PERCEIVED IMPACT OF LIMB FUNCTION LOSS IN STROKE PATIENTS: INSIGHTS FROM PATIENT PERSPECTIVES

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Abstract

This article investigates the perceived impact of limb function loss in stroke patients, focusing on the subjective experiences and perspectives of stroke patients. A total of 73 participants completed online questionnaires assessing the importance of limb function and functional status. The majority of stroke patients experienced impairments in both foot and hand limbs, with hand function being considered more important than foot function by 68% of patients. Dressing and grooming were rated as the most severe problem, highlighting the significance of hand function in daily activities. These findings emphasize the need for targeted interventions to improve hand mobility and dexterity in stroke patients. The results contribute to a better understanding of the challenges faced by stroke patients and have implications for stroke rehabilitation.

Keywords: limb function loss, stroke patients, perceived impact

1. Introduction

A stroke, also known as a cerebrovascular accident, is a medical condition that occurs when the blood supply to the brain is disrupted, either by a blocked blood vessel (ischemic stroke) or bleeding in the brain (hemorrhagic stroke) (Krafft et el., 2012; Guzik and Bushnell, 2017). Strokes are a medical emergency and require immediate attention as they can cause serious and potentially life-threatening complications (Powers et al., 2019). One of them is loss of limb function which represents a significant challenge faced by stroke patients, posing obstacles to their daily activities and overall quality of life. This impairment can manifest as weakness, paralysis, or spasticity in one or more limbs, primarily attributed to damage in the motor cortex or other areas responsible for movement control within the brain. The specific impairments experienced by stroke patients are contingent upon the extent and location of brain damage, leading to a wide range of functional limitations (van Mierlo et al., 2018). Rehabilitation plays a crucial role in helping individuals regain limb function after a stroke. Physical therapy focuses on exercises and activities that aim to improve strength, flexibility, and coordination. Occupational ergotherapy may also be employed to enhance specific skills needed for daily living, such as dressing, grooming, and eating (Doğan, 2023). The process of regaining limb function is often gradual and requires patience and persistence. It involves repetitive exercises to stimulate neural pathways and encourage the brain to adapt and reorganize. While some individuals may experience significant

improvement, others may face long-term challenges and may need to find alternative ways to perform certain tasks. In addition to physical rehabilitation, emotional and psychological support is essential. Coping with the loss of limb function can be emotionally taxing, leading to feelings of frustration, sadness, or even depression. Support from healthcare professionals, family, and friends can make a significant difference in the individual's overall well-being (Northcott and Hilari, 2018).

Understanding the subjective experiences and perspectives of stroke patients is crucial in identifying the most pressing concerns related to limb function loss and its impact on everyday life. (Wang and Langhammer, 2018; Caro et al, 2018).

This research paper aims to investigate which specific loss of limb function is considered the most significant obstacle for stroke patients in carrying out normal activities of life.

2. Methods

2.1. Ethics and patients

The research project was approved by the B-A-Z County Central Hospital and University Teaching Hospital Regional/Institutional Science and Research Ethics Committee, under the number BORS-16/2023.

Participants for this study were recruited from social networking sites that cater to stroke patients (Stroke Info Foundation's Stroke Heroes and Loved Ones community page and the Miskolc Stroke Heroes group). The inclusion criteria for stroke patients were being over 18 years old and having experienced residual symptoms of stroke for at least 1 year, affecting either the upper limb, lower limb, or both. One of the reasons for this is that spontaneous symptomatic improvement or remission can be expected after a stroke, and this typically occurs within the first three months. Another reason is that spasticity, a condition characterized by muscle stiffness and spasms, does not usually manifest immediately after a stroke but rather develops months later arising in about 30% of patients (Mayer and Esquenazi, 2003).

Prior to the study, permission was obtained from the website administrators to post the questionnaires on their community site. The purpose of the study, as well as instructions on how to participate and volunteer, were clearly explained to the potential participants at the beginning of the questionnaire. Participants were given the opportunity to provide their consent to participate by indicating a "yes" answer at the beginning of the questionnaire.

To ensure anonymity, the questionnaire was designed in a way that no personal identifying information was requested or collected from the participants.

2.2. Measures

2.2.1. Demographics

The questionnaires requested demographic information including age, gender, marital status (single, cohabiting/married), and type of residence (capital, town, village/farm).

2.2.2. Clinical data

Stroke patients provided information about the disease duration and the limb affected by the disease. They also answered questions about certain activities of daily living, such as which limb loss of function they find problematic and why.

2.2.3. Classification of residual symptoms after stroke

Revised Rankin Scale (1988) was used to classify the severity of a disease based on the patient's subjective perception (van Swieten et al, 1988). (0 = No symptoms at all; 1 = No significant disability despite symptoms; able to carry out all usual duties and activities; 2 = Slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance; 3 = Moderate disability requiring some help, but able to walk without assistance; 4 = Moderate severe disability; unable to walk without assistance and unable to attend to own bodily needs without assistance; 5 = Severe disability; bedridden, incontinent, and requiring constant nursing care and attention.) In our statistical analyses, 3 categories were used for better clarity. (1 = No or slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance; 2 = Moderate disability requiring some help, but able to walk without assistance; 3 = Moderate severe, or severe disability; unable to walk without assistance and unable to attend to own bodily needs without assistance.)

2.2.4. Assessing the impact of musculoskeletal impairments on daily living activities

The Health Assessment Questionnaire (HAQ) was used to assess the functional status and quality of life of individuals. The original questionnaire was designed for patients with rheumatoid arthritis, however, nowadays it is used in various chronic conditions (Fries et al., 1980). The HAQ consists of a series of questions that cover eight domains of daily living activities: (1) dressing and grooming; (2) arising; (3) eating; (4) walking; (5) hygiene; (6) reach; (7) grip; (8) common daily activities. The questionnaire asks individuals to rate their ability to perform specific tasks within each domain over the past week. The responses are used to calculate an overall HAQ score, which ranges from 0 (no functional impairment) to 3 (severe functional impairment). The final HAQ score is the average score of the completed categories.

2.2.5. Importance of limb function

The questionnaire included an open-ended question in which patients were asked which limb loss of function they perceived to be most problematic.

2.3. Data analysis

Descriptive statistics were calculated to summarize the demographic characteristics of the participants and clinical data of stroke patients. This included measures such as mean, standard deviation, range, and frequency distributions. Associations between HAQ scores and demographic variables (gender, age, marital status, residence, affected limb) were examined using appropriate statistical tests such as t-tests or analysis of variance (ANOVA). Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 28.0 (Armonk, NY: IBM Corp., USA). An alpha level of 0.05 was set for all tests. The information gathering from the open questions were analysed using content analysis (Erlingsson and Brysiewicz, 2017).

3. Results

3.1. Participants

A total of 73 questionnaires were completed and all were usable for data analysis. Demographic and clinical data of stroke patients are displayed in Table 1.

Table 1. *Demographic and clinical data of participants*

	Stroke patients
Sample size	73
Age	56.92 ±9.55
Gender rate (%)	
female	39.7
male	60.3
Family status (%)	
single	30.1
in relationship	65.8
other	4.1
Type of residence (%)	
capital	19.2
town	50.7
village/farm	30.1
Disease duration (year)	5.13 ±4.04
Limb affected (%)	
hand	7.0
foot	1.4
both	83.1
other	8.5
Raskin scale (%)	
mild	22.2
medium	62.5
severe	15.3
HAQ score	2.02 ±0.64

3.2. Importance of limb function

In most patients (83.1%), both the foot and hand limbs were affected, as shown in Table 1. The majority of patients identified the loss of hand function as a significant challenge in performing their daily activities. Some participants also mentioned the impairment of foot function as a deficit, while others perceived both to be comparable. Below is a selection of the responses.

Hand function
"A full stable grip...because then I would dare to start things more confidently" (Male, 64)
"Reclaiming the hand because it is more important for everyday self-sufficiency" (Male, 33)
"The hand to fully provide for myself" (Female, 66)
"It's good to have a little weight under control again. Not after 2 minutes to throw it away. Unfortunately, the self-confidence is gone." (Male, 35)
"I think the hand is more important. You can get somewhere with a limp, but you can't live without hands." (Male, 56)
"A full stable grip...because then I would dare to start things more confidently" (Male, 64)
"A hand to fully support myself" (Female, 66)

Foot function

"The foot is more important as it is the basis for independent movement" (Female, 62)

"My leg because it gives me more independence" (Male, 61)

"Walking is the most important" (Female, 71)

Both of them

"Walking, squeezing" (Female, 68)

"Both, because I would really like to walk all by myself and I miss my hands a lot" (Female, 56)

"I need both my hands and my leg movement" (Female, 54)

3.3. Functional status

Based on the HAQ questionnaire, patients scored 2.02 ±0.64 (range 1-3), indicating that patients had moderate functional impairment on average. Of the domains assessed [(1) dressing and grooming; (2) arising; (3) eating; (4) walking; (5) hygiene; (6) reaching; (7) grip; (8) common daily activities], dressing and grooming was rated as the most severe problem (Me = 3), with common daily activities the least problematic (Me = 1). Based on t-test and ANOVA, no associations were found between HAQ score and gender, age, marital status, residence and affected limb.

4. Discussion and conclusion

The findings of this study shed light on the perceived impact of limb function loss in stroke patients and provide valuable insights into the specific aspects of limb function that are considered crucial for stroke patients in terms of their quality of life.

The majority of stroke patients in this study experienced both foot and hand impairments, highlighting the widespread effect of stroke on multiple limbs. Interestingly, hand function was deemed more important than foot function by a significant proportion of stroke patients. This is primarily due to the significant impact upper limb impairment has on a person's daily activities, independence, and overall quality of life. The upper limb plays a crucial role in performing tasks such as self-care, feeding, dressing, and other activities of daily living. This suggests that the loss of hand function poses a greater obstacle for stroke patients in carrying out normal activities of life. The finding that dressing and grooming were rated as the most severe problem aligns with the importance of hand function in performing these tasks independently. However, in terms of recovery, Paci and colleagues (2016) found no difference between the time course of motor recovery in the lower and upper limb.

No significant associations were found between the HAQ questionnaire score and demographic factors such as gender, age, marital status, residence, and affected limb. These results suggest that the perceived impact of limb function loss is relatively consistent across different patient groups, regardless of these demographic variables. However, it should be mentioned subjective assessment of health after stroke is multidimensional and not necessary relates to current disability level of the stroke survivor (Mavaddat et al., 2018). Future studies could delve deeper into the intricacies of subjective health assessments to better understand the nuanced relationship between perceived health and disability levels.

In conclusion, this study provides valuable insights into the perceived impact of limb function loss in stroke patients, emphasizing the paramount importance of hand function in their overall quality of life. The findings underscore the need for rehabilitation programs that specifically target hand mobility and dexterity, thus highlighting the need for occupational (ergo)therapists in rehabilitation processes. Despite the lack of significant associations with demographic factors, it is essential for healthcare professionals to consider the multidimensional nature of subjective health assessments in stroke

survivors. This research contributes to the ongoing dialogue on stroke rehabilitation, urging for a more nuanced and personalized approach to address the unique challenges faced by individuals with upper limb impairments.

5. Summary

The stroke patients commonly experience impairments in both the upper and lower limbs, highlighting the widespread effect of stroke on multiple limbs. However, a significant proportion of stroke patients considered hand function to be more important than foot function. This preference is attributed to the crucial role of the upper limb in performing daily activities, self-care, and maintaining independence. Hand impairments were identified as a major obstacle to carrying out normal activities of life, with dressing and grooming being rated as the most severe problem.

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