

Effectiveness of Conventional Exercise on Motor Functions among Patients with Hemiparesis Admitted in Selected Hospital

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Abstract:- Background : Hemiparesis is the weakness or inability to move one side of the body, making daily activities difficult. **Motor activity (from daily activity) - All activities produced by stimulation of motor neurons, including activity in the gland, as well as activity of body and muscle complaints (American Psychiatric Association).** **Aim:** Effectiveness of conventional exercise on motor functions among patients with hemiparesis admitted in selected hospital, Salem, Tamilnadu. **Design:** The research design used for the present study was Quasi – experimental design. **Participants:** 30 hemiplegic patients who met the inclusion criteria were selected by purposive sampling technique. **Selection criteria: INCLUSION CRITERIA:** patients with hemiparesis => Age group 40 and 70 years, Illness for the duration of less than 2 years, present during the period of data collection, have normal cognitive function, willing to participate in the study, able to understand Tamil or English. **Results:** The results showed that the average motor test score of the hemiplegic patients in the control group was 24.45 ± 1.42 , and the average score of the experimental group was 18.21 ± 1.85 . **Result:** Regular exercise appears to be effective in improving motor function in patients with hemiplegia. **Paired t test and unpaired t test showed that regular exercise had an effect on motor function in hemiplegic patients. Conclusion:** According to the results of the study, daily exercise appears to be effective in improving motor function in patients with hemiplegia, regardless of demographic differences.

I. INTRODUCTION

Hemiparesis is a complex condition with multifaceted causes and symptoms. This condition can affect the arms, legs, and facial muscles, leading to significant functional impairment. It is often a consequence of damage to the brain or spinal cord, commonly resulting from strokes, traumatic injuries, tumors, or neurological diseases.

Hemiparesis can significantly impact an individual's quality of life. The physical limitations and the need for ongoing therapy and assistance can lead to emotional and psychological challenges. Patients may experience frustration, depression, and anxiety as they adapt to their new limitations.

Stroke is a leading cause of hemiparesis. According to the World Health Organization, approximately 15 million people suffer a stroke each year globally, with about 5 million resulting in long-term disability, including hemiparesis. (World Health Organization, 2020).

Studies suggest that hemiparesis occurs in approximately 50% to 80% of stroke survivors. For instance, Warlow et al. (2008) reported that about 80% of stroke survivors experience some form of motor impairment, with hemiparesis being the most common. Another study found that around 65% of individuals who have had a stroke develop some degree of hemiparesis. (Feigin et al., 2014).

A. Need for the Study

Motor dysfunction is a core characteristic of hemiparesis, manifesting as weakness or partial paralysis on one side of the body. Stroke is a major cause of hemiparesis. Each year, approximately 15 million people worldwide experience a stroke, with about 5 million left permanently disabled, many with hemiparesis (World Health Organization, 2020).

Hemiparesis occurs in roughly 50% to 80% of stroke survivors. Warlow et al. (2008) report that about 80% of stroke survivors experience motor impairment, primarily hemiparesis. Another study found that around 65% of stroke survivors develop significant motor dysfunction (Feigin et al., 2014).

Long-term studies indicate persistent motor dysfunction in a significant portion of stroke survivors. Nichols-Larsen et al. (2005) found that 50% of stroke survivors have ongoing hemiparesis five years post-stroke.

Conventional exercise plays a crucial role in the rehabilitation process, aiming to improve motor function, strength, and overall mobility. Studies have shown that balance and coordination exercises can significantly improve stability and reduce the risk of falls in individuals with hemiparesis (Dean et al., 2007). Task-oriented training is effective in improving motor function and independence in daily activities. A meta-analysis by French et al. (2010) supports the use of repetitive task training to enhance motor recovery after stroke. Regular stretching exercises help reduce muscle tightness and improve range of motion, which is crucial for individuals with hemiparesis (Blennerhassett et al., 2008). Conventional exercise is a cornerstone of rehabilitation for motor dysfunction in hemiparesis. These exercises aim to improve muscle strength, flexibility, balance, coordination, and overall functional ability. A comprehensive and individualized exercise program, tailored to the specific needs of the patient, can significantly enhance recovery and quality of life.

B. Objective of the Study

- To assess the level of motor functions among patients with hemiparesis in experimental and control group before and after conventional exercise.
- To evaluate the effectiveness of conventional exercise among patient with hemiparesis in experimental and control group.
- To find out the association between post test scores of motor functions among patient with hemiparesis in experimental and control group and their selected demographic variables.

C. Hypotheses

- H1 – There is significant difference in the level of motor functions among patients with hemiparesis before and after conventional exercise in experimental group.
- H2 – There is a significant difference in the level of motor functions after conventional exercise among patient with hemiparesis in experimental and control group.
- H3 – There is a significant association between posttest scores of motor functions among patient with hemiparesis in experimental and control group and their selected demographic variables.

II. MATERIALS AND METHODS

- **Design:** Quasi-experimental design.
- **Sample size:** The total sample included 30 hemiplegic patients.
- **Sampling Technique:** Purposive Sampling Technique
- **Selection criteria:** Inclusion Criteria:
 - Patients with hemiparesis => Age group 40 and 70 years.
 - Illness for the duration of less than 2 years, present during the period of data collection.
 - Have normal cognitive function.

- Willing to participate in the study, able to understand Tamil or English.

➤ Tool Development

- Part A: Demographic Variables will include the patient's demographic variables such as age, gender, side of the body, affected parts of the body, patient's support and Comorbid conditions.
- Part B: National Institutes of Health Stroke Scale (NIHSS) was used to evaluate the physical activity of hemiplegic patients.

➤ Data Collection Procedure

Prior to data collection, permission was obtained from the managing Director of selected hospitals at Salem. The National Institutes of Health Stroke Scale (NIHSS) was used to evaluate the physical activity of hemiplegic patients in the intensive care unit. An average of 2 to 3 patients are evaluated per day. Immediately after the pre-test, regular exercise, including aerobic exercise, simple exercise and functional exercise, was applied for 45 minutes, 3 days a week for 10 weeks. At the end of the 10th week, the experimental group and control group were evaluated using the National Institutes of Health Stroke Scale (NIHSS).

III. RESULT

- In experimental study, Demographic variables shows 54% of them were between the age group of 51-60 years, 67% of them were male, 67% of them affected with right side of the body, 46% of them were having 6 months-1 year duration of illness, 46% of them were having hypertension and 46% of the patients were doing business.
- In control group, Demographic variables shows 40% of them were between the age group of 51-60 years, 54% of them were male, 60% of them affected with right side of the body, 60% of them were having 6 months-1 year duration of illness, 54% of them were having hypertension and 47% of the patients were doing business.
- Overall in pre test mean score was (34.2 ± 1.88) , which is 81%, whereas in post test the mean score was (18.21 ± 1.85) which is 43%. Showing a difference of 38%. It seems that conventional exercise was effective in improving the motor functions among patient with hemiparesis.
- Both in experimental group and control group, gender and duration of illness were significant association with the post test score of motor function among patient with hemiparesis.
- Overall in pre test mean score was (33.12 ± 1.88) , which is 79%, whereas in post test the mean score was (24.45 ± 1.42) which is 58%, showing a difference of 21%. It seems that without intervention no improving the motor functions among patient with hemiparesis.

Table 1 Paired and Unpaired “t” Test Value of Motor Functions among Patient with Hemiparesis in Experimental Group and Control Group.

S. No	Patient with Hemiparesis	Paired ‘t’ Test Value	Unaired ‘t’ Test Value	Level of Significance
1	Control group	4.43	9.23	Significant
2	Experimental group	13.76		Significant

IV. DISCUSSION

The findings revealed that mean post test scores of level of motor functions among patients with hemiparesis in control group was 24.45 ± 1.42 , whereas in experimental group the post test mean score was 18.21 ± 1.85 . It seems that conventional exercise was effective in improving the motor functions among patient with hemiparesis. The paired ‘t’ test and unpaired ‘t’ test showed, there was a significant effectiveness of conventional exercise on motor functions among patients with hemiparesis. Both in experimental group and control group, gender and duration of illness were significant association with the post test score of motor function among patient with hemiparesis.

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