The Implementation of the SECI (*Socialization, Externalization, Combination*, dan *Internalization*) Model in Discharge Planning for Stroke Patients' Readiness for Discharge: Literature Review

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A B S T R A C T

Introduction: Discharge planning is a crucial element in nursing care, especially for patients recovering from serious medical conditions such as ischemic stroke. Effective discharge planning impacts patient outcomes, including recovery rates and quality of life. However, its implementation still faces challenges, such as ineffective communication and suboptimal patient education.

Objective: To review literature related to the application of the SECI model in discharge planning for ischemic stroke patients.

Method: The databases used included Google Scholar, PubMed, ScienceDirect, Semantic Scholar, ResearchGate, and BMC, utilizing a systematic literature review method. Keywords used were *ischemic stroke*, *discharge planning*. The literature search yielded 120 articles published between 2020 and 2024, which were screened using PICO elements and the CRAAP method.

Results: SECI model-based discharge planning proved more effective than conventional methods. To improve discharge planning for ischemic stroke patients, hospitals and nurses should train nurses in the SECI model and develop audiovisual-based educational modules. Good communication among healthcare team members should be maintained, and families should be involved in the discharge process. Regular evaluations are also essential to identify improvements and receive feedback from patients and families.

Conclusion: This analysis concludes that SECI model-based discharge planning is more effective than conventional methods. However, further research is needed to explore additional factors that may influence the success of SECI model-based discharge planning.

INTRODUCTION

Discharge planning is a critical component of nursing care, particularly for ischemic stroke patients who often face complex challenges, such as physical disabilities, cognitive impairments, and emotional disturbances. This process significantly impacts recovery, readmission rates, and the long-term quality of life of patients (1); (2). Effective discharge planning is essential to ensuring a successful transition from hospital to home care, encompassing key factors such as continuity of care, rehabilitation, and adequate support (3).

However, the implementation of discharge planning often encounters obstacles, particularly related to ineffective communication and suboptimal health education. For instance, patients frequently misunderstand the guidance provided, while nurses may not fully deliver education due to various constraints (4). The readiness of patients to be discharged greatly influences their recovery outcomes, with better-prepared patients being less likely to require hospital readmission (5). In this regard, nurses play a vital role in enhancing patient knowledge through discharge planning based on knowledge management principles (6).

The SECI model (Socialization, Externalization, Combination, Internalization), developed by Nonaka and Takeuchi, offers an innovative approach to knowledge transfer. This model aims to enhance the independence of stroke patients, improve behaviors, and prevent relapses, thereby improving their quality of life and reducing reliance on external care (7); (8).

Although the SECI model has been applied in various sectors, its use in the discharge planning of stroke patients remains underexplored. Several studies highlight its potential to improve patient satisfaction, reduce readmission rates, and support better recovery outcomes. This literature review seeks to explore the application of the SECI model in the discharge planning of ischemic stroke patients. The findings are expected to provide practical recommendations for nurses, helping to enhance communication, patient readiness, and long-term recovery outcomes. Additionally, this review aims to contribute to the understanding of patient-centered, multidisciplinary care approaches in the context of more effective discharge planning.

METHOD

This research is a literature review conducted through a search of published research articles. The databases used to find journals relevant to the research topic include Google Scholar, Springer, PubMed, Science Direct, Semantic Scholar, ResearchGate, and BMC. The research articles sought and selected were published between 2020 and 2024. The search strategy employed keywords in English, using Boolean combinations of each PICOS element: ("ischemic stroke" OR "stroke patients" OR "stroke"), ("discharge planning" OR "transition planning" OR "post-discharge care") and ("SECI model" OR "knowledge management"). Inclusion criteria were based on PICOS elements, with a primary focus on ischemic stroke patients and articles discussing the application of the SECI model or discharge planning on patient readiness for discharge. Studies comparing the SECI model with other planning methods were also included. Reported outcomes had to relate to patient readiness, readmission rates, or post-discharge recovery impact. The study types included were in Indonesian and English, with publication years limited to the last five years, and research types such as cross-sectional quantitative studies, qualitative action research, and systematic literature surveys. Articles were screened based on the CRAAP evaluation criteria (Currency, Relevance, Authority, Accuracy, and Purpose), yielding a total of 120 articles from both Indonesian and English journals. After deduplication and screening, 70 articles lacking full text due to being in repositories or digital libraries and thus inaccessible were excluded. Additionally, 15 articles consisting of theses and dissertations, and several articles outside the review scope (e.g., 10 articles on pharmacy services, studies conducted in clinics, psychiatric hospitals, or community health centers) were excluded. Furthermore, 15 articles did not meet the inclusion criteria, such as those with non-stroke patient samples or those not measuring patient discharge readiness. After the CRAAP evaluation, 10 articles remained that aligned with the research objectives and addressed the research questions.
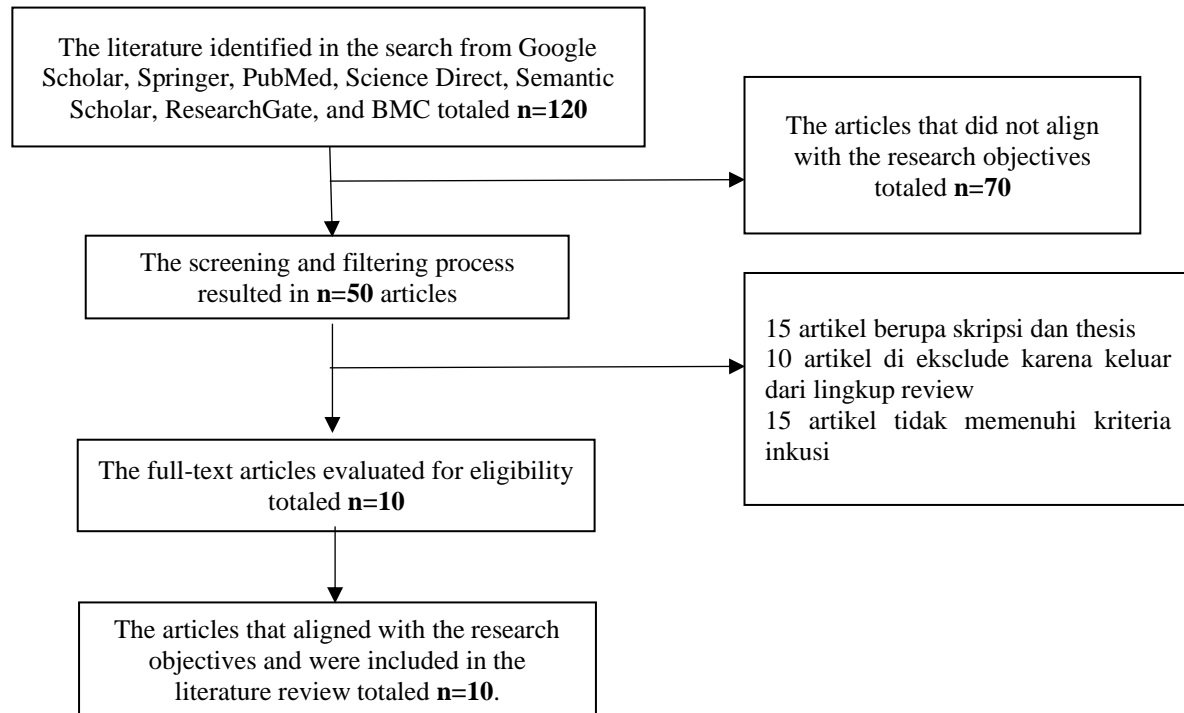
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│ search from Google Scholar,          │        ┌──────────────────────────┐
│ Springer, PubMed, Science Direct,    │───────▶│ The articles that did not │
│ Semantic Scholar, ResearchGate, and  │        │ align with the research   │
│ BMC totaled n=120                    │        │ objectives totaled n=70   │
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│ eligibility totaled n=10             │        │ kriteria inkusi           │
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│ The articles that aligned with the   │
│ research objectives and were         │
│ included in the literature review    │
│ totaled n=10.                        │
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Figure 1. Literature Selection Flow

RESULTS AND DISCUSSION

Based on the search results of studies or articles, 10 quantitative studies with a cross-sectional approach were found, one study with a quantitative-qualitative design, one study with a cohort approach, and two studies with a quasi-experimental approach. Overall, the most commonly used design was the quantitative study with a cross-sectional approach. The cross-sectional quantitative designs selected were journals that explain the relationship between discharge planning and the readiness for discharge of stroke patients. For more details, please refer to Table 1 for the list of articles from the search results.

Table 1. List of Articles from Search Results

No	Author, Title, Journal	Method Design	Results	Database
1	Siskaningrum, A., Yusuf, A., Mahmudah, Machin, A. (2023). Nurse performance and influence factors in discharge planning based on knowledge management SECI model in stroke patients. Journal of Medicinal and Chemical Sciences, 6, 2558-2568.DOI: https://doi.org/10.26655/JMCHEMSCI.2023.10.30	The research design employed was quantitative with a cross-sectional approach. Data analysis was conducted using SEM-PLS	Nurse factors ($p = 0.014$), patient factors ($p = 0.011$), family factors ($p = 0.000$), and organizational factors ($p = 0.013$) influence discharge planning based on the SECI knowledge management model	Google Schoolar
2	Panyuwa, A. A., Dwiantoro, L., & Rofi'i, M. (2023). The effect of application of discharge planning SECI model on the completeness of discharge planning documentation for tuberculosis. *Jurnal Keperawatan (JKEP)*, 8(2), 261–274. doi: 10.32668/jkep.v8i2.1351	A quasi-experimental study was conducted using a post-test-only design with a nonequivalent control group	The control group had an average documentation completeness score of 3.11 (categorized as poor), while the intervention group had an average score of 10.29 (categorized as good). The Mann-Whitney test results showed a significant difference between the two groups ($p = 0.000$)	Springer
3	Musrini, A., Ibnu, F., Hidayati, R. N., & Zamron, A. H. (2024). Correlation analysis of SECI-based discharge planning implementation with patient satisfaction. Indonesian Journal of Global Health Research, 6(4), 234-244. doi.org/10.37287/ijghr.v6iS4.4196	his study employed a quantitative research design with a cross-sectional approach. Data analysis was conducted using SPSS	There is a significant relationship between discharge planning and patient satisfaction ($p = 0.000$), with a very strong correlation strength ($r = 0.792$) and a positive direction of the relationship. This indicates that the better the discharge planning is implemented, the higher the patient satisfaction regarding nursing services in the inpatient ward	Reseach Gate
4	Wakhdi, N. M., Handiyani, H., Afriani, T., & Nurdiana. (2021). Development of discharge planning implementation through the preparation of guidelines	The method used was a pilot project encompassing the stages	The level of nurses' knowledge regarding discharge planning needs improvement, while their perceptions indicate the need for	Reseach Gate

	based on the SECI model of knowledge management. *Journal of Telenursing (JOTING)*, *3*(2), 611–623. https://doi.org/10.31539/joting.v3i2.2897	of problem identification and analysis, problem prioritization, plan of action development, implementation, and evaluation based on a literature review	revisions to the standard operating procedures (SOP)	
5	Ulumy, L. M., Yuswanto, T. J. A., & Ramlan, D. (2023). Health education using the SECI model technique improves self-care management and fluid adherence in hemodialysis patients with kidney failure. *Jurnal Penelitian Kesehatan Suara Forikes*, *14*(2), 243–250. http://dx.doi.org/10.33846/sf14201	The study employed a pretest-posttest with control group design involving 58 respondents divided into intervention and control groups	A significant difference was observed between the intervention and control groups, with a p-value of 0.000	Google Schoolar
6	Kuo, N. Y., Lin, Y. H., & Chen, H. M. (2021). Continuity of care and self-management among patients with stroke: A cross-sectional study. Healthcare (Basel), 9(8), 989. https://doi.org/10.3390/healthcare9080989	This study employed a quantitative research design with a cross-sectional approach. Data analysis was conducted using SPSS	The main factors influencing stroke patients' self-management were education level (10.8%), frequency of weekly exercise (2.1%), time since stroke onset (2.4%), and continuity of care (29.2%). To assist stroke patients in managing themselves, medical teams should provide continuous care, particularly for those with low educational attainment, those who do not exercise, and those who have experienced a stroke within the past six months	PubMed
7	Tarigan, N., Inayah, I., Irianto, G., Setiawan, A., & Chan, C. M. (2023). Comparative Study on the Discharge Planning Method for Self-Care in Ischemic Stroke Clients. Journal of Telenursing (JOTING), 5(2), 3578. https://doi.org/10.31539/joting.v5i2.7850	This study employed a quantitative research design with a quasi-experimental approach using a pretest-posttest with control group design	There was a significant effect of discharge planning on stroke patients' self-care behavior before and after implementation (p = 0.000). However, there was no significant effect on self-care management (p = 0.071).	Semantic Scholar
8	Taha, A. S., & Ibrahim, R. A. (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(1), 64-86. https://doi.org/10.20849/ijsn.v5i1.724	This study employed a quantitative research design with a quasi-experimental approach using a pretest-posttest with control group design	The scores for knowledge, quality of life, and daily activities of stroke patients were higher after participating in the discharge planning program compared to the average pretest scores. A positive relationship was found between patients' knowledge, quality of life, and daily activities (p = 0.000)	Google Schoolar
9	O'Callaghan, G., Fahy, M., O'Meara, S. *et al.* Transitioning to home and beyond following stroke: a prospective cohort study of outcomes and needs. *BMC Health Serv Res* **24**, 449 (2024). https://doi.org/10.1186/s12913-024-10820-8	This study employed a quantitative research design with a prospective cohort study approach	Significant disability was detected in 51% of patients at discharge, which improved at 3 months but increased again to 35% at 6 months. Physical health and social functioning were rated as 'moderate,' while HR-QOL remained impaired at 6 months. Cognitive impairment was observed in 40% of patients, and unmet needs, including transitional planning and rehabilitation support, were recorded with a median of four needs at discharge and three needs at 6 months	MBC
10	Marwah, & Sulidah. (2024). The Relationship Between Nurses' Knowledge Level and Adherence to Discharge Planning Implementation in Inpatient Care. MAHESA: Malahayati Health Student Journal, 4(9), 3692-3702. DOI: https://doi.org/10.33024/mahesa.v4i9.14863	This study employed a quantitative research design with a cross-sectional approach. Data analysis was conducted using SPSS	Nurses' knowledge of discharge planning was categorized as moderate, with most respondents adhering to its implementation. Chi-square analysis yielded a p-value of 0.005 (< 0.05), indicating a significant relationship between knowledge and adherence to discharge planning, with a moderate association strength	Science Direct

Based on the analysis of the 10 articles, discharge planning for stroke patients is a crucial aspect of enhancing patients' quality of life and families' readiness to care for them after discharge. In this context, several studies have demonstrated how certain factors contribute to the effectiveness of this planning. (8) stated that nursing factors, patient conditions, family support, and organizational structure significantly influence discharge planning based on the SECI knowledge management model. This study reported significant p-values, specifically $p < 0.05$ for all tested factors, reflecting the importance of a SECI-based approach in improving discharge planning quality. On the other hand, (9) found that the implementation of discharge planning is hindered by a lack of motivation and compliance from nurses, inefficient time management, and inadequate planning due to suboptimal documentation of discharge planning. (10) emphasized the importance of the relationship between discharge planning implementation and patient satisfaction, with results showing that the better the planning, the higher the patient's satisfaction.

This aligns with the findings of (11), which suggest that strengthening the implementation of discharge planning can be achieved by optimizing the control function of nursing managers, both at the ward head level and in nursing service departments. Ward heads, together with the nursing team, must actively oversee the implementation of discharge planning by the attending nurses. (12) state that good self-care management knowledge helps clients manage their health conditions independently. The SECI model (Socialization, Externalization, Combination, Internalization) strengthens the transfer of knowledge between nurses, clients, and families. In the Socialization stage, nurses share direct experiences; Externalization turns nurses' experiences into explicit knowledge; Combination integrates information for a holistic understanding; and Internalization allows clients to apply knowledge in daily life. The application of the SECI model in discharge planning ensures that clients are not only given knowledge but also empowered to manage self-care independently, improving their health outcomes and quality of life. (13) highlighted the importance of continuity of care, particularly for patients with low education, showing that ongoing support helps patients manage their health after discharge. This is consistent with research by (14), which noted that many patients experience disabilities post-discharge, indicating the need for better transition planning and rehabilitation support. (15) a family-based discharge approach is effective in enhancing readiness and reducing the psychological stress of families. This highlights the importance of involving families in the discharge planning process to improve the quality of home care. (16) comprehensive discharge planning, including education and family involvement, can improve the quality of home care and reduce the likelihood of patient readmission to the hospital.

Meanwhile, studies by (17) and (18) affirm that effective discharge planning can improve self-care behaviors and patients' quality of life. This demonstrates that good interventions, as proposed in the SECI model, can yield better outcomes in post-discharge care. (19) added that sufficient nurse knowledge correlates with their compliance in implementing discharge planning, emphasizing the importance of ongoing training. (11) the higher a nurse's knowledge, the better their actions will be, including the implementation of discharge planning. (20) urses' knowledge of discharge planning is essential to identify actual and potential problems that may occur in patients while being treated at home. (21) the educational intervention program is effective in improving the quality of discharge planning conducted by nurses and midwives. This highlights the importance of competency-based training to support better healthcare services.

The effectiveness indicators of the SECI model in discharge planning for patients include the level of discharge readiness, patient and family satisfaction, recovery rates, and readmission frequency, as well as communication among healthcare teams, knowledge application by patients and families, health behavior changes, feedback on the discharge process evaluation, and integration of ongoing healthcare services.

Overall, comparisons from this research indicate that discharge planning based on the SECI model is not only more comprehensive but also more effective in addressing the challenges faced by stroke patients and their families after discharge. By integrating various factors and a multidimensional approach, the SECI model can enhance discharge outcomes and reduce existing barriers, making it a superior choice compared to methods lacking a systematic knowledge management approach.

CONCLUSION

The conclusion of this review emphasizes that discharge planning for stroke patients based on the SECI knowledge management model has proven to be more effective than conventional methods. This model integrates various important factors, such as nursing performance, family support, and continuity of care, all of which contribute to the readiness of patients and their families in transitioning from the hospital to home. Research indicates that good training for nurses, along with the use of audiovisual educational modules, can enhance family readiness and patient satisfaction.

To improve discharge planning for ischemic stroke patients, hospitals and nurses need to undertake strategic steps. First, regular training for nurses on the SECI model will enhance their skills. The development of audiovisual-based educational modules is also essential to help patients and families understand home care. Effective communication among the healthcare team must be ensured for coordinated care. Involving families in the discharge process will prepare them to provide necessary

support. Finally, regular evaluations of the discharge process are crucial to identify areas for improvement and gather feedback from patients and families

AUTHOR CONTRIBUTIONS

Yulizabetri Sy: Conceptualization, Methodology, Writing, Editing
Nurul Huda: Supervision.

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REFERENCES

1. Gonçalves-Bradley DC, Lannin NA, Clemson L, Cameron ID, Shepperd S. Discharge planning from hospital. Cochrane Database of Systematic Reviews. 2022 Feb 24;2022(2).
2. van Dongen L, Hafsteinsdóttir TB, Parker E, Bjartmarz I, Hjaltadóttir I, Jónsdóttir H. Stroke survivors' experiences with rebuilding life in the community and exercising at home: A qualitative study. Nurs Open. 2021 Sep 10;8(5):2567–77.
3. Anie Tri Indiartinie, Eppy Setiyowati, Yurike Septianingrum, Abdul Muhith, Ima Nadatien, Umdatus Soleha, et al. The Importance of Discharge Planning in Stroke Patients: Literature Review. Journal Of Nursing Practice. 2023 Apr 25;6(2):130–6.
4. Krook M, Iwarzon M, Siouta E. The Discharge Process—From a Patient's Perspective. SAGE Open Nurs. 2020 Jan 20;6.
5. Septianingrum Y, Yusuf A, Widyawati IY, Sari RY, Wardani EM, Musfirah NR, et al. Factors associated with family caregiver readiness to care for post-stroke patients after hospital discharge. Discover Social Science and Health. 2024 Jan 30;4(1):4.
6. Farnese ML, Barbieri B, Chirumbolo A, Patriotta G. Managing Knowledge in Organizations: A Nonaka's SECI Model Operationalization. Front Psychol. 2019 Dec 10;10.
7. Adesina AO, Ocholla DN. SECI Model in Knowledge Management Practices. Mousaion: South African Journal of Information Studies. 2019 Dec 31;37(3).
8. Siskaningrum A, Yusuf A, Mahmudah, Machin A. Nurse performance and influence factors in discharge planning based on knowledge management SECI model in stroke patients. Journal of Medicinal and Chemical Sciences. 2023;6:2558–68.
9. Panyuwa AA, Dwiantoro L, Rofi'i M. The Effect of Application of Discharge Planning Seci Model on The Completeness of Discharge Planning Documentation for Tuberculosis. JKEP. 2023 Nov 26;8(2):261–74.
10. Musrini A, Ibnu F, Hidayati RN, Zamron AH. Correlation analysis of SECI-based discharge planning implementation with patient satisfaction. Indonesian Journal of Global Health Research. 2024;6(4):234–44.
11. Wakhdi NM, Handiyani H, Afriani T, Nurdiana N. Pengembangan Pelaksanaan Discharge Planning dengan Penyusunan Panduan Berbasis Knowledge Management SECI Model. Journal of Telenursing (JOTING). 2021 Nov 16;3(2):611–20.
12. Ulumy LM, Yuswanto TJA, Ramlan D. Edukasi kesehatan dengan teknik model SECI meningkatkan self-care management dan kepatuhan cairan pasien gagal ginjal dengan hemodialisis. Jurnal Penelitian Kesehatan Suara Forikes. 2023;14(2):243–250.
13. Kuo NY, Lin YH, Chen HM. Continuity of Care and Self-Management among Patients with Stroke: A Cross-Sectional Study. Healthcare. 2021 Aug 4;9(8):989.
14. O'Callaghan G, Fahy M, O'Meara S, Chawke M, Waldron E, Corry M, et al. Transitioning to home and beyond following stroke: a prospective cohort study of outcomes and needs. BMC Health Serv Res. 2024 Apr 10;24(1):449.

15. Mohammadi S, Zabolypour S, Ghaffari F, Arazi T. 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. 2019 Apr 30;113–20.

16. Putri AN, Nurhayati N. Hubungan Discharge Planning Dengan Kesiapan Pulang Pada Keluarga Pasien Stroke. Mandala Of Health. 2023 Apr 3;16(1):74.

17. Tarigan N, Inayah I, Irianto G, Setiawan A, Chan CM. Studi Komparatif Metode Discharge Planning pada Self Care Klien Stroke Ischemic. Journal of Telenursing (JOTING). 2023 Dec 10;5(2):3578–88.

18. Said Taha A, Ali Ibrahim R. 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. 2020 Mar 17;5(1):64.

19. Marwah M, Sulidah S. Hubungan Tingkat Pengetahuan dengan Kepatuhan Perawat Dalam Pelaksanaan Discharge Planning Pada Pasien Rawat Inap. MAHESA : Malahayati Health Student Journal. 2024 Sep 1;4(9):3692–702.

20. Farhah G, Yuswardi Y, Mayasari P, Rachmah R, Yullyzar Y. The nurses' knowledge regarding discharge planning in VIP room settings: A case study in Banda Aceh. Quest Journals: Journal of Medical and Dental Science Research. 2023;10(3):41–4.

21. Jehosua WA, Kakerissa N, Pangaribuan RN, Eka NGA. Effect of an educational intervention program on discharge planning for nurses and midwives. Enferm Clin. 2023 Mar;33:S33–7.