Systematic Review

DEVELOPMENT OF DISCHARGE PLANNING FOR STROKE PATIENTS

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ABSTRACT

The annual incidence of stroke has continued to rise, establishing it as the leading cause of mortality and permanent disability globally. The quality improvement of discharge planning is essential throughout the development of discharge planning, which guarantees a seamless transition of care for stroke patients and family preparedness. This systematic review aimed to analyze the development of discharge planning and its impact on stroke patients and their families. The research was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Eligible pieces of literature were compiled from seven electronic databases, i.e., ScienceDirect, Scopus, PubMed, EBSCOhost, ProQuest, SAGE Journals, and Google Scholar. The literature search was performed using predetermined search terms, with specific criteria that included papers exclusively published in English and studies conducted in 2018–2022. This study included eleven eligible papers, from which we identified three distinct approaches to the development of discharge planning. Firstly, seven articles recommended a conventional approach, which involved specific educational intervention with interactive learning methods through booklets, textbooks, and PowerPoint presentations. Secondly, two articles supported the use of a technology-based approach through audiovisual media or applications to deliver health information. Thirdly, two articles endorsed a family-centered nursing approach that focused on empowering families to deliver health information to the patient. The development of discharge planning showed a significant impact on stroke patients, as it could influence various aspects of their quality of life. This included improvements in physiological function, enhanced cognitive knowledge, increased satisfaction and self-efficacy, reduced stress levels and care burden, and the opportunity for families to adequately prepare for home-based patient care. This study concluded that integrating conventional with technology-based media is effective for developing discharge plans for stroke patients. The implementation of this novel approach in a health system can improve patient outcomes, family preparedness when providing care, and the quality of hospital care.

Keywords: Discharge planning; stroke; health system and access; health risk

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Highlights:
1. Given the frequent long-term complications of stroke, this study identified the ideal approach to discharge planning to improve the quality of life of patients and hospital care.
2. This study provides evidence supporting the effectiveness of a conventional discharge planning approach that incorporates specific educational intervention with interactive learning through audiovisual media.
3. The approaches presented in this study may offer valuable perspectives on enhancing health service provisions, particularly regarding the discharge planning process for nurses.

INTRODUCTION

Stroke is a public health issue that significantly affects the population of the world. Studies have shown that it has a high prevalence of morbidity and mortality rates (Whitehead & Baalbergen 2019, Chimatiro & Rhoda 2019). Currently, stroke is considered the second-leading cause of death on a global scale. Every year, 15 million people suffer from stroke and subsequently experience permanent disability (World Health Organization 2022, Temehy et al. 2022).

In addition to being physically impaired, stroke patients frequently experience cognitive impairments. These conditions further exacerbate their dependence on others for assistance (Westerlind et al. 2019, García-Pérez et al. 2021).

Discharge planning is crucial for overcoming these problems and improving treatment outcomes. It is imperative for health professionals to ensure the continuity of care and consistently provide training and education (Ngoc & Hsu 2021). The improvement of the health system through the development of discharge plans can effectively promote the seamless provision of medical services, thereby mitigating the risk of secondary strokes. This is in line with the third goal of the Sustainable Development Goals (SDGs), which is ensuring healthy lives and promoting well-being for all at all ages.

It is necessary to optimize the standard discharge plans that have been commonly used in recent times. This is because, according to a study, there is a significant prevalence of care discontinuity following the discharge of patients who have experienced a first-ever stroke (de Mooij et al. 2021). Studies have found that the implementation of discharge planning is frequently limited to the moment when patients leave the healthcare facility. Furthermore, the discourse surrounding discharge planning often centers around the evaluation of follow-up reporting cards (Asmuji et al. 2018, Soebagiyo et al. 2020).

Previous studies have primarily concentrated on the benefits and functions of discharge planning rather than on the development of a discharge planning model. In addition, there have been studies that focused on the general discussion of discharge planning findings in specific populations, such as stroke patients in Thailand (Simbolon et al. 2019, Suksatan & Posai 2020). As shown in the study by Lestari et al. (2020), limitations in implementing discharge planning will hinder adherence to care and follow-up visits due to the lack of information provided to patients and their families. It is clearly evident that further research is necessary to explore the development of discharge planning for stroke patients on a global scale. One approach that can be used is to conduct a thorough review of the available evidence derived from the findings of existing studies on discharge planning for stroke patients. Therefore, this systematic review aimed to analyze and synthesize the development of discharge planning used for the purpose of improving the recovery of stroke patients in hospitals.

MATERIALS AND METHODS

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, as outlined in the study conducted by Rethlefsen et al. (2021), were utilized to assist in the conduct of this systematic review. There were two research questions for this review: (1) What is the

development approach of discharge plans for stroke patients? (2) What is the impact of such development on stroke patients and their families? The literature search was performed in seven electronic databases, i.e., Scopus, PubMed, ProQuest, ScienceDirect, EBSCOhost, SAGE Journals, and Google Scholar. The search terms were derived from the developed Medical Subject Headings (MeSH), which generated the following queries: ("Discharge planning" OR "Discharge, Patient" OR "Discharges, Patient" OR "Patient Discharges" OR "Planning, Discharge") AND (Stroke OR "Cerebrovascular Accidents" OR "CVA (Cerebrovascular Accident)" OR "Brain Vascular Accident" OR "Acute Cerebrovascular Accident" OR "Stroke patient"). All of the results of the literature search were exported to the Endnote software, version 20.0 (Clarivate, Philadelphia, PA, USA). We eliminated duplicates from the search results.

A reviewer (IR) initially screened each title and abstract of the scientific articles. Afterwards, an expert reviewer (FA) examined each one of the articles to ensure the compliance with the inclusion criteria. In the selection process, any disagreements that arose between the two reviewers were discussed and clarified with a third reviewer. The inclusion criteria were as follows: (1) hospital-based research examining discharge planning for stroke patients and their families; (2) studies employing a quantitative, qualitative, or mixed research method; (3) publications from the period of 2018–2022; and (4) articles written in English. Excluded from this study were review articles, protocol studies, and research pertaining to the development of home-based stroke interventions following discharge (Page et al. 2021).

The Joanna Briggs Institute (JBI) Manual for Evidence Synthesis, as described in the study conducted by Aromataris & Munn (2020), provided instructions for mapping the data in this study. Detailed evidence, characteristics, and research instruments were extracted from eleven selected studies. Each of the articles was examined multiple times by the reviewers (IR and FA) to ensure that all information was recorded correctly. Afterwards, a table was generated utilizing Microsoft Word for Windows, version 2021 (Microsoft Inc., Redmont, WA, USA) to map and organize the essential information. The categorization of the data obtained in this study is presented in Table 1. The results of the analysis of discharge planning development were categorized to identify the approach used in each of the selected studies. We summarized the relevant findings in a tabular format, with a categorization of the first author and publication year, study objectives, country, study design, population, sample size, interventions implemented

for discharge planning, identification of impacts on stroke patients and their families, and intervention procedure. Analysis using such data organization could help identify, analyze, and communicate patterns within the data sets.

RESULTS

The literature search yielded a total of 1,952 items, out of which 82 publications were found to be duplicates. Out of the remaining 1,870 items, the title and abstract of each publication were carefully scrutinized according to the predetermined inclusion criteria. A total of 123 full-text papers were independently screened to determine the suitability of the research. The flow diagram depicted in Figure 1 illustrates the process of conducting a literature search in accordance with the PRISMA guidelines to discover the eligible papers for this study.

At the conclusion of the literature search, eleven scientific articles were found to be eligible. Table 1 presents the characteristics of the studies included in this systematic review. The majority of the selected articles were published in 2019. The included articles were written in seven countries: Indonesia (n=4), Iran (n=2), Egypt (n=1), America (n=1), France (n=1), Australia (n=1), and the Netherlands (n=1). The total number of participants in all of the studies was 1,610, consisting of 1,333 stroke patients and 277 family members or caregivers. The selected articles mostly reported on quantitative studies, including randomized control trials (RCT) (n=5), quasi-experimental studies (n=4), cross-sectional studies (n=1), and mixed-method studies (n=1).

The reviewed articles were categorized according to their approaches to discharge planning for stroke patients. The discharge plans were developed with an emphasis on various factors. A conventional approach with specific educational interventions was employed in the studies conducted by Simbolon et al. (2019), Iskandar et al. (2018), Taha & Ibrahim (2020), Boden-Albala et al. (2019), Benoit et al. (2020), Andrew et al. (2018), and Amiri et al. (2022). The conventional approach entailed a development model to directly address the needs of patients and caregivers. This was achieved by providing additional training and educational programs that were interactive and organized, utilizing media such as booklets, textbooks, or PowerPoint presentations. On the other hand, the studies by Kurniati et al. (2022) and Vloothuis et al. (2019) utilized information technology in developing discharge planning. The incorporation of information technology in the discharge planning process involved the use of audiovisual learning programs, a combination of PowerPoint

presentations and educational videos, and e-health applications such as caregiver-mediated exercises with e-health support for early supported discharge after stroke (CARE4STROKE). The two other studies conducted by Mohammadi et al. (2019) and Dharma et al. (2021) focused on the development of discharge planning that incorporated family-centered nursing. The importance of families and caregivers was highlighted by supporting their empowerment to provided improved assistance and care for stroke patients.

Among the seven articles that discussed conventional approaches with specific educational interventions, two articles revealed the beneficial impact of the intervention on physiological changes in stroke patients. Specifically, these studies observed an improvement in muscle strength on day 7 and a reduction in blood pressure at a 12-month follow-up duration (Iskandar et al. 2018, Boden-Albala et al. 2019). The other studies revealed various beneficial effects of well-developed discharge planning. Some of the benefits were the increased independence and patient satisfaction during hospital treatment, improved performance in daily living activities, a higher quality of life, enhanced knowledge on stroke and risk factors, strengthened self-efficacy, and a reduction in unmet needs (Andrew et al. 2018, Simbolon et al. 2019, Taha & Ibrahim 2020, Benoit et al. 2020, Amiri et al. 2022).

There were two studies by Vloothuis et al. (2019) and Kurniati et al. (2022) that supported the utilization of technology, and both articles presented evidence regarding the benefits of the intervention. The incorporation of technology in the development of discharge planning demonstrated the potential to reduce anxiety and depression in stroke patients' families. It could also improve family preparedness to provide care for stroke patients at home. Meanwhile, the development of discharge planning using a family-centered nursing approach in the other two studies by Dharma et al. (2021) and Mohammadi et al. (2019) demonstrated further benefits, including the improvement of adaptive coping skills in families and the reduction of family burden. It was also revealed that there were increased levels of family preparedness and reduced stress in stroke patients' families.
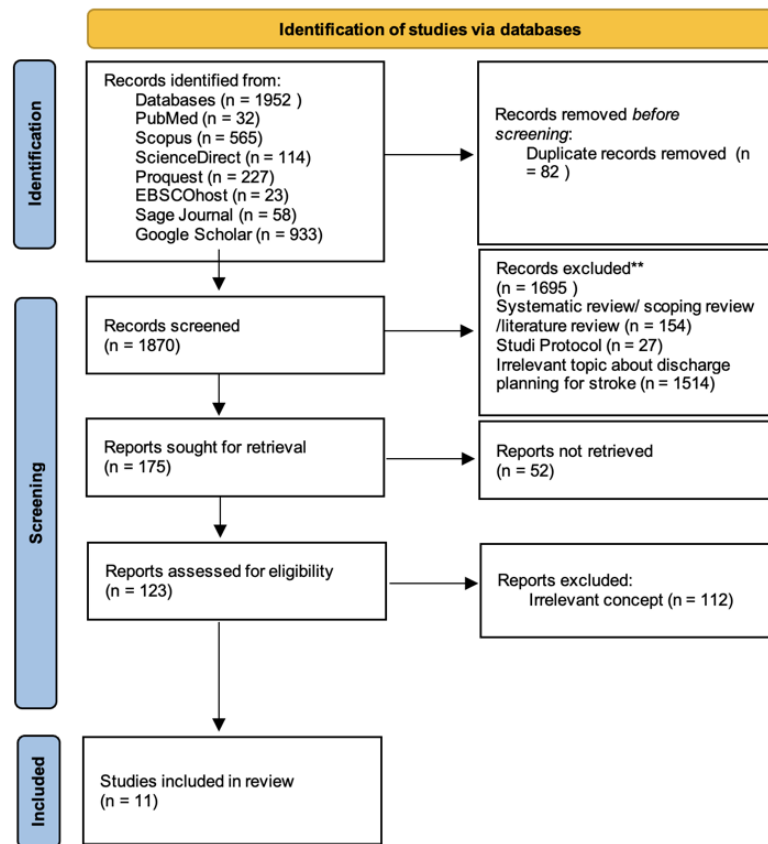
Figure1. PRISMA flow diagram of the literature search process.

Table 1. Summary of the selected article

Author/year	Development of discharge planning	Study design, samples, country, and instruments	Findings	Discharge planning intervention procedure
Simbolon et al. (2019)	Discharge planning model for stroke patients with hypertension vs. standard discharge planning.	Design: Quasy-experimental Sample: 160 stroke patients Country: Indonesia Instruments: -	A significant influence on independence and satisfaction after the provision of a discharge planning with stroke education.	Media: Training module. Time: From admission until discharge. Materials: Treatment of stroke patients with hypertension.
Iskandar et al. (2018)	Discharge planning that incorporated ROM training vs. standard discharge planning.	Design: Quasy-experimental Sample: 34 stroke patients Country: Indonesia Instruments: -	A significant increase in muscle strength for both the upper and lower extremities in the treatment group (on day 7) and control group (on day 14).	Media: ROM monitoring sheet. Time: From admission up to 14 days of treatment. Materials: Stroke-related information and ROM exercises.

Author/year	Development of discharge planning	Study design, samples, country, and instruments	Findings	Discharge planning intervention procedure
Taha & Ibrahim (2020)	A discharge planning program with an evaluation of the quality of life and daily living activity of stroke patients.	Design: Quasy-experimental Sample: 50 stroke patients Country: Egypt Instruments: Structured interview questionnaires, i.e., Stroke Specific Quality of Life Scale (SS-QOL) and Barthel Index for Activities of Daily Living (ADL).	An increase in the mean score of stroke knowledge, daily living activity, and quality of life after the implementation of discharge plans.	Media: Textbooks with concise wording and illustrations. Time: Four sessions with a duration of 45–60 minutes each. Materials: - First session: Theoretical knowledge regarding the definition, signs, symptoms, risk factors, medications, complications, and recurrence prevention of stroke. - Second session: Knowledge related to daily living activities. - Third session: Instructions for patients regarding exercise, dietary restriction, hydration, personal hygiene, adaptive clothing, medications and aids, and a healthy lifestyle. - Fourth session: Physical activity recommendations to improve physical health.
Boden-Albala et al. (2019)	Discharge education strategy vs. standard discharge care.	Design: RCT Sample: 552 stroke patients Country: USA Instruments: -	A statistically significant decrease in systolic average blood pressure of 9.9 mmHg among Hispanic individuals after the one-year follow-up duration, compared to regular. treatments	Media: PowerPoint presentations, books, and videos. Time: Before discharge and during follow-up with durations at 72 hours and 1, 3, 6, and 12 months. Materials: Patient-physician communication, medication adherence, risk mitigation skills, and motivations for behavior change.
Benoit et al. (2020)	Pre-discharge educational intervention vs. standard discharge care.	Design: RCT Sample: 199 stroke patients Country: France Instrument: stroke knowledge score (SKS)	A significant improvement in stroke knowledge score and increased knowledge of risk factors.	Media: PowerPoint presentations. Time: Two-hour session before discharge. Materials: Knowledge related to the mechanisms, risk factors, warning symptoms, and emergency aid of stroke to ensure patient comprehension through an interactive learning process.
Amiri et al. (2022)	Self-management program vs. standard care.	Design: RCT Sample: 72 stroke patients Country: Iran Instrument: The Jones Stroke Self-Efficacy Questionnaire	Significant changes in mean self-efficacy scores immediately after the intervention and three months later.	Media: Booklets on stroke training and post-discharge home care. Time: 6 weeks. Materials: Training on treatment status, medication management, symptom management (e.g., sleep management, relaxation, and fatigue management), psychological component management (e.g., self-regulation, emotional control, and anger, depression, stress, and anxiety management), lifestyle (exercise, diet, nutrition, and smoking restriction), social support (e.g., family communication and assistance), effective communication (e.g., communication strategies), problem-solving, and decision-making skills.

Author/year	Development of discharge planning	Study design, samples, country, and instruments	Findings	Discharge planning intervention procedure
Andrew et al. (2018)	Standard discharge planning.	Design: Cross-sectional study Sample: 200 stroke patients Country: Australia Instruments: EQ-5D-3L and VAS	An improvement in patients' quality of life and a reduction in unmet needs after discharge.	Media/time/materials: - Additional information: A simple strategy to improve the quality and flexibility of stroke-specific discharge planning, which can provide information regarding referrals to group rehabilitation and local support services according to patients' needs.
Kurniati et al. (2022)	Discharge planning that combined audiovisual media and family-centered nursing vs. standard discharge planning.	Design: Mix-method Sample: 71 family members of stroke patients Country: Indonesia Instruments: -	Phase 1: Knowledge regarding the implementation of discharge planning, specifically focusing on discharge time, treatment, and follow-up appointments. Phase 2: Increased family preparedness in caring for post-acute stroke patients before discharge	Media: Audiovisual media. Time: Three sessions, i.e., at admission, during treatment, and before discharge. Materials: Treatment of stroke patients.
Mohammadi et al. (2019)	Family- or caregiver-oriented discharge planning program vs. standard discharge planning.	Design: RCT Sample: 60 family members of stroke patient. Country: Iran. Instrument: The Kingston Caregiver Stress Scale (KCSS) and the Preparedness for Caregiving Scale (PCS).	A significant increase in family preparedness levels and lower stress compared to the control group.	Media: - Time: Three sessions with a duration of 60–120 minutes each. Material: Information regarding the causes and risk factors of stroke, the importance of treatment, the role of relatives in stroke care, cognitive and emotional effects, sensory complications (e.g., attention deficit, awareness impairment, depression, visual disturbance, and disorientation), movement disorders (e.g., paralysis), bowel and bladder dysfunction, sleep problems (e.g., excessive daytime sleepiness), urinary tract infections, and pneumonia.
Dharma et al. (2021)	The Caregiver Empowerment Program Based on the Adaptation Model (CEP-BAM) vs. conventional intervention through discharge planning programs for caregivers.	Design: Quasy-experimental Sample: 80 family members of stroke patients. Country: Indonesia Instrument: The Caregiver Coping Questionnaire and the Caregiver Burden Scale (CBS).	An improvement in coping ability at 5–6 months and a decrease in family burden at 4-6 months after the intervention.	Media: CEP-BAM intervention module. Time: Three sessions with a duration of 60–120 minutes each, scheduled over a two-week period. Materials: (1) Stroke information for caregivers, i.e., the challenges and experiences of stroke patients as well as the prevention of recurrent strokes; (2) Training for caregivers to perform adaptive coping strategies, assist physical adaptation (ambulation), aid patients in walking exercises and joint movements, and help patients with daily activities such as bathing, using the restroom, getting dressed, and practicing eating; (3) Education for caregivers on providing emotional support to patients and maintaining their own mental well-being while caring for patients.

Author/year	Development of discharge planning	Study design, samples, country, and instruments	Findings	Discharge planning intervention procedure
Vloothuis et al. (2019)	Caregiver-mediated exercises with e-health support for early supported discharge after stroke (CARE4STROKE) vs. standard care.	Design: RCT Sample: 66 stroke patients and 66 caregivers Country: Netherlands Instruments: For patients: SIS 3.0 and length of stay For caregivers: The Caregiver Strain Index and the Care Quality of Life Scale.	• Significant decrease in caregiver depression and patient anxiety after the intervention, which remained consistent until the week 12 follow-up. appointment • No significant improvements in the length of stay or the mobility component of the SIS after 8 and 12 weeks.	Media: CARE4STROKE e-health application. Time: 150-minute session per week over the course of eight weeks. Material: 37 options for standard exercises to improve mobility.

Notes: RCT=Randomized control trial; ROM=Range of motion; EQ-5D-3L=The 3-level European Quality of Life-5 Dimensions; VAS=Visual Analogue Scale; SIS 3.0=The Stroke Impact Scale 3.0; the length of stay refers to the time between the onset of a stroke and the discharge from the rehabilitation facility.

DISCUSSION

This study reviewed the evidence of existing studies on the development of discharge plans for stroke patients and their families. Furthermore, the purpose of this systematic review was to outline the approaches used to develop discharge plans as well as their effects on stroke patients and their families or caregivers. Duangchan et al. (2022) described that the implementation of discharge planning generally consists of four phases: patient assessment, plan development, provision of plans, and follow-up evaluation. However, the components of discharge planning vary between countries due to differences in healthcare systems, cultural attitudes, and patient needs.

The studies reviewed were conducted in seven countries and employed three different approaches in developing discharge plans. The first approach was a conventional method that incorporated specific educational interventions. Benoit et al. (2020) emphasized that educational interventions in discharge planning are elementary, realistic, and easy to implement in a stroke unit. Educational interventions implemented by nurses were found to have more impactful outcomes in stroke patients compared to passive methods such as providing video content, booklets, or multimedia applications. The dissemination of information via technology, such as videos, leaflets, guidebooks, or multimedia applications, resulted in patients needing further clarification and facing difficulties in directly posing interactive questions to healthcare professionals.

The second approach relied on the utilization of technology, namely CARE4STROKE, to enhance the emotional well-being of caregivers. This approach was implemented by providing them with meditation exercises aimed at reducing their stress levels. They were reported to experience enhanced engagement in the rehabilitation process and improved preparedness for home-based care (Vloothuis et al. 2019). The utilization of technology in the form of audiovisual media in the study conducted by Kurniati et al. (2022) provided families with retrievable and replayable information that might be easily accessed at home in case they forgot specific details. This aligns with previous studies that found video instruction effectively delivered concise information, regardless of the patients' health literacy or ability to communicate with healthcare professionals. The implementation of e-discharge planning for heart failure patients demonstrated the potential to affect self-care and medication management, increase knowledge, and facilitate remote patient monitoring for healthcare professionals (Jové-Blanco et al. 2021, Aryadi & Arofiati 2021).

During the literature search for this systematic review, we discovered numerous protocol studies that introduced innovative approaches to technology-based discharge planning for stroke patients. One of the studies was a research project with discharge planning that utilized machine learning (Bacchi et al. 2022). Previous studies have

documented the utilization of online information in inpatient units specifically catering to individuals suffering from stroke. The applications of trees in data structure accelerated the development of discharge plans for stroke patients through the efficient organization and optimization of data storage and retrieval (Archambault et al. 2020, Veerbeek et al. 2022). In a separate study, Wang et al. (2022) employed a protocol to build an online clinical practice guide specifically designed for the discharge planning of stroke patients. However, further evaluation is required to ascertain the impact of these technologies on stroke patients and their families.

The third approach emphasized family-centered nursing, with all training and educational activities specifically tailored to address the needs and concerns of families. Rodakowski et al. (2017) conducted prior research on the involvement of caregivers in the discharge planning process for older adults. The study revealed that implementing discharge planning interventions that involve caregivers' participation could effectively reduce the risk of hospital readmissions. Mohammadi et al. (2019) reported that the provision of support programs in discharge planning to family members of stroke survivors, which included training in adult learning theory, was able to improve care. The effectiveness of the program resulted from the families' attentive participation in all educational and learning sessions.

Upon reviewing eleven articles, we discovered that the implementation of discharge planning for stroke patients resulted in favorable outcomes. These included improvements in quality of life, stroke-related knowledge, patient independence, and family preparedness to care for stroke patients. The conventional approach, involving direct and active educational instruction by nurses, was the most commonly employed method in the development of discharge planning. Media support and educational content help nurses provide health education during the discharge planning process. The studies conducted by Iskandar et al. (2018) and Boden-Albala et al. (2019) focused on educational interventions for stroke patients during discharge planning. These interventions specifically addressed the need for range of motion (ROM) training and education on hypertension for stroke patients. Further studies are necessary to address the different discharge requirements of each patient. The precise interventions implemented in the discharge planning process can assist patients in fulfilling their requirements during the discharge preparation process.

The utilization of educational media in the discharge planning process was shown to be most efficient when incorporating PowerPoint presentations or video media featuring illustrated, animated, or photographic information. This can facilitate patients' comprehension of the material being presented. The research conducted by Kurniati et al. (2022) and Vloothuis et al. (2019) highlighted that implementing a technology-based information system and utilizing audiovisual or video-based educational materials in discharge planning can enhance the preparedness of families to provide care for stroke patients. Audiovisual media featuring animations, infographics, or photographic images can improve one's comprehension of a topic by providing contextual convenience. Discharge planning utilizing media, modules, or booklets remained prevalent in numerous studies. However, brochures have limitations relating to visualization, narrow space and context, minimal interaction, and constrained accessibility. Furthermore, the absence of interesting auditory and visual elements contributes to a deficiency in emotional engagement, which may result in learners being less actively immersed in the learning process. In practical application, a combination of modules or brochures accompanied by audiovisual media offers a higher level of accessibility for patients and their families to acquire comprehension of discharge preparations (Boden-Albala et al. 2019, Benoit et al. 2020).

It is imperative that the development of discharge planning include the active involvement of families in every care process to ensure the seamless continuation of care for stroke patients upon their return home. Dharma et al. (2021) described that employing a family-centered nursing approach offers the benefit of improving families' adaptive coping skills and equipping them with the capacity to use the skills when faced with challenges. By using these coping skills, caregivers can effectively reduce their burden, manage stress levels, and maintain an ideal quality of life. The provision of care, attention, and affection by the family to ill family members will aid in the patients' physical and psychological recovery (Hutagalung 2021).

Strength and limitations

This systematic review provides a comprehensive overview of the latest developments in discharge planning for stroke patients. It includes a detailed explanation of the methods employed in the development of discharge planning, the mechanism for intervention procedures, and the outcomes observed in stroke patients and their families. However, we encountered challenges in collecting articles that specifically addressed the topic of discharge plans for stroke patients. Not all articles on discharge planning for stroke patients in various countries were written in English.

CONCLUSION

The conventional approach, with the incorporation of specific educational interventions, is the most widely used method in the development of discharge planning for stroke patients. A conventional approach combined with interactive learning through audiovisual media appears to be effective in developing discharge planning to improve patient outcomes and equip families to be prepared to take care of their sick family members. Clear and structured educational interventions that actively involve nurses in the discharge planning process provide more convincing evidence of patient comprehension. Further research is required to evaluate the effectiveness of other alternative approaches in discharge planning for stroke patients and their families or caregivers.

REFERENCES

Amiri FS, Abolhassani S, Alimohammadi N, et al (2022). Investigating the effect of self-management program on stroke's patients' self-efficacy. BMC Neurology 22, 360. doi: 10.1186/s12883-022-02876-y.

Andrew NE, Busingye D, Lannin NA, et al (2018). The quality of discharge care planning in acute stroke care: Influencing factors and association with postdischarge outcomes. Journal of Stroke and Cerebrovascular Diseases 27, 583–590. doi: 10.1016/j.jstrokecerebrovasdis.2017.09.043.

Archambault PM, Rivard J, Smith PY, et al (2020). Learning integrated health system to mobilize context-adapted knowledge with a wiki platform to improve the transitions of frail seniors from hospitals and emergency departments to the community (LEARNING WISDOM): Protocol for a mixed-methods implementati. JMIR Research Protocols 9, e17363. doi: 10.2196/17363.

Aromataris E, Munn Z (2020). Chapter 1: JBI Systematic Reviews. In JBI Manual for Evidence Synthesis. JBI. Available at: https://jbi-global-wiki.refined.site/space/MANUAL/4688650/Chapter+1%3A+JBI+Systematic+Reviews.

Aryadi A, Arofiati F (2021). The influence of electronic discharge planning in patients with heart failure: A literature review. Jurnal Aisyah : Jurnal Ilmu Kesehatan. doi: 10.30604/jika.v6i4.724.

Asmuji A, Faridah F, Handayani LT (2018). Implementation of discharge planning in hospital inpatient room by nurses. Jurnal Ners 13, 106–113. doi: 10.20473/jn.v13i1.5942.

Bacchi S, Oakden-Rayner L, Menon DK, et al (2022). Prospective and external validation of stroke discharge planning machine learning models. Journal of Clinical Neuroscience 96, 80–84. doi: 10.1016/j.jocn.2021.12.031.

Benoit C, Lopez D, Loiseau M, et al (2020). Impact of a pre-discharge education session on stroke knowledge: A randomized trial. Journal of Stroke and Cerebrovascular Diseases 29, 105272. doi: 10.1016/j.jstrokecerebrovasdis.2020.105272.

Boden-Albala B, Goldmann E, Parikh NS, et al (2019). Efficacy of a discharge educational strategy vs standard discharge care on reduction of vascular risk in patients with stroke and transient ischemic attack. JAMA Neurology 76, 20. doi: 10.1001/ jamaneurol.2018.2926.

Chimatiro GL, Rhoda AJ (2019). Scoping review of acute stroke care management and rehabilitation in low and middle-income countries. BMC Health Services Research 19, 789. doi: 10.1186/s12913-019-4654-4.

Dharma KK, Damhudi D, Yardes N, et al (2021). Caregiver empowerment program based on the adaptation model increase stroke family caregiver outcome. Frontiers of Nursing 8, 419–427. doi: 10.2478/fon-2021-0042.

Duangchan C, Steffen A, Matthews AK (2022). Discharge planning practice for patients with colorectal cancer in Thailand. Nursing Practice Today. doi: 10.18502/npt.v9i4.11201.

García-Pérez P, Rodríguez-Martínez M del C, Lara JP, et al (2021). Early occupational therapy intervention in the hospital discharge after stroke. International Journal of Environmental Research and Public Health 18, 12877. doi: 10.3390/ijerphss182412877.

Hutagalung MS (2021). Psikoedukasi dan psikososial bagi keluarga penderita stroke (Panduan lengkap stroke). Nusamedia. Available at: https://books.google.co.id/books?id=tKNsEAAAQBAJ&pg=PR2&lpg=PR2&dq=Psikoedukasi

+dan+Psikososial+Bagi+Keluarga+Stroke+:+Pan duan+Lengkap+Stroke.+Terbit+Digital+:+Nusam edia&source=bl&ots=2-DZrml5dC&sig=ACfU3 U0VCk7eAvljurkrwuaGG8hNbq-LlA&hl=en&sa =X&ved=2ahUKE.

Iskandar M, Mardiyono, Rumahorbo H (2018). The effectiveness of discharge planning and range of motion (ROM) training in increasing muscle strength of nonhemorrhagic stroke patients. Global Health Management Journal (GHMJ) 2, 57–62. doi: 10.35898/ghmj-23556.

Jové-Blanco AJ, Solís-García G, Torres-Soblechero L, et al (2021). Video discharge instructions for pediatric gastroenteritis in an emergency department: a randomized, controlled trial. European Journal of Pediatrics 180, 569–575. doi: 10.1007/s00431-020-03827-w.

Kurniati N, Nursalam N, Kartini Y (2022). The effect of discharge planning combines audiovisual with the family centered nursing preparedness caring for acute post stroke patients. Interest : Jurnal Ilmu Kesehatan 154–165. doi: 10.37341/ interest.v0i0.345.

Lestari TEW, Suwondo A, Budiyono B (2020). Discharge planning-based information system to improve compliance among preeclampsia patients. International Journal of Nursing and Health Service. doi: 10.35654/ijnhs.v3i2.321.

Mohammadi S, Zabolypour S, Ghaffari F, et al (2019). The effect of family-oriented discharge program on the level of preparedness for care-giving and stress experienced by the family of stroke survivors. Iranian Rehabilitation Journal 113–120. doi: 10.32598/irj.17.2.113.

de Mooij MJ, Ahayoun I, Leferink J, et al (2021). Transition of care in stroke patients discharged home: a single-center prospective cohort study. BMC Health Services Research 21, 1350. doi: 10.1186/s12913-021-07347-7.

Ngoc PT, Hsu S-C (2021). Caregivers of stroke survivors: Factors sssociated with caregiver burden. International Journal of Caring Sciences 14, 825–836. Available at: https://www.interna tionaljournalofcaringsciences.org/docs/4_ngoc_or iginal_14_2.pdf.

Page MJ, McKenzie JE, Bossuyt PM, et al (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. PLOS Medicine 18, e1003583. doi: 10.1371/journal.pme d.1003583.

Rethlefsen ML, Kirtley S, Waffenschmidt S, et al (2021). PRISMA-S: an extension to the PRISMA statement for reporting literature searches in systematic reviews. Systematic Reviews 10, 39. doi: 10.1186/s13643-020-01542-z.

Rodakowski J, Rocco PB, Ortiz M, et al (2017). Caregiver integration during discharge planning for older adults to reduce resource use: A metaanalysis. Journal of the American Geriatrics Society 65, 1748–1755. doi: 10.1111/jgs.14873.

Simbolon S, Hamid AYS, Mustikasari, et al (2019). The effectiveness of discharge planning stroke patient due to hypertension to improve patient satisfaction and independence. Enfermería Clínica 29, 703–708. doi: 10.1016/j.enfcli.2019.06.011.

Soebagiyo H, Nursalam N, Ahsan A (2020). The influence of impedance and enhancement factors of discharge planning implementation at hospital: A systematic review. Jurnal Ners 15, 25–33. doi: 10.20473/jn.v15i1Sp.18905.

Suksatan W, Posai V (2020). An integrative review of discharge planning interventions with Thai stroke patients. Systematic Reviews in Pharmacy 11, 1692–1700. Available at: https://www.sysrev pharm.org/articles/an-integrative-review-of-disch arge-planning-interventions-with-thai-stroke-pati ents.pdf.

Taha AS, Ibrahim RA (2020). Effect of a design discharge planning program for stroke patients on their quality of life and activity of daily living. International Journal of Studies in Nursing 5, 64. doi: 10.20849/ijsn.v5i1.724.

Temehy B, Rosewilliam S, Alvey G, et al (2022). Exploring stroke patients' needs after discharge from rehabilitation centres: Meta-ethnography. Behavioral Sciences (Basel) 12, 404. doi: 10.3390/bs12100404.

Veerbeek JM, Ottiger B, Cazzoli D, et al (2022). Speed up discharge planning at the acute stroke unit: A development and external validation study for the early prediction of discharge home. Frontiers in Neurology. doi: 10.3389/fneur.2022 .999595.

Vloothuis JDM, Mulder M, Nijland RHM, et al (2019). Caregiver-mediated exercises with e-health support for early supported discharge after stroke (CARE4STROKE): A randomized controlled trial ed. Quinn TJ. PLoS One 14, e0214241. doi: 10.1371/journal.pone.0214241.

Wang C, Yu T, Luo X, et al (2022). Protocol for the development of a clinical practice guideline for discharge planning of stroke patients. Annals of Translational Medicine 10, 937–937. doi: 10.21 037/atm-22-3151.

Westerlind E, Abzhandadze T, Rafsten L, et al (2019). Very early cognitive screening and return to work after stroke. Topics in Stroke Rehabilitation 26, 602–607. doi: 10.1080/1074935 7.2019.1645440.

Whitehead S, Baalbergen E (2019). Post-stroke rehabilitation. South African Medical Journal 109, 81. doi: 10.7196/SAMJ.2019.v109i2.00011.

World Health Organization (2022). Stroke, cerebrovascular accident. WHO. Available at: https://www.emro.who.int/health-topics/stroke-cerebrovascular-accident/index.html.