

The Principles of Home Care for Patients with Stroke: An Integrative Review

Abstract

Background: Patients With Stroke (PWS), like patients with other chronic health conditions, need long-term care in home settings. Patient transfer from hospital to home is associated with challenges such as care quality impairment and ineffective patient need fulfillment. The aim of this study was to assess the principles of Home Care (HC) for PWS. **Materials and Methods:** This integrative review was conducted in 2023 using the method recommended by Whittmore and Knafl. The Web of Science, Google Scholar, ScienceDirect, ProQuest, Scopus, Cumulative Index to Nursing and Allied Health Literature, PubMed, and specific databases for stroke care guidelines were searched to find relevant articles published between 2010 and 2023. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement was used for document screening and selection. The data were analyzed using the constant comparison method. **Results:** Primarily, 2608 documents were retrieved, and 22 of them were included in data analysis. The principles of HC for PWS were categorized into six main categories: principles of transition from hospital care to HC, principles of assessment for HC, principles of education for HC, principles of designing an HC plan, principles of HC measures, and principles of discharge from HC centers. **Conclusions:** The present study provides a detailed overview of the principles of HC for PWS, which can be used to develop standard guidelines and improve the quality of HC for PWS.

Keywords: Home care services, practice guideline, review literature, stroke

Introduction

Stroke is one of the major healthcare challenges and one of the leading causes of death worldwide. According to the World Health Organization, stroke was the second leading cause of death in 2019, with more than 13 million cases of death throughout the world.^[1] Almost half of stroke survivors develop moderate-to-severe stroke-related complications such as physical disorders, cognitive problems, and emotional defects and thus need continuous care and support.^[2]

Patients With Stroke (PWS), like patients with other chronic health conditions, need long-term care in home settings.^[3] Home Care (HC) is a community-based approach to care specifically useful for situations with limited resources.^[4] HC consists of nursing, medical, rehabilitative, and social services at the primary, secondary, and tertiary levels of prevention.^[5] Quality HC has many positive outcomes for both patients and healthcare systems. For example, it

reduces hospital bed occupation rate, risk of nosocomial infections, re-hospitalization rate, mortality rate, and healthcare costs.^[5,6]

Despite its different positive outcomes, patient transfer from hospital setting to home setting to reduce costs may negatively affect care quality and patient need fulfillment.^[7] HC for PWS has its own challenges. For example, studies have shown that most healthcare providers have limited knowledge about stroke.^[8,9] Stroke is a sudden event that is associated with different complications and extensive changes in life, and hence, PWS and their families have various needs that are not usually fulfilled adequately.^[10] Inadequate need fulfillment can be associated with different problems for PWS, which include fear, anxiety, disease aggravation, emotional problems, misconceptions, heavy caregiver burden, poor treatment adherence, and re-hospitalization.^[11,12]

Different strategies have been recommended to reduce HC-related challenges. Examples

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of these strategies are tele-education for patients,^[13] telemonitoring of patients,^[14] smartphone-based educational interventions,^[15] participatory stroke care by family members and rehabilitation physicians,^[16] and the use of evidence-based educational guidelines.^[17] There are different guidelines for the rehabilitation and management of PWS. However, HC nurses usually do not use most of these guidelines due to reasons such as lack of specific information about daily nursing care for PWS.^[18] Moreover, most of these guidelines are appropriate for hospitalized patients who have specific needs and priorities and thus are not appropriate for long-term care in home settings.^[19,20] In addition, these guidelines are the output of studies in well-equipped settings and are not appropriate for settings with limited resources.^[21] Some previous studies have attempted to address stroke rehabilitation in home settings,^[22] stroke HC effectiveness,^[3] home-based educational interventions for PWS,^[23] and stroke-related HC experiences.^[24] However, to the best of our knowledge, no study has comprehensively addressed the principles of HC for PWS. Therefore, the present study was designed and conducted to reduce this gap. The aim of this study was to assess the principles of HC for PWS.

Materials and Methods

This integrative review is part of a nursing PhD thesis. This study was conducted in 2023 using the method recommended by Whittemore and Knafl.^[25] The five stages of this method are problem identification, literature search, data evaluation, data analysis, and presentation.^[25] Problem identification stage: Stroke care is complex and multidisciplinary, and hence, care transition from hospital to home settings may negatively affect care quality and patient need fulfillment.^[7] Therefore, the principles of HC for PWS need to be identified.

The first and second authors of the study independently searched the existing literature on the principles of HC for PWS in June and July 2023. They searched the Web of Science, Google Scholar, ScienceDirect, ProQuest, Scopus, Cumulative Index to Nursing and Allied Health Literature, PubMed, Scientific Information Database, MagIran, and specific databases for stroke care guidelines [Table 1], as well as the reference lists of the retrieved documents.

The search keywords were determined based on the Medical Subject Headings (MeSH) and relevant literature and through consultation with a healthcare librarian and included “stroke,” “cerebrovascular accident,” “home care services,” “home care agencies,” “home healthcare,” “home care services,” “home health nursing,” “community health nursing,” “recommendation,” “protocol,” “instruction rule,” “legislation guideline,” “primary healthcare,” “regulation,” “principle,” and “evidence-based practice.” The “AND” and “OR” operators were used to combine the search results. Acceptable documents for the present study were original researches, literature reviews, books, policies, statements, functional codes, standards, and guidelines in the area of HC for adult PWS (age of above 18 years). The study inclusion criteria were accessible full-text, publication in English or Persian, and publication between January 2010 and January 2023. Documents that exclusively addressed the acute phase of stroke care were not included. Table 2 presents an example of the search strategy.

Document screening and selection were performed using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.^[26] The title and the abstract of the retrieved documents were entered into the Endnote software (version 18.0; Clarivate Plc., Philadelphia, PA, USA), and duplicate records were omitted. The first and second authors of the study independently reviewed the titles and the abstracts of the documents and excluded the documents that did not meet the inclusion criteria. Then, they compared their results, and in case of any disagreement, they assessed and discussed the full-text of the documents to reach an agreement. Subsequently, they independently extracted the data on the authors, publication date, country of origin, aim, and principles of HC for PWS from the documents, and documented them in data collection sheets. They also independently appraised the retrieved documents by using the Appraisal of Guidelines for Research and Evaluation II (AGREE II)^[27] and the Mixed Methods Appraisal Tool.^[28] Disagreements between the first and second authors were resolved through group discussion with the third author.

The constant comparison method was used for data analysis. The steps of this method are data reduction, data display,

Table 1: List of valid databases in the field of clinical guideline and stroke association websites

Site	URL
National Institute for Clinical Excellence (NICE)	https://www.nice.org.uk
National Guideline Clearinghouse (NGC)	https://www.guideline.gov
Guideline International Network (GIN)	https://g-i-n.net
Scottish Intercollegiate Guidelines Network (SIGN)	https://www.sign.ac.uk
UK Stroke Association	https://www.stroke.org.uk
American Stroke Association	https://www.stroke.org
World Stroke Organization (WSO)	https://www.world-stroke.org
Stroke Foundation - Australia	https://strokefoundation.org.au
Iranian Stroke Organization	https://irstroke.com

Table 2: An Example of the search strategy used in the literature database of PubMed

Search	Query	Result
#23	((((((((("home care services"[Title/Abstract]) OR ("home care agencies"[MeSH Terms])) OR ("home care services"[MeSH Terms])) OR ("home care services, hospital based"[MeSH Terms])) OR ("home health nursing"[MeSH Terms])) OR ("home health care"[Title/Abstract])))) OR ("community health nursing"[MeSH Terms])) OR ("primary health care"[Title/Abstract]) AND ((humans[Filter]) AND (2010/1/1:2023/5/1[pdat]) AND (english[Filter] OR persian[Filter]) AND (alladult[Filter]))) AND (((((((("guideline"[Title/Abstract]) OR ("recommendation"[Title/Abstract])) OR ("principle"[Title/Abstract])) OR ("regulation"[Title/Abstract])) OR ("legislation"[Title/Abstract])) OR ("instruction"[Title/Abstract])) OR ("evidence based practice"[MeSH Terms])) OR ("rule"[Title/Abstract]) AND ((humans[Filter]) AND (2010/1/1:2023/5/1[pdat]) AND (english[Filter] OR persian[Filter]) AND (alladult[Filter]))) AND ("stroke"[MeSH Terms])) OR ("cerebrovascular accident"[Title/Abstract])) OR ("CVA"[Title/Abstract]) Filters: Humans, English, Persian, Adult: 19+years, from 2010/1/1-2023/1/1	1672

data comparison, conclusion drawing, and verification.^[25] Accordingly, the first and second authors read the text of the included documents line by line several times, extracted meaning units that were relevant to the study aim, and categorized them according to their similarities. The accuracy and relationship of the categories were assessed and confirmed by the members of the research team.

Ethical considerations

The current study is an integrative review. It did not imply direct contact with a sample of people. The author did not have direct participation of human subjects or involvement in an experimental design. Data were collected from an online literature search and not from hospital depositories. This manuscript has no plagiarism. The results of the analysis are completely honest. The research (ethics code: IR.USWR.REC.1398.009) was approved by the Ethics Committee of Tehran University of Welfare and Rehabilitation Sciences, Iran.

Results

Presentation stage

A total of 2608 documents were retrieved in the primary search, and 2450 documents were omitted after title and abstract assessment either as duplicate or irrelevant records. Then, 136 of the 158 remaining documents were omitted due to ineligibility. Finally, 22 documents were included in the study [Figure 1]. The included documents were six guidelines, nine research projects, four review studies, two statements, and one governmental document; these had been developed in the United States (n = 6), Canada (n = 5), England (n = 2), Brazil (n = 2), Malaysia (n = 2), China (n = 1), South Africa (n = 1), Indonesia (n = 1), Turkey (n = 1), and Iran (n = 1). The results of the quality appraisal showed the high quality of these documents. Table 3 presents the characteristics of the documents, namely author(s), organization, publication year, country of origin, design, aim, and quality appraisal score.

The principles of home care for patients with stroke

During data analysis, the principles of HC for PWS were categorized into six main categories (and seven

subcategories): 1. principles of transition from hospital care to HC, 2. principles of assessment for HC, 3. principles of education for HC (staff training, education of patients, families, and caregivers), 4. principles of designing an HC plan, 5. principles of HC measures (supportive measures, psychological care measures, physical care measures, preventive care measures, and measures for reintegration into the community), and 6. principles of discharge from HC centers. Figure 2 shows a visual presentation of the data.

Principles of transition from hospital care to home care for patients with stroke

Patient transfer from hospital to home is one of the most challenging events for PWS and their families.^[48,49] Therefore, adequate education about the necessary skills for caregiving, psychosocial support, and information about social services are needed to prepare PWS and their families for hospital-to-home transfer.^[30,50] Numerous guidelines and protocols have so far been designed for such transfer.^[30,50,51] Some studies have reported five recommendations to improve care transition for PWS: improvement of communication processes, use of transition specialists, use of a patient-centered discharge checklist, use of standard outcome criteria, and collaboration with community health programs.^[50,51]

Care transition is also challenging for healthcare providers because they may be uncertain about the best post-discharge destination and may have problems with the admission regulations of HC centers.^[39,52] Some studies have shown that discharge to home has significant relationships with patients' functional dependence, comorbid conditions, neurocognitive disorders, pre-stroke life conditions, and marital status.^[52] The most appropriate candidates for stroke-related HC are homebound patients with mild-to-moderate disability; stable medical conditions; easy access to appropriate nursing care; adequate resources; and adequate support services by family, caregivers, and HC institutes.^[31,34] Referral of these patients to HC centers should be performed with medical order and based on appropriate guidelines and aims.^[19,31,45]

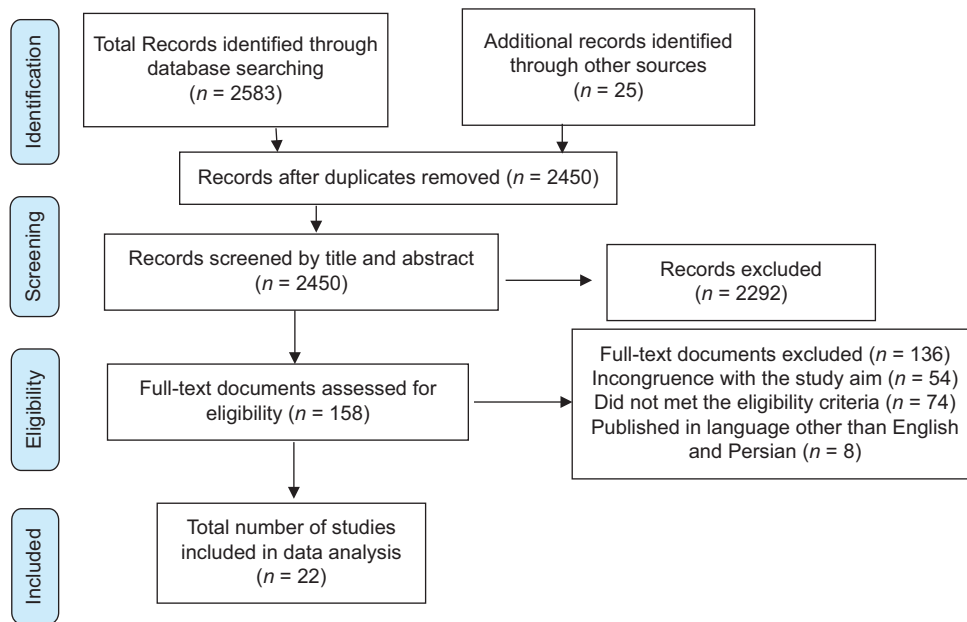


Figure 1: The PRISMA flow diagram of the study

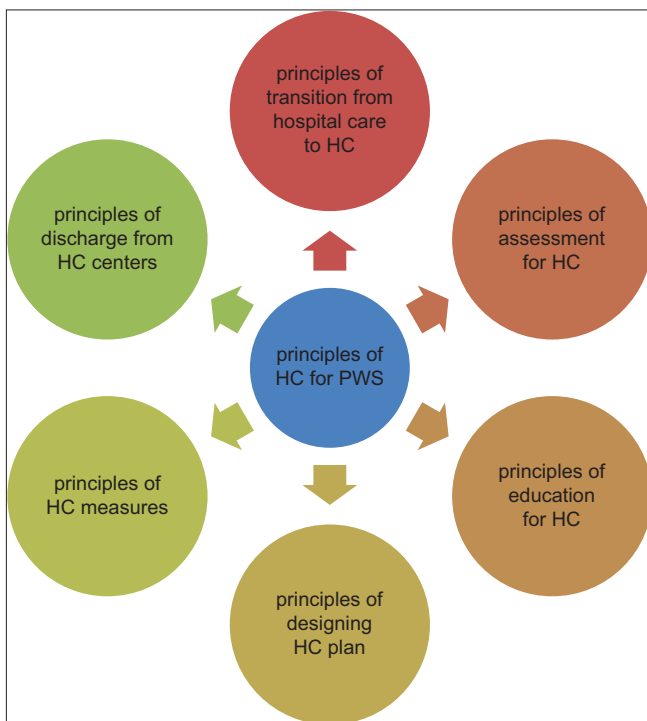


Figure 2: Visual presentation of findings

Principles of assessment for home care for patients with stroke

Accurate patient and family assessment is essential for the development of an accurate care plan, prevention of complications, and improvement of recovery.^[35] HC providers need to consider some important principles during patient assessment, including the use of appropriate assessment tools, early assessment after any change in the patient's conditions, assessment by trained and

competent staff, and referral of the patient to the most appropriate specialists based on the results of the assessment.^[33,34] One of the assessment tools in this regard is the international Resident Assessment Home Care instrument (interRAI-HC), which was developed for the assessment of the health status, care-related needs, and characteristics of home settings and caregivers of patients.^[53] The assessment of PWS should include the assessment of their medical conditions, vital signs, physical status (including stroke severity, functional restrictions, ability to perform the general and instrumental Activities of Daily Living (ADL), bladder function, swallowing ability, skin, nutrition, and sensory and perceptual alterations), mental status (including cognitive status and ability to learn and communicate), patient safety status (including assessment of home setting for health risks such as the risk of fall), and family assessment (including assessment of family members' physical, mental, and financial status, roles, and abilities).^[19,37,46,47]

Principles of education for home care for patients with stroke

Education is a key component of stroke care and is needed throughout the process of care.^[41] Stroke-related education includes two main aspects: (1) staff education, and (2) patient and family education.^[14,36,41] Specialized centers for community-based stroke care should provide staff with periodical education and up-to-date guidelines for stroke care.^[29,38] The educational needs of nurses respecting care provision to PWS are mainly related to stroke assessment tools; rehabilitation and disability prevention; acute interventions for stroke; nutrition and swallowing in PWS; teamwork; and appropriate measures for cognitive, communicative, and speech problems.^[54,55]

Table 3: The characteristics of documents included in the present study

Author/Organization/ year/Country	Study design	Purpose	Quality appraisal		Main findings
			MMAT score* (%)	AGREE II**	
Abdul Aziz <i>et al.</i> /2014/Malaysia ^[29]	Cross-sectional survey	To determine post-stroke care and its related problems among Family Medicine specialists managing public primary health care services	75		Expectations to improve the care of stroke patients at the primary care level: 1. Referral with adequate guidelines and goals after hospital discharge, 2. Specific guidelines on the management of long-term stroke patients at the community level, 3. A web-based system to follow up stroke patients, 4. Training program in community-based stroke care centers, 5. Regular meetings with neurologists/rehabilitation team to discuss specific problems of stroke patients
Winstein <i>et al.</i> / American Heart Association & American Stroke Association/2016/ USA ^[19]	Guideline	Provide a synopsis of best clinical practices in the rehabilitative care of adults recovering from stroke		7/7	The best clinical practices in the rehabilitation care of adults recovering from stroke include assessment, prevention, and management of comorbidities, management of sensorimotor impairments and activities, chronic care management, home and community-based partnerships, and transitions to community care and rehabilitation
Cameron <i>et al.</i> / World Stroke Organization/2016/ Canada ^[30]	Guideline	Managing transitions of care following stroke		6/7	In the management of the transition of care following a stroke, attention should be paid to these points: 1. Support for patients, families, and caregivers throughout the transition of care, 2. Education of the patient, family, and caregivers, 3. Interprofessional communication and planning for discharge, 4. Reintegration into society, 5. Transition to long-term care after stroke
Abdul Aziz <i>et al.</i> /2017/Malaysia ^[31]	Mixed method study	Provide integrated care pathway for post stroke patients	75		Ten care items that are reviewed after the patient is discharged from the hospital include assessment, monitoring of stroke risk factors, mood, cognition, medical and nursing examinations, assessment of swallowing disorders, physical therapy, occupational therapy, and list of medications used
Burris/2017/USA ^[32]	Brief review	Current American Stroke Association guidelines, care, and implications for practice	75		It is recommended that stroke patients receive organized, coordinated, and interprofessional care after the acute stage
Lindsay <i>et al.</i> / World Stroke Organization/2014/ Canada ^[33]	Guideline	Provide a tool for identifying key elements in stroke care across a continuum of health models		6/7	The general dimensions of stroke management are: identification, assessment, diagnosis, intervention, prevention, education, technology, and measurement

Contd...

Table 3: Contd...

Author/Organization/ year/Country	Study design	Purpose	Quality appraisal		Main findings
			MMAT score* (%)	AGREE II**	
Teasell <i>et al.</i> / World Stroke Organization/2020/ Canada ^[34]	Guideline	Rehabilitation, recovery, and community participation following stroke		7/7	This guide contains two parts: 1. Organizing the stroke rehabilitation system to provide optimal services, and 2. Delivering stroke rehabilitation to address physical, functional, cognitive, and emotional issues to maximize participation in normal life roles
Hebert <i>et al.</i> / World Stroke Organization/2016/ Canada ^[35]	Guideline	Stroke rehabilitation practice guidelines		7/7	Organization of a stroke rehabilitation system, including 1. Initial assessment of rehabilitation, 2: Rehabilitation unit, 3: Provision of inpatient rehabilitation, and 4: Outpatient and community-based rehabilitation
Fisher <i>et al.</i> /2013/ UK ^[36]	Mixed method	Implementation of evidence-based rehabilitation services for stroke survivors living in the community	75		The main components of community-based stroke services include 1. Organization, 2. Specialized stroke care outside the hospital, 3. Decision-making about care pathways according to need, 4. Providing information, 5. Intervention, 6. Forming a care team, 7. Access and transfer of care, 8. Performance indicators, and 9. Reintegration into the community
Bushnell <i>et al.</i> /2018/ USA ^[37]	Mixed method	Provide a comprehensive post-acute stroke services model	75		The main components of the comprehensive care model include 1. Standardized messages, 2. Electronic individualized care plans, 3. Listing of community-based facilities, 4. Educational materials, 5. Performance quality measures
Bryer <i>et al.</i> /2011/ South Africa ^[38]	Guideline	Guideline for the management of ischemic stroke and transient ischemic attack and recommendations for a resource-constrained health care setting		5/7	Recommendations for a health care environment with limited resources: 1. Implementing the rehabilitation process using an interdisciplinary approach, 2. Reducing the burden of family care and helping the patient to be as independent as possible, 3. Providing and training caregivers by the rehabilitation team
Pereira <i>et al.</i> /2014/ Canada ^[39]	Cross-sectional study	To determine the predictive value of age, stroke severity, and caregiver availability for rehabilitation of individuals with severe stroke following inpatient rehabilitation	50		For every 1-year increase in age, the odds of returning home decreased by 13%, and for every 1-point increase in the total FIM score, the odds of leaving the home care program increased by 8%. Caregivers play an important role in determining where patients with stroke are going for rehabilitation after being discharged.

Contd...

Table 3: Contd...

Author/Organization/ year/Country	Study design	Purpose	Quality appraisal		Main findings
			MMAT score* (%)	AGREE II**	
Zawawi <i>et al.</i> /2020/ UK ^[40]	Systematic narrative review	To identify unmet needs of stroke survivors and stroke caregivers	75		Unmet needs reported by survivors: 1. Physical problems and other problems related to stroke, 2. Social participation, 3. Information, 4. Rehabilitation and care
Bishop & Bushnell/2017/USA ^[14]	Review article	To review the multiple conditions commonly affecting stroke survivors	50		Conditions affecting stroke survivors include: 1. Medication management, 2. Lifestyle modification, 3. Post-discharge care of the stroke patient
Fuhrmann <i>et al.</i> /2021/ Brazil ^[41]	Methodological study	To construct and validate an educational manual for family caregivers of older adults dependent on care after a stroke	75		The training manual included 11 topics: What is a stroke? How to prevent stroke; Caregiver care; nutritional care; tracheostomy care; taking care of medicines; Health Care; care in disposal; skin care; care in taking off and putting on clothes; care in changing position; and adjusting the environment
Lin <i>et al.</i> /2021/ China ^[42]	Systematic review	To understand the unmet needs of community-dwelling stroke survivors	75		Unmet needs include: informational needs, rehabilitation needs, physical performance needs, mental health needs, safety needs, love and affiliation needs, esteem and self-actualization needs, activity and participation needs
dos Santos <i>et al.</i> /2020/ Brazil ^[17]	Methodological study	To develop and validate the content of a nursing care protocol with educational interventions for family caregivers of elderly people after stroke	75		The protocol consisted of 12 domains: stroke guidelines; emotional support, use of health care network, diet, Airway, medications, hygiene, skin care, elimination, dressing or undressing, repositioning and transfer, and fall prevention
Miller <i>et al.</i> / American Heart Association/2010/ USA ^[43]	Scientific Statement	To provide summaries on the best available evidence and recommendations for interdisciplinary management of the needs of stroke survivors and their families during inpatient and outpatient rehabilitation and in chronic care and end-of-life settings	75		The ICF can be used to facilitate professional decision-making, communication, and collaborative efforts among nurses and other interdisciplinary team members, as well as provide a uniform structure to educate staff, patients, families, and referral agencies.
Bakas <i>et al.</i> / American Heart Association/2014/ USA ^[44]	Scientific Statement	To critique, analyze, and synthesize the evidence on the impact of the family caregiver and dyadic interventions on stroke survivor and caregiver outcomes	75		Interventions that are designed based on the needs of stroke caregivers and combine skill building with psycho-educational strategies are recommended for the care of stroke caregivers.

Contd...

Table 3: Contd...

Author/Organization/ year/Country	Study design	Purpose	Quality appraisal		Main findings
			MMAT score* (%)	AGREE II**	
Bigmohamadi <i>et al.</i> /Ministry of Health and Medical Education/2020/ IRAN ^[45]	Government document	Necessary information to Supply medical, nursing, and rehabilitation services of home health care for discharged ICU patients	50		Necessary information for home care in patients discharged from ICU and brain injury has been provided in three sections before, during, and after providing the service, as well as the frequency of the service and the qualified people to provide the service.
Chayati <i>et al.</i> /2019/ Indonesia ^[46]	Delphi study	To test the face validity of the home care quality indicator in stroke patients with the modified Delphi method	75		The Delphi process resulted in 67 indicators out of 81 indicators, which were divided into 10 domains: 1) personal, 2) documents, 3) professional development, 4) support facilities, 5) administrative activities, 6) interaction of health workers with patients and families, 7) physical conditions, 8) self-actualization, 9) mental state, and 10) independence and family compatibility
Akgül <i>et al.</i> /2023/Turkey ^[47]	Delphi study	To develop a checklist for post-stroke home care for the use of primary healthcare professionals	75		A checklist was created including the four areas of assessment of current status, identification of risks, evaluation of the care environment and caregiver, and planning follow-up care.

*The MMAT is a critical appraisal tool that is designed for the appraisal stage of systematic mixed studies reviews, i.e., reviews that include qualitative, quantitative, and mixed methods studies. The tool results in a methodological rating of 0, 25, 50, 75, and 100 (with 100 being the highest quality) for each study based on the evaluation of study selection bias, study design, data collection methods, sample size, intervention integrity, and analysis.^[28] **AGREE II consists of 23 items divided over six domains. Each item is rated on a 7-point scale ranging from strongly disagree (1) to strongly agree (7). The assessment is based on the total score of the 23 items, and whether the user wants to recommend the guideline for use and rate the overall quality of this guideline: 1 (lowest possible quality) – 7 (highest possible quality)^[27]

Moreover, healthcare providers need to assess the educational needs of PWS and their families and caregivers and provide them with need-based education.^[19,34] PWS and their family members need information that is consistent with their conditions,^[40] particularly about the clinical aspects of stroke, prevention, treatment, functional improvement, mobility, patient transfer and positioning, physical exercise, mental changes, nutrition, coping with the new stroke-related roles, emotional self-management, support resources, balance between the needs of self and patient, and financial support resources.^[10,56] During education, careful attention should be paid to patients' and their families' hearing, visual, and verbal abilities, as well as cultural sensitivities and perceptions, which can affect their perception, learning, information retention, and adherence to medications and lifestyle recommendations.^[38,43] Education of patients, families, and caregivers should be documented in patients' medical records.^[30]

Principles of designing a home care plan for patients with stroke

Care plan is a significant factor influencing care quality and

patient outcome.^[46] The most basic principle of designing an HC plan for PWS is to have a multidisciplinary care provision team consisting of a rehabilitation specialist or neurologist, a general physician, a nurse, an occupational therapist, a physiotherapist, a speech therapist, a recreational therapist, a nutritionist, a psychologist, a social worker, the patient, family members and friends, and family caregivers.^[29,36,44,46] The members of the team should be selected based on the patient's needs.^[34]

The HC plan should be designed in the first contact with patients.^[30] An important point is to actively involve patients and their family members in designing the plan.^[33,35,41,44] Participation of the PWS in goal setting improves teamwork and patients' self-confidence, motivation, satisfaction, recovery, goal attainment, self-care, collaboration, and relationships.^[56] The HC plan should be patient-centered, address all medical, functional, cognitive, communicative, and psychosocial needs of patients, and be updated with changes in patients' conditions or any insignificant change in their recovery.^[19,35,45] Moreover, an HC plan should be based on patients' needs, values, and culture.^[30]

Principles of home care measures for patients with stroke

The principles of HC measures for PWS consist of five subcategories: supportive measures, psychological care measures, physical care measures, preventive care measures, and measures for reintegration into the community.

A. Supportive measures: Support for PWS should start with patient admission and continue throughout the process of care, discharge, and HC.^[17,39] Supportive measures for PWS include psychosocial support, anxiety reduction, determination and reduction of caregiver burden, improvement of patients' and family members' health, quality of life (QOL), and mood, and empowerment of patients and their caregivers through education, counseling, and financial support.^[17,33,39,40]

B. Psychological care measures: One of the most prevalent mental problems among PWS is depression.^[34] Therefore, HC providers should determine patients with depression through appropriate screening, refer them to a psychologist or psychiatrist, and take appropriate pharmacological and non-pharmacological measures to reduce their depression and emotional problems.^[17,42] Moreover, as PWS may suffer from communicative problems such as aphasia, education of family members to have continuous dialog with them and use non-verbal communication as well as referral of these patients to a speech therapist are necessary.^[19,35,40] Cognitive disorders such as impairment of attention, memory, and functioning are also prevalent after stroke, and hence, the use of assistive technologies such as notebooks and paging systems, environmental enrichment, and cognitive rehabilitation are recommended for PWS.^[19]

C. Physical care measures: Physical care measures for PWS should adequately address their ADL, nutrition, incontinence, pressure ulcer, post-stroke pains, hearing and visual problems, and sexual relationships.^[32,35,40,47,57]

D. Preventive care measures: PWS are very vulnerable and at risk of re-hospitalization in the first 30 days after hospital discharge, mainly due to stroke risk factors, stroke complications, and medication-related problems.^[17] Therefore, their HC providers need to take appropriate preventive care measures to reduce the risk of complications and re-hospitalization. These measures include risk factor modification, medication management, lifestyle modification, prevention of deep vein thrombosis, and prevention of fall. The most important risk factors of stroke that should be modified include hypertension, hyperlipidemia, atrial fibrillation, obesity, and smoking.^[14,30,31,47] PWS also need education about their medications, importance of medication adherence, and removal of the barriers to medication adherence.^[14,40] They also need considerable modifications in their lifestyle, which include obesity prevention and weight loss measures, adequate physical activity, smoking cessation, alcohol abstinence, avoidance from

exposure to smoke, and safe and healthy eating for the management of hypertension, hyperlipidemia, obesity, and dysphagia.^[33,41] Furthermore, anticoagulant therapy and the use of compression stockings may be indicated to reduce the risk of deep vein thrombosis.^[19] These patients are also at a great risk of fall; therefore, appropriate strategies are needed to reduce this risk. These strategies may include environmental assessment to determine the potential risks and the necessary environmental modifications, exercises for balance and flexibility improvement, and education about the use of wheelchair and assistive devices.^[35]

E. Measures for reintegration into the community: Leisure and social activities such as physical exercise; studying; entertainment; and being with children, grandchildren, and friends can improve mood and mental status, life enjoyment, and QOL among PWS.^[35] HC providers need to provide PWS and their families with education about the importance of active and healthy lifestyle and develop their self-management skills to empower them to manage their problems and overcome the barriers to engagement in social activities.^[38,46] Moreover, they should assess patients' ability to return to work, encourage those with this ability to return to their work, and inform them about the advantages of returning to work after stroke.^[43] PWS who want to start driving should carefully be assessed for their cognitive, perceptual, physical, and functional abilities and referred to appropriate specialists to undergo the necessary assessments.^[40]

Principles of discharge from home care centers

Discharge from HC refers to the process of a patient being released from the care and services provided by home health agencies or professionals. This may occur when the patient's condition has improved to the point where they no longer require HC services, or when they are transitioning to a different level of care such as a rehabilitation facility or a long-term facility.^[58] The discharge process typically involves coordination between the HC provider, the patient, and their family to ensure a smooth transition and continuity of care. Therefore, an appropriate discharge and follow-up program is needed to go through this process. This program should be developed as soon as possible and with the collaboration of PWS, their family members, and their caregivers.^[35] PWS should be informed about the date of discharge and continuously be assessed in terms of their physical and psychosocial needs^[30,44] and recovery progress.^[30] Moreover, planned and purposeful home visits are needed before discharge to determine the potential barriers and risks and assess discharge readiness.^[38] A written discharge guideline should also be developed,^[30] and patients should be monitored after discharge.^[33,43,47] A web-based system^[19,39] or a telemedicine system^[14,44] is also recommended for patient and family education and referral.

Discussion

Recently, with increasing healthcare costs, healthcare policymakers have emphasized the early discharge of PWS and referral to HC programs.^[34,59] However, studies have shown that coordination of post-stroke care beyond the hospital setting is inconsistent.^[31,60]

Accordingly, to address this issue, HC centers should take care of these patients in a specialized way, which requires the use of the best evidence.^[16] Therefore, this review study was designed to collect the most important principles of HC for PWS from the best available evidence and present them in a simple language.

One of the advantages of this study is the extensive review of the literature, and it has tried to provide a comprehensive guide regarding the care of PWS at home by integrating qualitative and quantitative studies.

There are many studies and guidelines for the rehabilitation and management of PWS. Some of these studies have provided guidelines for the care of PWS in specific settings such as hospitals. In the review study by Tanlaka *et al.* (2023),^[61] the nurse's role in rehabilitating hospitalized PWS was discussed, but no details were provided regarding rehabilitation in the patient's home. In the study by Amatangelo and Thomas (2020), the priorities of care for PWS in the ICU department were examined, but this study investigated only the acute stage of the disease and is not acceptable for home-hospitalized patients.^[62]

There are other studies that have shown that the care of a PWS at home is mostly designed for the patient's family and non-professional caregivers, which can be practical for HC nurses. Dos Santos *et al.* (2020)^[17] illustrated a training protocol for family caregivers of PWS at home. In this study, criteria such as acceptance of patient in the HC system and care of family caregivers are not mentioned.^[17] In a study conducted by Akgül *et al.* (2023),^[47] a checklist for HC in PWS was developed for use by primary care professionals. This checklist comprised four main domains: assessment of current status, identification of risks, evaluation of the care environment and caregiver, and planning follow-up care. Notably, the criteria for accepting patients in HC centers were not addressed in this research.^[47]

In this review, we tried to create a complete guide that includes patient care from the moment of patients' entrance into the HC system to discharge from this system. The aim of the study was to explicitly support healthcare providers by increasing awareness, knowledge, and competence of home healthcare providers in the care of PWS.

The target group of our study was professional HC providers; thus, tips on transition and assessment and designing of an HC plan are provided for their use. Moreover, notes on the educational needs of HC nurses are

mentioned for the use of HC managers. Another advantage of this study is considering the patient's family as members of the care team and examining and supporting them alongside the PWS.

The following points should be considered in this literature. This study is not a fixed protocol, but it is a tool to support professional healthcare providers and should be combined with clinical judgment to individualize care based on the patient's wishes and values.

The recommendations provided in this study were obtained through a review of the literature. Further research is necessary on specific issues, such as patients, families, and other healthcare providers involved in HC. Another limitation of this study is the unavailability of the full text of some potentially qualified documents, as well as the use of only documents published in English or Persian.

Conclusion

The present study provided a detailed overview of the principles of HC for PWS. Nurses, HC providers, and support groups can use the findings of the present study to provide quality care to PWS and effectively fulfill their needs. Further studies into the principles of HC for PWS are needed to develop standard guidelines in this area and improve the quality of HC for PWS.

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Conflicts of interest

Nothing to declare.

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