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**ORIGINAL ARTICLE**

# Exercise Compliance in Patients with Stroke Following Physical Therapy Treatment

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## ABSTRACT

**Background:** Stroke, also known as cerebrovascular accident is caused when the brain does not receive enough blood supply, thus preventing brain from receiving oxygen and nutrients. Its divided into two major categories: ischemic and hemorrhagic. A stroke is a medical emergency, and prompt treatment is crucial.

**Objective:** To determine the level of exercise compliance following Physical Therapy treatment in patients with stroke.

**Methodology:** This cross-sectional study was conducted in different hospitals of Lahore on 139 participants in Lahore, ages between 45 to 70, both genders, patients with both ischemic and/or hemorrhagic stroke and those following a home based plan were included for the study. Any participants unwilling for follow-ups, with cognitive impairments, diabetes or ischemic heart disease and unable to communicate were excluded. For the collection of the data, a researcher designed questionnaire was used. An informed consent was taken from the study participants. SPSS 25 was used for data analysis.

**Results:** 31.7% of the participants agreed that exercise was beneficial to health and 36.7% remained neutral. 23.0% strongly agreed and 25.9% agreed their preference were scheduled exercise programs. 35.3% agreed to feel better when they were active and 30.9% disagreed to this. Sense of accomplishment, keep mind active and good for heart were significant motivators to exercise adherence. Lack of strength, shortness of breath and bad weather were significant barriers.

**Conclusion:** There was little to moderate level of compliance with exercise in patients with stroke following physiotherapy intervention.

**Keywords:** exercise, exercise compliance, physical therapy, stroke

## INTRODUCTION

A stroke is defined as a brain injury with "quickly evolving clinical symptoms of focal or worldwide disruption to focal neurological, with symptoms lasting 24 months or longer" according the World Health Organization. (1) Cognitive recovery employs a diverse set of treatment methods and practices from a variety of philosophical perspectives. When quantified, stroke is the world's largest second major cause of death and the third cause of disability and premature mortality. (DALY).(2, 3) Cerebral vascular disease remains the major cause of neurological disability, taking account for 4.1 percent of total global DALY. At the base of the brain, the coronary artery and spinal column fibular blood vessels form the Circle of Willis.(4, 5)

Above 90% of the international prevalence rates can be attributed to lifestyle modifications, and trying to control psychosocial and cardiovascular causative agents could help stop more than three-quarters of the international prevalence rates.(6, 7) The assessment and understanding of risk factors is essential for disease and prevention programs. The investigation to back up the different methodologies obviously varies, with just some methodologies possessing a prosperity of facts to support them up, whereas others have restricted evidence to support them up but rely on empirical evidence.(8, 9)

Over the last decade, the percentage of Randomized Control Trials on physical therapy treatments used in stroke has increased significantly. According to Veer beek et al. (2014), the percentage of Randomized controlled trials on Stroke Medications has nearly quadrupled during last decade, with 30 out of 53 interventions showing compelling evidence for positive effects on one or even more outcomes.(10) (11)

Although the knowledge base about physical therapy in therapeutic interventions continues to grow, further recognition of the scientific proof for physical therapy after stroke, as well as designed to facilitate the transfer to clinical settings, generally requires a good sense of the neurophysiological mechanisms including neuroplasticity, which is still driving stroke recovery (12)

Conformity to practice was confirmed as a binary variable (performing any part of the exercises as instructed with or without modifications). Many stroke survivors have functional deficits, trying to make them one of the most common patients compared in rehabilitation training. (13, 14) Individuals who have had a stroke must continue to exercise even after they have completed formal therapy. During the discharge planning, therapists raise this through home physical activity (HEP).

Various factors come to play for exercise adherence of any individual. There are positive influences (motivators) and negative influences (barriers). Some common motivators are self-efficacy, self-motivation and outcome expectation. Whereas, common barriers are lack of time,

space, social support, financial issues and insufficient equipment. Other significant barriers are also fear of fall or risk of injury, older age, depression, stress and poor health status. [15]

Aerobic exercises for stroke are recommended in clinical guidelines but clinical uptake has found to be dissatisfactory. It should be incorporated into a program for stroke rehabilitation programs and secondary stroke prevention. This program also may include balance training, gait training, muscle strengthening, functional use of the upper extremity, motor control which is task oriented. [16]

Due to the various benefits of exercises for stroke rehabilitation, it should be a common practice among patients post stroke. There is little is known about adherence to a HEP prescribed by a physical therapist in older adults following discharge or about the factors that affect post discharge adherence. Thus, this research focuses on finding the level of adherence and factors affecting them in stroke patients.

## SUBJECTS AND METHODS

This cross-sectional study was conducted in University of Lahore Teaching Hospital Lahore and Mansoura Hospital Lahore from February 2021 to July 2021 to determine the level of exercise compliance following Physical Therapy Interventions in patients with stroke. Approval was obtained from the institutional review board. The sample size of 139 was calculated with Epitool at 95% confidence interval. Non-probability convenient sampling technique was used. Inclusion criteria was set to be ages 45-70, both genders, patients with both ischemic and/or hemorrhagic stroke and those following a home based plan were included for the study. Any participants unwilling for follow-up appointments, with any cognitive impairments, who had diabetes or ischemic heart disease and were unable to communicate were excluded from the study. Written consent was taken from the participants before filling the questionnaires. For data collection, a researcher designed questionnaire according to previous literature[15] was used. The questionnaire had a set of questions to inquire the demographics of a participant, followed by history of hypertension, diabetes, fall or depression. Questions based on the time, ease and preference for exercise by the patient were then asked followed by questions on how exercise made them feel, and their views on exercising as well as reasons to non-adherence of exercise and a general health status in the past 4 weeks. Data was entered and analyzed using IBM SPSS 25. Frequencies with percentages were calculated for categorical variables.

## RESULTS

In the total population, there were 52.5% of females and 47.5% males. Out of which, 32.4% were normal, 38.1% were overweight and 29.5% were obese. The results regarding comorbidities showed that 23.0% patients were hypertensive, 24.5% were diabetic, 33.1% were both diabetic and hypertensive and 48.2% had depression. 31.7% of the participants agreed that exercise was beneficial to health and 36.7% remained neutral. 23.0% strongly agreed and 25.9% agreed their preference were scheduled exercise programs.

Table 1: Motivators for exercise among participants

| Motivators for exercise | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Total |
|---|---|---|---|---|---|---|
| I feel better when I am active | 0 (0) | 49 (35.3%) | 47 (33.8%) | 43 (30.9%) | 0 (0) | 139 (100%) |
| Gives me more energy | 0 (0) | 46 (33.1%) | 45 (32.4%) | 48 (34.5%) | 0 (0) | 139 (100%) |
| Sense of accomplishment | 46 (33.1%) | 50 (36.0%) | 43 (30.9%) | 0 (0) | 0 (0) | 139 (100%) |
| Keeps mind active | 46 (33.1%) | 50 (36.0%) | 43 (30.9%) | 0 (0) | 0 (0) | 139 (100%) |
| Good for my heart | 53 (38.1%) | 48 (34.5%) | 38 (27.3%) | 0 (0) | 0 (0) | 139 (100%) |
| Helps my spirits | 30 (21.6%) | 25 (18.0%) | 36 (25.9%) | 23 (16.5%) | 25 (18%) | 139 (100%) |
| Keeps me healthy | 29 (20.9%) | 34 (24.5%) | 23 (16.5%) | 24 (17.3%) | 29 (20.9%) | 139 (100%) |

Table 2: Barriers for exercise among participants

| Barriers for exercise | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Total |
|---|---|---|---|---|---|---|
| I want to exercise when I want | 29 (20.9%) | 23 (16.5%) | 34 (24.5%) | 25 (18.0%) | 28 (20.1%) | 139 (100%) |
| I prefer to exercise with others | 28 (20.1%) | 31 (22.3%) | 27 (19.4%) | 28 (20.1%) | 25 (18.0%) | 139 (100%) |
| I do not have the strength to exercise | 30 (21.6%) | 21 (15.1%) | 26 (18.7%) | 27 (19.4%) | 35 (25.2%) | 139 (100%) |
| I am not interested in exercise | 15 (10.8%) | 28 (20.1%) | 35 (25.2%) | 36 (25.9%) | 25 (18.0%) | 139 (100%) |
| Bad weather prevents me from exercising | 31 (22.3%) | 28 (20.1%) | 25 (18.0%) | 32 (23.0%) | 23 (16.5%) | 139 (100%) |
| Shortness of breath on exercising | 33 (23.7%) | 28 (20.1%) | 22 (15.8%) | 32 (23.0%) | 24 (17.3%) | 139 (100%) |
| Fear of falling | 25 (18.0%) | 28 (20.1%) | 36 (25.9%) | 19 (13.7%) | 31 (22.3%) | 139 (100%) |

Table 3: Reasons for non-adherence to exercise

| Non- Adherence | Frequency | Percent |
|---|---|---|
| Change in health status | 16 | 11.5 |
| Doing other forms of exercise | 20 | 14.4 |
| Lack of motivation | 18 | 12.9 |
| It is too long | 22 | 15.8 |
| It is uncomfortable | 24 | 17.3 |
| It is too hard | 25 | 18.0 |
| No equipment | 14 | 10.1 |
| Total | 139 | 100.0 |

## DISCUSSION

Physical therapists are in charge of prescribing, promoting, and teaching patients about the importance of exercise for optimum solution physical function, health, and standard of living. [17] If a patient is prescribed a physical therapy HEP, he or she should be prepared to adhere to the exercise programme over period. We found that while 90% of survey respondents started receiving a HEP after being disposed from a physical therapy program, 36% of older people were no longer going to participate in their recommended HEP, and a smaller amount than 10% participated 5 or even more days each week.[17]

Unexpectedly, the duration since discharge had no effect on conformance with a suggested HEP. There was no difference in adherence between older people who were discharged from physical therapy within 12 months and those who were discharged after more than 48 months. A change in health status was the most common reason for not participating in a HEP. According to Burton et al [18], among the most significant aspects in beginning or prolonging physical activity is one's current health. This finding suggests that physical health professionals should notify patients and physicians that changes in health status might necessarily require a comeback to physiotherapy for HEP modification.

Other forms of physical exercise were also mentioned as a factor for non-adherence to a prescribed medication HEP, which could describe in detail poor post-discharge HEP adhesion. However, in this study, older people confirmed doing more physical exercise less than once every week, implying that involvement in more physical activity was not a contributing factor to non-adherence to a prescription. According to the respondents, aerobic activity was the least common mode of exercise in the HEP. This was an unexpected finding, given that older people consider walking to be their preferred form of activity, according to previous research.

There are several explanations for this discovery. First, in these two balance-training regimens, physical therapists may take priority strength over aerobics when prescribing a HEP. Conversely, one of the most significant barriers to sustaining participation in physical activity mentioned by survey respondents was the weather. Because seniors can perform strength, training exercises in their homes.

## CONCLUSION

The findings of study showed that there was little to moderate level of compliance to exercise in patients with stroke following physiotherapy intervention. Sense of accomplishment, keep mind active and good for heart were significant motivators to exercise adherence. Lack of strength, shortness of breath and bad weather were significant barriers.

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