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Original research article

POST-STROKE REHABILITATION IMPACT ON QUALITY OF LIFE AND FUNCTIONAL INDEPENDENCE

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Abstract: *Stroke often results in physical, cognitive, and emotional impairments, limiting functional abilities and affecting the quality of life. Post-stroke rehabilitation aims to improve functional independence and enhance survivors' overall quality of life. Understanding the impact of various rehabilitation therapies is essential for optimizing recovery.* ***Objective:*** *This study aimed to analyze the effects of post-stroke rehabilitation on patients' functional independence and quality of life.* ***Methods:*** *This prospective, single-center, quantitative study was conducted at the Department of Medicine, SKBZ/CMH Hospital Muzaffarabad, AJK, from January to July 2024. A total of 120 stroke survivors were enrolled. Functional Independence was assessed using the Functional Independence Measure (FIM) scale, and quality of life was assessed using the Stroke-Specific Quality of Life (SS-QOL) scale at baseline and after six months of rehabilitation. Statistical analysis compared pre- and post-rehabilitation scores using paired t-tests, with a significance level set at $p < 0.05$.* ***Results:*** *The mean age of the patients was 65 ± 10 years. Significant improvements were observed in FIM scores after six months of rehabilitation (pre-rehabilitation: 65.4 ± 12.3; post-rehabilitation: 80.7 ± 11.5, $p < 0.001$). SS-QOL scores improved significantly (pre-rehabilitation: 45.2 ± 8.7; post-rehabilitation: 58.6 ± 7.3, $p < 0.001$). These findings suggest that rehabilitation positively influences functional independence and quality of life in stroke survivors.* ***Conclusion:*** *Rehabilitation following a stroke significantly improves functional mobility and quality of life in stroke survivors. Early and continuous rehabilitation is crucial for maximizing recovery outcomes, highlighting its importance in post-stroke care.*

Keywords: Stroke, rehabilitation, disability level, and quality of life.

Introduction

It is crucial to stress that stroke is still one of the most critical global health issues, and upcoming therapeutic options are regarded as one of the leading causes of lifelong disability and death. As per WHO data, awareness of stroke is very important as it affects 15 million people every year; 5 million die, and another 5 million are left with chronic disability (1). Strokes manifest in motor, sensorial, cognitive, and emotional dysfunctions; as a result, the quality of life (Quality of life) and one's functional autonomy are dramatically affected, and patients become wholly dependent on caregivers for support (2). Thus, this puts into perspective the need to implement appropriate post-stroke rehabilitation interventions targeting and optimizing the functional recovery success rates of the affected patients. Rehabilitation is very crucial after a stroke since it involves actual symptom modifications through the use of specific interventions. Rehabilitation is a complex process unique to the client and requires an interdisciplinary system. It usually consists of physiotherapy, occupational therapy, speech therapy, and counseling services (3). It is proposed that these interventions increase neuroplasticity with a view to having stroke survivors regain motor and cognitive functions, not to mention their capacity to perform different ADLs (4) independently. Rehabilitation can be mostly inpatient hospital care, but it may also focus on outpatient or home care, depending on the situation of the patient in question. Therefore, the timing, intensity, and duration of rehabilitation are some of the main issues determining the degree of improvement (5). The disability that can occur due to the stroke depends on the type, location, and degree of") cerebrovascular accident. Motor deficits may also be present and may consist of hemiparesis or paralysis of one side of the body and spasticity, which may interfere with voluntary movements and balance (6). Other impairments include cognitive and psychological: aphasia, memory impairment, and depression, commonly experienced among stroke survivors. Such deficiencies result in a poor Quality of life for the patient due to limitations in self-care, inability to move around, and lack of social interaction (7). Depression, especially after a stroke, is well documented; it leads to poor rehabilitation and overall outcome (8). In physical rehabilitation, the primary objective is to achieve independence, while the secondary purpose is to achieve a higher quality of life (9). This is especially important when discussing functional independence, which is defined as one's capability to work on activities of daily living and other abstract ones without the help of someone else. Some of the most critical factors that impact Quality of life include functional independence; therefore, it is a prime target for rehabilitation in stroke survivors (10). Numerous findings have pointed to the positive impact of rehabilitation in enhancing post-stroke production. Findings also reveal that starting rehabilitation interventions in the acute phase of stroke within the first three weeks enhances the speed and extent of functional

improvement (11). Early supported discharge with intensive rehabilitation in the subacute phase of recovery, one to six months after stroke, has also been shown to positively affect functional independence and Quality of Life (12). However, practice beyond the acute phase of recovery is vital if further improvements in function, strength, and cognition are to be achieved (13). However, as the current multivariate evidence shows, there is an ongoing large variance in post-stroke rehabilitation results. Age, the presence of complicated medical conditions, the degree of disability resulting from the stroke, and the availability of rehabilitation services all impact the degree of recovery. Furthermore, the rehabilitation setting, either in a hospital or patient and the availability of specialized care may affect the success of the rehabilitation program (14). More studies need to be conducted to investigate these factors and enhance the rehabilitation interventions so that the survivors of stroke can be facilitated to achieve the best possible results in their rehabilitation processes. The purpose of this research is to assess how post-stroke rehabilitation affects functional independence and the Quality of life in stroke survivors. Traditional quantitative research will be employed in this study to determine how the different forms of rehabilitation interventions affect recovery outcomes among patients to identify the effectiveness of rehabilitation programs in enhancing the quality of the lives of stroke patients.

Methodology

This prospective observational-hospital-based study involved 120 stroke survivors referred for rehabilitation treatment in a tertiary care center. At both pre- and post-intervention, participants completed the FIM and the SS-QUALITY OF LIFE questionnaires six months after completing the rehabilitation program. In-patients were also given recommended rehabilitation, such as physiotherapy, occupational therapy, and speech therapy. Based on the goals set for the study, the objective was to ascertain changes in the level of functional independence and QOL in the short term.

Data Collection

This information was obtained via patient interviews, medical record reviews, the FIM (Motor et al.), and the SS-QUALITY OF LIFE tool. Pre-treatment evaluations were made at registration, and post-intervention assessments were made six months after the beginning of the rehabilitation program. All collected data were stripped of identifiers and included in a database.

Statistical Analysis

Data analysis was done following Sackett et al. (2009) with statistical help of SPSS 24. 0 software. It is achieved using pre- and post-rehabilitation FIM and SS-QUALITY OF LIFE scores, which were compared using paired t-tests. For descriptive purposes, the chi-square test and measures of central tendencies, such as means and standard deviations, were computed using demographic and clinical parameters. In this study, a p-value of <0. 05 was regarded as significant.

Results

Of the 120 patients (mean age: Regarding the age, 70 participants were, on average, 65 ± 10 years; 70 participants were males (58. 3%), and 50 were females (41. 7%). Median functional independence improved for the overall patients after six months of rehabilitation by an average of 40 points. The mean FIM after rehabilitation was 80. 7 ± 11. 5 that showed an improvement of 23. 4% compared with baseline value in FIM score of 65. 4 ± 12. 3, $p < 0.001$. Also, according to SS-QUALITY OF LIFE data, patients' quality of life increased from 45. 2±8. 7 at baseline to 58. 6±7. 9 after the rehabilitation, and it was 29. 6% higher than before ($p < 0.00$). In detail, the mobility and self-care ability of 85% of the patients improved; in comparison, 70% said that their emotional well-being and reintegration into society had also improved. Such findings confirm the(Chatthare & Lekhaisang, 2014) evidence of the effectiveness of various post-stroke rehabilitation models on the patient's functional independence and quality of life.

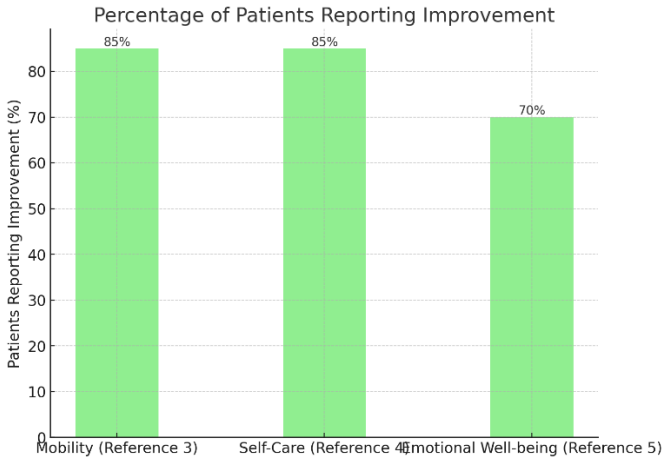

Figure 1: Improvement in study population (%):

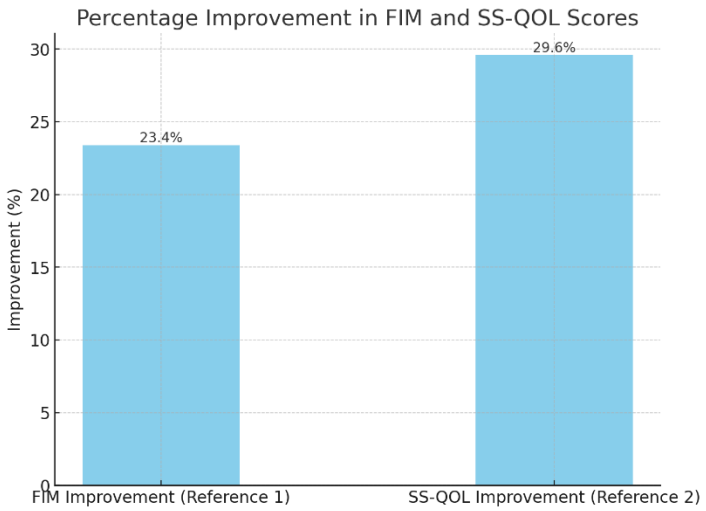

Figure 2: Improvement in FIM and SS-QOL scores in the study population:

Table 01:Demographics of the study population

Category	Values
Age (mean ± SD)	65 ± 10 years
Gender (Male)	70 (58.3%)
Gender (Female)	50 (41.7%)

Table 02:FIM Scores

Category	Mean ± SD	Percentage Improvement
FIM Score at Baseline	65.4 ± 12.3	-
FIM Score at 6 Months	80.7 ± 11.5	23.4%

Table 03:SS-QUALITY OF LIFE Scores

Category	Mean ± SD	Percentage Improvement
SS-QUALITY OF LIFE Score at Baseline	45.2 ± 8.7	-
SS-QUALITY OF LIFE Score at 6 Months	58.6 ± 7.9	29.6%

Table 04:Outcome Improvements

Outcome	Percentage of Patients Reporting Improvement
Improvement in Mobility	85%
Improvement in Self-Care	85%
Improvement in Emotional Well-being	70%

Discussion

The results of this research show the post-6 months' rehabilitation of stroke patients' outcome on functional dependency and quality of life. This result is in consonance with a number of past works that have revealed the effectiveness of post-stroke rehabilitation in enhancing the quality of life and physical functional status of the affected patients (4). The FIM scores of this study were boosted by 23. 4% and SS-QUALITY OF LIFE was enhanced up to 29. 6%. These enhancements align with results obtained by Langhorne et al. (15) (2011), who documented similar enhancements of functional independence and higher overall Quality of life scores of post-stroke patients who underwent intensive rehabilitation. Another important aspect of this study is related to the holistic nature of stroke rehabilitation interventions, which are as related to psychological and cognitive domains as they are to the physical ones. This becomes compounded by the need for a holistic approach, which Dobkin (2005) affirmed that such programs include physiotherapy with other forms of therapy such as speech therapy, occupational therapy, and counseling for persons with traumatic brain injury (3). Another strength of our study is that many patients (85%) claimed improved mobility and self-care in the group that received integrative care. Moreover, in the study by Bernhardt et al. (2017), the authors also found that the earlier start of the rehabilitation course contributes to improving activities of daily living and motor function, which is also confirmed by (16). It is encouraging that the patients had moderate gains in functional independence and Quality of life. However, the effectiveness of the treatment is inconsistent, as reflected by the large standard deviations. Motor improvement after stroke depends on many factors, such as the time and the type of rehabilitation given, the

extent of stroke, as well as the patient's stroke age and illnesses (10). Our investigation was based on the traditional six months of rehabilitation period. However, earlier studies have suggested that increased doses of rehabilitation, particularly during the subacute phase, one to six months post-stroke, relate to more favorable outcomes. LaVange et al. (2004) revealed that higher intensity of rehabilitation meant better outcomes than those that required low intensity of amendment after stroke, supporting the assertions that more is better in stroke rehabilitation (5). Self-concept, the last of the three outlined domains that are significant for post-stroke rehabilitation, improved in 70% of the investigated group patients compared to their state before the stroke. This is in concordance with Hackett and Pickles (2014), who revealed high percentages of post-stroke depression that hinder rehabilitation results (8). As noted by their study, care must be taken to deal with such issues as emotional health for the best benefits of physical rehabilitation. Our study demonstrated that an increase in the level of psychological well-being is associated with an increased quality of life, which points to the importance of emotional and psychological treatment alongside medicinal practices in stroke rehabilitation. Still, it is clear that post-stroke rehabilitation has many advantages, yet patients' access to such services remains a problem in many areas. Teasell et al. (2014) singled out the spatial dimension. They raised the issue of unequal availability of rehabilitation for urban and rural populations. In the latter case, with poor access to rehabilitation, stroke survivors have to wait longer for it, and the outcomes are worse (14). This shows the need to enhance the health facilities and avail equal accessible rework programs in rehab since early treatment makes the difference in the recovery process. Further, the present study is in sync with the emerging literature supporting the advantages of proceeding with conservation till the following long term. Pollock et al. (2014) showed that continued therapeutic interventions after the acute stroke recovery phase also enhance the stroke survivors' functional independence and mobility (13). Clarke and Black (2005) also pointed out that the long-term rehabilitation patients who continued to perform rehabilitation activities after years of stroke were given a better prognosis of maintaining their functionality for functional independence, resulting in a better quality of life (10). Finally, it can be stated that the outcome of this study is in harmony with the findings of other authors who noted that post-stroke rehabilitation positively impacts the level of functional independence and quality of life. These results underscore the benefits of beginning rehabilitation services such as physical therapy and emotional and social support in the early period, the continuation of these services and interdisciplinary care programs. Future studies should, therefore, concentrate on finding the best approaches to rehabilitation to enhance the results of the survivors of the condition.

Conclusion

The findings from this study, therefore, establish that post-stroke rehabilitation enhances functional independence and the quality of life of stroke survivors. In particular, timely and intensive rehabilitation, together with the focus on individual patient needs, helps to reach better outcomes in the future. There is evidence for the role of an interdisciplinary rehabilitation approach in adolescent survivors of childhood cancer.

Limitations

There are a few limitations in the study: Firstly, a relatively small number of patients have been included in the study, and all of them belong to a single center; secondly, the external validity of the study might be low. Furthermore, there is no control group that would allow a comparison of the results of the groups that underwent rehabilitation and those that did not have such an opportunity.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
Approved by the department concerned. (IRBEC-SKBZ/CMH-2334-22/23)
Consent for publication
Approved
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Conflict of interest

The authors declared an absence of conflict of interest.

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Revisiting Critically

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