

"¿Qué hará el cuidador?" en casa para ejercicio de acv utilizando silla de ruedas: investigación cualitativa en la perspectiva de profesionales multidisciplinares de la salud

"What will the caregiver do?" at home for stroke exercise using a wheelchair: qualitative research in multidisciplinary health professionals perspective

*Moch Yunus, *Ronal Surya Aditya, *Anita Sulistyorini, *Arief Darmawan, *Nanang Tri Wahyudi, **Reem Iafi Almutairi
*Universitas Negeri Malang (Indonesia), ** Hail University, Hail (Saudi Arabia)

Resumen. Antecedentes: Según datos recientes, el accidente cerebrovascular ocupa el segundo lugar entre los factores que más contribuyen a la mortalidad y la discapacidad a escala mundial. No ha habido una síntesis exhaustiva de estudios cualitativos relacionados con la orientación de los cuidadores de pacientes con accidente cerebrovascular en el hogar que utilizan sillas de ruedas. El objetivo de este estudio es examinar los principios fundamentales empleados por los cuidadores en la prestación de atención a pacientes en silla de ruedas en el hogar. Método: Realizamos grupos focales y entrevistas en profundidad con informantes clave y profesionales de la salud multidisciplinares (n=17). La guía de entrevista describe a los pacientes de atención en centros, un enfoque multidisciplinario y explora el ejercicio de un paciente en silla de ruedas. Los datos se codificaron y revisaron utilizando un marco de análisis con el software NVivo. Este estudio se informó de acuerdo con las pautas COREQ (criterios consolidados para informar investigaciones cualitativas) Resultado: Ocho temas principales surgieron del análisis de datos: Atención en el centro del paciente, Enfoque multidisciplinario, Herramientas para crear creatividad, Experiencia familiar, Selección de una silla de ruedas eficaz, La habitación importa, El significado de la terapia, Movimientos eficaces, Conteo preciso durante la práctica. Conclusión: Los cuidadores poseen la capacidad de abordar el problema de la accesibilidad limitada a los servicios de rehabilitación de pacientes mediante la utilización de aplicaciones de autoayuda para sillas de ruedas. Los principales desafíos que enfrentan los cuidadores abarcan varios aspectos, incluida la implementación de la atención centrada en el paciente, la adopción de un enfoque multidisciplinario, la selección adecuada de sillas de ruedas que sean efectivas y la comprensión de la importancia de la terapia.

Palabras clave: Cuidadores, Sillas de ruedas, Personas con discapacidad, Accidente cerebrovascular

Abstract. Background: According to recent data, stroke ranks as the second most prominent contributor to both mortality and disability on a global scale. there has been no comprehensive synthesis of qualitative studies pertaining to caregiver guidance for home-based stroke patients utilizing wheelchairs. Objective of this study is to examine the fundamental principles employed by caregivers in the provision of care for wheelchair-bound patients within a home setting. Method: We conducted focus groups and in-depth interviews with key informant multidisciplinary health professionals (n=17). The interview guide describes center care patients, a multidisciplinary approach, and explores the exercise of a patient using a wheelchair. Data was coded and reviewed using an analysis framework with NVivo software. This study was reported according to COREQ guidelines (consolidated criteria for reporting qualitative research) Result: Eight main themes emerged from the data analysis: Patient Center care, Multidisciplinary approach, Creativity making tools Family experience, Selection of an effective wheelchair, Room matters, The meaning of therapy, Effective moves, Precise count during practice. Conclusion: Carers possess the capacity to address the issue of limited accessibility to patient rehabilitation services through the utilization of wheelchair self-help applications. The primary challenges faced by carers encompass various aspects, including the implementation of Patient Centered Care, adoption of a Multidisciplinary Approach, appropriate selection of wheelchairs that are effective, understanding the significance of therapy.

Keywords: Caregivers, Wheelchairs, Disabled Persons, Stroke

Fecha recepción: 10-03-24. Fecha de aceptación: 24-07-24

Moch Yunus

moch.yunus.fk@um.ac.id

Introduction

According to recent data, stroke ranks as the second most prominent contributor to both mortality and disability on a global scale (Rodrigues et al., 2023). In the year 2019, a total of 12.2 million individuals worldwide encountered a stroke (Epalte et al., 2023). The ongoing rise in the number of elderly individuals globally has contributed to the escalating incidence of stroke (Jeon et al., 2016). In light of the growing population of individuals who have experienced a stroke and the constrained availability of healthcare resources, the provision of post-stroke rehabilitation services necessitates the implementation of inventive approaches (Masuda et al., 2004). There has been a shift towards home-based rehabilitation care models following a stroke, supported by evidence indicating

that coordinated care provided by a supported early discharge team is successful in reducing hospitalization duration while maintaining functional outcomes (Sunnerhagen et al., 2003). Furthermore, there have been endeavors to transition rehabilitation from the hospital setting to home-based or outpatient services as a result of the substantial financial implications linked to inpatient stroke care (Yoshimura et al., 2022). Research has demonstrated that the financial expenses directly linked to home-based therapy are comparatively lower when compared to those incurred in center-based facilities, such as hospitals or outpatient clinics (S. E. Park & Moon, 2016). Individuals who undergo home-based therapy immediately following their discharge from the hospital can experience a higher level of functional benefit (Rodrigues et al., 2023). Furthermore, it has been observed

that early rehabilitation conducted at home is comparable to, or even more efficacious than, rehabilitation conducted at specialized centers in terms of reducing hospital readmission rates, enhancing activities of daily living function, and improving social functioning. This is particularly advantageous for younger individuals who have experienced a stroke and those with more severe stroke symptoms. Currently (Franco et al., 2021). The findings of a systematic review investigating the physical effects of home-based therapy following a stroke revealed moderate enhancements in physical functioning. The study also indicated that individuals who experienced their first stroke, were at least six months post-stroke, and received assistance from caregivers to facilitate therapy participation demonstrated more substantial improvements (Johansen et al., 2016).

Over the past decade, there has been limited qualitative research conducted on the topic of caregiver guidance for individuals affected by stroke. To the best of the authors' knowledge, there has been no comprehensive synthesis of qualitative studies pertaining to caregiver guidance for home-based stroke patients utilizing wheelchairs. Qualitative synthesis refers to a methodological approach that involves the selection and analysis of pre-existing qualitative research in order to gain a deeper understanding of the combined implications and collective meaning of the included studies (Sawtelle et al., 2022). Conducting a qualitative synthesis provides a comprehensive and in-depth thematic comprehension of the existing knowledge pertaining to a specific topic in the field of healthcare. This understanding can subsequently contribute to the development of healthcare practices and policies, as well as guide future research endeavors (van Erp et al., 2019). Considering the extensive range of qualitative research conducted on the subject of home-based physical rehabilitation programs following stroke, which investigates the experiences of stroke survivors, caregivers, and therapists, conducting a thematic synthesis provides a comprehensive understanding that surpasses the findings of each individual study (Choi et al., 2013). The objective of this synthesis is to address the inquiry: 'What are the activities undertaken by caregivers who engage in home-based physical rehabilitation following a stroke, from the standpoint of a multidisciplinary approach to health.' The provision of stroke care and rehabilitation necessitates the implementation of a multidisciplinary approach. As stated in reference (Yoshimura et al., 2020), there exists indisputable evidence supporting improved outcomes when patients receive treatment in a stroke unit under the care of a multi-disciplinary team. Stroke rehabilitation is carried out by multidisciplinary teams comprising medical doctors, nurses, physiotherapists, and occupational therapists across various phases and settings, including hospitals, communities, and clinics (Lam et al., 2022). Physiotherapists and nurses constitute the most prominent professionals within the

multidisciplinary team who provide care for individuals recovering from strokes (Wattchow et al., 2018).

One exercise therapy that has been shown to improve activities of daily living (ADL) in stroke patients is chair-stand exercise. This particular exercise involves performing repetitive, low-intensity movements at a slow pace (Bai et al., 2020). Theoretically, engaging in exercise is expected to enhance stroke recovery alongside conventional rehabilitation programs. Nevertheless, the current body of evidence is insufficient to support this claim. Based on the findings of reference, it is evident that the responsibilities and jurisdiction of the caregiver in the context of providing home care for stroke patients utilizing a chair are not clearly defined. Hence, within the context of a multidisciplinary stroke care approach, caregivers assume a pivotal role in providing stroke care within the home setting (S. J. Park & Oh, 2020). The literature on the role of caregivers in stroke care and rehabilitation has extensively documented their significant contributions. However, there remains a scarcity of literature specifically focusing on the role of caregivers in home-based rehabilitation utilizing a chair. Hence, the primary objective of this study is to examine the fundamental principles employed by caregivers in the provision of care for wheelchair-bound patients within a home setting.

Method

Study Design A qualitative exploratory study was conducted to identify the basic principles used by caregivers in the provision of care for stroke patients who use wheelchairs in the home environment from the multidisciplinary perspective of health workers. The focus group study method was chosen because it is useful for gathering information about the beliefs of certain subgroups (Epalte et al., 2023). This study was reported according to COREQ guidelines (consolidated criteria for reporting qualitative research)

Setting

Individuals were recruited from multidisciplinary health professionals in one of the major cities in Indonesia. These health workers come from medical rehabilitation medical specialists, sports medicine specialists, general practitioners, nurses, physiotherapy, midwifery, and public health. In general, community health workers keep in touch and visit patients.

Participants and data collection

Participants were sampled purposively with the aim of recruiting multidisciplinary health workers in Figure 1, most of whom had previous experience in hospitals and clinics. Because our goal, a qualitative approach, is not to generalize but to investigate the perspectives and experiences of different key and vulnerable populations, we conducted focus group

discussions (FGDs) and in-depth interviews (IDIs) within each population to allow exploration of possible similarities and differences across populations. By design, we conducted separate FGDs (and IDIs) based on their experience and spare time to facilitate exploration of possible differences along these lines. Those who meet the inclusion criteria health workers who have a registration letter, have experience treating stroke patients using wheelchairs, have worked in stroke rehabilitation more than 5 years and type of rehabilitation service at home. Those who showed interest after the study was explained were scheduled for IDIs or FGD according to their preferences. Those who show interest and meet the inclusion criteria are scheduled for interviews or focus groups. The focus group was conducted at the office of the Faculty of Sports Science, State University of Malang. During the IDIs and FGD, no other personnel outside the study team were present. For IDIs, only resource persons and interviewers were present; for the FGD, the note taker and facilitator were present with the participants. No interviews were conducted in a public place, neither to allow for privacy nor to ensure better quality recordings. We conducted eight key informant (KII) interviews to obtain further context to understand caregivers comprehensively. Key informants were interviewed in English and Indonesian. Other participants were interviewed

in Indonesian, as determined by the participant's comfort and preference. IDIs and FGDs were conducted by staff members who had qualitative research experience and had experience caring for stroke patients to encourage comfort and openness. Interviews and FGDs with multi-disciplinary health workers were conducted by staff who had received training in qualitative interview techniques. Prior to IDIs and FGD, interviewers and facilitators followed a strict informed consent process. At the beginning of the FGD and IDIs, the facilitator/interviewer delivered a short text about the roles and functions of caregivers in the care of stroke patients who use wheelchairs. The key informant interview guide reflects the topic guide for FGD and IDIs, and raises perspectives on caregivers. The FGD and IDIs lasted 45–80 minutes and were recorded with audio. Participants are issued a transportation reimbursement voucher worth (\$5 US). Two trained Indonesian-speaking personnel conduct FGD and IDIs, and then translate them into English. Every Indonesian transcription and English transcript were cross-checked by other copiers to ensure quality. The study's lead author then read through the entire English transcript to identify any remaining errors; these were sent back to the transcription team for correction. data collection assisted by students.

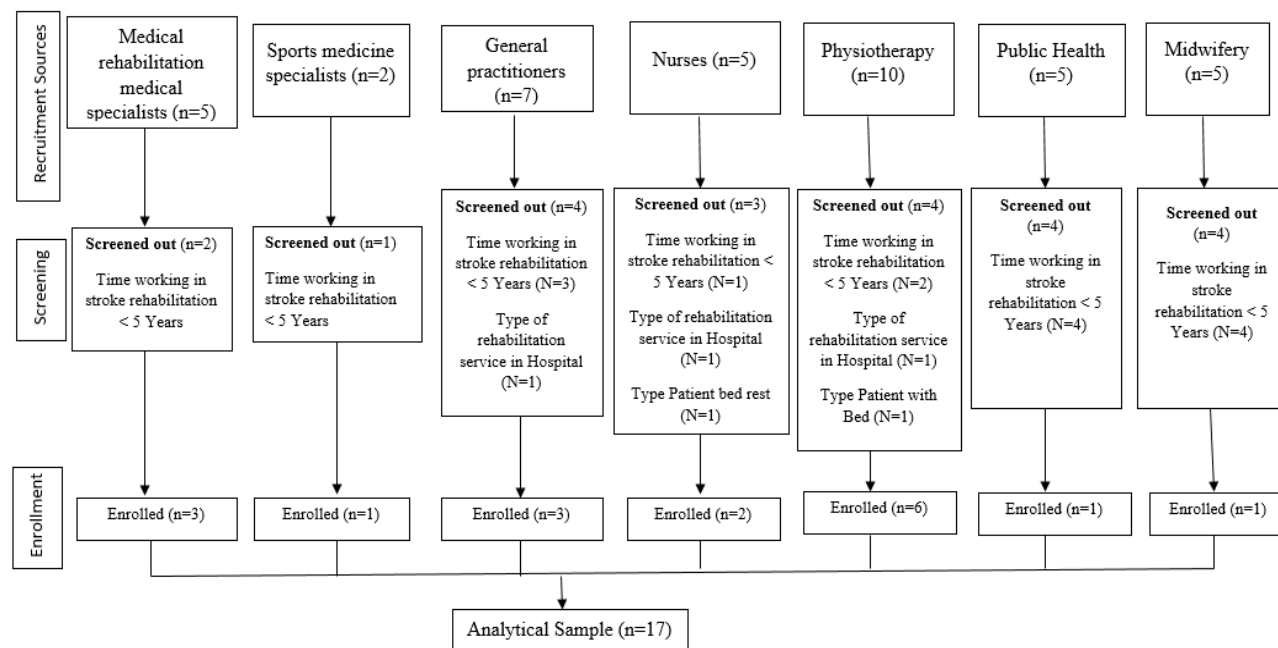


Figure 1. Flow Chart Participant recruitment

This study received approval from the Research Ethics Board of the STIKes Kepanjen of the. All participants provided written informed consent and adolescent participants (<18 years-old) received written parental/caregiver consent before participating in the study. All consent forms were approved by the STIKes Kepanjen before they were utilized.

Data analysis

We review the data following a thematic approach using an analytical framework, a matrix-based system to organize, reduce, and synthesize data. In the initial analysis, the first line code was generated from IDIs guidance and FGDs by two coders. The code is modified after reading the transcript. We compile a code book, shared among the team, which analyzes

and duplicates the code with two to three transcripts to clarify and resolve disagreements by consensus before the final code book is developed. The codebook was then imported into NVivo 10 (QSR International, Melbourne, Australia) as a node, which was used to extract text from transcripts. The extracted text snippets are compiled from all IDIs and FGDs under specific codes and subcodes. These thematically arranged pieces of data are then reviewed to explore the “details and differences” (Platz & Owolabi, 2021) of each and synthesized into meaningful themes. For population-based analyses, coding and synthesis were first performed for each group of participants (i.e. health workers) before the codes and common themes were compared and contrasted among the different groups of participants. This process is also implemented to facilitate comparisons between health workers. Additional aspects of analysis emerge during the coding and synthesis processes. After noting that the participants stated the roles and functions of caregivers.

The data is examined in accordance with a thematic approach, employing an analytical framework that utilizes a matrix-based system to effectively organize, condense, and synthesize the collected information (Lavis et al., 2023). During the preliminary analysis phase, the initial line of code was derived from the guidance provided by In-Depth Interviews (IDIs) and Focus Group Discussions (FGDs), and this process was carried out by two coders. The code has been altered subsequent to the examination of the transcript. A code book is created and distributed among the team members, facilitating the analysis and replication of the code. This process involves generating two to three transcripts to address any uncertainties or conflicts through consensus, ultimately leading to the development of the final code book. The codebook was subsequently imported into NVivo 10, a software developed by

QSR International in Melbourne, Australia. This software was utilized to create a node, which facilitated the extraction of text from the transcripts. The text snippets that have been extracted are gathered from all individual in-depth interviews (IDIs) and focus group discussions (FGDs) based on specific codes and subcodes. The data, which is organized thematically, is subsequently examined to investigate the specific “details and differences” of each piece of information. These findings are then combined to form coherent themes. In order to conduct population-based analyses, the process of coding and synthesis was initially carried out for each distinct group of participants, specifically health workers. Subsequently, the codes and common themes identified within each group were compared and contrasted across the various groups of participants. This procedure is additionally employed to enable the evaluation of health workers. During the coding and synthesis processes, various additional aspects of analysis come to light. Upon observing the participants' articulation of the roles and functions attributed to careers.

Result

Health care demographic data is presented in Table 1. They have more than 5 years of experience working in hospitals and caring for patients at home. Eight main themes emerged from the data analysis: Patient Center care, Multi-disciplinary approach, Creativity making tools Family experience, Selection of an effective wheelchair, Room matters, The meaning of therapy, Effective moves, Precise count during practice (Table 3). as well as a conceptual framework for interpretation of themes and sub-themes (Figure 2)

Table 1.
Health care demographic (N=17).

ID	Profession	Institution	Time working in stroke rehabilitation (years)	Type of rehabilitation service	Type of patient with a wheelchair.
1	Medical rehabilitation medical specialists	Hospital	> 5 Years	Hospital and Home	Yes
2	Medical rehabilitation medical specialists	Hospital	> 5 Years	Hospital and Home	Yes
3	Medical rehabilitation medical specialists	Hospital	> 5 Years	Hospital and Home	Yes
4	Sports medicine specialists	Rehabilitation	> 5 Years	Hospital and Home	Yes
5	General practitioners	Hospital	> 5 Years	Hospital and Home	Yes
6	General practitioners	Hospital	> 5 Years	Hospital and Home	Yes
7	General practitioners	Hospital	> 5 Years	Hospital and Home	Yes
8	Nurses	Hospital	> 5 Years	Hospital and Home	Yes
9	Nurses	Rehabilitation	> 5 Years	Hospital and Home	Yes
10	Physiotherapy	Hospital	> 5 Years	Hospital and Home	Yes
11	Physiotherapy	Hospital	> 5 Years	Hospital and Home	Yes
12	Physiotherapy	Hospital	> 5 Years	Hospital and Home	Yes
13	Physiotherapy	Rehabilitation	> 5 Years	Hospital and Home	Yes
14	Physiotherapy	Rehabilitation	> 5 Years	Hospital and Home	Yes
15	Physiotherapy	Rehabilitation	> 5 Years	Hospital and Home	Yes
16	Midwifery	Hospital	> 5 Years	Hospital and Home	Yes
17	Public health	Rehabilitation	> 5 Years	Hospital and Home	Yes

Table 2.
Theme and Sub-theme

Theme	Sub-theme
Patient Center care	1. Pathology
	2. Main disease
	3. Need
	4. Results to be achieved
Multidisciplinary approach	1. Recommendations for the profession of a medical rehab doctor
	2. Physiotherapy recommendations
	3. Nurse recommendation
	4. Sports medicine doctor's recommendation
Creativity making tools Family experience	1. Cultural approach
	2. Availability of resources
Selection of an effective wheelchair	1. According to anthropometry
	2. backrest tilt level,
	3. safety anterior support or activity table
Room matters	1. Longing for the room
	2. Comfort
	3. Home is the first step in the recovery process
	4. Home can be isolated and lonely
The meaning of therapy	1. Question yourself and hope
	2. Goals and results of goal setting
	3. Empowerment for participation
	4. Low Budget
Effective moves	1. Chair standing exercises
	2. Sitting on the examining table and moving from the examining table to the chair
	3. functional improvement
Precise count during practice	1. Five repetition sit-to-Stand test
	2. Timed 'Up & Go' and '30 second Chair-Stand' tests

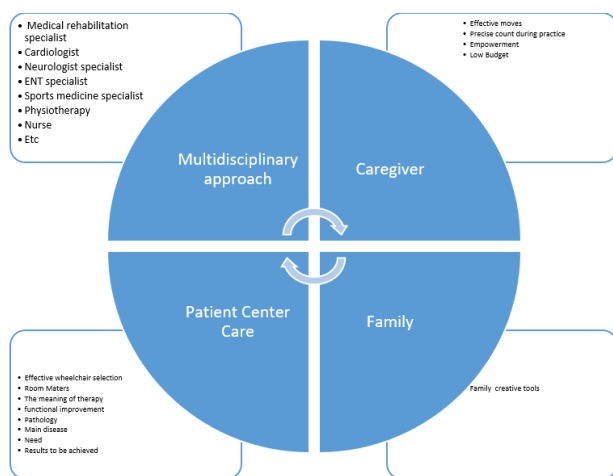


Figure 2. a conceptual framework to interpretation theme and sub-theme

Patient-Centered Care

In patient-centered care, a comprehensive understanding

of the patient's wishes is important. The expression of wanting to get well is not enough. The outputs to be achieved must be adjusted to the patient's clinical condition, the patient's wishes, and the ability of the health care organization. An in-depth discussion between the patient and the therapist is necessary to achieve service goals

“We must know the pathology of the accompanying disease, because people with strokes must be seen comprehensively”

“Stroke is a symptom, but we must know the main disease that must be controlled immediately”

“Stroke patient care must be seen based on the needs of the patient, family and doctor, the main priority needed”

“The results that each patient wants to achieve are different, each individual has different wishes, so we as health workers must be able to accommodate that”.

Multidisciplinary approach

Special care home care for stroke patients will provide complete care with the advantage of speed of service, complete facilities and trained families to minimize disability due to stroke. Treatment planning is carried out from the time the initial patient is cared for at home until the end of life is jointly prepared by a multidisciplinary team

“Recommendations for the profession of a medical rehab doctor limit the authority of other health workers at home, so caregivers can treat patients according to their authority”.

“Physiotherapy recommendations such as upper and lower movements when in a wheelchair need to be applied regularly by caregivers”

“Nurse recommendations in the form of maintaining patient safety, taking medication regularly, fulfillment of basic needs needs to be considered by caregivers”.

“The sports medicine doctor's recommendation expects the patient to recover but is able to improve the organs that have healed”

Creativity making tools Family experience

Stroke is a disease whose recovery takes time. The impact of this stroke causes disability in sufferers ranging from mild to severe disabilities. Stroke sufferers who experience severe disabilities are unable to carry out daily activities independently so that the role of the accompanying family is needed to help them. However, on the other hand, accompanying families are very creative, not only to assist but to make tools for patients. Families can make tools based on existing resources and the culture they have followed so far, this is the main attraction.

The cultural approach in Indonesia is very strong regarding caring for family members wholeheartedly, and they must strive for their families to recover quickly.

The availability of existing resources makes them creative, using used goods, modified items that are obsolete and used to mobilize the muscles of the fingers, toes, etc.

Selection of an effective wheelchair

A wheelchair has a seat material in the form of rubber and

a structure that does not fit the user's posture. A comfortable wheelchair will increase the need for a sense of security and comfort for stroke sufferers who use wheelchairs. Modification of seat materials and wheelchair structures can increase the fulfillment of the need for a sense of security and comfort in stroke patients who use wheelchairs so that users can feel safe and comfortable when using them.

According to appropriate anthropometry will make the patient comfortable in a wheelchair

the degree of inclination of the backrest should be a priority, because the patient's strength is different. so you need a backrest that can adjust the tilt.

safety anterior support or activity table to improve the patient's ability to fulfill daily activities such as eating, drinking and writing

Room matters

Although not as complete as a hospital, home itself is a more comfortable place for treatment. families who are sick and need treatment to recover their bodies, at home to help them recover quickly. This also applies to comfortable rooms that will heal faster. People who are sick need time to rest and recover. Usually they spend time in the bedroom to sleep. For this reason, the bedroom must be made as comfortable as possible to support the recovery of sick people.

Patients always miss their bedroom, doing treatment in the room will improve the health of patients with wheelchairs

Bedroom comforts such as aromatherapy, room decorations and safety equipment make patients feel comfortable in their rooms

Home is the first step in the recovery process, so those who are treated at home will recover faster than in the hospital.

Homes can be isolated and quiet without patients, because everyone needs a private room without noise or people passing by.

The Meaning of Therapy

Stroke therapy is the main step that needs to be done for sufferers. This effort is made to restore the body's condition after experiencing stroke symptoms. At best, you can recover as before after therapy. Therapy is an important treatment so that patients still have a good quality of life. Exercises performed in post-stroke therapy aim to help sufferers carry out their daily routines independently, as well as maintain brain function that can still be maintained.

Self-questioning and patient expectations are the main things that must be considered, because home care is patient care center

The goals and results of setting goals for each person are different for each patient, so an individual approach is needed to determine top priorities

Empowerment for the participation of patients, families and other support systems is urgently needed not only to help treat but moral and financial support is urgently needed.

Effective Moves

The post-stroke restoration or therapy that will be carried

out will be different for each stroke patient, therefore it must be recommended by health workers regarding the movements given according to their conditions. One of the recommended movements is functional movement therapy when using a wheelchair.

The practice of standing near a chair for a while becomes the patient's initial practice of using a wheelchair

Sitting on the examining table and moving from the examining table to the chair are exercises that depend on the patient's ability

Precise Count During Practice

The patient's movement count while carrying out therapeutic activities is very varied, but there are several references from several studies regarding effective calculations. so that this can be a guide for caregivers at home

The five repetition sit-to-stand test on which the latest research is based

Timed 'Up & Go' and '30 second Chair-Stand' tests can also be research-based references

Discussion

This study found several themes of Patient Center Care, Multidisciplinary Approach, Creative tools Family experience, Selection of effective wheelchairs, Room problems, Meaning of therapy, Effective movement, Correct calculation during practice

This study reveals that the Patient Center Treatment focuses on disease pathology, the main disease suffered by the patient, the main needs, the results that the patient and family want to achieve. Professionals employ various strategies to effectively carry out their responsibilities, both autonomously and collaboratively, within the residence of a stroke patient who relies on a wheelchair. Furthermore, there exists a certain level of skill transfer within the team, as team members are able to screen patients on behalf of other professional groups. From an academic standpoint, the convergence of professional and collective interprofessional interests serves to improve the provision of need-based care and foster collaboration within teams. The subject matter under consideration, namely caregiver empowerment, is of significant interest. Additionally, it exerts an impact on the process of delineating and adjusting collaborative practice, a crucial aspect in the establishment and sustenance of teams, as indicated by scholarly sources (Yoshimura et al., 2022). The dominant belief is that this process involves the establishment and maintenance of professional boundaries (Winstein et al., 2016), as well as the acquisition of legitimacy for specific skills (Wang et al., 2021).

The significance of our findings lies in the expanded definition of professionalism, which now encompasses a combination of diverse skills and a recognition of the collaborative efforts of various healthcare professionals as essential require-

ments for meeting the needs of patients. The literature suggests that shared interests and goals play a significant role in promoting effective collaboration between interprofessional teams and caregivers (Van Duijnhoven et al., 2016). The implementation of a novel inclusive professionalism that assumes accountability for the needs of patients has the capacity to bring about a significant and lasting transformation in the provision of healthcare (Katowa-Mukwato et al., 2021). From a scholarly standpoint, our research highlights the significance of addressing the distinct requirements of patients and the organizational context in stroke rehabilitation. This emphasis serves to strengthen the connection between healthcare providers and patients, as they engage in home-based interventions. Additionally, it sensitizes healthcare professionals to the importance of providing care that is tailored to individual needs. Furthermore, fostering collaboration among different professional groups, through the establishment of interprofessional teams, cultivates a supportive environment where professionals can appreciate and value each other's specialized knowledge and skills (Saadatnia et al., 2020).

The findings of this study indicate a multidisciplinary approach with medical rehabilitation doctor professional recommendations, physiotherapy recommendations, nurse recommendations, sports medicine doctor recommendations. The complex and multidimensional aspects of stroke care and treatment have posed challenges for conventional, fragmented, and hierarchical hospital approaches. In the present moment, there is a growing recognition that individuals who have experienced a stroke, similar to those with other enduring health conditions, are in immediate need of consistent home-based care (Platz & Owolabi, 2021). This necessitates the implementation of a comprehensive, interconnected, and multidisciplinary network approach that establishes a connection between healthcare providers and caregivers. This approach represents a significant shift in the prevailing paradigm. Policies, systems, and services, encompassing payment systems, should be designed to effectively address the provision of care across multiple settings. Previous research has indicated a correlation between team processes, encompassing the coordination and communication of a team's work, and the attitudes and perceptions exhibited by its members, with the subsequent impact on patient outcomes. Patients demonstrate enhanced functional improvement when they receive care from a more organized team that employs a higher degree of patient outcome data. The coordination and facilitation of regular meetings by the multidisciplinary team play a crucial role in discussing the patient's progress and devising an effective treatment plan. In order to ensure the provision of excellent healthcare for individuals who have experienced a stroke, it is imperative to prioritize the integration of various care providers, including specialists, general practitioners, pharmacists, nurses, psychologists, and physiotherapists. This integration should extend to the coordination of activities

among these providers and caregivers across different levels of care and multiple healthcare settings. By establishing a system that promotes the empowerment of patients, families, and caregivers, all aspects of stroke care can be effectively incorporated and optimized (Lavis et al., 2023).

The findings of this study indicate creativity in making tools based on family experience, cultural approach, and availability of resources. The advantages of home-based sports rehabilitation can be attributed to various factors, including pre-discharge education of patients and their families, familial support, prompt initiation of sports rehabilitation, the suitability of the home environment for sports activities, and diligent monitoring and supervision. The participants expressed that they were making personal sacrifices in order to prioritize the well-being of the individual receiving care. Indonesian culture places a significant emphasis on collectivism, prioritizing the welfare of groups over individual interests. Additionally, there is scholarly literature available that explores the cultural aspects of Chinese society. Furthermore, the concept of self is delineated through the lens of familial and societal connections and categorizations (Burau et al., 2017). The aforementioned paper presents instances where participants express the inclination to prioritize their positioning over personal needs or disregard their own health concerns. Family caregivers may encounter a range of health issues, including social isolation, depression, lack of knowledge regarding self-care, and even mortality. This is primarily due to their tendency to neglect their own health while assuming the demanding responsibilities of caregiving. It is important to note that caregivers themselves may develop acute or chronic illnesses as they age, necessitating ongoing medical supervision and self-care. Consequently, the findings of this study indicate that self-care holds significant importance for both families and caregivers. It is advisable to exercise patience.

The findings of this study indicate the selection of an effective wheelchair according to anthropometry, degree of backrest, safety anterior support or activity table. Multimodal training encompasses a comprehensive regimen that integrates resistance training, aerobic exercise, walking, and balance training. While rehabilitation has been shown to have a beneficial impact on mitigating muscle weakness and complications associated with immobility in patients undergoing inpatient rehabilitation (D'Souza et al., 2021), there is limited evidence supporting the effectiveness of specific exercise therapies in improving the condition of these patients. Exercise therapy, specifically chair-standing exercises characterized by low-intensity repetition and slow motion, have been found to enhance activities of daily living (ADLs) in individuals affected by stroke and undergoing dialysis (Stoykov et al., 2022). Theoretically, this exercise is anticipated to enhance sarcopenia alongside conventional rehabilitation programs. In this particular context, it is crucial to emphasize that clinical practice guidelines advocate for a standardized seat height

ranging from 43 to 45 cm. However, it is prudent to exercise caution when implementing these recommendations, particularly when accounting for variations among different populations. Ethnicity can contribute to variations in recommended seat height due to individual anthropometric characteristics. A recent study implemented trunk supports for three different levels of backrest, with a focus on examining clinical and functional trends in relation to patient status. According to other scholarly sources, it has been proposed that the use of support returns structure can help maintain an upright position of the neck, thereby improving ward head posture. This is achieved by increasing the cervical angle and providing stability through back support during extended periods of sitting (Kwakkel et al., 2002). Several authors have emphasized that the enlargement of the contact area results in an enhanced tactile sensation on every segment of the back, thereby improving postural perception. The addition of a front safety seat support enhances patient security and facilitates therapist mobility during mobilization activities. The activity table has the potential to modify frontal support when the patient demonstrates functional upper extremity movement.

The findings of this study indicate room issues such as longing for a private room, comfort, home is the first step in the recovery process, Home can be isolated and lonely. Upon returning to their residence, stroke survivors often experience a sense of familiarity in their surroundings, which can contribute to a feeling of relaxation. This relaxed state has been observed to have a positive impact on therapy outcomes during sessions for some individuals who have suffered a stroke (Y. Wang et al., 2022). Nevertheless, some individuals may find that the informal environment of their own homes undermines their motivation to engage in therapy (Duncan et al., 2007). Residing in one's own residence fosters a feeling of safety and enhances the self-assurance of individuals who have experienced a stroke (Chiu et al., 2021). The perceived advantage of home gatherings lies in their capacity to offer individuals a certain level of privacy, which in turn allows for undisturbed participation in therapy (Reddy et al., 2022). However, it is important to acknowledge that home gatherings can also be seen as potentially isolating and lonely (van der Worp et al., 2021), resulting in limited social interaction following a stroke (Beucler et al., 2022). The safety advantages of conducting rehabilitation in a home setting are acknowledged by stroke survivors, caregivers, and therapists. This environment enables therapists to evaluate and pinpoint areas that necessitate adjustments, thereby promoting the implementation of home adaptations that safeguard stroke survivors. Moreover, this approach facilitates enhanced autonomy in daily activities (Wattchow et al., 2018). However, it has been observed by therapists that the personal safety of individuals undergoing home-based rehabilitation may be compromised. This is pri-

marily due to the lack of adaptability or availability of equipment used during therapy sessions, as well as inadequate space in the home environment (Alabdulaali et al., 2022). Stroke survivors and caregivers articulate the pragmatic benefits associated with receiving in-home rehabilitation services. The advantages encompass convenience, cost-effectiveness, and time efficiency, which arise from a decrease in the number of trips and a lessened burden on caregivers, who frequently bear the responsibility of facilitating the attendance and engagement of stroke survivors in therapy (Schnitzler et al., 2022). Despite the aforementioned benefits, therapists acknowledge that the process of traveling to and from home visits necessitates additional preparation and time, which can have an effect on the duration of therapy sessions (Kim et al., 2023).

The findings of this study indicate the meaning of therapy with self-questioning and expectations, goals and outcomes from goal setting, empowerment for participation, low budget. Stroke survivors experienced a therapeutic process that was guided by familiar environments, activities, and routines in their own homes, leading to an enhanced sense of normalcy (Thilarajah et al., 2018). The process of recovering from a stroke was perceived as a dynamic progression, wherein the achievement of normalcy was regarded as the ultimate goal (Maier et al., 2019). Numerous individuals who have experienced a stroke perceive engagement in therapy conducted within their own homes as a method to attain their objectives, frequently centered on enhanced functionality and the resumption of their previous roles. This facilitates their desire to reintegrate into a life they yearn for. The pursuit of individual objectives has been found to offer significant benefits to stroke survivors. Survivors who possess hope and motivation during therapy sessions play a significant role in maintaining their commitment to therapeutic programs. According to therapists, it was observed that setting goals related to real-life issues proved to be highly motivating. The caregivers expressed a positive perception of the value of home-based exercises. They also acquired an understanding of the limitations faced by stroke survivors, while simultaneously recognizing their potential abilities. This led to a reduction in worry and an increase in hope and confidence for the future. Nevertheless, caregivers also acknowledged that certain objectives could not be fully achieved through a home-based rehabilitation program, leading to feelings of frustration (Egan-Shuttler et al., 2019). The domestic environment facilitated the implementation of hands-on exercises that were pertinent and applicable, specifically designed to meet the unique needs of individuals within the framework of their daily routines (Butchart et al., 2022). The perception was that therapists offered a blend of general therapy, encompassing the development of motor skills, as well as specialized skills pertaining to activities conducted in domestic settings, such as showering.

In these interventions, a combination of educational instruction and hands-on practice was employed (Katowa-Mukwato et al., 2021). According to the caregivers, it was noted that engaging in home-based therapy resulted in the development of self-assurance and autonomy (Epalte et al., 2023). The inclusion of functional tasks within the home setting during therapy sessions has been found to enhance stroke survivors' capacity to adapt to life post-stroke in a practical manner. In this context, engaging in home-based tasks facilitated sustained practice during therapy.

The findings of this study indicate effective movement, standing exercises in a chair, sitting on the examining table and moving from the examining table to the chair, functional improvement. There is a positive correlation between the chair-stand exercise and improvement in activities of daily living (ADL) among stroke patients who experience dysphagia. This discovery suggests that the repeated chair-stand exercise has an additional impact on improving activities of daily living (ADL) in patients who are also participating in a convalescent rehabilitation program. The rehabilitation program, which lasted up to 3 hours per day, was already being undertaken by these patients. Sarcopenia, a condition characterized by the loss of skeletal muscle mass and function, is a significant health concern, particularly among older adults. In order to address this issue, various clinical guidelines have consistently advocated for the inclusion of whole-body exercise as a recommended intervention.^{11,12,30} Hence, engaging in a chair-stand exercise that incorporates low-intensity resistance training has the potential to enhance activities of daily living (ADL). In addition, the chair-stand exercise has the potential to enhance the execution of activities of daily living (ADLs). The exercise regimen incorporates the sit-to-stand movement performed from a chair, which has been shown to improve the overall well-being of individuals who have experienced a stroke and are dealing with physical impairments.²² Additionally, the physical activity does not necessitate any specialized equipment or infrastructure, can be conducted at a relatively affordable expense, and can be carried out individually or in groups of different sizes, including within rehabilitation settings situated in hospitals. Two frequently utilized functional tests include: (i) transitioning from a supine position to a sitting position; or (ii) transitioning from a sitting position on an examination table to a chair. The current body of knowledge does not provide any information regarding the reliability of these tests. Other conducted a study that examined the transition from a supine to a sitting position as part of their investigation into the reliability of the Modified Motor Assessment Scale (MAS)(S. E. Park & Moon, 2016). They found that both inter-rater and intra-rater reliability for the total score and individual item rating were statistically acceptable.

The findings of this study indicate precise count during practice, five repetition sit-to-Stand test, timed 'Up & Go' and

'30 second Chair-Stand' tests. Additionally, identified a total of 1,469 individuals who were in good health and ranged in age from 20 to 90 years. The study showcased a correlation between the CS-30 assessment and the muscular strength of the lower extremities in elephants (van Erp et al., 2019). The frequency of standing in individuals is influenced by age-related alterations in lower extremity muscle strength. The findings were consistent with previous reports. This study aims to investigate the correlation between the CS-30 test and the strength of lower extremity muscles. In examining the extension muscle strength of the affected side of the knee joint in relation to the muscle strength of the nonparalyzed side, no significant correlation was found. However, a positive correlation was observed between muscle strength on the paralyzed side. It is imperative to acknowledge and accept the presented statement. In their study, found a correlation between the standing ability of individuals with hemiplegia and their isokinetic muscle strength. According to reports, the presence of muscle strength in hip extension on the non-paretic side is deemed significant for hip flexion. become(Egan-Shuttler et al., 2019). Moreover, in the event that the muscle strength of the paralyzed leg is significantly diminished, it can impede the progress in the individual's capacity to stand. In this study, individuals exhibiting diminished muscular strength on the paralyzed side were examined. The physical attributes of a chair have an impact on an individual's performance in biomechanical capacity tests. Similarly, it has an impact on the post-stroke performance of patients in the Five Times Sit-to-Stand Test (5STSt). Therefore, modifying the chair to align with the anthropometric characteristics of each person is a method to assess the actual performance of individuals in sit-to-stand activities. Utilizing an adapted chair appears to be the most appropriate approach for conducting the 5STSt assessment (Choi et al., 2013). Consequently, it is recommended that this method be employed in forthcoming evaluations, despite the fact that chairs with standardized height and depth are more readily available in clinical settings. An improved assessment of an individual's performance in activities, as presented in this study, could empower subjects to make future adjustments to the chair and develop potential strategies for carrying out these activities.

Strengths and limitations

Strengths:

A home-based exercise program is highly accessible for stroke patients using a wheelchair, allowing them to engage in rehabilitation without the need for frequent hospital visits.
2. **Convenience**: The program provides convenience for both patients and their families, as it can be easily integrated into daily routines without the necessity of specialized equipment or facilities.

3. **Individualized Approach**: Home-based programs

allow for a more personalized approach, tailoring exercises to the specific needs and abilities of each patient, which is crucial in stroke rehabilitation.

4. **Multidisciplinary Perspective**: Involving various health professionals ensures a comprehensive approach, considering not only physical but also psychological and emotional aspects of stroke recovery.

5. **Long-term Sustainability**: The program may encourage long-term adherence, as patients can continue exercises independently at home, promoting ongoing rehabilitation even after the formal program concludes.

Limitations

1. **Lack of Direct Supervision**: Without constant supervision, it may be challenging to ensure patients are performing exercises correctly, potentially leading to improper form or inadequate intensity.

2. **Limited Equipment Availability**: Home environments may not have the specialized equipment available in rehabilitation centers, limiting the variety and intensity of exercises that can be included in the program.

3. **Social Isolation**: Home-based programs may contribute to social isolation, as patients miss out on the camaraderie and support often found in group rehabilitation settings.

4. **Technological Barriers**: Some patients may face technological challenges if the program incorporates digital tools or telehealth, hindering their ability to fully participate.

5. **Varied Home Environments**: The diversity in home environments makes it challenging to standardize the exercise program, and there may be limitations in adapting exercises to different living conditions.

6. **Patient Motivation**: Lack of direct supervision and the comfort of home may impact patient motivation, leading to reduced adherence to the exercise program.

It's important to note that these strengths and limitations are general considerations and might vary based on the specifics of the program, patient population, and the expertise of the health professionals involved. Adjustments and careful planning can help mitigate some of the limitations and enhance the overall effectiveness of the home-based exercise program for stroke patients using wheelchairs.

Conclusion

Overall, health care professional's express opinions regarding the roles and functions that caregivers can perform in

caring for stroke patients who use wheelchairs. caregivers have If the programmed is appropriately modified and the patient's functional status allows for the use of wheelchair self-application, there is the potential to address issues related to the limited availability of rehabilitation services and the shortage of specialists. The caregiver's biggest challenge is understanding the patient's character that is tailored to each individual. Things of concern are Patient Center Care, Multidisciplinary approach, Creative tools Family experience, Selection of effective wheelchairs, Room problems, Meaning of therapy, Effective movement, Precise count during exercise. other studies should accommodate the right type of wheelchair so caregivers can tailor their care. This research will provide input regarding the development of a caregiver role theory that focuses on wheelchairs, as well as provide input to various health workers to know the limits of their authority in the future.

Acknowledgments

The authors express their gratitude to the healthcare professionals who actively engaged in the discussions and generously shared their valuable insights. Thanks all of participants for their collaboration and Institute of Research Universitas Negeri Malang, Universitas Negeri Padang and Universitas Andalas

Conflicts of Interest

None declared.

References

- Alabdulaali, L., Hickman, L., Punt, T. D., & Jenkinson, N. (2022). Effectiveness of transcranial direct current stimulation on hand dexterity in stroke patients: A protocol for a systematic review and meta-analysis. *BMJ Open*, *12*(2). <https://doi.org/10.1136/bmjopen-2021-056064>
- Bai, Z., Fong, K. N. K., Zhang, J. J., Chan, J., & Ting, K. H. (2020). Immediate and long-term effects of BCI-based rehabilitation of the upper extremity after stroke: A systematic review and meta-analysis. *Journal of NeuroEngineering and Rehabilitation*, *17*(1), 1–20. <https://doi.org/10.1186/s12984-020-00686-2>
- Bucler, N., Cungi, P. J., Baucher, G., Coze, S., Dagain, A., & Roche, P. H. (2022). The Kernohan-Woltman Notch Phenomenon: A Systematic Review of Clinical and Radiologic Presentation, Surgical Management, and Functional Prognosis. *Journal of Korean Neurosurgical Society*, *65*(5), 652–664. <https://doi.org/10.3340/jkns.2022.0002>
- Burau, V., Carstensen, K., Lou, S., & Kuhlmann, E. (2017). Professional groups driving change toward patient-centred care: Interprofessional working in stroke rehabilitation in Denmark. *BMC Health Services Research*, *17*(1), 1–8. <https://doi.org/10.1186/s12913-017-2603-7>

- Butchart, S., Candow, D. G., Forbes, S. C., Mang, C. S., Gordon, J. J., Ko, J., Deprez, D., Chilibeck, P. D., & Ditor, D. S. (2022). Effects of Creatine Supplementation and Progressive Resistance Training in Stroke Survivors. *International Journal of Exercise Science*, 15(2), 1117–1132. <http://www.ncbi.nlm.nih.gov/pubmed/35992184><http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC9362889>
- Chiu, Y. H., Chang, K. V., Wu, W. T., Hsu, P. C., & Özçakar, L. (2021). Comparative effectiveness of injection therapies for hemiplegic shoulder pain in stroke: A systematic review and network meta-analysis. *Pharmaceuticals*, 14(8). <https://doi.org/10.3390/ph14080788>
- Choi, Y., Her, J. G., Ko, J., Ko, D. H., Woo, J., O'Sullivan, D., & Kim, H. (2013). The effects of chair height and foot position on chronic stroke patients' sit-to-walk movement. *Journal of Physical Therapy Science*, 25(4), 431–435. <https://doi.org/10.1589/jpts.25.431>
- D'Souza, S., Godecke, E., Ciccone, N., Hersh, D., Janssen, H., & Armstrong, E. (2021). Hospital staff, volunteers' and patients' perceptions of barriers and facilitators to communication following stroke in an acute and a rehabilitation private hospital ward: A qualitative description study. *BMJ Open*, 11(5), 1–10. <https://doi.org/10.1136/bmjopen-2020-043897>
- Duncan, P. W., Sullivan, K. J., Behrman, A. L., Azen, S. P., Wu, S. S., Nadeau, S. E., Dobkin, B. H., Rose, D. K., & Tilson, J. K. (2007). Protocol for the locomotor experience applied post-stroke (LEAPS) trial: A randomized controlled trial. *BMC Neurology*, 7(c), 1–23. <https://doi.org/10.1186/1471-2377-7-39>
- Egan-Shuttler, J. D., Edmonds, R., Eddy, C., O'neill, V., & Ives, S. J. (2019). Beyond Peak, a Simple Approach to Assess Rowing Power and the Impact of Training: A Technical Report. *International Journal of Exercise Science*, 12(6), 233–244.
- Epalte, K., Grjadovoj, A., & Berziņa, G. (2023). Use of the Digital Assistant Vigo in the Home Environment for Stroke Recovery: Focus Group Discussion With Specialists Working in Neurorehabilitation. *JMIR Rehabilitation and Assistive Technologies*, 10, 1–14. <https://doi.org/10.2196/44285>
- Franco, J., Quintino, L. F., & Faria, C. D. C. M. (2021). Five-repetition sit-to-stand test among patients post-stroke and healthy-matched controls: the use of different chair types and number of trials. *Physiotherapy Theory and Practice*, 37(12), 1419–1428. <https://doi.org/10.1080/09593985.2019.1709234>
- Jeon, H. J., An, S., Yoo, J., Park, N. H., & Lee, K. H. (2016). The effect of monkey chair and band exercise system on shoulder range of motion and pain in post-stroke patients with hemiplegia. *Journal of Physical Therapy Science*, 28(8), 2232–2237. <https://doi.org/10.1589/jpts.28.2232>
- Johansen, K. L., Stistrup, R. D., Schjøtt, C. S., Madsen, J., & Vinther, A. (2016). Absolute and relative reliability of the timed "Up & Go" test and "30second chair-stand" test in hospitalised patients with stroke. *PLoS ONE*, 11(10). <https://doi.org/10.1371/journal.pone.0165663>
- Katowa-Mukwato, P., Banda, M. C., Kanyanta, M. M., Musenge, E. M., Phiri, P. D. C., Mwiinga-Kalusopa, V., Chapima, F., Simpamba, M., Kapenda, C., & Shula, H. (2021). Study Protocol on Stroke Management: Role of Nurses and Physiotherapists at the Adult University Teaching Hospital, Lusaka Zambia. *Journal of Biosciences and Medicines*, 09(09), 25–37. <https://doi.org/10.4236/jbm.2021.99003>
- Kim, G. J., Gahlot, A., Magsombol, C., Waskjewicz, M., Capasso, N., Van Lew, S., Goverover, Y., & Dickson, V. V. (2023). Protocol for a remote home-based upper extremity self-training program for community-dwelling individuals after stroke. *Contemporary Clinical Trials Communications*, 33(March), 101112. <https://doi.org/10.1016/j.conctc.2023.101112>
- Kwakkel, G., Kollen, B. J., & Wagenaar, R. C. (2002). Long term effects of intensity of upper and lower limb training after stroke: A randomised trial. *Journal of Neurology Neurosurgery and Psychiatry*, 72(4), 473–479. <https://doi.org/10.1136/jnnp.72.4.473>
- Lam, S. K. Y., Chau, J. P. C., Lo, S. H. S., Siow, E. K. C., Lee, V. W. Y., Shum, E. W. C., & Lau, A. Y. L. (2022). User engagement in the development of a home-based virtual multidisciplinary stroke care clinic for stroke survivors and caregivers: a qualitative descriptive study. *Disability and Rehabilitation*, 44(20), 5983–5989. <https://doi.org/10.1080/09638288.2021.1955305>
- Lavis, H., van Vliet, P., & Tavener, M. (2023). Stroke survivor, caregiver and therapist experiences of home-based stroke rehabilitation: a thematic synthesis of qualitative studies. *Physical Therapy Reviews*, 28(2), 157–173. <https://doi.org/10.1080/10833196.2023.2180710>
- Maier, M., Ballester, B. R., & Verschure, P. F. M. J. (2019). Principles of Neurorehabilitation After Stroke Based on Motor Learning and Brain Plasticity Mechanisms. *Frontiers in Systems Neuroscience*, 13(December), 1–18. <https://doi.org/10.3389/fnsys.2019.00074>
- Masuda, Y., Nisida, Y., & Kurosawa, K. (2004). Relationship of a 30-second chair-stand test to gait performance in stroke patients. *Rigakuryoho Kagaku*, 19(2), 69–73. <https://doi.org/10.1589/rika.19.69>
- Park, S. E., & Moon, S. H. (2016). Effects of trunk stability exercise using proprioceptive neuromuscular facilitation with changes in chair height on the gait of patients who had a stroke. *Journal of Physical Therapy Science*, 28(7), 2014–2018. <https://doi.org/10.1589/jpts.28.2014>
- Park, S. J., & Oh, S. (2020). Effect of diagonal pattern training on trunk function, balance, and gait in stroke patients. *Applied Sciences (Switzerland)*, 10(13). <https://doi.org/10.3390/app10134635>
- Platz, T., & Owolabi, M. (2021). Clinical pathways in stroke rehabilitation: Background, scope, and methods. In *Clinical Pathways in Stroke Rehabilitation: Evidence-based Clinical Practice Recommendations*. https://doi.org/10.1007/978-3-030-58505-1_2
- Reddy, R. S., Gular, K., Dixit, S., Kandakurti, P. K., Tedla, J. S., Gautam, A. P., & Sangadala, D. R. (2022). Impact of Constraint-Induced Movement Therapy (CIMT) on Functional Ambulation in Stroke Patients—A Systematic Review and Meta-Analysis. *International Journal of Environmental Research and Public Health*, 19(19). <https://doi.org/10.3390/ijerph191912809>
- Rodrigues, P. S. M., Shimano, M. M., de Oliveira, E., Kawamura, F. M., Silveira, A. F., José Luvizutto, G., & de Souza, L. A. P. S. (2023). Adaptation and clinical application of assistive device chair for bedside sitting in acute stroke phase: two case reports.

- Disability and Rehabilitation: Assistive Technology*, 0(0), 1–7. <https://doi.org/10.1080/17483107.2023.2166600>
- Saadatnia, M., Shahnazi, H., Khorvash, F., & Esteki-Ghashghaei, F. (2020). The Impact of Home-Based Exercise Rehabilitation on Functional Capacity in Patients With Acute Ischemic Stroke: A Randomized Controlled Trial. *Home Health Care Management and Practice*, 32(3), 141–147. <https://doi.org/10.1177/1084822319895982>
- Sawtelle, M., Roddey, T., Ellison, J., & Tseng, S. C. (2022). Gluteus Maximus Muscle Activation Characteristics During a Chair-Rise in Adults With Chronic Stroke. *Journal of Neurologic Physical Therapy*, 46(4), 270–280. <https://doi.org/10.1097/NPT.0000000000000404>
- Schnitzler, A., Dince, C., Freitag, A., Iheanacho, I., Fahrbach, K., Lavoie, L., Loze, J. Y., Forestier, A., & Gasq, D. (2022). AbobotulinumtoxinA Doses in Upper and Lower Limb Spasticity: A Systematic Literature Review. *Toxins*, 14(11), 1–48. <https://doi.org/10.3390/toxins14110734>
- Stoykov, M. E., Heidle, C., Kang, S., Lodesky, L., Maccary, L. E., & Madhavan, S. (2022). Sensory-Based Priming for Upper Extremity Hemiparesis After Stroke: A Scoping Review. *OTJR Occupation, Participation and Health*, 42(1), 65–78. <https://doi.org/10.1177/15394492211032606>
- Sunnerhagen, K. S., Brown, B., & Kasper, C. E. (2003). Sitting up and transferring to a chair: Two functional tests for patients with stroke. *Journal of Rehabilitation Medicine*, 35(4), 180–183. <https://doi.org/10.1080/16501970306130>
- Thilarajah, S., Mentiplay, B. F., Bower, K. J., Tan, D., Pua, Y. H., Williams, G., Koh, G., & Clark, R. A. (2018). Factors Associated With Post-Stroke Physical Activity: A Systematic Review and Meta-Analysis. *Archives of Physical Medicine and Rehabilitation*, 99(9), 1876–1889. <https://doi.org/10.1016/j.apmr.2017.09.117>
- van der Worp, H. B., Hofmeijer, J., Jüttler, E., Lal, A., Michel, P., Santalucia, P., Schönenberger, S., Steiner, T., & Thomalla, G. (2021). European Stroke Organisation (ESO) guidelines on the management of space-occupying brain infarction. *European Stroke Journal*, 6(2), XC–CX. <https://doi.org/10.1177/23969873211014112>
- Van Duijnhoven, H. J. R., Heeren, A., Peters, M. A. M., Veerbeek, J. M., Kwakkel, G., Geurts, A. C. H., & Weerdesteyn, V. (2016). Effects of Exercise Therapy on Balance Capacity in Chronic Stroke: Systematic Review and Meta-Analysis. *Stroke*, 47(10), 2603–2610. <https://doi.org/10.1161/STROKEAHA.116.013839>
- van Erp, J. H. J., Ostendorf, M., & Lansdaal, J. R. (2019). Shoulder surgery in beach chair position causing perioperative stroke: Four cases and a review of the literature. *Journal of Orthopaedics*, 16(6), 493–495. <https://doi.org/10.1016/j.jor.2019.05.009>
- Wang, W., Lin, B., Mei, Y., Zhang, Z., & Zhou, B. (2021). Self-care interventions in stroke survivor-caregiver dyads: A protocol for systematic review and meta-analysis. *BMJ Open*, 11(12), 1–7. <https://doi.org/10.1136/bmjopen-2021-051860>
- Wang, Y., Li, X., Sun, C., & Xu, R. (2022). Effectiveness of kinesiology taping on the functions of upper limbs in patients with stroke: a meta-analysis of randomized trial. *Neurological Sciences*, 43(7), 4145–4156. <https://doi.org/10.1007/s10072-022-06010-1>
- Wattchow, K. A., McDonnell, M. N., & Hillier, S. L. (2018). Rehabilitation Interventions for Upper Limb Function in the First Four Weeks Following Stroke: A Systematic Review and Meta-Analysis of the Evidence. In *Archives of Physical Medicine and Rehabilitation* (Vol. 99, Issue 2). The American Congress of Rehabilitation Medicine. <https://doi.org/10.1016/j.apmr.2017.06.014>
- Winstein, C. J., Stein, J., Arena, R., Bates, B., Chorney, L. R., Cramer, S. C., Deruyter, F., Eng, J. J., Fisher, B., Harvey, R. L., Lang, C. E., MacKay-Lyons, M., Ottenbacher, K. J., Pugh, S., Reeves, M. J., Richards, L. G., Stiers, W., & Zorowitz, R. D. (2016). Guidelines for Adult Stroke Rehabilitation and Recovery: A Guideline for Healthcare Professionals from the American Heart Association/American Stroke Association. In *Stroke* (Vol. 47, Issue 6). <https://doi.org/10.1161/STR.0000000000000098>
- Yoshimura, Y., Wakabayashi, H., Nagano, F., Bise, T., Shimazu, S., & Shiraishi, A. (2020). Chair-stand exercise improves post-stroke dysphagia. *Geriatrics and Gerontology International*, 20(10), 885–891. <https://doi.org/10.1111/ggi.13998>
- Yoshimura, Y., Wakabayashi, H., Nagano, F., Bise, T., Shimazu, S., Shiraishi, A., Kido, Y., & Matsumoto, A. (2022). Chair-stand Exercise Improves Sarcopenia in Rehabilitation Patients after Stroke. *Nutrients*, 14(3), 1–14. <https://doi.org/10.3390/nu14030461>

Datos de los/as autores/as y traductor/a:

Moch Yunus
Ronal Surya Aditya
Anita Sulistyorini
Arief Darmawan
Nanang Tri Wahyudi
Reem Iafi Almutairi
Tarqabin nusantara

moch.yunus.fk@um.ac.id
suryaronal@gmail.com
anita.sulistyorini.fik@um.ac.id
arief.darmawan.fik@um.ac.id
nanang.wahyudi.fk@um.ac.id
r.almutairi@uoh.edu.sa
tarqabin.pengurus@gmail.com

Autor/a
Autor/a
Autor/a
Autor/a
Autor/a
Autor/a
Traductor/a