THE EFFECTIVENESS OF COMBINED GROUP TASK THERAPY IN MOTOR REHABILITATION FOR PATIENTS WITH ISCHEMIC STROKE AT SON TAY GENERAL HOSPITAL, HA NOI

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SUMMARY

Objective: *To evaluate the effectiveness of combined group task therapy in motor rehabilitation for patients with ischemic stroke.* ***Methods:*** *Interventional study, comparing before and after treatment on 32 patients with ischemic stroke treated at Son Tay General Hospital, Ha Noi from May 2024 to October 2024. Rehabilitation intervention includes physical therapy: 20 minutes/day, occupational therapy: 20 minutes/day combined with group task therapy for balance and walking 60 minutes/day, 05 sessions/week, evaluated after 4 weeks of treatment.* ***Results:*** *After 4 weeks of treatment, there was an improvement in balance ability (BBS), Berg score increased by 19 ± 4 points (p<0.001). There was an improvement between the time to stand and walk (TUG) before and after the intervention of 8.51 ± 3.84 seconds (p<0.001). Improvement in walking speed (10MWT) increased by 0.26 ± 0.11 m/s (p<0.01). Improvement in distance traveled in the 2-minute walk test (2MWT) increased to an average of 41.32 ± 0.75 m (p<0.001).* ***Conclusion:*** *Intervention of motor rehabilitation combined with group task therapy in 32 patients with ischemic stroke at Son Tay General Hospital after 4 weeks of intervention, we found an improvement in BBS score, standing up and walking time before, and after TUG intervention. After intervention, patients had improved 10 m walking speed and improved distance traveled in the 2-minute walking test.*

Keywords: *Ischemic stroke, group task therapy, rehabilitation.*

I. INTRODUCTION

According to the World Health Organization, 15 million people worldwide suffer from strokes annually, of which 5 million die, and another 5 million are permanently disabled. The reduction in stroke mortality rates has led to an increase in the number of patients with motor disabilities after discharge[1]. Globally, many scientists have studied stroke, especially regarding rehabilitation for hemiplegic patients, confirming that this remains a significant challenge for healthcare systems.

Rehabilitation is an essential and urgent need for all types of disabilities, particularly post-stroke hemiplegia, to minimize sequelae and help individuals regain independence. For stroke patients and their families, the ability to achieve independence in daily living activities is a primary concern. Restoring mobility is particularly important, as it is often crucial for daily activities and increases the likelihood of discharge.

Researchers have observed positive

cortical reorganization in both animals and humans post-stroke, stimulated by activity and repetitive task-specific actions. Moreover, studies show that motor recovery after stroke is best facilitated through intensive, task-specific therapy.

Providing task-oriented therapy to stroke patients in group settings has been proposed as a way to increase the time patients actively participate in task practice.

In Vietnam, numerous studies have been conducted on motor rehabilitation for hemiplegic stroke patients; however, group task training in rehabilitation remains a novel approach with limited research. For these reasons, we conducted the study, *"The Effectiveness of combined Group Task Therapy in Motor Rehabilitation for Patients with Ischemic stroke at Son Tay General Hospital, Hanoi."*

II. STUDY SUBJECTS AND METHODS

2.1. Study Subjects

2.1.1. Inclusion Criteria

- Patients are diagnosed with ischemic stroke.
- Patients with sufficient ability to participate in group task-oriented therapy:
    - Ability to follow instructions.
    - The ability to sit without support.
    - Ability to stand with the assistance of one person.
- Patients without cognitive impairment as assessed by the Mini-Mental State Examination (MMSE) (score ≥ 24).
- Consent from both patients and their families to participate in the study.

2.1.2. Exclusion Criteria

- Patients with cerebellar lesions.
- A history of any neurological disorders (except for prior strokes).
- Regular use of mobility aids (except for single-point canes) or reliance on personal assistance before the stroke.
- Currently experiencing trauma or recovering from orthopedic surgery on the lower limbs.
- Severe visual impairment.
- Development of new brain lesions during the treatment period.

2.2. Research Methods

2.2.1. Study design

An interventional, prospective study without a control group.

2.2.3. Sample Size and Sampling

A total of 32 patients meeting the inclusion criteria were admitted simultaneously and divided into groups of 4 patients per group, resulting in 8 patient groups.

2.2.4. Study Location and Duration

- **Location**: Son Tay General Hospital, Hanoi.
- **Duration**: From April 2024 to September 2024.

2.2.5. Rehabilitation Intervention Details

- Physical therapy: 20 minutes/day.
- Occupational therapy: 20 minutes/day.
- Group task therapy: 60 minutes/day.

Group Task Therapy: Patients participated in rehabilitation sessions 5 days/week, with 60 minutes/day over 4 weeks. The exercises focused on balance and gait rehabilitation, including:

- Strengthening exercises for the lower limb muscles and balance.
- Sit-to-stand practice and walking exercises.
- Postural control exercises while standing.
- Exercise for the upper limbs and hands.

2.2.6. Research Outcome Evaluation

- **Balance assessment**: Using the Berg Balance Scale (BBS) for scoring and evaluation.
- **Timed Up and Go (TUG) Test**: For scoring and outcome evaluation.
- **10-Meter Walk Test (10MWT)**: For

scoring and outcome evaluation.

- **2-Minute Walk Test (2MWT)**: For scoring and outcome evaluation.

2.2.7. Data Processing

- Data was collected based on study-specific medical records and processed using medical statistical methods with SPSS 20.0 software.
- Study results were considered statistically significant at p<0.05.

III. RESEARCH RESULTS

Table 1. Characteristics of Study Subjects by Age Group

Age Group	n	Rate (%)
<60	4	12.5%
60 -69	16	50.0%
≥ 70	12	37.5%
Total	32	100%
Mean ± standard deviation	69.50 ± 8.92	100%

The most common age group experiencing strokes was 60–69 years, with 16 patients (50.0%). The group aged ≥70 years included 12 patients (37.5%), while the least affected was the group aged <60 years, with 4 patients (12.5%).

3.1.2. Characteristics of Study Subjects by Gender

Female patients accounted for most of the study group, making up 65.6%. Male patients were fewer, comprising 34.4% of the total participants.

3.2. Effectiveness of Group Task-Oriented Therapy in Rehabilitation

Table 2. Balance Ability Based on the Berg Balance Scale (BBS)

Subject	BBS score	p
Pre	24 ± 7 (8-38)	0.000
Post	43 ± 6 (23-52)	
Δ	19 ± 4	

The BBS score improvement among patients was 19 points. The improvement in BBS scores was statistically significant with p<0.001.

Table 3. Movement Time Using the Timed Up and Go (TUG) Test

Subject	TUG (second)	p
Pre	20.37 ± 6.32	0.000
Post	10.84 ± 3.39	
Δ	8.51 ± 3.84	

A significant difference was observed in the time taken to stand up and move before and after the intervention (p<0.001). The average improvement after the intervention was 8.51 ± 3.84 seconds (p<0.01).

Table 4. Walking Speed Using the 10-Meter Walk Test (10MWT)

Subject	10MWT (m/s)	p
Pre	0.33 ± 0.11	0.001
Post	0.59 ± 0.22	
Δ	0.26 ± 0.11	

After the intervention, patients showed an improvement in walking speed, increasing by 0.26 ± 0.11 m/s. This improvement was statistically significant with p<0.01.

Table 5. Walking Distance Using the 2-Minute Walk Test (2MWT)

Subject	2MWT (m)	p
Pre	43.81 ± 19.18	0.000
Post	85.13 ± 19.93	
Δ	41.32 ± 0.75	

The walking distance during the 2-minute test increased by an average of 41.32 ± 0.75m for the study group. This improvement was statistically significant ($p<0.001$).

IV. DISCUSSION

4.1. General Characteristics of Study Subjects

4.1.1. Age Characteristics

According to Table 3.1, the average age of study subjects was 69.50 ± 8.92 years. Patients aged 70 and older accounted for 37.5%, followed by those aged 60–69 (50%) and those under (12.5%). These findings align with the study by Edzie et al. (2021) [2] on 840 first-time stroke patients, which reported an average age of 62.45 ± 14.45 years.

Our study is consistent with previous research and aligns with statistics from the Centers for Disease Control and Prevention (CDC), which indicate that 3 out of 4 stroke cases occur in individuals aged over 65.

4.1.2. Gender Characteristics

In our study, female patients accounted for 65.6%, while males comprised 34.4%. According to several authors, gender differences in stroke epidemiology depend on patient age, as the impact of gender on stroke risk and outcomes changes over a lifetime. According to Cámana et al. (2020), in subjects under 75 years, stroke incidence is higher in men, but this pattern reverses in those over 75 years[3].

The overall lifetime risk for stroke is calculated as 1.6 and 1.5 times higher in men than women, respectively. This difference can be explained by factors such as higher rates of hypertension in younger male patients and lifestyle habits such as smoking and alcohol consumption. Meanwhile, women tend to live longer and have unique risk factors, including contraceptive use, pregnancy history, and menopause. However, when considering first-time stroke patients, the gender distribution shows no significant difference.

4.2. Outcomes of Rehabilitation on Mobility and Balance

4.2.1. Improvement in Balance Evaluated Using the Berg Balance Scale (BBS)

According to Table 3.2, the pre-intervention BBS score was 24 ± 7 points. After four weeks of intervention, the score improved to 43 ± 6 points, with a difference of 19 ± 4 points ($p<0.05$). The BBS is a validated and reliable scale for assessing balance, particularly in stroke patients.

Our study showed a 19-point improvement in BBS scores after group task-oriented therapy. This result is consistent with the findings of Nguyễn Thanh Duy et al. (2022) [4], who studied 54 post-stroke patients and observed significant BBS score improvements in the group receiving task-oriented therapy compared to a control group ($p<0.001$). This suggests that group therapy is at least as effective, if not more so, than conventional rehabilitation in improving balance.

4.2.2. Reduction in Fall Risk Assessed Using the TUG Test

As shown in Table 3.3, the average time to complete the TUG test decreased from 20.37 ± 6.32 seconds pre-intervention to 10.84 ± 3.39 seconds post-intervention, with a significant reduction of 8.51 ± 3.84 seconds ($p<0.05$).

This result aligns with Ain et al. (2018) [5], who studied the effectiveness of group task therapy on gait and mobility in 30 participants. Over six weeks, the TUG scores improved from 26.01 ± 8.5 seconds

to 20.87 ± 8.02 seconds, with the group therapy participants showing more significant improvement ($p<0.05$).

The improved TUG performance in our study is likely due to repeated practice of transitions, such as moving from sitting to standing and walking, which were emphasized more in the group therapy sessions than in conventional rehabilitation.

4.2.3. Improvement in Speed and Time in the 10-Meter Walk Test

According to Table 3.4, the average walking speed increased from 0.33 ± 0.11 m/s pre-intervention to 0.59 ± 0.22 m/s post-intervention, with a significant improvement of 0.26 ± 0.11 m/s. Dean et al. (2000) [6] similarly observed improvements in walking speed at four weeks and two months post-intervention ($p<0.05$).

This result is consistent with the meta-analysis by English et al. (2017)[7], which included 8 studies with 744 participants, demonstrating significant improvements in walking speed with task-oriented group interventions. Thus, group therapy effectively enhances walking speed compared to conventional rehabilitation, likely due to the increased practice time during group sessions.

4.2.4. Improvement in Endurance Using the 2-Minute Walk Test

According to Table 3.5, the average walking distance in the 2MWT increased from 43.81 ± 19.18 m to 85.13 ± 19.93 m ($p<0.05$). This aligns with Song et al. (2015) [8], who reported significant differences in the 2MWT between groups ($p<0.001$). In their study, the group receiving task-oriented therapy improved from 57.6 ± 20.5 m to 73.9 ± 27.2 m, while the conventional therapy group showed a decline from 76.6 ± 33.1 m to 74.1 ± 27.00 m. Our findings align with previous research, demonstrating that group task-oriented therapy is more effective in improving walking endurance than conventional rehabilitation.

V. CONCLUSION

After four weeks of combined motor rehabilitation and group task therapy for 32 ischemic stroke patients at Son Tay General Hospital, significant improvements were observed in BBS scores, TUG test times, 10-meter walking speeds, and 2-minute walking distances.

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