Effectiveness of Autogenic Relaxation Training with Cognitive Graded Activity Training for Post Stroke Apathy Patients- A Case Study

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Abstract

Apathy, characterized by reduced motivation, behaviour, and cognitive function, significantly impacts post-stroke recovery, impairing daily functioning and increasing the risk of dementia and depression. This study aimed to evaluate the effectiveness of combining Autogenic relaxation training and cognitive graded activity training in alleviating apathy symptoms in a post-stroke patient. Conducted as a single-case study at the Saveetha Physiotherapy Department, Saveetha Medical College and Hospital, it involved a 46-year-old male patient who had suffered an MCA stroke. The Dimensional Apathy Scale (DAS) was used to assess apathy symptoms before and after a 6-week intervention consisting of 60-minute session of Autogenic relaxation and cognitive graded activity training, five days a week. Results revealed a significant reduction in apathy symptoms, as reflected by a lower DAS score post-intervention. Improvements were observed in emotional responses, cognitive function, and goaldirected behaviour, demonstrating the effectiveness of the combined therapeutic approach. This study underscores the importance of early identification and intervention for apathy in post-stroke patients. The combination of Autogenic relaxation training and cognitive graded activity training shows promise in not only alleviating apathy but also in preventing further cognitive decline and dementia, offering a potential solution for enhancing post-stroke recovery and quality of life.

Keywords: Apathy, Autogenic Relaxation Training, Cognitive Graded Activity Training, Post Stroke.

Introduction

Apathy is most usually described as a syndrome characterized by less emotion, thought, and goal-directed activity. Apathy can negatively affect daily living activities, overall health, quality of life, and functional recovery. Apathy affects the cognitive, behavioural, emotional, or social domains of a patient's daily activities and occurs in one out of three patients after stroke [1]. A reduction in goal-directed behaviour, such as a lack of initiative and effort, is one of the most prevalent clinical indicators. A decrease in goal-directed cognition, which manifests as a lack of interest, a lack of plans and goals, and a loss of interest in one's own life. Apathy among stroke patients is present at a prevalence rate of 33.0% [2]. Patients with post-stroke apathy exhibit shorter recovery timelines to return to normal functioning and more functional disability. Apathy also increases the chance of incident vascular disease, dementia, and death. Apathy may be caused by anatomical lesions or dysfunctions of the basal ganglia and prefrontal cortex. This is because lesions impair the frontal cortex's capacity to extract signals, which hinders the frontal cortex's capacity to select, initiate, maintain, and modify action programs which is required for goal directed behavioural activities [3, 4]. Apathy as a psychopathologic concept and its clinical manifestations share traits with chronic schizophrenia, dementia, depression, and other affective disorders [5]. Executive functions play a crucial role in our daily lives they help us maintain focused attention, effectively tackle problems, and plan ahead successfully [6]. Apathy-related emotional and motivational issues might get worse when there deficits. are cognitive Furthermore, indifference prevents rehabilitation involvement, which reduces enrolment in rigorous early rehabilitation programs and results in subpar functional and cognitive performance [7]. In many conditions, such as spinal cord injury, Parkinson's disease, stroke, and cerebral palsy, emotional problems can have a detrimental effect that can be mitigated by engaging in relaxation techniques. One of the most popular relaxing methods with proven benefits is autogenic relaxation training (ART). A series of simple exercises known are designed to help patients improve their mobility. Autogenic relaxation proves to be beneficial in various conditions in reducing anxiety and depression [8, 9]. The prevalence of depression among patients with cerebrovascular accidents is reported to be 75.8%, which is notably high. Regular screening for depression in stroke patients could aid in the early detection and management of the condition [10]. Autogenic training is based on autosuggestion and involves passively focusing on body sensations of warmth and heaviness while taking slow, deep breaths. Gradual active hypnosis, autogenic training, autogenic neutralization, autogenic modification, autogenic feedback training, and autogenic behaviour treatment are all included in autogenic therapy [11]. Autogenic relaxation is a technique that fosters deep mental calm and relaxation. A structured self-guided series of affirmations and visualizations designed to enhance awareness of bodily sensations. This method help alleviate both the psychological and physical aspects of anxiety [12].

The main objective of Cognitive Graded Activity Training (COGRAT) is to equip stroke patients with cognitive skills so they can make better and more efficient use of their cognitive resources. This is the concept of progressively increasing the muscular and aerobic load intensity which reinforces the training, which places an emphasis on physical endurance, flexibility, and muscle strength [13]. Graded activity treatment uses a graded approach with ongoing goals that incorporate improvements in physical or cognitive activities, regardless of the severity of the illness or symptoms. This is a biopsychosocial approach that integrates cognitive behavioural therapy with graded activity/exercise treatment [14].

This cognitive-behavioural approach states that in addition to the underlying disease, social, cognitive, emotional, and behavioural factors all influence impairment. Therefore, graded activity exercises aim to lessen pain and functional limitations by addressing fear associated with pain, kinesiophobia, and abnormal behaviours [15]. Apathy is composed of a number of elements pertaining to thought, behaviour, and emotion. Levy and Dubois's classification of apathetic subtypes formed the basis for the multidimensional Dimensional Apathy Scale (DAS). The total score ranges from 0 to 72 with greater scores indicating apathy. A 24-item scale was developed following an initial examination of the psychometric properties of the 45-item measure [16].

The Dimensional Apathy Scale (DAS) measures three types of apathy including the executive, emotional& initiation. The DAS demonstrated strong internal consistency and convergent validity when compared to the current gold standard unidimensional assessment for apathy [17, 18]. This study aims to determine the effects of autogenic relaxation training with cognitive graded activity training in reducing post stroke apathy symptoms. The integration of autogenic relaxation training and cognitive graded activity training (COGRAT) specifically for post-stroke apathy patients is a novel intervention that addresses both emotional and cognitive recovery. The study focuses on apathy in stroke patients, a common but under-addressed symptom that significantly impacts rehabilitation outcomes.

Materials and Methods

Case Description

A 46-year-old male with a history of hypertension (SHTN) on irregular medication, presented with complaints of dizziness and inability to move his left upper and lower limbs, along with a deviation of the mouth to the right, diagnosed as intracerebral hemorrhage (ICH) in the left globus pallidus region, with type 2 diabetes mellitus (T2DM), on November 30,2024. On examination, he was conscious and oriented but had left-sided hemiparesis and facial asymmetry, along with elevated blood pressure (170/110 mmHg). A CT brain scan revealed an acute hematoma in the right ganglio -capsular region with a midline shift of 2 mm, suggesting a right-sided middle cerebral artery (MCA) stroke. His condition was managed with conservative measures, including blood pressure control and antiepileptic medication, with regular CT brain scans to monitor progression. The patient was admitted to the ICU, where he showed some clinical improvement but developed multiple complications, including increased midline shift, cerebral edema, and obstructive hydrocephalus. Patient was hemodynamically stable and shifted back to ward on december 5. CT brain done on 6/12/24 showed reports associated cerebral edema and mild contralateral obstructive hydrocephalus. The patient was referred for daily chest and limb physiotherapy under ICU setting followed to ward. During physiotherapy, the patient began exhibiting symptoms of apathy and a lack of motivation, which progressively worsened during his hospital stay. Initially, the patient showed limited interest in participating in his rehabilitation sessions, despite efforts from the team to engage him. As the days passed, the patient's emotional and cognitive responses became more blunted, and he showed minimal verbal communication or emotional expression. Despite multiple efforts from team, patient showed less interest and motivation during rehabilitation. This apathy, which was likely a result of the stroke's impact on areas of the brain involved in motivation and emotion regulation, interfered with his rehabilitation progress. His family noted a decline in his ability to engage in basic activities of daily living and a noticeable lack of initiative. The subject is evaluated for apathy using the outcome measure Dimensional Apathy Scale (DAS), which consists of three main domains Executive, Emotional and Behaviour. The total score ranges from 0 to 72 with greater scores indicating apathy. The total score evaluated is 47 with the sub scores of 14 in Executive category, 13 in Emotional category and 20 in Behaviour category. Patient has apathy and more predominant symptoms in behaviour domain. The patient and the caregiver was educated about the study, symptoms and the treatment for apathy and its psychological complications, if left untreated. After getting the informed consent, the patient is treated with Autogenic relaxation training with cognitive graded activity training (COGRAT) for a duration of 6 weeks with 5 sessions per week, in addition to the stroke rehabilitation protocol. The intervention is given for a duration of 60 minutes with 30 minutes for autogenic relaxation and other 30 min for the cognitive graded activity training. Autogenic training is based on autosuggestion and involves passively focusing on body sensations of warmth and heaviness while taking slow, deep breaths. That includes Sensation of heaviness in the musculoskeletal system, Warmth the in circulatory system, Consciousness of the heartbeat, Slowing the breath, Relaxing the abdomen & cooling the forehead. Cognitive Graded Activity Training aims at improving the cognitive function with improving the overall

performance. This can be achieved through memory exercises like word recall tasks, attention and concentration tasks, problem solving executive exercises like task planning and time management tasks, goal setting, communication tasks, graded motor tasks including balance exercises and fine motor tasks.

Results

After 6weeks, the dimensional apathy scale is again used as a post test measure for analysing the symptoms. The total score evaluated post intervention is 29 with the sub scores of 10 in Executive, 8 in Emotional, and 11 in Behaviour categories. There was a significant reduction in the apathy scores from 47 to 29. Marking the reduction of apathy The intervention symptoms. led to improvements emotional in responses, cognitive function, and goal-directed behaviour, demonstrating the effectiveness of the combined approach.Table:1 shows the pre and post test scores of dimensional apathy scale in various three sub categories of the outcome measure.Figure:1 represents the pre and post test values of the dimensional apathy scale in which, behaviour sub category has the higher total score value of 20 and has significantly reduced to 11 after intervention. The intervention seems to have led to substantial improvements, especially in behaviour, as evidenced by the significant reduction in the subscore from 20 to 11. This indicates that the combined approach was successful in apathy-related addressing behavioral symptoms, which are often among the most difficult to manage after conditions like stroke or other neurological disorders. The overall decrease in the total score from 47 to 29 further highlights the effectiveness of the intervention in alleviating apathy symptoms.

Fable1.	Pre and	Post T	Test Scores	using	Dimen	sional	Apathy	Scale	(DAS)	in	Three	Subcat	egories
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Dimensional apathy scale(das)	Pre-test scores	Post-test scores
Executive	14	10
Emotional	13	8
Behaviour	20	11
Total	47	29
10(a)	7/	<i>23</i>





Discussion

The main aim of the study is to assess the combined effects of autogenic relaxation training and graded activity training in post stroke apathy patients. It's important to evaluate apathy early to prevent cognitive decline and to improve emotional and functional outcomes during stroke rehabilitation. In addition to standard physiotherapy, ART (Autogenic Relaxation Training) is both feasible and beneficial for reducing anxiety and depression, while enhancing mobility and quality of life in stroke survivors. The combined approach is also well-received by stroke patients, making it a viable therapy option for those in rehabilitation. Further research with a control group is suggested to validate these findings Autogenic relaxation proved to be effective in lowering depression levels in menopausal women. [19, 20].

Studies consistently show the effectiveness of Autogenic training in reducing anxiety and producing moderate positive effects on mild-tomoderate depression. However, its impact on bipolar disorders, psychotic disorders, and acute stress disorder has yet to be explored. As an adjunctive psychotherapy technique with positive outcomes on psychophysiological functioning, Autogenic training offers a promising opportunity to expand research on the brain-body connection, beyond the current boundaries of preventing and clinically managing various mental disorders [21].A 12week cognitive therapy program can help reduce persistent fatigue following a stroke. The most effective outcomes are achieved when cognitive therapy is combined with graded activity training [22].Stroke survivors who receive ART alongside standard physiotherapy are likely to experience a reduction in anxiety levels, as well as improvements in functional ability and quality of life. Additionally, we anticipate that the combined intervention will be feasible and could be implemented as a strategy to enhance post-stroke rehabilitation, which is currently not fully optimized. Autogenic relaxation should be incorporated into other therapies and practiced by nurses as part of their daily routines. Nurses should encourage menopausal women to integrate autogenic relaxation into their everyday lives [23, 24]. Cognitive behavioural therapy had a beneficial effect on managing anxiety and stress in hospital housekeeping workers [25].

By targeting the psychological and cognitive aspects of post-stroke recovery, the integrated intervention may improve not only motivation and emotional well-being but also cognitive function, which is often impaired after stroke. The integration of Autogenic Relaxation Training and Cognitive Graded Activity Training appears to be an effective and comprehensive approach for managing poststroke apathy. By targeting both the emotional and cognitive aspects of rehabilitation, this combined intervention could significantly improve patient motivation, emotional wellbeing, and recovery. The findings support the potential use of Autogenic relaxation training and Cognitive graded activity training as complementary treatments in clinical practice, offering a more holistic approach to post-stroke rehabilitation that addresses both emotional and cognitive rehabilitation needs.

Conclusion

This study emphasizes the importance of early identification and intervention for apathy in post-stroke apathy patients. The combination of Autogenic relaxation training and cognitive graded activity training shows promise in reducing apathy, potentially preventing further cognitive decline and dementia. While promising, further research with larger sample sizes is needed to confirm these findings and assess long-term outcomes.

Conflict of Interest

There is no conflict of interest.

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