

# Perceptions of stroke patients attending King Faisal Hospital-Rwanda regarding the effectiveness of the rehabilitation services

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## ABSTRACT

**INTRODUCTION:** Stroke rehabilitation involves a multidisciplinary approach to restore functional abilities and improve quality of life. This study aimed to explore stroke patients' perceptions of the effectiveness of rehabilitation interventions provided at King Faisal Hospital, Rwanda.

**METHODS:** A qualitative study using in-depth face-to-face interviews was conducted with ten stroke survivors aged 30 to 80 years. Participants shared their experiences of physiotherapy, occupational therapy, and speech and language therapy interventions. The data was analyzed using a qualitative inductive thematic approach with Atlas ti software.

**RESULTS:** Participants reported significant improvements in physical function and mobility due to physiotherapy services, including increased balance, enhanced muscle strength, and the ability to perform activities such as walking on uneven surfaces and climbing stairs. However, two participants noted limited progress in their affected limbs. Occupational Therapy was reported to lead to improvements in functional performance, self-care activities, and job-related skills. Participants regained abilities such as transferring independently, holding objects, bathing, and dressing. Occupational therapy also enabled some participants to return to work. A minority expressed the need for increased therapy frequency for better outcomes. Speech and Language Therapy improved participants' communication and interaction skills. Some regained their ability to talk, express themselves, and engage in conversations, although challenges with pronunciation and fluency persisted for a few.

**CONCLUSION:** Rehabilitation interventions at King Faisal Hospital-Rwanda, are perceived as effective in enhancing physical function, independence in daily activities, and communication skills among stroke survivors. The findings underscore the importance of a multidisciplinary approach and suggest potential benefits of increasing therapy frequency for improved outcomes.

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## INTRODUCTION

Stroke is a leading cause of long-term disability and a major contributor to global morbidity and mortality [1]. The World Health Organization

(WHO) defines stroke as an acute, diffuse dysfunction of the brain caused by blood vessel abnormalities, which may persist for a day or longer [1,2]. Rehabilitation plays a crucial role in improving functional recovery and promoting

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independence among stroke survivors [3]. Effective stroke rehabilitation requires collaboration and interdisciplinary teamwork involving patients, their families, caregivers, physicians, nurses, physical and occupational therapists, speech-language pathologists, psychologists, nutritionists, social workers, and other healthcare professionals [4]. Communication and coordination among team members are essential to maximize the effectiveness and efficacy of rehabilitation interventions.

A study in South Australia found that circuit-class therapy provided more peer support, while individual sessions were perceived as more important to participants' goals. Both methods effectively challenged patients [5]. Another study in Sweden found that occupational gaps post-stroke are common, especially among individuals experiencing difficulties in Activities of Daily Living (ADLs) [6]. Rehabilitation interventions should focus on activities that patients want to perform to narrow these gaps. A study in Japan compared the occupation-based approach with the impairment-based approach in occupational therapy to determine feasibility and client satisfaction [7]. The results suggested that the occupation-based approach had more ability to improve clients' general health and emotional score on the short form than the impairment-based approach. Dysphagia and communication impairments are common in acute stroke patients, and stroke survivors with one or both impairments are prone to poorer long-term outcomes [8,9]. Speech-language pathologists play a vital role in screening, standardized and non-standardized assessment, and rehabilitation management of stroke clients who experience dysphagia and/or communication impairment [9].

Stroke clients at King Faisal Hospital-Rwanda are admitted to the intensive care unit and medical ward, with many from the outpatient department in physiotherapy, occupational therapy, and speech-language therapy pathology service. The hospital has enough standardized equipment for rehabilitation services as standard management interventions for stroke. However, no studies have been conducted to understand the perceptions of stroke patients attending King Faisal Hospital-Rwanda regarding the effectiveness of rehabilitation services. Therefore, this study aimed

to bridge this gap, and the findings will inform improvement measures for the services at the hospital and across Rwanda in general.

## METHODS

### Study Setting

This study was conducted in the City of Kigali at King Faisal Hospital-Rwanda, one of Rwanda's teaching hospitals. The hospital offers several specialized healthcare services, including rehabilitation. The rehabilitation services at King Faisal Hospital-Rwanda include physiotherapy, occupational therapy, as well as speech and language therapy [10]

### Study design

The researchers used a qualitative phenomenological approach consisting of in-depth interviews to explore the perceptions of stroke patients attending King Faisal Hospital in Rwanda about the effectiveness of the rehabilitation services

### Study population and sampling methods

The study population consisted of patients with stroke attending the King Faisal Hospital-Rwanda rehabilitation services. The convenient sampling method was used to recruit the study participants following the inclusion criteria. We recruited participants with different characteristics in terms of sex, inpatient or outpatient services, and education level to get responses from different perspectives. However, stroke survivors who were in the intensive care unit were excluded as they were unable to share their views with the interviewer.

The researchers involved ten stroke patients, and this sample size was determined by the data saturation as long as the data was analyzed concurrently with data collection.

### Data collection tool

Face-to-face, semi-structured interviews were conducted. All interviews were conducted by the Researchers using an interview guide. It was developed based on the study objective, the literature, and the researchers' experiences. The research consensus was that the semi-structured questions in the interview guide should be applied before being applied. The participants were asked to tell their stories related to how they think the

rehabilitation services have improved their lives. Adding to that, there was a series of guided probes to obtain an in-depth description of their views on the research question.

### **Procedures for data collection**

Following the receipt of ethical clearance and permission from the relevant authorities, in-depth interviews were conducted in Kinyarwanda with 10 participants at the hospital. The researcher contacted the study participants at their convenience, explained the study objectives and benefits, and ensured confidentiality before signing the consent form. Then, after the participant had signed the consent form, the interview was conducted in a calm environment with one interviewee, and probing questions were added to guide the participants in being concise. During the interviews, the researchers set up the audio recording device, shorthand notebook, and pen to use for noting observations and other key points during the interview. The researcher continued to record the interviewees together with data analysis till the data saturation was met.

### **Data analysis**

The researcher transcribed the tape-recorded interviews in Kinyarwanda (NF, NJ). These transcriptions were then reviewed multiple times, cross-checking with the audio recordings and field notes to ensure accuracy. The corresponding author (NF), with the support of the research member (UG, GD), also carefully listened to the audio recordings and translated the transcriptions into English. The researcher then compared the transcriptions with the original audio recordings. Following this, the researcher generated initial codes, which were refined into sub-themes, preliminary themes, and final themes. The research team identified common patterns, as well as similarities and differences, and these findings were reflected in the initial report. The final report was then produced based on these analyses.

### **Ethical considerations**

Ethical clearance for the study was gained from the Institutional Review Board (IRB) of the University of Rwanda College of Medicine and Health Sciences with the reference number CMHS/IRB/496/2023. Permission for data collection was also provided by King Faisal Hospital-Rwanda after the submission of the research protocol to

be reviewed by their board of research and after review of the study protocol and ethical clearance, King Faisal Hospital-Rwanda provided the letter to collect the data with the reference number of KFH/2023/132/IRB. The researcher explained the aim and objectives of the study to participants and their families. Written informed consent was given to participants and their caregivers. Participation in the study was voluntary, and participants could withdraw at any stage. For purposes of anonymity and confidentiality, the quotations of data from the interviews were cited using the cryptogram P1 to P10 rather than the participants' names.

## **RESULTS**

### **Participants' characteristics**

Four participants (40%) were females, and six (60%) were males. The participants were between 30 and 80 years old (mean age =52,3 years). Seven of the participants (70%) were married, and three (30%) were widowed. Eight of the participants (80%) were educated to the level of bachelor's degree and above, while two of the participants (20%) were educated to the level of high school and below. Most of the participants from King Faisal Hospital-Rwanda belong to the middle or high seriocomic status.

Perceptions of the stroke patients attending the rehabilitation services at the King Faisal Hospital-Rwanda.

The study participants of stroke survivors reported their perceptions of the rehabilitation interventions during management. Three themes related to rehabilitation interventions emerged: (1) Effectiveness of physiotherapy interventions in stroke management (amelioration in physical body function and improvement in mobility); (2) effectiveness of occupational therapy in stroke management (advancement in functional performance, improvement in self-care activities, amelioration of job performance); and (3) effectiveness of speech and language pathologist in stroke management (improvement in interaction and communications skills).

### **Effectiveness of physiotherapy interventions in stroke management**

**Amelioration in physical body function:** Amelioration in physical body function was described by the majority of the participants

interviewed at King Faisal Hospital-Rwanda in physiotherapy service, including the improvement in the ability to perform bed activities, the ability to lengthen and bend their arms, improvement in balance while they are sitting and others realized the muscle strength increase. However, two participants among ten participants reported that no clear improvement since the day one receiving the treatment sessions.

*“.....I could not move, but I tried to elicit some movements, and the physiotherapist trained me to sit with balance; he trained me in bed mobility and transfers, such as moving from bed to a wheelchair. However, the leg improves more than the arm” (P6).*

*“...I was able to use some sports materials which include riding a stationary bicycle, but due to physiotherapy interventions. The physiotherapist used the belt for fixing my foot on the stationary bicycle for the purpose he explained to me for strengthening the muscles of the leg to improve muscle coordination for the end goal of walking independently. And I am able to use other sports equipment such as the tread mill and metal stairs for walking upstairs and downstairs.” (P1)*

*“Based on the affected body part, I can't tell you that there is a clear improvement because I cannot see any typical improvement as I still have body weakness, and I am still dependent in many areas.” (P3)*

**Improvement in mobility:** The majority of participants reported that there were clear improvements in terms of mobility after receiving physiotherapy interventions, such as the ability to stand, being able to move in an uneven area, and being able to use different types of crutches.

*“....in mobility, the improvement is remarkable because, on the first day I came to the physiotherapy service, I came in a wheelchair from the car to the department, yet for now I come alone; I am no longer using the wheelchair only the crutches no assistance of a person during ambulation to reach physiotherapy service” (P1).*

*“The improvement is noticeable now I can walk without an assistive device, able to move from bed to other rooms, able to go to the bathroom, bath myself, move toward my job” (P10).*

## **Effectiveness of occupational therapy in stroke management**

**Advancement in functional performance:** More interviewees tackled the clinical improvements after receiving the Occupational therapy interventions; they stated that there was an improvement in daily functional performance such as improvement in transfers, Ability to hold objects, Improvement in hand function, Home-based activities, and Skills in the use of the assistive device. However, one participant suggested coming more than four times per week as an occupational therapist prescribed such that he can realize the amelioration in his functional level because he cannot see the advancement in his functional level therefore, he believes that it is because of the few frequencies of number of sessions.

*“The improvement is noticeable, as before, I had many difficulties, but after retraining in occupational therapy, I was able to transfer myself from the wheelchair to the toilet. I can try to dress my upper body with some minor difficulties to the affected side but I try until I complete without the assistance of caregivers” (P5).*

*“I can hold light objects. I couldn't turn on the bed because of weakness but now I can do it without support as an Occupational therapist taught me how I can simplify this activity” (P8)*

*“I am not yet reaching the steps of using my arms as well as my hand without the guidance of an occupational therapist; probably, if I can be engaged in more frequencies of sessions, the improvement can be noticeable.” (P6)*

**Improvement in self-care activities:** Based on the in-depth interview conducted in KFH, Rwanda in Occupational therapy service, the majority reported that their performance in self-care activities was increased due to the occupational therapy interventions as the self-care activities were among the skills I had that were lost.

*“The improvement was realized after a couple of months of receiving the occupational therapy interventions such as regaining the skills to perform some self-care activities independently such as bathing, dressing: buttoning, and unbuttoning, zipping and unzipping, preparation of breakfast, and other bilateral hand activities” (P1).*



*“... Other areas related to self-care where I was unable to dress independently but now, I am able, I was unable to bathe independently but now I am able as well as grooming activities” (P2)*

**Amelioration in job performance:** In the in-depth interview that was conducted at King Faisal Hospital-Rwanda, more interviewees expressed their clinical improvements after receiving the occupational therapy interventions. Some reported that after receiving Occupational therapy services for a long time, they were able to return to their job due to relearning the skills needed to perform their jobs, such as regaining typing skills and being able to manipulate the equipment used in their jobs in the Occupational therapy service.

*“There are many improvements, as I reported. I am a mechanical engineer, and now I can take the different keys to open small nails, and the other heavy keys technicians can help with my supervision” (P2).*

*“As you can see, I returned to work, and now I can walk toward my job office from home without an assistive device, able to move from bed to other rooms, able to bath myself, able to dress my whole body, able to do office work which includes typing, and able to drive yet before I could not try; therefore I acknowledge the work done by Occupational therapist.” (P10)*

### **Effectiveness of speech and language pathologist in stroke management**

**Improvement in interaction and communication skills:** Based on the in-depth interview that was conducted at King Faisal Hospital-Rwanda, more interviewees reported clinical improvements after receiving the speech and language therapy interventions; they were able to talk, communicate, and have conversations.

*“There are typical improvements compared to the onset of the stroke, I was mute totally but at least now I can talk; however, I still have a few speech difficulties, though I can express my message about what I want to do or to ask for particular help” (P5).*

*“There are other clinical improvements due to speech therapy as I can make a dialogue and pass the message, but before, I could not. However, speaking English is quite difficult for me in terms*

*of pronunciation but I can deliver the message to the listener” (P6)*

### **DISCUSSION**

The study findings will be discussed under three sections: effectiveness of physiotherapy interventions, Occupational Therapy interventions, and Speech-language pathology interventions experienced by stroke survivors concerning relevant literature and the context of the study setting.

The findings of this study revealed the various clinical improvements due to physical therapy interventions. The study showed that participants had the typical improvement in functional activity performance, such as the ability to walk, the ability to lengthen and bend their limbs, improvement in balance while they are sitting, transfers from wheelchair to bed, and vice versa. The physical therapy interventions supported the participants in getting involved in work they did before, but there was also a considerable improvement in activity participation at home from attending this service. Furthermore, additional individuals reported being able to roll in bed and move upstairs, implying that physical therapy sessions enhance functional mobility among stroke patients. As a result, mobility assistance devices that improve mobility independence are infrequently used. Similar to previous research, ambulation and lower limb exercises were the most important interventions from physiotherapy services offered to regain functional mobility and other physical body functions [11]. Another study that North East Thames Health Authority conducted showed that 82 stroke clients who received physiotherapy 40 had been taken to be interviewed, and those who agreed to be interviewed were significantly less likely to be disabled after 12 months of receiving rehabilitation. Generally, patients were satisfied and appreciated physiotherapy because it improved their function [12].

Improvement in balance due to physiotherapy interventions was also previously reported by other studies. For instance, a study conducted in Indonesia concluded that physiotherapy interventions were effective in improving balance and mobility after stroke [13]. The study participants revealed that the occupational therapy interventions involve improving the ability of daily activities such as holding different objects,

including a pen, typing, opening the bottle, being able to bathe and dress independently, and training in the use of assistive and adaptive equipment. This implies that occupational therapy interventions in stroke management emphasize retraining fine motor skills and training on compensatory strategies through the use of assistive/adaptive equipment and environmental modification to improve independence in daily life. A study investigating the impact of occupational therapy interventions on outcomes for stroke survivors revealed significant benefits in various aspects of recovery. Occupational therapy facilitated activity performance by enhancing related performance skills and developing compensatory strategies to restore lost abilities. It also focused on retraining activities of daily living (ADLs), encouraging engagement in leisure activities, and providing instructions and guidance on the use of assistive and adaptive equipment [14]. These interventions collectively supported stroke survivors in regaining independence and improving their quality of life. Another study conducted at the Jordan University of Science and Technology indicated that after six weeks of task-oriented rehabilitation intervention, participants demonstrated significant clinical and functional improvements, such as greater active range of motion and activities of daily living in the upper extremities [15].

In our study, participants reported that after receiving the speech and language pathology interventions, they noticed improvement in interaction and communication skills, such as talking and expressing verbally while interacting with others. This highlights that aphasia post-stroke can be effectively managed with the involvement of a speech-language pathologist and the stroke client's adherence to prescribed treatment strategies and advice. A similar study conducted at the Healing Center of the University of Alabama examined three male aphasic participants with left hemisphere strokes who attended speech therapy sessions. This study indicated notable improvements in speech-language capabilities for all participants following animal-assisted therapy, highlighting its potential as a supportive approach for managing aphasia post-stroke [16].

## CONCLUSION

This study explored the perspectives of stroke clients on the effectiveness of rehabilitation

professionals in managing stroke at King Faisal Hospital-Rwanda. The findings demonstrated that physiotherapy interventions significantly improve functional movement, including walking on various surfaces and climbing stairs. Occupational therapy interventions were found to enhance independence in daily functional activities, supporting patients' journeys toward self-reliance. Additionally, speech therapy interventions were effective in improving communication skills, enabling stroke clients to engage in conversations and express themselves more effectively. This study highlights the value of a multidisciplinary approach, where physiotherapy, occupational therapy, and speech-language therapy work synergistically to enhance mobility, independence in activities of daily living, and communication skills. These improvements collectively contribute to the overall rehabilitation and reintegration of stroke patients.

Based on the study findings, which highlight the significant impact of rehabilitation interventions on stroke recovery, it is recommended that King Faisal Hospital-Rwanda increase the number of rehabilitation professionals, particularly in the Occupational Therapy and Speech and Language Pathology departments. Currently, each of these departments is staffed by only one professional, despite serving a large number of beneficiaries. This imbalance limits both the quality and quantity of service delivery, thereby hindering optimal functional outcomes and quality of life for individuals recovering from stroke. Furthermore, rehabilitation professionals at King Faisal Hospital-Rwanda are encouraged to strengthen interdisciplinary and interprofessional collaboration. Some clients reported not receiving Occupational Therapy services despite being eligible, which suggests the need for improved coordination among team members to ensure comprehensive care and equitable access to rehabilitation services.

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