

Does Early Mobilization Leads to Differential Improvements in Motor Function and Cognitive Outcomes between Male and Female Patients with Left and Right Mca Stroke

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Date of Submission: 15-08-2024

Date of Acceptance: 25-08-2024

ABSTRACT: This study evaluates the effects of early mobilization and a tailored rehabilitation program on stroke recovery, specifically comparing outcomes between left and right middle cerebral artery (MCA) strokes and between male and female patients. A total of 50 patients will be included, divided equally into two groups of 25 each, who will go through a 4-week training program. Using the Modified Rankin Scale and the Barthel Index, we assessed patient recovery pre- and post-intervention. Our findings indicate that recovery outcomes are similar for both left and right MCA strokes when early mobilization is employed, suggesting that the stroke's hemisphere does not significantly affect recovery with this approach. Additionally, although males are generally more prone to stroke, recovery rates between males and females were comparable after the intervention. Age, while being a known risk factor for stroke, did not significantly influence recovery outcomes between genders. These results highlight the effectiveness of early mobilization and tailored rehabilitation in promoting recovery across different stroke types, genders, and age groups. The study underscores the importance of consistent rehabilitation strategies and calls for further research into gender-specific responses and age-related factors in stroke recovery.

KEYWORDS: Stroke, Middle Cerebral Artery, Early Mobilization, Rehabilitation, Modified Rankin Scale, Barthel Index, Gender Differences, Age Factors.

I. INTRODUCTION:

Stroke remains a leading cause of disability worldwide, significantly impacting patients' quality of life and functional independence. It is one of the leading causes of morbidity and mortality in developed countries and, according to data from the World Health Organization, is the second leading cause of death

in the Western world, the leading cause of physical disability in adults.⁽¹⁾ For the most part, stroke is a disease of old age. With the predicted increase in the aged population and longer life expectancies, the number and proportion of people living with stroke is expected to increase, especially among women and the elderly. With women being more adversely affected by stroke than men, it is critical to identify and understand sex-specific prevention and treatment strategies.⁽²⁾ Gender differences were noted in the incidence of stroke but did not significantly affect recovery outcomes. These findings highlight the need for tailored treatment and rehabilitation strategies to address age-related challenges and ensure effective stroke management across different patient demographics.⁽³⁾ Among the various types of strokes, those involving the middle cerebral artery (MCA) are particularly common, affecting both the left and right hemispheres of the brain. Early mobilization and tailored rehabilitation have emerged as crucial components of stroke recovery, aiming to enhance functional outcomes and improve overall quality of life. Despite the recognized benefits of these interventions, there is limited research comparing recovery outcomes between different MCA stroke types and across genders. The Modified Rankin Scale and the Barthel Index, this study will provide valuable insights into the effectiveness of rehabilitation strategies and contribute to the development of more tailored approaches to stroke recovery.⁽⁴⁾⁽⁵⁾ Rehabilitation is an important aspect of the continuum of care in stroke. With advances in the acute treatment of stroke, more patients will survive stroke with varying degrees of disability. There are various aspects of stroke rehabilitation, focusing on the continuum of care from acute management to long-term recovery⁽⁶⁾

II. AIMS AND OBJECTIVES:

The aim of this study is to Investigate whether recovery outcomes from early mobilization and tailored rehabilitation differ between male and female stroke patients.

The objective is to compare Gender-Specific Recovery Rates, to evaluate and compare recovery rates between male and female patients post-intervention to identify any significant differences related to gender and also to explore if there are any potential factors contributing to variations in recovery rates between different genders and age groups, providing rehabilitation strategies.

III. METHODS:

Study Design: Patients with left or right MCA stroke of age group 40-80 years who are conscious and are willing to participate in this study will be selected from Department of neurology PMCH Udaipur, Rajasthan. after obtaining ethical approval.

Sample size: 50 patients with left and right MCA stroke will be selected. who are then divided into two groups 25 each.

Study duration: The study will span a period of 4 weeks, during which participants will undergo treatment twice a day, with mobilization interventions administered once daily.

Data Analysis: In this study, subjects will be analyzed using both the Modified Rankin Scale (mRS) and the Barthel Index (BI). The Modified Rankin Scale will assess overall functional disability and the degree of impairment in daily activities, ranging from no symptoms to severe disability. Simultaneously, the Barthel Index will measure specific functional abilities related to activities of daily living, such as mobility and self-care. By employing these two assessment tools, the study aims to provide a thorough evaluation of both general disability and specific functional capabilities in male and female patients with left or right MCA stroke.

IV. RESULTS:

The study reveals that elderly individuals are more susceptible to stroke, particularly with left MCA involvement. It also highlights a gender disparity, with a higher prevalence of male patients. Although female patients with right MCA involvement are slightly older on average, and male patients with left MCA involvement are somewhat older, but these differences are not statistically significant. Results of both the male and female are comparable. The chi-square test indicates greater age variability among males with left MCA involvement, while female patients show consistent variability.

Table 1: Age group wise distribution of patients

Age group	Group A Left MCA		Group B Right MCA	
	Number of patients	Percentage	Number of patients	Percentage
40-49	7	30.43%	4	14.81%
50-59	4	17.39%	6	22.22%
60-69	7	30.43%	14	51.85%
70-80	5	21.74%	3	11.11%
Total	23	100.00%	27	100.00%
Mean Age ± SD	58.30 ± 13.29		60.33 ± 9.76	

P=0.28 (NS) Chi square

The given table presents a detailed comparison of the distribution of patients in two groups, group A with left middle cerebral artery (MCA) involvement and group B with right MCA involvement, across different age groups. It also provides the mean age and standard deviation for both groups.

The distribution shows a higher percentage of patients in the 60-69 age group in Group B compared to Group A. Conversely, Group A has a higher percentage in the 40-49 and 70-80 age groups. The mean age is slightly higher in Group B, but the difference between the two groups is not statistically significant.

Table 2: Sex group wise distribution of patients

Sex	Group A Left MCA		Group B Right MCA	
	Number of patients	Percentage	Number of patients	Percentage
Males	13	56.52%	21	77.78%
Females	10	43.48%	6	22.22%

P=0.11; Chi square test

The given table provides a breakdown of the sex distribution among patients with left middle cerebral artery (MCA) involvement and right MCA involvement.

In group A 56.52% people are male while 43.48% are female. In group B 77.78% people are male while 22.22% people are female.

The data highlights a gender disparity in both groups, with a higher prevalence of male patients. This disparity is more pronounced in the right MCA group compared to the left MCA group.

Table 3: Mean Age wise distribution with Sex of patients

Age	Group A Female		Group B Male	
	Left MCA	Right MCA	Left MCA	Right MCA
Mean	57.31	61.43	59.60	56.50
SD	12.21	9.82	15.16	9.38
P value	>0.05 (NS)		>0.05 (NS)	

The data indicates that there are no statistically significant age differences between left and right middle cerebral artery (MCA) involvement in both female and male patient groups.

□ Female patients with right MCA involvement are generally older on average compared to those with left MCA involvement.

□ Male patients with left MCA involvement are slightly older on average compared to those with right MCA involvement.

V. DISCUSSION:

The study found that both male and female patients with middle cerebral artery (MCA) strokes, whether affecting the left or right MCA territory, achieve similar levels of recovery when given the same early mobilization treatment. This indicates that the effectiveness of the treatment is not dependent upon the gender impacted by the stroke. In other words, the recovery outcomes are comparable regardless of whether the stroke affected the male or the female.

The study utilized two assessment tools to evaluate recovery: the Modified Rankin Scale (mRS) and the Barthel Index. Both tools showed significant improvement in stroke patients treated

with early mobilization, confirming that the treatment leads to positive outcomes across different MCA territories and in both the genders. The mRS measures overall disability and functional outcomes, while the Barthel Index assesses the level of independence in daily activities.

The consistent improvements observed in both scales across patients of any gender underscore that early mobilization is effective for stroke rehabilitation, irrespective of the stroke's location, gender and age. This suggests that with appropriate and timely treatment, stroke patients can expect comparable recovery benefits, demonstrating the broad efficacy of early mobilization as a rehabilitation strategy for MCA stroke cases.

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