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Effectiveness of Mirror Therapy in Enhancing Dressing Capability Among Stroke Patients

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Abstract:

- ***Background:***

Stroke is a leading cause of disability worldwide, with many patients experiencing significant loss of functionality, particularly on the affected side. In stroke, Mirror Therapy effectively improves motor function, reduces pain, and enhances ADL. Dressing is an important activity of daily living (ADL) for participation in social life. Independence in dressing is considered necessary to maintain dignity and self-esteem and imparts a sense of accomplishment. This study aims to find the effectiveness of mirror therapy in improving dressing skills in stroke patients.

- ***Methods:***

A quasi-experimental study was conducted. Stroke patients with difficulty in independent dressing were selected as the participants. The patients were given interventions using mirror therapy. 30 minutes per session, 5 sessions per week for 8 weeks. The PASS (Performance Assessment Self-care Skill) scale was used as an evaluation tool and collected the pre-test and post-test data.

- ***Results:***

The data were subjected to statistical analysis using the IBM Statistical Package for the Social Sciences (SPSS) 25 ver. The calculations were carried out using the Paired-t test.

- ***Conclusion:***

The significant value or 'p' value was obtained and proved a significant improvement in the post-test scores of dressing skills compared to the pre test scores.

Keywords: *Stroke, Mirror Therapy, Dressing (ADL).*

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I. INTRODUCTION

- *Stroke*

A stroke is a neurological condition in which blood arteries get blocked, a stroke-induced malfunction of higher motor neurons causes hemiplegia, which is the paralysis of one side of the body, including the trunk, limbs, and often the face and oral tissues(1).The dressing was interrupted for patients with right hemisphere impairment due to poor sustained attention or visuospatial issues. People with ideomotor apraxia and left hemisphere impairment couldn't learn how to dress correctly to adapt to hemiparesis(2).

- *Brunnstrom Stages*

The Brunnstrom recovery phases represent the symptoms and recovery pattern of spasticity and post-stroke functions. The pattern consists of six stages. This classification results from clinical observations of the degree of voluntary movement, spasticity, and synergy in numerous hemiplegic individuals(3).

- Stage 1: Flaccidity is evident in this stage and limb movements are impossible.
- Stage 2: Basic limb synergies or their components can manifest as related reactions or slight voluntary movements. Spasticity starts to form.
- Stage 3: The patient gets voluntary control of movement

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synergies; however, the full range of all synergy components may not develop. At this stage spasticity is severe.
- Stage 4: In this stage, the person will be able to perform some movement that deviates from the synergy pattern, and spasticity will start to decrease.
- Stage 5: More complex movement combinations can be achieved as the fundamental limb synergies become less predominant in motor activities.
- Stage 6: At this stage, spasticity will be eliminated, allowing the individual to perform movements of each joint independently(4).

Brunnstorm stages 3, 4 and 5 were only taken for this study. In this stage, the patient had some voluntary movement and showed significant motor recovery.

➢ *Activities of Daily Living (ADL)*

ADLs, or activities of daily living, are routine tasks at home that people perform to keep themselves in good condition. ADLs include moving around, eating and drinking, getting dressed and undressed, using the restroom, maintaining personal hygiene, and grooming. Stroke results in impairment-related functional limits that might make it difficult to perform ADLs without guidance, supervision, or physical support(5).

➢ *Mirror Therapy*

Mirror therapy (MT) is a Mirror Visual Feedback therapy where a mirror is positioned between the arms and legs to create the illusion of normal movement in the affected limb by reflecting the image of a non-affected limb in action(6). Mirror therapy provide patients with "proper" visual input, replacing lost or absent proprioceptive input(7). Performance in everyday living tasks was enhanced by the provision of visual feedback in mirror treatment, which also improved paretic upper-extremity function. The ability of the mirror group to carry out everyday life tasks significantly improved(8).

➢ *Aims And Objective*

- *Aim*

To find the effectiveness of mirror therapy in enhancing dressing capability among stroke patients.

- *Objectives*

✓ Assess the dressing capability using the PASS (Performance Assessment of self-care Skills) scale.
✓ Applied mirror therapy intervention protocol.
✓ Measure the dressing capability by using the PASS scale.
✓ Compare the pre-test and post-test.

II. METHODOLOGY

➢ *Research Design*

Quasi-experimental pre and post-design.

➢ *Setting of the Study*

The study was conducted at the Occupational Therapy, Department of Therapeutics NIEPMD, Muttukadu, and Chennai.

➢ *Sampling Technique*

A convenience sampling method was used to select the samples.

➢ *Sample Population*

Stroke patients with difficulty in independent dressing.

➢ *Duration of the Study*

30 minutes per session, 5 sessions per week for 8 weeks[18].

➢ *Data Collection*

Out of 15 patients, 13 were selected for the study based on the selection criteria. The purpose of the study and procedures were explained to the patients clearly. Informed consent was collected, along with the patient's socio-demographic data concerning confidentiality. The patient's pre-test value of dressing skill was recorded using the PASS scale. Patients were given 30 minutes per session, 5 sessions per week for 8 weeks. After 8 weeks, the post-test value was recorded.

➢ *Scale used*

The PASS is criterion-referenced and the client is rated according to established performance criteria. It consists of 26 core tasks/ items: 5 functional mobility(FM), 3 basic activities of daily living(BADL) or self-care tasks, 14 instrumental activities of daily living with a cognitive emphasis(IADL -C), and 4 instrumental activities of daily living with a physical focus (IADL—P). Each item stands alone, that is, all 26 core tasks of the PASS are validated and reliable. All items may be administered in total or select items (one or more) relevant to a specific client can be administered. It has two versions – clinic and Home versions. Items are rated on a predefined 4-point (0-3) ordinal scale. In this study, I am assessing the dressing skills of stroke patients by using the PASS scale.

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➢ *Scoring Guidelines for Independence Data*

Table 1 Scoring Guidelines for Independence Data

None	0	No assistance
Verbal	1	Verbal support (encouragement)
	2	Verbal non-directive cues (alter that something is not right)
	3	Verbal directive cues (tell what to do)
Gestures	4	Gestures (point at task object)
	5	Task/environment rearrangement (break task down)
	6	Demonstration (demonstrate followed by return performance)
Physical	7	Physical guidance (hands down – move body/ extremity)
	8	Physical support (hand up – lift body part object)
	9	Total Assist (do a task or subtask for the person)

➢ *Data Analysis Procedure*

To determine mirror therapy's effectiveness in improving stroke patients' dressing skills. Mirror Therapy was used for giving the intervention and the effectiveness was measured using the PASS scale. The scores obtained from these scales were presented for statistical analysis.13 stroke clients were screened and taken for the study. The patients were grouped into 12 males and 1 female. A pre-test was done initially followed by 8 weeks of intervention, after which a post-test was administered. A descriptive analysis was performed to compare the effectiveness of Mirror Therapy in improving dressing skills among stroke patients in frequency, percentage, mean, and standard deviation. The Paired "t" test was used for the pre to post-test comparison of Mirror Therapy. The p-value < 0.05 is considered as significant. Data were analyzed by using the IBM SPSS software (SPSS Inc.; Chicago, IL) version 24.0.

III. RESULT

Table 2 Descriptive Statistics of the Age Group of Patients.

(n = 13)	Range	Mean	S.D
Age (Years)	20 to 64	45.92	9.004

The age group of the patients chosen for the study ranges from 20 to 64 years, constituting a mean value of age 45.92 also with a standard deviation of 9.004.

Table 3 Descriptive Statistics for Independence Mean Score

Pair	Pretest	Posttest	Mean	SD	Std. Error Mean	"t"	p-value
1	1.00	1.62	-.615	.506	.140	-4.382	.001*
2	1.85	2.54	-.692	1.109	.308	-2.250	.044
3	.23	.77	-.538	.519	.144	-3.742	.003*
4	.77	1.38	-.615	.506	.140	-4.382	.001*
5	.92	1.38	-.462	.519	.144	-3.207	.008
6	.77	1.38	-.615	.506	.140	-4.382	.001*
7	.23	.77	-.538	.519	.144	-3.742	.003*
8	1.85	2.54	-.692	1.109	.308	-2.250	.044
9	1.00	1.62	-.615	.506	.140	-4.382	.001*

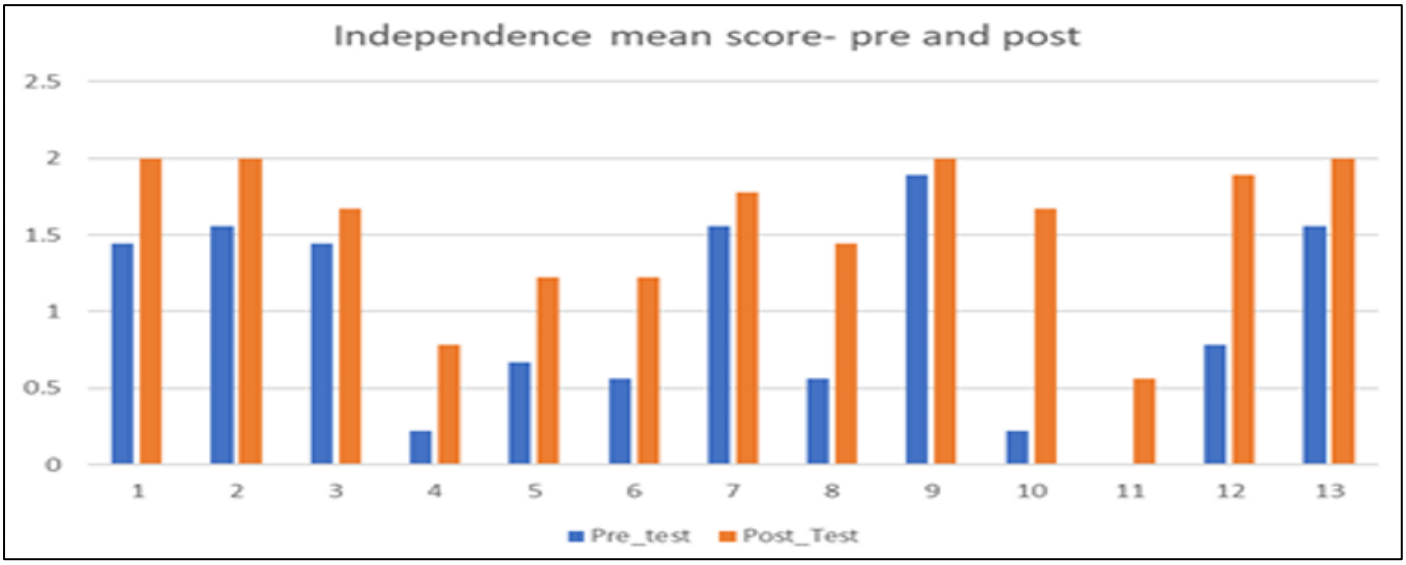

Fig 1 Independence Mean Score-Pre and Post

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Table 4 Descriptive Statistics for Safety Score

Patients (n=13)		Mean	S.D.	"t"	p-value
Safety score	Pre-Post	-1.077	.277	-14.00	0.000

Table 5 Descriptive Statistics for Adequacy Score

Patients (n=13)		Mean	S.D.	"t"	p-value
Adequacy score	Pre-Post	-.846	.376	-8.124	.000

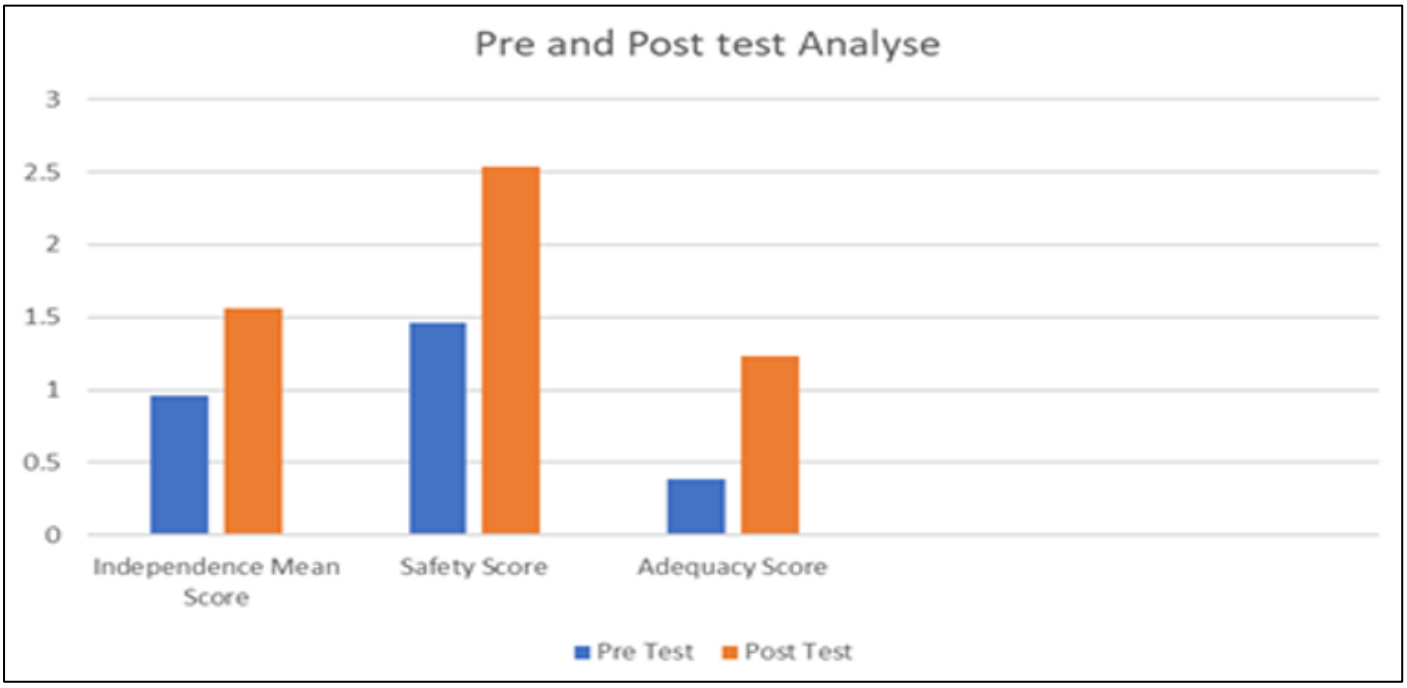

Fig 2 Pre and Post Test Analyse

IV. DISCUSSION

The study explored the effects of mirror therapy on stroke patients with hemiplegia. The participants ranged in age from 20 to 64, with a majority being male (92%). Hemiplegia was almost evenly distributed, with slightly more patients affected on the left side than the right.

After the intervention, there were notable improvements in several subtasks related to independence mean score especially in subtasks 1, 3, 4, 6, 7, and 9, where the mean scores significantly increased ($p < 0.05$). Subtasks 2, 5, and 8 showed less improvement, indicating that while mirror therapy had a positive impact, its effectiveness varied across different functional areas.

In addition, safety scores improved markedly between pre-test and post-test, with a very significant p-value (0.000). This indicates that the therapy not only helped with independence but also boosted the safety aspects of patient recovery. The high t-value supports the claim that the post-test scores were substantially better than the pre-test scores.

In addition, comparison between pre-test and post-test Adequacy scores shows a significant improvement and the p-value of 0.000 confirms statistical significance ($p < 0.05$).

Overall, the findings support the alternative hypothesis, demonstrating that mirror therapy can positively influence dressing capability among stroke patients.

V. CONCLUSION

The study aimed to find out the effectiveness of Mirror Therapy in enhancing dressing capability among stroke patients. The results suggest that improvement has been observed in Dressing skills among stroke patients. After completing the intervention, the data was analyzed and it was concluded that significant changes were observed in stroke patients' Independence, Safety, and Adequacy scores.

VI. LIMITATIONS

- Unequal gender distribution
- Sample taken from one place.

RECOMMENDATIONS

- A larger sample size would be chosen for the study.
- Study Duration could be increased.

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