

Evaluate Effect of Mirror Therapy on Upper Limb Motor Functions Among Patients with Stroke

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Abstract

Stroke sometimes called as a brain attack occurs when a clot blocks the blood supply to the brain or when a blood vessel in the brain bursts. Mirror therapy reduce spasticity, muscle pain, improve muscle strength and improves patient quality of life. In which inversion of visual feedback leads to additional activation of hemisphere contralateral to the perceived limb laterally. Sample size is 60 in which 30 samples covered for experimental group, 30 samples covered for control group and Non probability purposive sampling technique used. Medical research council (MRC) scale acts as a tool for measuring the level of muscle strength. The percentage distribution of muscle strength scores reveals that stroke patients in experimental group had significant resistance whereas in control group had no resistance in the muscle strength level. The findings of the study shows the significance difference between the mean and standard deviation of post test muscle strength scores of stroke patients of experimental and control group using 't' test. The obtained 't' value 5.887 is greater than table value 2.05 at 29 DF in 0.05 level of significance. Therefore the obtained 't' value is found to be significant.

Keywords: Effect, Upper limb motor functions, Patients with stroke, Mirror therapy.

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INTRODUCTION

A stroke, sometimes called a brain attack, occurs when a clot blocks the blood supply to the brain or when a blood vessel in the brain bursts stroke can be caused by either too little blood to the brain, a ischemic stroke, or too much blood in the brain, a hemorrhagic stroke. The statement of the study Evaluate the effectiveness of mirror therapy on upper limb motor functions among patients with stroke. Damage to the brain cause by a stroke may lead to problems with speech as well as movement in a leg or arm. The area that suffers damage and the extent of that damage will depend on which area of the brain was damaged and how badly. Studies show that both physical and mental therapy techniques can be used to improve the patient's responses, and various types of stroke rehabilitation are encouraged to help regain speech and motor functions. One can greatly reduce ones risk for stroke through lifestyle changes and, in some cases, medication. Stroke

rehabilitation typically includes both mental and physical therapy techniques. Patients are encouraged to continue with both in order to combat the damage that has been done to the brain. As well as regular exercise for those areas of the body that have been affected by the effects of stroke, there are other complementary exercises and therapy techniques that can also be considered. In hypothesis there will be significant difference in upper limb motor functions among stroke patients of both experimental and control group after mirror therapy. The main objective of the study is to compare the effectiveness of mirror therapy between experimental and control group after mirror therapy.

MATERIAL AND METHODS

Research Design

Non randomized control group design was utilized to achieve the objectives of the study.

Variables

- **Research Variable:** The effectiveness of Mirror therapy in stroke patients
- **Demographic Variables:** Age, Gender, Religion, Educational qualification, Marital status, Family type, Nutritional status, Family history of stroke.
- **Setting of the Study:** The study was conducted among patients with stroke in the selected rehabilitation centers in Visakhapatnam. This institution was chosen due to its accessibility and relevance to the target population.

Population

The target population consists of Stroke patients in the selected rehabilitation centers in Visakhapatnam.

Sample and Sampling Technique

A sample of 60 stroke patients was selected from the rehabilitation center. The sampling technique used was Non probability sampling technique, where participants were selected based on availability and willingness to participate in the study.

Sampling Criteria

Inclusion Criteria:

1. Stroke patients whom upper limb motor function is affected.
2. Stroke patients who are available at rehabilitation centers

Exclusion Criteria:

1. Stroke patients whom upper limb motor function is affected.
2. Stroke patients not willing to participate in the study
3. Patients who are not available at that time

Data Collection Tool

PART A: DEMOGRAPHIC DATA:

The demographic variables such as Age, Gender, Religion, Educational qualification, Marital status, Family type, Nutritional status, Family history of stroke.

Section B: MEDICAL RESEARCH COUNCIL (MRC) SCALE FOR MUSCLE STRENGTH

The scale shows a varies levels of muscle power ranging from 0-6 scores. i.e, 0-total paralysis, 1- slight flicker movements, 2 –able to move , 3- no resistance, 4- significant resistance, 5-normal. The subject was instructed to indicate the muscle strength.

Development of the Tool

The tool was developed following these steps:

1. Review of literature on mirror therapy effects on stroke patients
2. Consultation with the study guide and subject matter experts.

3. Incorporation of findings from previous research studies and resources from libraries and the internet.

Data Collection Procedure

Prior to data collection, formal permission was obtained from the SP Physiotherapy and rehabilitation center in Visakhapatnam. After introducing the purpose of the study, participants were given instructions on how to complete the questionnaire. The investigator provided guidance to ensure clarity and consistency in responses.

Plan for Data Analysis

Descriptive statistics were used to analyze the data. The following steps were followed:

1. **Data entry and editing:** Data collected from the questionnaire was coded, grouped, and tabulated.
2. **Descriptive statistics:** The data was analyzed using frequency, mean, and mean percentage to assess the variables of interest.
3. **Summary and interpretation:** Results were aligned with the study objectives to provide meaningful insights into effects of mirror therapy on selected rehabilitation centers

This approach ensured that the data was systematically collected and analyzed, providing a clear understanding of the effects of mirror therapy and practice among the study population.

RESULTS AND DISCUSSION

Findings are summarized as follows

The pretest level of muscle strength scores among stroke patients of experimental group shows 0% (paralysis), 0% (slight flicker movements) and 17% (able to move), 30% (no resistance), 53% (significant resistance), 0% normal whereas in control group 0% (paralysis), 0% (slight flicker movements), 17% (able to move) 50% (no resistance), 33% (significant resistance), 0% normal before mirror therapy. The findings of the study demonstrated that most of the stroke patients had significant resistance, no resistance, able to move, no patients of full paralysis and slight flicker movements. The mean post test score of experimental (4.1) was greater than the mean pre test score (3.1), showed that there was a significant difference between the pre test and post test muscle strength level scores. The standard deviation of pre test is 0.771 and the standard deviation of post test is 0.803, showed that there was a significant difference between the pre test and post test level of muscle strength scores among stroke patients. The overall computed t value is 5.887 greater than the table value 2.05, which is statistically significant at $p < 0.05$ level. The results shows that significant difference in upper limb motor functions among stroke patients before and after mirror therapy in experimental group. Paired 't' test showing the significance difference between the mean and standard deviation of post test muscle strength scores of stroke patients of experimental and control

group. The obtained 't' value 4.586 is greater than table value 2.001 at 58 DF in 0.05 level of significance. Therefore the obtained 't' value is found to be significant. Therefore we have sufficient evidence to conclude that experimental group had improved muscle strength than control group after mirror therapy. It can be concluded that the mirror therapy played an important role in improving the level of muscle strength among stroke patients. The results shows that significant difference in upper limb motor functions among stroke patients of both experimental and control group after mirror therapy. There is age, nutritional status, family history of stroke are statistically significant at P value 0.05 remaining demographic variables such as gender, education, marital status, type of family, religion are not significant at 'p' value 0.05 in experimental group.

DISCUSSION

The study reveals that the comparison of pre test level of muscle strength scores among stroke patients of Experimental group; 0% paralysis, slight flicker movements 0%, able to move 17%, no resistance 30%, significant resistance 53%, normal 0%; in post test, 0% paralysis, 0% slight flicker movements, 0% able to move, 27% no resistance, 40% significant resistance, normal 33% whereas in control group paralysis 0%, slight flicker movements 0%, able to move 17%, no resistance 50%, significant resistance 33%, normal 0% in pre test and 0% paralysis and 0% slight flicker movements, 16.7% able to move, 46.7% no resistance, 36.7% significant resistance, 0.0% normal in post test.

The findings of the study shows the significance difference between the mean and standard deviation of post test muscle strength scores of stroke patients of experimental and control group using 't' test. The obtained 't' value 5.887 is greater than table value 2.05 at 29 DF in 0.05 level of significance. Therefore the obtained 't' value is found to be significant.

There is no statistical association between the post test level of muscle strength and the selected demographic variables at p value 0.05 level such as Age, Gender, Education, Marital status, Type of family, Religion, Nutritional status, Family history of stroke in control group.

There is age, nutritional status, family history of stroke are statistically significant at p value 0.05 remaining demographic variables such as gender, education, marital status, type of family, religion are not significant at p value 0.05 in experimental group.

CONCLUSION

The present study evaluated the effect of mirror therapy on upper limb motor functions among patients with stroke attending selected rehabilitation centres. Overall, carrying out the present study was really an enriching experience for the investigator. It also helped a great deal to explore and experience different feeling of

the respondents. The constant encouragement and guidance by the guide, and the cooperation and interest of the respondents in participating in the study contributed to the fruitful completion of the study.

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Declaration

Author Contribution

Conceptualization: Mr. Guntu Durga Prasad

Methodology: Mr. Durga Prasad

Data Collection and Analysis: Mrs. Snehalatha Reddy

Writing – Original Draft Preparation: Mr. Guntu Durga Prasad

Writing – Review & Editing: Mrs. Snehalatha Reddy

Supervision: Mrs. Snehalatha Reddy

Project Administration: Mrs. Devi Nanjappan

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Competing Interest

The authors declare that there are no competing interests related to this research. The remaining authors declare no competing interests.

Ethical Clearance

Every procedure in this investigation complied with equivalent ethical standards or the 1964 Helsinki Declaration and its revisions. "The ethical aspect of the study has been institutionally reviewed". Informed consent has been procured by all respondents in this study.

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