increased sense of control are the positive responses of relaxation training. Shavasana reduces blood pressure, muscle tension and general levels of anxiety. It increases energy levels, boosts memory, and enhances focus and concentration.

Yoga practices enhance the pursuit of brain and reduce cortisol levels. These physical and chemical changes in the brain can aid in reducing anxiety. Yoga therapy makes alterations in the central nervous system function and as a result the sympathetic activities are reduced causing neuromuscular relaxation [14]. The implementation of yoga as a therapeutic intervention, which began early in the twentieth century avail oneself of the several psycho physiological benefits of the component practices. The physical exercises (Asanas) possibly increase patient's flexibility, coordination, it may calm and focus the mind to develop greater awareness and diminish anxiety and consequently resulting in higher quality of life [15].

Objectives

1. To find out the Effectiveness of Shavasana verses Jacobson's Relaxation technique on anxiety in post stroke patients.
2. To evaluate the effect of relaxation technique in reducing anxiety in post stroke patients.
3. To evaluate the effect of Shraavana in reducing anxiety in post stroke patients.
4. To evaluate the effect of Shavasana verses Jacobson's relaxation technique in reducing anxiety in post stroke patients.
5. To find the effect of shavasana and Jacobson's relaxation technique on the hospital anxiety and depression scale –A.

Material and Methods

An Ethical approval was taken by the ethical committee of the institution before undertaking the study and a written consent was taken from the participants explaining the entire procedure of the study before recruiting them in the study.

- Study design – experimental comparative study
- Sample size-A total of 36 participants between the age of 40-60 years, with the clinical diagnosis of stroke were included in this study.
- Duration of study –This study was conducted over a duration of 6 months.
- Study population- Patients diagnosed with sub-acute and chronic stroke were included in this study.

Inclusion Criteria

- Both males and females.
- Age group 40-60 years.
- Patients with MMSE score above 20.
- Patients with HADS-A score 8-21(i.e abnormal and borderline abnormal)
- Patients diagnosed with right and left side CVA of sub-acute and chronic stage post stroke.

Exclusion Criteria

- Patient with severe cognitive or communication difficulties like speech disorder.
- Patient with psychotic disorders, sleep disorders, or any previous history of schizophrenia.
- Presence of any co -morbidity such as painful musculoskeletal conditions.

Randomization

- Study setting- tertiary care Centre Miraj.
- Allocation - Participants were allocated in group A (Jacobson's relaxation technique) and Group B(Jacobson's relaxation technique followed by Shavasana).
- Implementation - the method of randomization and allocation of the samples in the study was done by researchers themselves.

Procedure

An Ethical committee clearance was obtained. All the 36 participants were screened on the basis of inclusion and exclusion criteria and selected from attending Neuro physiotherapy O.P.D. Procedure was explained to all the participants. A written consent was obtained from all the participants. All the participants were divided into 2 groups of 18 participants each. Group A was given relaxation techniques. Group B was given relaxation techniques with shavasana. All participants were introduced and were given a briefing about the procedure. They were given appointment and asked to report to the O.P.D on given time.

Jacobson's Relaxation Technique

- The patient was positioned comfortably in a quit, dim room in the ward. Language was used as per the patient's convenience.
- This technique required patient to silently repeat read–out statements such as "My right arm is heavy. My entire right arm, and hand, and fingers, are very heavy and limp and relaxed."
- This intervention was given for 20 minutes per session for 2 weeks. 3 sessions per week.
- The Hospital anxiety and depression -A scale is used pre and post intervention.

Jacobson's Relaxation Followed by Shavasana

- The patient was positioned comfortably in a quit, dim room in the ward. Language was used as per the patient's convenience.
- Lie down on your back with feets about 18 inches apart and allow them to fall out to the sides. Place your hands

about a foot away from torso palm facing upward. Allow the eyes to close and feel completely relaxed. Slowly inhale and exhale while releasing the tension. Hold this position for twenty minutes.

This intervention was given for 20+5 minutes per session for 2 weeks.3 sessions per week.

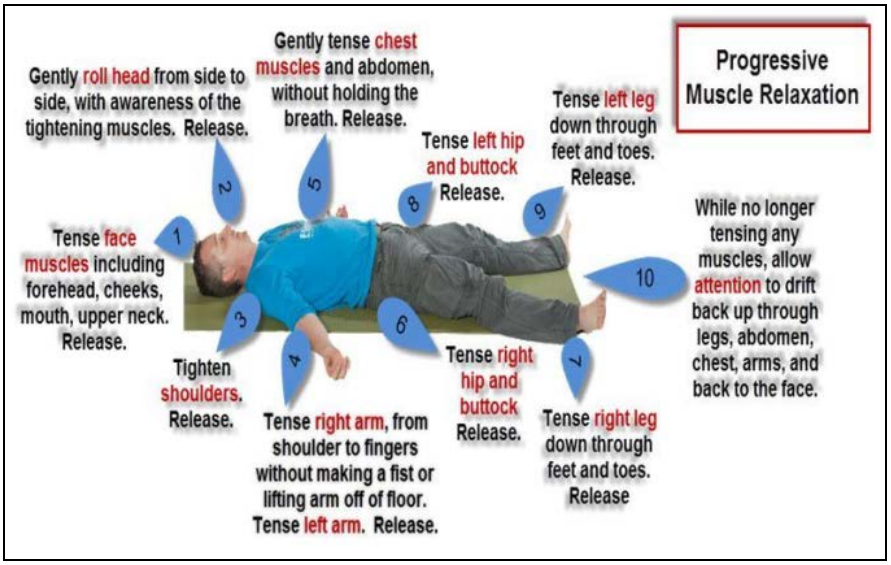

Fig 1: Jacobson's relaxation technique in supine

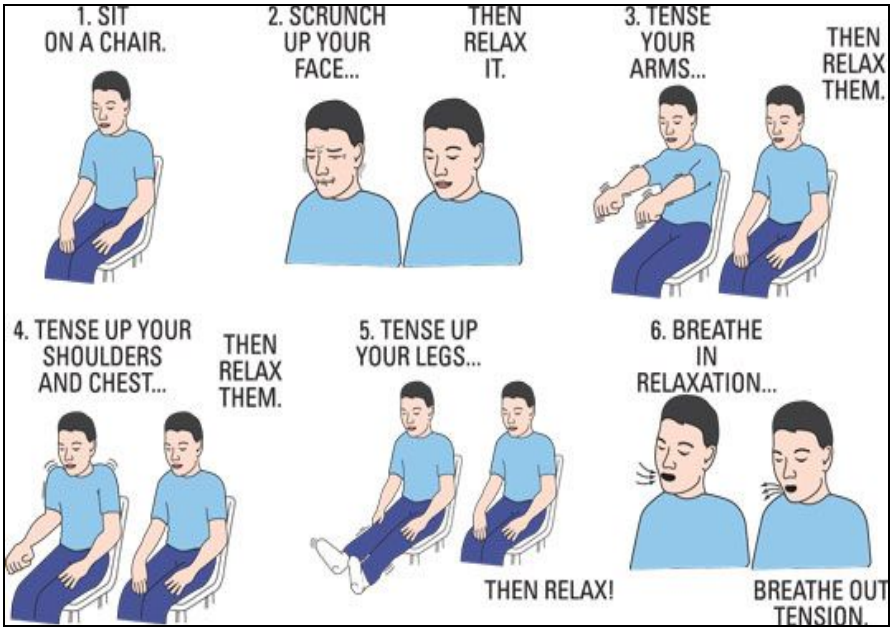

Fig 2: Jacobson's relaxation technique in sitting

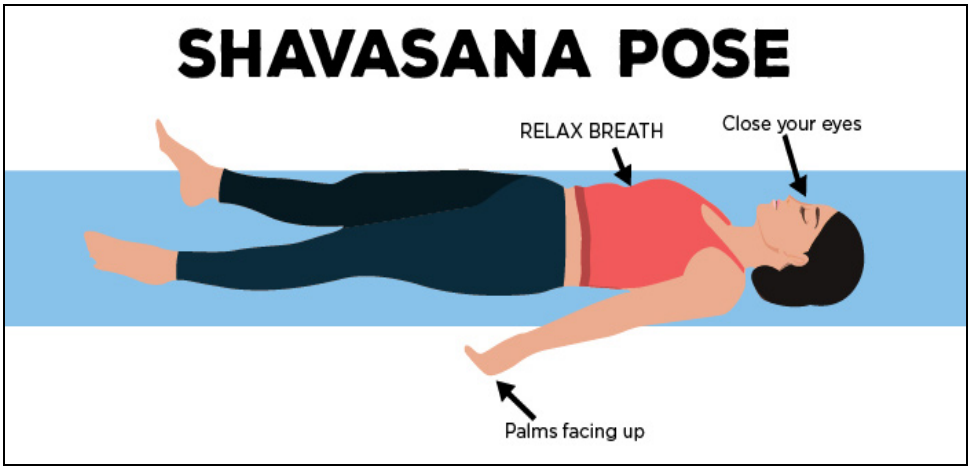

Fig 3: Shavasana pose

Statistical Analysis

Data analysis was performed with spss 20.0 version. Pre and post treatment outcomes of HADS-A scale was done using a Paired T test. Unpaired T test was used to determine between the groups analysis.

Results

There were 12(33.3%) female post stroke patients and 24(66.7%) ale post stroke patients.

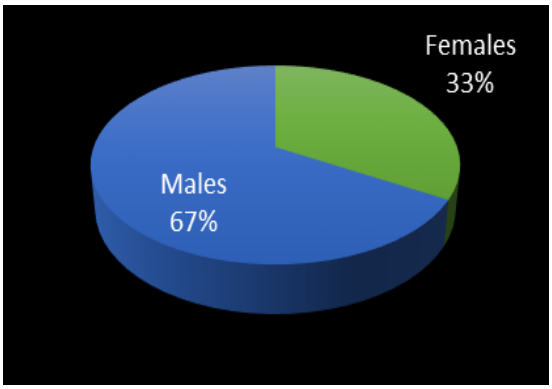

Fig 4: Pie diagram representing gender wise distribution of post stroke patients

There were 19(52.8%) left side affected post stroke patients and 17(47.2%) right side affected post stroke patients.

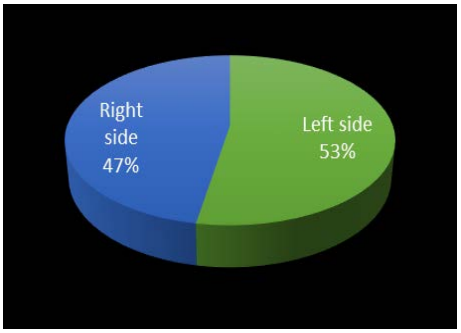

Fig 5: Pie diagram representing side wise distribution of post stroke patients

There were 16(44.4%) chronic post stroke patients and 20(55.6%) sub acute post stroke patients.

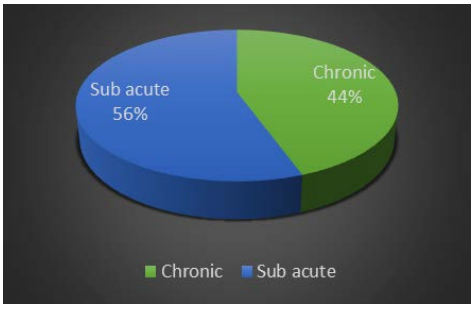

Fig 6: Pie diagram representing Time since stroke wise distribution of post stroke patients

Table 1: Effectiveness of Shavasana verses Jacobson's relaxation technique in reducing anxiety in post stroke patients.

	Group	N	Mean	Std. Deviation	Unpaired t statistic	p value
MMSE score	A: Relaxation Technique	18	29.17	1.15	0.59	0.56
	B: Relaxation Technique with Shavasana	18	29.39	1.09		
Pre intervention HADS- A Score	A: Relaxation Technique	18	10.72	2.63	2.07	0.05
	B: Relaxation Technique with Shavasana	18	12.83	3.43		
Post intervention HADS- A Score	A: Relaxation Technique	18	7.83	1.86	2.69	0.01
	B: Relaxation Technique with Shavasana	18	5.78	2.65		

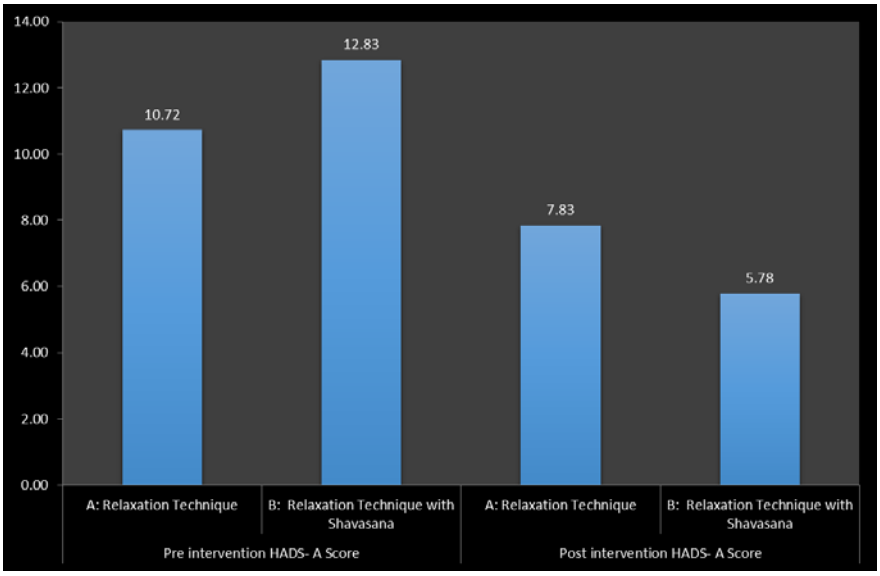

Fig 7: Bar Graph Representing Effectiveness of Shavasana and Jacobson's Relaxation Technique In Reducing Anxiety In Post Stroke Patient

Unpaired t test was done to compare HADS-A score of Shavasana and Jacobson's relaxation technique group post stroke patients. It revealed significant difference.

Unpaired t test was done to compare between Shavasana and Jacobson's relaxation technique in reducing anxiety in post stroke patients.

Post Intervention

It was found that, average anxiety of group B patients (5.78) was significantly lesser than average anxiety of group A patients (7.83) (p=0.01).

Table 2: Effectiveness of Shavasana and Jacobson's Relaxation Technique In Reducing Anxiety Between The Groups In Post Stroke Patient

Group	Intervention	Mean	Std. Deviation	Paired t statistic	p value
A: Relaxation Technique	Pre HADS- A Score	10.72	2.63	11.36	<0.001
	Post HADS- A Score	7.83	1.86		
B: Relaxation Technique with Shavasana	Pre HADS- A Score	12.83	3.43	14.65	<0.001
	Post HADS- A Score	5.78	2.65		

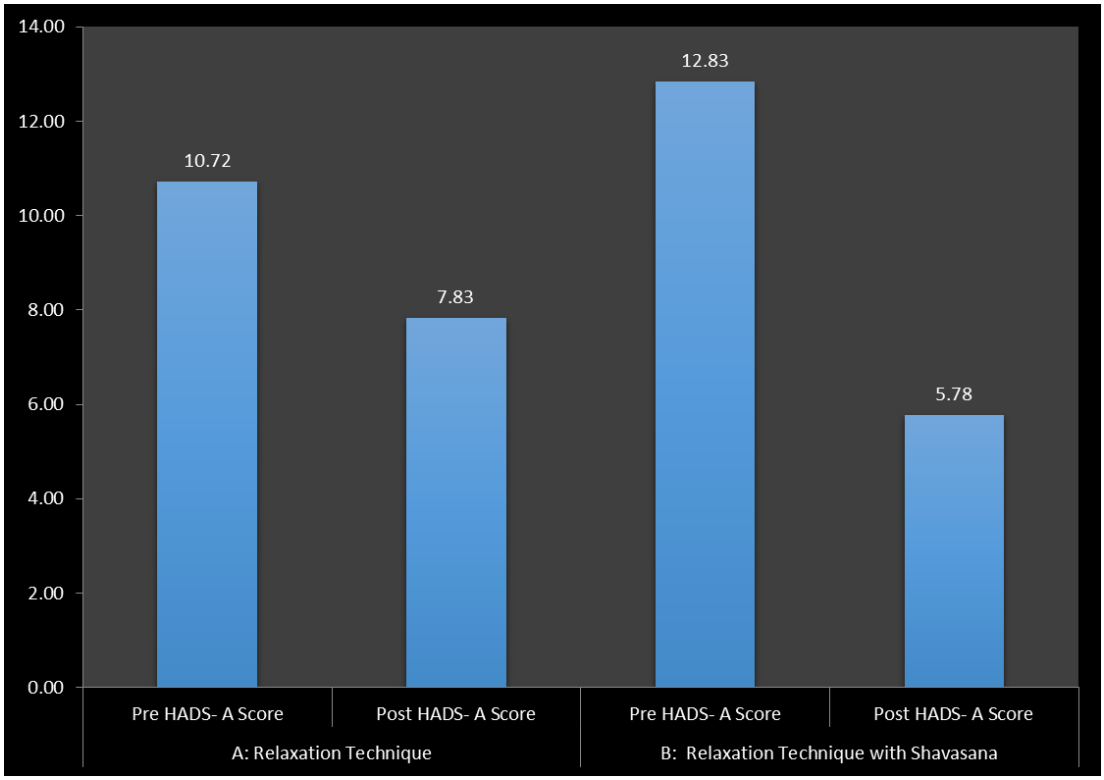

Fig 8: Bar Graph Representing Effectiveness of Shavasana and Jacobson's Relaxation Technique In Reducing Anxiety In Post Stroke Patient

Paired t test was done to compare between pre and post intervention of Shavasana and Jacobson's relaxation technique in reducing anxiety in post stroke patients.

Group A: Relaxation Technique

It was found that, average anxiety of group A patients, post intervention (7.83) was significantly lesser than average anxiety pre intervention (10.72) (p<0.001).

Group B: Relaxation Technique with Shavasana

It was found that, average anxiety of group B patients, post intervention (5.78) was significantly lesser than average anxiety pre intervention (12.83) (p<0.001).

Discussion

Stroke is a major health issue affecting the young today and causes long term disability. Anxiety strikes most patients as recovery consumes time and is also essential for post stroke survivors to lead a meaningful and productive life. Anxiety is evident in such patients.

Jacobson's relaxation technique is a progressive relaxation therapy that focuses on tightening and relaxing specific muscle groups in sequence. Research on the relaxation response has shown that this simple technique can: boost energy, lower fatigue as well as increase arousal from a drowsy state. It can increase motivation, productivity, and enhance decision-making ability. Relaxation techniques include a number of practices such as progressive relaxation, guided imagery, deep breathing exercises [13].

Shavasana decreases heart rate, blood pressure, muscle tension and general levels of anxiety. Yoga practices enhance the activity of brain and reduce cortisol levels. These physical and chemical changes can help reduce anxiety. Yoga therapy modifies the central nervous system function and therefore reduces sympathetic activities and causes neuromuscular relaxation [14]. The physical exercises (Asanas) may increase patient's physical flexibility, coordination, may calm and focus the mind to develop greater awareness and diminish anxiety and thus result in higher quality of life [15].

In a study conducted in 2014 by Ian Kneebone, he gave relaxation group therapy to inpatients with stroke to reduce anxiety. In his study, he concluded that relaxation therapy was useful in reducing anxiety in post stroke patients.

In the present study undertaken a total of 36 participants were recruited for the study, of which 18 participants were given Jacobson's relaxation technique which comprised Group A and the other 18 participants were given Jacobson's relaxation technique followed by shavasana and they formed Group B. Anxiety levels were measured using

HAM- A score in both the study groups before commencing the treatment and 2 weeks after giving the treatment.

In the present study it was observed that the Mean age of patients with stroke was 50.11 ±5.34 years. Brett M. Kissela *et al* in their study found trends towards increasing stroke incidence at younger ages. In our study we observed a similar finding [26].

In our study the results of Paired T test revealed that the average anxiety of group A patients, post intervention (7.83±) was significantly less than average anxiety before the intervention (10.72±) ($p<0.001$). A concurrent observation was also seen while studying the anxiety levels in group B patients, the post intervention (5.78±) was significantly lesser than average anxiety pre intervention (12.83±) ($p<0.001$). The results of our study suggests that anxiety levels of Group A subjects who participated in Jacobson's relaxation technique had significant reduction in their anxiety levels. Several studies performed worldwide also are suggestive of similar observations. In a study conducted in 2013 by Maggie Lawrence, she evaluated the benefits of mindfulness-based interventions following transient ischemic stroke. In her study, the results demonstrated positive trend in favour of the benefits of mindfulness-based interventions across a range of psychological, and psychosocial outcomes including anxiety [27].

Participants in group B practicing Shavasana with Jacobson's relaxation therapy treatment as usual showed significantly reduced anxiety levels as compared to before intervention. Efficacy of Shavasana has been reported previously in a study conducted in 2013 by Asimina Lazaridou where he concludes that Yoga seems to offer a relief from a long list of medical ailments in stroke by alleviating both the mind and the body from stress [28].

In our study the results of Unpaired T test revealed that after the treatment was given, average anxiety of group B patients (5.78) was significantly lesser than average anxiety of group A patients (7.83) ($p=0.01$).thus, implying that there was significant reduction in anxiety in participants who were given Jacobson's relaxation technique along with shavasana (GROUP B) than in participants who were given only Jacobson's relaxation technique (GROUP A).

In a study conducted by Maggie Lawrence in 2017, she concluded that Yoga has the potential for being included as part of patient-centered stroke rehabilitation [29].

The HADS-A demonstrated a significant reduction in anxiety in maximum participants. Even participants who attended one session, on average showed a reduction in anxiety. This is an indication that relaxation training may be useful in treating anxiety after stroke. In sum, this study found that relaxation group in a post stroke rehabilitation setting may be useful in reducing anxiety. Relaxation training was well received by participants. Challenges in establishing a relaxation group can be overcome in consultation with the multidisciplinary ward team. Research into the effectiveness of relaxation training to treat symptoms of anxiety in those with stroke is warranted.

Conclusion

Our study supported the alternate hypothesis. Both groups showed significant reduction in anxiety after treatment. The Jacobson's relaxation technique followed by shavasana was more effective in reducing anxiety as compared to Jacobson's relaxation technique alone in post stroke patients. This reveals that shavasana played an eminent role in proving that combination therapy of Jacobson's relaxation with shavasana was more effective in reducing anxiety in post stroke patients.

Limitations and Suggestions

Limitations:

- The sample size of this study was small.
- Patients with cognitive impairments were not included.
- There was lack of follow up for a long period of time.

Suggestions:

- Further study may include larger sample size longer treatment duration and regular follow up sessions.
- However, as there was no anxiety level criteria for admission to the relaxation group, the effectiveness of relaxation training in treating anxiety post stroke should be further explored in a sample of patients diagnosed with anxiety after stroke.

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