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THE ROLE AND SIGNIFICANCE OF HOME REHABILITATION IN THE PROCESS OF PATIENTS' RECOVERY AFTER STROKE

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Abstract

The relevance of the study is due to the fact that stroke holds a leading position among the causes of long-term disability in the adult population worldwide, leaving about half of surviving patients with severe physical and cognitive impairments. In the context of the current trend toward shortening the duration of hospital treatment, the functional recovery process is often incomplete at the time of discharge, which shifts the primary burden of rehabilitation to the home environment. The first three months after a vascular catastrophe are critically important, as it is during this period that brain plasticity and the potential for functional reorganization are maximal. Organizing a multidisciplinary process at home allows for context-specific training in an environment familiar to the patient, proving highly clinically and economically effective compared to traditional care. The implementation of innovative approaches, such as home telerehabilitation and structured family support, opens new opportunities to minimize post-stroke disability and successfully return individuals to a fulfilling life. [1]

Stroke is one of the main causes of death and the leading cause of adult disability worldwide. About half of stroke survivors are left with varying degrees of physical or cognitive impairment. Ischemic stroke, caused by large artery atherosclerosis and cardioembolism, occurs in 20% and 15% of stroke patients, respectively. Stroke survivors also experience great suffering, such as physical limitations, emotional trauma, job loss, and rejection by family due to the caregiver burden. Most motor and functional recovery typically occurs within the first three months after a stroke. Moreover, depression and dementia significantly affect the quality of life and physical capabilities of stroke patients. The length of hospital stay for acute stroke rehabilitation has shortened, so recovery is often

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incomplete at discharge. Post-discharge outcomes can include not only persistent neurological deficits but also lifelong disability. [1]

Previous studies have shown that 25%–74% of stroke patients require assistance from caregivers to perform daily tasks, and the quality of life for both patients and caregivers is severely affected. Although the need for rehabilitation services for stroke patients after discharge from acute care hospitals is widely recognized, outpatient and inpatient rehabilitation is often compromised due to reasons such as poor accessibility, increased costs, and low treatment adherence. On the other hand, the ability to perform daily tasks in an institutional setting cannot be generalized to the home environment, which is the final discharge destination for most stroke patients. Furthermore, motor relearning in stroke patients is enhanced by context-specific training, and training in the patient's own environment is preferred. Early supported discharge from the hospital followed by home-based rehabilitation services has proven to be more cost-effective than conventional care, with less burden on caregivers and a shorter hospital stay. [1]

Home-based stroke rehabilitation plays an important role in patient recovery and returning to a full life. The correct organization of the rehabilitation process helps restore lost functions and prevent recurrent strokes. Here are several aspects that can be included in home rehabilitation: [1]

Medical supervision: Regular monitoring by a doctor is essential, especially in the first weeks following a stroke. This may be a general practitioner, neurologist, or rehabilitation specialist. It is also important to monitor health status parameters such as blood pressure and blood sugar levels. [1]

Physical rehabilitation: Physical exercises help restore mobility and strength. These may include: Physical therapy (PT/kinesiotherapy) involving exercises to restore muscle strength, coordination, and gait; massage to stimulate blood circulation and relax muscles; and working with a physical therapist to help design a personalized movement recovery program. [1]

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Speech therapy: If the stroke has affected speech, work with a speech-language pathologist will be required. This can include articulation training, restoring speech comprehension, and improving sentence construction skills. [1]

Psychological support: A stroke often leads to depression or anxiety. Psychological support or consultations with a psychotherapist can help the individual adapt to changes and cope with emotional difficulties. [1]

Environment modification: It is crucial to create safe and comfortable living conditions. To achieve this, obstacles that could lead to falls must be removed; furniture, equipment, and other items should be arranged so the patient can move around easily; and assistive devices such as canes, walkers, and wheelchairs should be utilized. [1]

Proper nutrition: A proper diet is essential for post-stroke recovery. The diet must be balanced, emphasizing foods that support the cardiovascular system, such as products rich in fiber and omega-3 fatty acids, while remaining low in salt and fats. [1]

Social support: Support from family and loved ones is vital. Timely communication, assistance with household chores, and emotional support help the patient recover faster. [1]

Health monitoring: It is important to regularly conduct necessary medical checkups, such as blood pressure control and blood tests, as well as monitor the functions affected by the stroke, including movement, speech, and vision. [1]
All stages of rehabilitation require patience, time, and effort from both the patient and their family. The main goal is to help the person return to normal life and minimize the consequences of the stroke. [1]
Many studies have been conducted to investigate stroke patient rehabilitation, but the results have been contradictory. Previous research has documented that patients usually experience significant residual physical disability, functional

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impairment, and reduced quality of life. Some studies have indicated that motor function gradually recovers solely as a result of spontaneous recovery, suggesting that stroke rehabilitation programs might not improve outcomes. [1]

Several studies have suggested that home rehabilitation is more effective and less expensive than conventional care. Rehabilitation initiated early during the acute phase optimizes the patient's potential for functional recovery. Early mobilization prevents or minimizes the adverse effects of deconditioning and the potential for secondary complications. Post-stroke recovery and relearning are based on the brain's capacity for reorganization and adaptation. An effective rehabilitation plan utilizes this potential and encourages the functional use of the affected body parts. Activities that are meaningful and important to the patient are selected. Optimal motor skill learning can be achieved by focusing on several factors, the most important of which are strategy development, feedback, and practice. Rehabilitation can begin as soon as the patient is medically stable, typically within 72 hours of the stroke. Patients can be admitted to a dedicated stroke unit or a neurology department providing rehabilitation services. Evidence supports the benefits of such services in significantly improving functional outcomes compared to patients who do not receive them. [1]

There was insufficient evidence to determine the short-term effect of home-based intervention compared to institutional intervention, or to determine the long-term effect of home intervention compared to conventional care, due to the limited number of studies and participants included in meta-analyses. There was insufficient evidence to prove the short-term effect of home intervention on performing activities of daily living (ADLs) in stroke patients compared to no intervention. There was insufficient evidence to suggest a short-term effect of home intervention compared to conventional care, or a long-term effect of home intervention added to conventional care compared to conventional care alone. Heterogeneity between studies limited the conclusions that could be drawn. [1]

Many modern rehabilitation interventions are developed in clinical settings, and some are transferred to the home. Home intervention strategies vary by type, duration, intensity, frequency, and delivery method. This systematic review showed that exercise physiology practice and activities of daily living training

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were commonly performed as home interventions, supported by current evidence. [1]

The American Heart Association/American Stroke Association (AHA/ASA) guidelines suggested that lower extremity strengthening exercises and cardiovascular exercises are beneficial for improving walking ability in stroke patients, and can also improve their ability to perform walking-related tasks. Moreover, activities of daily living training is strongly recommended for community-dwelling stroke patients. Several recently developed home interventions, such as caregiver-mediated rehabilitation and telerehabilitation, have emerged over the last two decades to replace traditional face-to-face specialist visits. A Cochrane systematic review showed that caregiver-mediated rehabilitation did not increase caregiver burden, but its effectiveness on patients' capability to perform basic activities of daily living (BADLs) remained uncertain. One large study showed that a lower dose of caregiver-led rehabilitation training and a lack of multidisciplinary coordination could reduce the effectiveness of caregiver-mediated home interventions. Telerehabilitation appears to be a viable alternative to traditional rehabilitation. Chen et al. applied the same treatment strategy to a home-based telerehabilitation group and an institutional rehabilitation group. At the end of the intervention and during follow-up, both groups showed significant improvements in their ability to perform daily activities, with no significant difference between the two groups over time. Similarly, when compared with traditional face-to-face home interventions performed by specialists, home telerehabilitation showed an equal positive effect on improving the ability to perform daily activities in stroke patients. Higher quality research and practice are needed to prove the effectiveness of these new strategies. [1]

Based on the analysis of clinical data, home rehabilitation represents a cost-effective and promising alternative to inpatient treatment, optimizing recovery potential during the critical first three months after a stroke. Organizing a multidisciplinary process in the patient's familiar environment—including medical supervision, physical therapy, speech therapy, psychological support, and dietary adjustments—allows for the effective development of self-care skills

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under context-specific conditions. Despite persistent heterogeneity in meta-analysis results and the need for higher quality research, the implementation of modern formats, such as home telerehabilitation, demonstrates equal efficacy to traditional institutional care in restoring the daily activity of patients. Thus, an early, systematic, and home-adapted rehabilitation process acts as a key factor in minimizing post-stroke disability and successfully returning individuals to a fulfilling life. [1]

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