

CHARACTERISTICS OF HOME CARE FOR POST-STROKE PATIENTS FROM THE PERSPECTIVE OF A PHYSIOTHERAPIST

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Abstract

Team neurorehabilitation care after a cerebrovascular accident (CVA/stroke) in acute and inpatient facilities is at a very high level. However, models suitable for subsequent rehabilitation in home environments are less known. A review of the literature published between 2013–2023 was conducted using the PRISMA methodology. The search for relevant articles used three electronic databases, i.e., Web of Science, Scopus, and PubMed. Twenty-three articles were initially selected for review. This study summarizes the physiotherapeutic methods and approaches available to stroke patients undergoing rehabilitation in the home environment. The study also characterizes home rehabilitation programs in terms of content, duration, frequency of visits, availability, and use of self-therapy materials, interactions with the therapist, exercise record keeping, tools used to assess the functional status of stroke patients, and whether or what kind of an interprofessional team was involved in home rehabilitation. The goal of successful community rehabilitation is to have an interprofessional neurorehabilitation program specific to each stroke patient, and a program focused on the patient's current needs and goals relative to their rehabilitation environment.

Keywords: Home; Homecare; Interprofessional team; Physiotherapy; Rehabilitation programs; Stroke

INTRODUCTION

Cerebrovascular accidents (CVA) or strokes are sudden impairments in brain function due to vascular failure, often leading to impaired speech, mobility, memory, and other functions, depending on the severity of the associated tissue damage. CVAs limit the patient's functional abilities and impact their activities of daily living, which places a burden on both stroke patients and their informal

caregivers, as well as society in general. The Institute of Health Information and Statistics of the Czech Republic (2021) states that in 2019, 51,250 (16.5%) people with cerebrovascular disease were hospitalized nationwide, 8.7% of cases ended in death, and at the same time, cerebrovascular diseases were characterized by a significantly above-average treatment period of 13.2 days. In the European Union (EU), strokes are the second leading cause of death and the leading cause of disability

in adults (Wilkins et al., 2017). In 2017, there were 1.12 million incident strokes, 9.53 million individuals living post-stroke, and 0.46 million stroke-related deaths in the EU (Wafa et al., 2020). It is estimated that the number of stroke survivors in the EU will increase by 27% between 2017 and 2047, mainly due to the aging of the population and high quality acute healthcare (Wafa et al., 2020).

Acute care for stroke patients is at a very high level in most developed countries. Early care is provided by neurorehabilitation teams in highly specialized medical centers. Often, there is an effort to free up specialized rehabilitation beds as quickly as possible, which explains the current trend of early discharge of patients to community care and home environments (Perkins et al., 2016). In this study, the terms community care and home environment are used somewhat interchangeably, although community care can include such things as outpatient services, group sessions, etc. In general, “community care or community-based care” are patient services provided post-stroke in a home setting after discharge from acute care, and the “home environment” is where these services are provided.

The weakest link in the stroke support system is the limited availability of specialized follow-up rehabilitation and a lack of quality continuity care. For example, in the German healthcare system, standardized care programs are lacking, and outpatient follow-up care for stroke survivors is frequently insufficient, with patients often having to self-organize their care (Deutschbein et al., 2020). Measures of patient perceptions of their health status during the five years after a stroke identified inadequate rehabilitation care as a significant factor influencing patient health status after stroke (Bjälkefur et al., 2020).

In many countries the WHO has introduced community-based rehabilitation services (CBR) as a strategy to improve access to rehabilitation services for persons with disabilities in developing countries. However, the geographical coverage remains limited, the services do not match the expectations of people with a stroke, and they are characterized by discontinuity of programs and lack of information (Guo et al., 2021). In China, CBR multidisciplinary teams consisting mainly of nursing, medical and rehabil-

itation professions are described (An et al., 2024). Long-term rehabilitation provided by physiotherapists who visit patients at home is still uncommon, even though 85% of patients prefer rehabilitation at home (Gregory et al., 2010).

Community Stroke Rehabilitation Teams (CSRTs) can include physical therapists, occupational therapists, speech pathologists, social workers, registered nurses, therapeutic recreational specialists, and rehabilitation therapists working together to help patients (Allen et al., 2014). CSRTs operating primarily in the United Kingdom, Canada, Australia, and the Scandinavian countries provide individualized, at-home interprofessional stroke-specific rehabilitation (Allen et al., 2014).

In the United States, posthospital community-based stroke interventions involving nurses or community health workers (CHWs) who are peer navigators, lay health workers, or patient navigators mediating the delivery of health services in the community have been described (Magwood et al., 2020).

In the Czech Republic, it is possible to get help from the Home Care Agency and Caritas. These agencies mainly provide nursing care; physiotherapeutic procedures are uncommon. Nonetheless, short-term training of nursing staff or informal caregivers by a physiotherapist or occupational therapist is standard. In addition to the general principles of patient care, special procedures for stroke patients should be included. Physiotherapeutic methods are the basis of the neurorehabilitation program. This study aimed to describe the physiotherapeutic approaches and methods used after a CVA in the home environment, characterize home rehabilitation programs, describe the tools used to evaluate the functional status of stroke patients in home care, and determine whether and what interprofessional team is involved in-home rehabilitation.

MATERIALS AND METHODS

Study design

For the selection of suitable studies and subsequent data collection, we used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology (Page

et al., 2021). The research was conducted in November 2023. The search used bibliographic and multidisciplinary electronic databases, i.e., Web of Science, Scopus, and PubMed. Studies published between 2013 and 2023 were initially analyzed. Only studies that met the selection criteria and were available in full were included.

Search strategy and selection criteria

Criteria for inclusion included English and Czech language, professional periodicals published between 2013–2023, and adult populations. Research fields included the social sciences, health care, rehabilitation, and clinical neurology. The information retrieval strategy combined the following terms: “physiotherapy”, “home care”, “home”, and “stroke”. The Boolean operators were AND/OR. All sources were then screened for relevant content based on title and abstract. Duplicate sources, unrelated titles, and protocols, sources from proceedings, editorials, and commentaries were eliminated. The research was fo-

cused on physiotherapy in stroke patients at home; therefore, studies with patients with a clinical diagnosis of stroke, regardless of elapsed time since the stroke, the severity and location of stroke damage, or previous disease status, were included. Studies with patients with other neurological diseases were also included if more than 50% of the research participants were post-stroke. We also included studies in which at least one intervention group received physiotherapy in a home environment, studies in which home physiotherapy was a supplement to standard outpatient physiotherapy, and research in which the therapist visited the patient at least once in his or her home to recommend therapy. Based on keyword searches and searches for relevant studies in reference lists, 756 sources were found, which were further classified according to the PRISMA scheme (Diagram 1). A total of 23 scientific articles were selected for synthesis and extraction and are summarized in Suppl. Table 1.

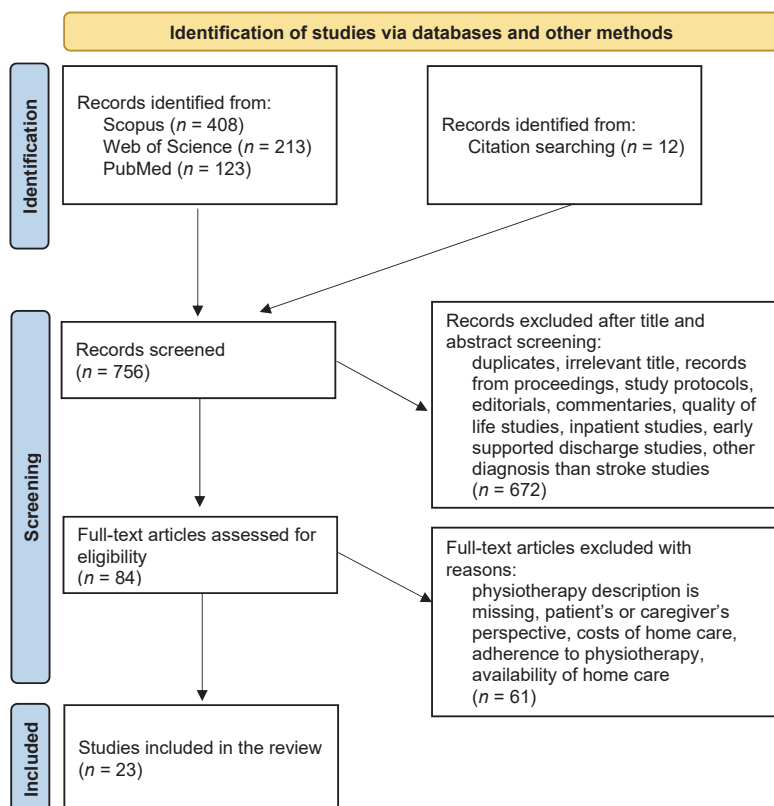


Diagram 1 – PRISMA 2020 flow diagram for the systematic review of sources (Page et al., 2021)

RESULTS

Study characteristics

Most of the research studies were conducted in Europe ($n = 13$) and Asia ($n = 5$). There were two studies from America, two from Australia, and one from Africa. Study designs included quantitative, qualitative, and mixed methods. Eleven of the 23 analyzed articles were randomized controlled trials. Other designs included a prospective cohort study, a thematic analysis, a case study, a retrospective cohort study, a pilot study, and a Delphi consensus. The mean age of the patients was 76.6 years, and they were from one week to five years post-stroke.

Characteristics of home care in stroke patients (items are sorted by occurrence in studies):

Client-centered rehabilitation

The reviewed studies report the essential concept of client-centered rehabilitation, which is described in the studies as follows: (1) individual and comprehensive rehabilitation programs, (2) designed and tailored according to the patient's and caregivers individual needs, abilities, goals, and context, (3) adapted to their home environment and the availability of family and social support, (4) involved active physiotherapy – emphasizing functional recovery as a learning process with a focus on the patient having an active role in the planning and execution of their rehabilitation.

Applied methods

- *Positioning and preparation:* (1) exercises focused on preparations for upcoming exercises, gradual adaptation of the cardiovascular system, thoracic and diaphragmatic breathing, (2) patient positioning, passive mobilization, assisted limb movements, and relaxation, (3) exercises for inhalation and exhalation muscles, and (4) warm-up stretching exercises.
- *Verticalization and mobility:* (1) sitting, getting up from a seated position, verticalization, (2) stability training, mobility exercises and selective mobility training, reaching objects while standing, balance exercises, (3) combining changes in the position relative to the center of gravity

with memory exercises, (4) gait training, moving in different directions, (5) walking, walking and turning exercises, walking sideways, walking with sidesteps in different directions, (6) climbing and descending steps and curbs, stair climbing, (7) walking outdoors, walking on uneven terrain, and (8) cycling.

- *Limb therapy:* (1) exercise, range of motion and strengthening of the upper and lower limbs, (2) shoulder joint care (3) care for the paralyzed hands or feet – the use of hand splints, hand movement exercises including grip strength, and splinting of ankle joints, (4) teaching repetitive tasks, i.e., grasping and writing (5) upper limbs rehabilitation using games, and (6) Graded Repetitive Arm Supplementary Program – exercise for upper limbs using self-therapy at home.
- *Task-oriented and task-specific therapies:* (1) help patients with specified specific tasks and overcome other barriers they face, (2) therapy focused on performing specific activities and typical daily tasks, (3) functional activity therapy, (4) combining multiple tasks and function-specific therapy, and (5) teach coping mechanisms and exercises at home and in the community.
- *Activities of Daily Living (ADL):* (1) exercises for independence and self-care, (2) exercises to assist with common daily tasks, (3) exercises for specifically selected ADL and extended ADL.
- *Device therapy:* (1) Home balance system – a stabilometric platform with visual feedback, (2) Oxygen Dual Valve device – exercise to increase the strength of respiratory muscles and increase activity, (3) Home-based Virtual Rehabilitation System for at-home upper limb rehabilitation, and (4) Elements by Dynamic Neural Arts – a portable virtual rehabilitation system based on the principle of adapted movement tasks using manipulation of objects on the surface of the display.
- *Cognitive training:* (1) individual therapy to improve physical and cognitive functions, and (2) combining changes in the position relative to the center of gravity with memory exercises.

Physiotherapeutic approaches

(1) Standard health education and physiotherapy, (2) early release therapy, (3) kinesiotherapy, functional training, training with aids, (4) activation physiotherapy, (5) evidence-based rehabilitation – structured rehabilitation training, (6) Vojta method, proprioceptive neuromuscular facilitation, Bobath concept, (7) constraint induced movement therapy, (8) progressive strengthening, (9) physical therapy, and (10) play elements.

Characteristics of rehabilitation programs

- The shortest rehabilitation program was three weeks, the longest was 12 months, and the most common program length was 4–8 weeks.
- The frequency of therapy was at least once a week, most often every day.
- The duration of a single therapy session was at least 15 minutes, a maximum of 4 hours, and the most common session length was 30–45 minutes.

Additional types of interaction with therapists

(1) Online therapy with a physiotherapist, (2) regular telephone check-ups, (3) online consultation (telephone, video conference, email), (4) remote monitoring of progress and adjust the rehabilitation program, and (5) provide remote technical support and interaction.

Materials for self-therapy

(1) Use of a written manual, (2) use of verbal instructions supplemented with pictures and written commentary, (3) exercise videos obtained using a QR code in a home workout brochure, (4) mHealth application, and CARE4STROKE program.

Workout recordings

(1) Use of a diary for documenting home exercises, (2) use of record sheets.

Evaluation of functional status

- *Neurological severity, disability, and functional abilities:*
Fugl-Meyer Assessment, Ashworth scale, kinesiology analysis, National Institutes of Health Stroke Scale, Functional Independence Measure, Neurobehavioral Function-

ing Inventory, Motor Activity Log, Box and Block Test, Nine-Hole Peg Test, Stroke Self-efficacy Questionnaire, The Stroke Impact Scale.

- *ADL:*
Barthel index, Rankin Scale, instrumental ADL, Assessment of Motor and Process Skills, Nottingham Extended ADL Scale, Frenchay Activities Index.
- *Balance skills and walking:*
Berg Balance Scale, Timed Up and Go Test, 10 Meter Walk Test, Synapsis Posturography System, Balance Evaluation Systems Test, Tinetti Test, Modified Rivermead Mobility Index, frequency of falls.

Interprofessional teams included (number of studies in parentheses)

- Physiotherapist (20), occupational therapist (10), rehabilitation doctor (7), nurse (6), family or informal caregiver (5), speech therapist (5), psychologist (4), neurologist (3), general practitioner (2), social worker (2), zootherapist (1).

DISCUSSION

The effectiveness of interprofessional cooperation in the neurorehabilitation of stroke patients in acute and inpatient facilities is well established. However, very few studies have examined the role of interprofessional teams in community/home-based rehabilitation (Fens et al., 2013). This review characterizes home care for stroke patients from the perspective of the physiotherapist based on 23 studies from different countries. The aim of the review was to (1) determine and describe what physiotherapeutic approaches and methods are used in home-based rehabilitation programs for stroke patients, (2) characterize home rehabilitation programs, (3) determine the tools used to evaluate the functional status of stroke patients in-home care, and (4) determine whether and what interprofessional teams were involved in home rehabilitation.

Client-centered rehabilitation

The first step to support those who have suffered a stroke should be to focus on client-centered rehabilitation and practice activities that are meaningful to the client in the con-

text of a familiar environment. A client-centered approach focuses on the individual and includes assessing several aspects of function to better understand the changes that patients go through. Therapists must listen carefully to patients to understand their needs and how they perceive their difficulties. “Therapy should be based more on what patients have had time to discover on their own (rather) than on therapists calling things to their attention and forcing them to see their problems” (von Koch et al., 2000). Individualized interventions should be based on the patient’s wishes and perception of their problems and on understanding the patient in this context, i.e., the patient is not an object to be analyzed but rather a partner in a collaborative project (von Koch et al., 2000). We know that patients have more opportunities and are better at expressing their own goals in their natural home environment (Wottrich et al., 2007).

Applied physiotherapeutic approaches

Our analysis of 23 studies revealed seven areas where a physiotherapist interacts with patients in a homecare setting. Core therapy, especially in the first days after moving to the home environment, is patient *positioning and preparatory exercises*, especially passive mobilization and thoracic and diaphragmatic breathing exercises, which allow for gradual adaptation of the cardiovascular system (Betlachová et al., 2013; Vasileva et al., 2015). This is followed by *verticalization and mobility*, which includes sitting, reaching for objects, stability exercises, and walking under various conditions. An integral part of therapy is *limb therapy*, focusing on shoulder joints, paretic arms, and legs, including splinting and grasping, writing, and exercises involving games. The patient’s reduced mobility usually dominates early stroke care. During this time, task-oriented and *task-specific therapy can be introduced*, which can improve the patient’s ability to stand up from a seated position and improve the patient’s functional gait (Pollock et al., 2014a).

The reviewed studies also showed that functional activities, i.e., purposeful and meaningful activities, were central to successful home rehabilitation after a stroke. In addition, meaningful daily activities can promote a sense of continuity and increase the connection between the patient and their life before

the stroke. This helps connect past life experiences with their present life. Motor learning is best supported by challenging, motivating tasks, and a changeable environment, including coping with practical situations at home and in the community (Krakauer, 2006).

An essential part of home rehabilitation involves exercises directed at *activities of daily living (ADL)*; these exercises are related to self-sufficiency in eating and drinking, hygiene, dressing, and moving. Thanks to the development of information and communication technologies, *device therapy has become part* of stroke rehabilitation in the home environment. It offers the opportunity to rehabilitate multiple cognitive domains while at the same time including tasks closely related to daily life activities (Geraldo et al., 2018). Some systems can increase stability (Janatová et al., 2015, 2018), increase respiratory muscle strength and activation (Menezes et al., 2017), or provide virtual rehabilitation of the upper limbs (Qiu et al., 2020; Wilson et al., 2021). Robotic-assisted training is also suitable for upper extremity therapy in stroke patients (Mehrholtz et al., 2018). Depending on the severity of the stroke, patients may develop cognitive deficits. *Cognitive training* is used in combination with the above-mentioned physiotherapeutic interventions, e.g., combining changes in the position of the center of gravity with memory exercises (Janatová et al., 2015) or the use of individualized therapy to improve physical and cognitive functions (Taule et al., 2015).

Applied concepts

In the reviewed studies, physiotherapists most often use “standard physiotherapy” for the at-home rehabilitation of stroke patients; however, the studies failed to elucidate what “standard physiotherapy” entailed (Chang et al., 2021; Chen et al., 2021). Most physiotherapy is based on neurophysiological approaches such as the Bobath concept, Proprioceptive neuromuscular facilitation, and the Vojta method (Betlachová et al., 2013). Progressive strengthening, Constraint Induced Movement Therapy, Activation Physiotherapy, and games were also used (Horsáková et al., 2017; Janatová et al., 2015; Kei et al., 2020; Reunanen et al., 2016). Play elements are an essential motivational component of physiotherapy, especially in the long term, when re-

habilitation progress often slows down (Reed et al., 2014).

Characteristics of the rehabilitation program

The characteristics of rehabilitation programs are dependent on the severity of the disability and perceived problems; however, patients should be aware that the self-directed rehabilitation that occurs between therapist visits is just as crucial for improving functional status as the time spent with the therapist during home visits. The duration of the observed rehabilitation programs was at least three weeks, but never longer than 12 months, and was most often between 4–8 weeks. The frequency of therapy was at least once every two months or, in some cases, every day; most often, it was three times a week. The duration of single therapy sessions was at least 15 minutes, at most four hours, and most often 30 minutes. The ideal intensity of community rehabilitation was not established. However, a randomized controlled trial conducted by Ryan et al. (2006) found that patients who received more intensive rehabilitation experienced statistically significant improvements in social participation and quality of life scores (Ryan et al., 2006).

Foreign guidelines (Australia, Canada, the UK, and the Netherlands) agree that stroke patients at home should receive from 45 minutes to 3 hours of appropriate rehabilitation therapy 2 to 5 times per week, depending on individual patient goals and needs (National Clinical Guideline for Stroke for the UK 2023; Stroke Foundation 2023; Teasell et al., 2020; Verbeek et al., 2014). Higher exercise intensity was generally associated with better functional outcomes (Pollock et al., 2014b).

Further interaction with the therapist

To increase the effectiveness of home rehabilitation, patients often have contact with a physiotherapist as a consultant for proposed rehabilitation programs. Telephone check-ups, telephone or e-mail consultations, video conferencing, and remote technical support were among the most commonly used consultation methods (Chen et al., 2021; Mahmood et al., 2021; Qiu et al., 2020; Wilson et al., 2021). Compliance with this type of intervention was shown to be excellent (Chaiyawat and Kulkantrakorn, 2012b). Technological

innovations such as telerehabilitation can help address barriers to standard rehabilitation, such as time and resource limitations, geographical isolation, and management of the implementation of proposed self-therapy (Appleby et al., 2019). It also allows remote monitoring, tracking of patient progress, and adjusting the rehabilitation program as needed (Qiu et al., 2020). This type of intervention reduces healthcare costs and increases the efficiency and effectiveness of rehabilitation services (Musiat and Tarrier, 2014).

Materials for self-therapy

The home rehabilitation programs reviewed included self-therapy materials in the form of brochures, instructions with pictures, exercise videos, audio recordings, or mobile applications (Chung et al., 2020; Mahmood et al., 2021; Vloothuis et al., 2018). Audiovisual materials contribute to recovery, are useful as a source of intense, progressive motivation, and support good cooperation and understanding between therapist and patient (Chaiyawat and Kulkantrakorn, 2012a).

Workout recordings

Patients themselves contribute to maintaining cooperation and motivation by keeping records of performed exercises and problems with self-therapy in exercise diaries or record sheets (Kei et al., 2020; Mahmood et al., 2021; Wilson et al., 2021).

Evaluation of functional status

It is necessary to demonstrate the effectiveness of therapy using clinical and laboratory assessments, which in some cases also becomes an argument for continuing therapy in specific patients (Opavský, 2016). Quality neurorehabilitation care is therefore looking for methods, questionnaires, and scales that can effectively assess areas of diagnosis, as well as monitor the patient's condition and rehabilitation needs (Opavský, 2016). There is a broad spectrum of evaluation tools; however, a stroke is a complex multifactorial disease, and no measurements assess all components of its clinical picture. Regarding client functional status, the studies in our review evaluated several aspects, such as neurological severity, disability and functional ability, ADL level, and assessment of balance and gait abilities. Clinicians should be trained in using

various measurement instruments for post-stroke patients; these instruments facilitate a better understanding of patient abilities and limitations. It is vital to use the best instruments for the client and ensure that the instrument is consistently used by the neurorehabilitation team.

Interprofessional team

Evidence suggests that home rehabilitation is more effective when provided by an interprofessional team, and it allows therapists to use a behavioral approach in which patients take responsibility for and influence their rehabilitation (Wottrich et al., 2007). All components of the interprofessional team aim to maximize independence and patient self-care, increase integration into society, and, when possible, return to the work environment. In almost all reviewed studies, home therapy is performed by a physiotherapist; in two studies, it was carried out by a trained nurse or a trained caregiver (Chen et al., 2021; Kei et al., 2020). An interprofessional team, together with a physiotherapist, usually consists of an occupational therapist, a rehabilitation doctor, a nurse, and a family or informal caregiver. Equally important are speech therapists, psychologists, and neurologists, and in two studies, there was a general practitioner and a social worker on the team. A limited number of studies investigating interprofessional rehabilitation interventions in the home environment were identified in the literature (Fens et al., 2013). Community-based programs were often limited to self-contained rehabilitation inputs such as physiotherapy, occupational therapy, informal caregiver instruction, or a combination of two or three specialties (Fens et al., 2013). However, interprofessional care has been shown to help guarantee the best outcomes in terms of overall health and quality of life, the provision of better services, improved cost-effectiveness of interventions, greater collaboration between neurorehabilitation experts and the patient and their family, and interprofessional care increases patient satisfaction rates (López-Liria et al., 2019).

Based on a partial analysis of 11 randomized controlled trials (RCTs) from a total of 23 studies, it was found that the interprofessional rehabilitation team most often consisted of a rehabilitation doctor, a physio-

therapist, and an occupational therapist, and operated in Norway, the Netherlands, South Korea, Australia, and Brazil. All RCTs used client-centered rehabilitation, the physiotherapy approaches described above were applied, among the applied concepts the most common were standard health education and physiotherapy, Early Release Therapy, Progressive Strengthening, Evidence-based Rehabilitation, and the Barthel index and Rankin scale were most often used to evaluate functional status. The most common program length was 4–8 weeks, the frequency of therapy was most often every day, and the most common session length was 30–45 minutes.

CONCLUSION

Home rehabilitation programs differ in implementation, content, length, and frequency of visits. Interventions involving rehabilitation in the home environment are still novel, and detailed studies are still rare. We know that a single one-size-fits-all approach is not always effective.

This review study characterizes home care for stroke patients from the perspective of a physiotherapist. The clinical experience of physiotherapists is critical for stroke rehabilitation at home and requires an approach that is guided by the patient's individual needs as well as their unique home environment. Home environments, together with client-centered rehabilitation, facilitate the use of purposeful and meaningful activities and allow patients to take responsibility and influence their rehabilitation process. This study summarizes physiotherapeutic methods and approaches available to care for stroke patients in the home environment. The study also characterizes home rehabilitation programs in terms of content, duration, frequency of visits, self-therapy materials, interactions with the therapist, exercise record keeping, tools used to assess the functional status of stroke patients, and whether and what interprofessional team was involved in home rehabilitation.

Ethical aspects and conflict of interest

The authors have no conflict of interest to declare.

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Supplementary material

Suppl. Table 1. Description of the 23 included studies characterizing home care of stroke patients from the physiotherapist perspective

First author (Year), Country	Objectives of the research	Characteristics of the cohort	Inter-professional team	Tools to assess functional status	Physiotherapeutic approaches and techniques	Characteristics of implemented rehabilitation programs
Betlachová et al. (2013), Czech Republic	Description of complex care for a patient with movement disorders in the home environment	Patients after stroke	Physiotherapist, occupational therapist, speech therapist, psychologist, social worker, family		Positioning (paretic side, healthy side, supine, prone), passive mobilization, sitting, assisted limb movement training, verticalization, gait training, care of the shoulder joint, use of hand splints, training of all hand movements including gripping, ankle joint splinting, training of independence and self-care, Vojta method, Bobath concept, PNF, occupational therapy, animotherapy.	
Chang et al. (2021), South Korea	Providing evidence for the applicability of early discharge for patients after acute stroke in Korea	90 patients after acute stroke with mild to moderate disability, divided into intervention and control groups	Rehabilitation doctor, physiotherapist, occupational therapist, social worker	Barthel index, Rankin Scale, Instrumental Activities of Daily Living, frequency of falls and re-admissions, Stroke Impact Scale	Individual rehabilitation programme – physiotherapy, occupational therapy, speech therapy, mediation of cooperation with community services.	4 weeks, once a week 30 minutes with physiotherapist and occupational therapist
Chen et al. (2021), China	Evaluation of an advanced home rehabilitation program for patients with lower limb spasticity after stroke	121 patients after stroke with lower limb spasticity who were divided into intervention and control groups	Trained nurse, informal caregiver	Fugl-Meyer Assessment, Modified Ashworth scale, 10 Metre Walk Test, Barthel index	Standard health education – information on physical activity, medication, diet, follow-up time, telephone follow-up, medical examination to assess recovery. Individual comprehensive rehabilitation program – patient orientation to the home environment, psychological preparation, and an actual exercise component. Lower extremity therapy, object lifting training, stability training, gait and stair walking.	30 minutes three times a week for the first 3 months, then once a week for the next 3 months, then once a month, up to once every two months. For a total of 12 months. Consultation with the nurse by phone or email at any time.

First author (Year), Country	Objectives of the research	Characteristics of the cohort	Inter-professional team	Tools to assess functional status	Physiotherapeutic approaches and techniques	Characteristics of implemented rehabilitation programs
Chung et al. (2020), China	Comparison of the effectiveness of standard paper-based and mobile video-guided home exercise programs	56 patients after stroke, divided into intervention and control groups	Physiotherapists	Stroke Self-efficacy Questionnaire, Barthel Index	A set of exercise videos obtained by QR code in the home exercise booklet. The control group received a traditional home exercise booklet in the form of photographs and written instructions. The content was the same and included nine upper extremity exercises, six lower extremity exercises, six trunk exercises, and four mobility exercises.	Instruction 10–15 minutes, home exercises about 3–5 exercises per day, about 10–30 minutes per day, 1–3 times per day
Daviet et al. (2023), France	Investigating improvements in the social participation of patients who have completed a rehabilitation programme delivered by Community Stroke Rehabilitation Teams (CSRTs)	206 patients after stroke at home with deficits in ADL management, mean age 66.3 years, mean 16.4 months after stroke	General practitioner, rehabilitation doctor, neuro-psychologist, occupational therapist, movement therapist, physiotherapist, nurse, speech therapist	Frenchay Activity Index, Barthel Index	A rehabilitation programme provided by CSRTs individually tailored to the needs of patients and carers. Home-based therapies based on an individual approach with a focus on a specific task. Patients specified specific tasks they wished to complete with a professional, along with other barriers they faced. Home rehabilitation with the aim of achieving social participation in their current living environment. The interventions varied considerably from one situation to another and were primarily concerned with participation, social mobility, community living, social support, and relationships, including care education and a supervised physical activity programme.	Mean program duration was 145 ± 75 days, each patient averaged 1.3 therapies per week, interprofessional meeting once a week to identify needs
Hofstad et al. (2014), Norway	Comparison of rehabilitation in hospital and home environment	350 patients approximately 7 days after stroke, divided into two intervention groups and a control group of 117 patients each	Nurse, physiotherapist, occupational therapist	Rankin Scale, National Institutes of Health Stroke Scale, Barthel Index	Community health team visits, therapy according to the early discharge concept.	5 weeks, for a maximum of 4 hours a day, 5 days a week

First author (Year), Country	Objectives of the research	Characteristics of the cohort	Inter-professional team	Tools to assess functional status	Physiotherapeutic approaches and techniques	Characteristics of implemented rehabilitation programs
Horsáková et al. (2017), Czech Republic	The use of Constraint Induced Movement Therapy (CIMT) in patients after stroke		Rehabilitation professions, occupational therapist, informal caregiver	Motor Activity Log	CIMT therapy focusing on specific activities and common daily tasks – individually selected 10 activities of daily living or home exercises in the form of 2 tasks selected by the patient from the therapist's menu, training in repetitive tasks, grasping, writing. Diary.	Repetitive tasks for several hours a day (1 task for 20 minutes), therapy for everyday activities consists of 10 activities for about 30 minutes a day
Janatová et al. (2018), Czech Republic	The importance of telerehabilitation and description of its application in practice	Patient (42 years old) with balance disorder, 2 years after hemorrhagic stroke with residual right-sided hemiparesis.	Physiotherapist	Synopsis Posturography System, Berg Balance Scale, Mini-BESTest, Functional Independence Measure, kinesiology analysis	The Homebalance system – a stabilometric platform using visual feedback. Weight transfer in all directions, transfer of weight from toes to heels and vice versa, alternating center of gravity in anteroposterior and laterolateral directions, tandem standing, narrow base standing, training with the platform in a mirror-reversed center of gravity position, combination of center of gravity position changes with memory training, training of extreme positions on heels and toes. Recording sheet, possibility of online therapy with a physiotherapist.	4 weeks, three times a week for 45 minutes under control, and the remaining days also 45 minutes without control
Janatová et al. (2015), Czech Republic	Evaluation of the effect of a therapeutic system using a stability platform and audiovisual feedback, tested in the home environment of patients after brain injury	Patient (63 years) with balance disorder, 8 months after ischemic stroke	Physiotherapist	Synopsis Posturography System, Berg Balance Scale, Timed Up and Go Test, kinesiology analysis	The Homebalance system – shifting the body's centre of gravity, modification of standing, sitting exercises on the platform or sitting with the platform under the feet, game elements. Recording sheet, possibility of online consultation with physiotherapist.	4 weeks, 20 minutes a day. The first two weeks the patient exercised for about 6 minutes a day and the second two weeks for about 15 minutes a day

First author (Year), Country	Objectives of the research	Characteristics of the cohort	Inter-professional team	Tools to assess functional status	Physiotherapeutic approaches and techniques	Characteristics of implemented rehabilitation programs
Kara and Nisiea (2015), South Africa	To assess the effect of written and pictorial home exercise prescription on adherence to a home exercise program in stroke patients	42 patients with stroke, less than 4 months from the episode, mean age 60.8 years, divided into control and intervention groups of 21 each	Physiotherapist	Modified Rivermead Mobility Index, Barthel Index	Functional activity therapy, exercises, home exercise program adapted to each patient's functional abilities and home environment, verbal instructions supplemented by pictures with written comments, exercise. Diary.	4 weeks
Kei et al. (2020), Malaysia	Assessment of the effectiveness of home therapy compared with usual practice in patients after stroke	42 patients after stroke, aged 18 to 80 years, divided into two groups	Trained caregiver, principal investigator	Timed Up and Go Test, 10 Metre Walk Test, Stroke Self-efficacy Questionnaire	Exercise program containing 9 categories of exercises – warm-up stretching exercises, practice getting up from sitting, stepping in different directions, ascending and descending stairs/block, reaching objects while standing, practice walking and turning, walking sideways, walking with stepping in different directions, strengthening of upper limbs. All exercises modified according to the patient's abilities to improve muscle strength, balance and walking skills. Progressive strengthening, balance exercises, practice of various tasks, gait training. Diary.	12 weeks, 36 sessions, 45 to 60 minutes 3 times a week, exercise adherence was monitored biweekly
Lindley et al. (2017), India and Australia	To determine whether family rehabilitation after stroke initiated in hospital and continued at home is better than usual care in a low-resource setting.	1,250 patients less than 1 month after stroke, divided into control and intervention group	Rehabilitation professional – coordinator, physiotherapist, neurologist	Modified Rankin scale, Barthel Index, Nottingham Extended ADL Scale	Simplified version of evidence-based rehabilitation (structured rehabilitation training) – overall assessment of the patient's abilities and setting of common goals, instruction, ADL and extended ADL training, communication training, positioning, task-focused therapy. Written manual, exercise diary.	6 visits by the coordinator, telephone support by the physiotherapist and neurologist team for 2 months

First author (Year), Country	Objectives of the research	Characteristics of the cohort	Inter-professional team	Tools to assess functional status	Physiotherapeutic approaches and techniques	Characteristics of implemented rehabilitation programs
López-Liria et al. (2016), Spain	Comparison of outpatient and home physiotherapy	145 patients after stroke – 78 in-home and 67 outpatients	Rehabilitation doctor, physiotherapist, neurologist, occupational therapist	Barthel index, Tinetti Test, Short Form	Bobath concept, selective mobility training, ADL training. The treatment approach was selected by the rehabilitation physician based on the need for assistance with ADLs, the characteristics of the patients' homes, and the availability of family and social support.	46.2% 3 times a week, 53.8% twice a week
López-Liria et al. (2019), Spain	Evaluating the functional impact of a shared intervention model of mobile physiotherapy and rehabilitation team (MPRT) and primary care case management nurses (PCCMN) on chronic patients	1,086 patients, mean age 80 years, 63.7% women	Mobile physiotherapy and rehabilitation team, primary care case management nurse	Barthel index	Combination of rehabilitation techniques: kinesiotherapy, functional training, electrotherapy, informal caregiver instruction, training with aids.	Average of 9.8 therapies
Mahmood et al. (2021), India	A Delphi method to develop a set of strategies and frameworks to enhance home exercise adherence after stroke		13 experts from physiotherapy, occupational therapy, neurology, clinical psychology, behavioural science and community medicine. The patient's family		Patient education about stroke and recovery. Task-specific (task-oriented) and individually tailored therapy based on each person's disability, goals, and context. Emphasis on exercise demonstration and hands-on practice. Supplemented with written instructions, pictures, videos of exercises or voice recordings. Meaningful and relevant exercises, with the option to break exercises down into steps and gradually increase the difficulty. Fun and engaging exercises, use of the mHealth app. Diary.	Phone calls and visits once a week or once every 14 days

First author (Year), Country	Objectives of the research	Characteristics of the cohort	Inter-professional team	Tools to assess functional status	Physiotherapeutic approaches and techniques	Characteristics of implemented rehabilitation programs
Menezes et al. (2017), Brazil	Determining the effectiveness of high-intensity respiratory muscle training for increasing strength and improving activity after stroke	38 patients older than 20 years, more than 3 months and less than 5 years after the last stroke episode	Doctor, physiotherapist	Inspiratory and expiratory muscle strength, inspiratory endurance, dyspnoea, respiratory complications and walking ability	Individually tailored training using the Oxygen Dual Valve device, aimed at increasing the strength of the respiratory muscles and increasing activity. Diary.	40 minutes (2 x 20) a day, 7 days a week, 8 weeks. Physiotherapist and doctor visit once a week – to adjust therapy
Qiu et al. (2020), USA	Introduction of the Home based Virtual Rehabilitation System (HoVRS) for upper limb rehabilitation in the home environment	15 patients after stroke, 40–80 years old	Physiotherapist, engineer	Fugl-Meyer Assessment	Assessment of the home environment by a physiotherapist and engineer, individual setup of HoVRS, instruction, 5 upper extremity exercise games from a library of 12 games for each category (elbow-shoulder, wrist, hand, whole limb), regular visits and remote monitoring by physiotherapist and engineer, monitoring of progress, modification of program, remote technical support and interaction.	At least 15 minutes every weekday for 3 months, an average of 47.18 sessions, an average of 7 sessions of face-to-face support and 5 sessions of remote support. Participants spent an average of 13.5 hours using the system.
Reunanen et al. (2016), Finland	To determine the experience of stroke clients with an individual home rehabilitation intervention after discharge from a rehabilitation centre	14 patients about 7 months after stroke, 48–83 years, 9 men, 5 women	Nurse, physiotherapists, occupational therapists, neuropsychologist, speech therapist	Timed Up and Go Test, 10 Metre Walk Test, Stroke Self-efficacy Questionnaire	Individual rehabilitation - activation physiotherapy – functional recovery is a learning process with the active role of the patient in planning and implementing rehabilitation, task-specific therapy, clients had the opportunity to assess their functioning at home and outdoors in activities that were important to them, self-specified the specific tasks they wished to practice in therapy and indicated the barriers that prevented them from performing the activity, manage practical situations at home and in the community, learning about community services, completing physical exercises under professional supervision, and engaging in dialogue with professionals.	Once or twice a week for 3 months, 15 visits in total

First author (Year), Country	Objectives of the research	Characteristics of the cohort	Inter-professional team	Tools to assess functional status	Physiotherapeutic approaches and techniques	Characteristics of implemented rehabilitation programs
Taule et al. (2015), Norway	A description of stroke patients' experiences of home rehabilitation following early supported discharge from hospital	8 patients after stroke, 4 women and 4 men, 45–80 years old	Physiotherapist, occupational therapist, nurse, speech therapist, general practitioner	Modified Rankin Scale, Assessment of Motor and Process skills	Individual therapy to improve physical and cognitive function, joint goal setting, combination of tasks, function-specific therapy, process-oriented communication (e.g., information and reflection on lifestyle changes, processing motivations or refocusing wishes), ADL training, adaptation of the home environment including aids, final assessment.	5 weeks, up to 4 hours per day
Vasileva et al. (2015), Macedonia	Monitoring the effect of specialized kinesiotherapy methodology on balance reactions in patients with chronic ischemic stroke	56 patients after ischemic stroke in the chronic phase (5 months to 1 year)	Physiotherapist	Berg Balance Scale, Brunnstrom test, Ashworth scale	Specialized 10 days kinesiotherapy methodology, based on the Bobath concept, the exercises focus on preparing the body for the upcoming exercise, gradual adaptation of the cardiovascular system, chest and diaphragmatic breathing, exercises for the transition from supine to standing, upper limb exercises and shoulder control, lower limb exercises and trunk control, pelvis and gait training, relaxation exercises.	40–50 minutes daily, for 2 months
Vega-Ramírez et al. (2017), Spain	Characteristics of patients diagnosed with motor disabilities in primary care, goals of home rehabilitation and its functional impact.	473 patients, mean age 83 years, 59% female	Mobile Rehabilitation and Physiotherapy Teams (MRPT) – rehabilitation doctor, 4 physiotherapists, occupational therapist, 2 drivers	Barthel index	Identification of factors associated with fall risk, kinesiotherapy, manual therapy, functional therapy – restoration of range of motion, activation of weakened muscles, gait and stability training, education of informal caregiver about community activities and services, physical therapy – electrostimulation, ultrasound, use of aids.	3 weeks, max. 15 visits, possibility to continue on the recommendation of a rehabilitation doctor

First author (Year), Country	Objectives of the research	Characteristics of the cohort	Inter-professional team	Tools to assess functional status	Physiotherapeutic approaches and techniques	Characteristics of implemented rehabilitation programs
Vloothuis et al. (2018), The Netherlands	Characteristics of the CARE4STROKE programme and implementation of this intervention in practice.	Pair selection of a post-stroke patient with functional limitation of mobility and an informal caregiver, built on motivation for exercise.	Experienced physiotherapist, informal carer, rehabilitation doctor		A comprehensive treatment package individually tailored to each patient. 37 exercise units of the CARE4STROKE program (Videos with voice commentary) for general mobility, including transfers, standing balance and walking, seated balance, range of motion and lower extremity, strengthening exercises, outdoor walking, stair walking, walking on uneven terrain, and cycling. Diary, introductory instruction and practice, video conferencing, and emails with physiotherapist.	8 weeks, 5 times a week for 30 minutes, an initial one-hour training
Wilson et al. (2021), Australia	Comparison of Elements by Dynamic Neural Arts (EDNA) use with an active control group (Graded Repetitive Arm Supplementary Program – GRASP training) using a parallel RCT design	17 patients after stroke with upper limb dysfunction, divided into intervention and control group	Occupational therapist	Box and Blocks Task, 9-Hole Pegboard Test, Stroke Impact Scale, Neurobehavioural Functioning Inventory	Initial setup and instruction of the EDNA system (portable virtual rehabilitation system based on the principle of adapted movement tasks using manipulation of objects on the surface of the display), EDNA training tasks – 4 target and 3 exploratory movement activities; GRASP training – upper extremity exercise program for post-CVA patients, self-therapy in the home environment. Recording sheet.	8 weeks, 30 minutes 3–4 times a week, phone call with occupational therapist once a week