

Original Research Article

Analysis of medical surgical nursing specialist practice in neurological system disorder patients with primary cases of hemorrhagic stroke and non-hemorrhagic stroke using the Dorothea Orem theory model approach

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ABSTRACT

Background: Hemorrhagic and non-hemorrhagic strokes are among the leading causes of neurological disability worldwide, often resulting in significant self-care deficits. Specialist medical-surgical nurses play a critical role in addressing these needs through structured, theory-guided interventions. Dorothea Orem's self-care deficit nursing theory (SCDNT) offers a comprehensive framework to guide care for stroke patients experiencing functional dependency.

Methods: This descriptive-analytic study used a retrospective case study approach to examine the application of Orem's SCDNT in stroke care. The study was conducted at Gatot Subroto Army hospital and the Pusat Otak nasional hospital in Jakarta from October 2022 to May 2023. Data were obtained from three directly managed cases and 40 patient medical record summaries meeting inclusion criteria (hemorrhagic or non-hemorrhagic stroke, ≥ 6 days hospitalization, complete documentation). Structured reviews of nursing and physician records captured variables such as demographics, risk factors, national institutes of health stroke scale (NIHSS) scores, and nursing diagnoses. Nursing interventions were categorized using Orem's care systems: wholly compensatory, partially compensatory, and supportive-educative. Descriptive statistics and thematic interpretation were used to analyze patterns and theory-practice alignment. Ethical clearance was not required due to the use of de-identified secondary data, though institutional permission was obtained.

Results: The majority of patients were male (75%) and aged 51-60 years. Hypertension was the most common risk factor (40%). NIHSS scores most frequently ranged from 5-15, indicating moderate stroke severity. The dominant nursing diagnosis was ineffective cerebral perfusion (52.5%). Most patients required wholly or partially compensatory nursing systems based on their level of dependence and clinical status.

Conclusions: Dorothea Orem's theoretical model effectively supported the delivery of individualized, structured nursing care in stroke patients with neurological deficits. The use of wholly and partially compensatory systems aligned with patients' functional limitations, enabling nurses to meet care needs, support recovery, and gradually enhance self-care capabilities. These findings underscore the relevance of theory-based practice in specialist nursing and its value in improving outcomes for stroke patients.

Keywords: Hemorrhagic stroke, Non-hemorrhagic stroke, Orem's theory, Medical-surgical nursing, Self-care, NIHSS

INTRODUCTION

Stroke is one of the leading causes of death and long-term disability worldwide. According to the global burden of disease study (GBD 2019), stroke ranks as the second leading cause of mortality globally, affecting millions of individuals each year.¹ There are two primary types of stroke: hemorrhagic and non-hemorrhagic (ischemic). Both types significantly impair neurological functions and result in decreased ability to perform self-care.²

In clinical practice, stroke patients frequently experience deficits in motor function, communication, cognition, and consciousness, which interfere with their capacity to meet basic self-care needs. This condition has been well-documented in several studies that associate stroke with impaired quality of life and functional dependency.^{3,4} This situation underscores the critical role of specialist nurses, particularly in the field of medical-surgical nursing, in providing structured and comprehensive care based on established nursing theories. One such theory is SCDNT, which emphasizes the importance of identifying self-care limitations and tailoring nursing interventions accordingly.⁵

Despite its relevance, the application of Orem's model in stroke care, especially in the context of specialist nursing practice in Indonesia, remains underexplored. Few clinically reported studies have systematically examined the integration of this model into nursing documentation and practice in acute stroke settings.⁶ Therefore, this study aims to analyze the application of Orem's model in specialist medical-surgical nursing care for patients with neurological deficits due to hemorrhagic and non-hemorrhagic stroke.

METHODS

This study employed a descriptive-analytic research design with a retrospective case study approach to analyze the application of SCDNT in medical-surgical specialist nursing care for patients with neurological disorders, specifically hemorrhagic and non-hemorrhagic stroke.

The data were derived from two sources: (1) three managed stroke cases directly handled by medical-surgical nursing specialists during clinical residency, and (2) forty patient medical record summaries selected from hospital archives. Patients were included based on the following criteria: diagnosed with hemorrhagic or non-hemorrhagic stroke, hospitalized for a minimum of 6 days, and had complete documentation of medical history, NIHSS scores, nursing assessments, diagnoses, and interventions. Cases involving head trauma or central nervous system infections were excluded unless the primary diagnosis remained stroke-related.

Data collection procedures involved structured document review of nursing records and physician reports.

Collected variables included gender, age, education, occupation, comorbidities, risk factors, length of hospitalization, NIHSS score, and nursing diagnoses. The classification of nursing interventions was mapped to Orem's care systems: wholly compensatory, partially compensatory, and supportive-educative.

Ethical approval was not required as the study used de-identified, secondary data without direct patient involvement or identifiable information. However, permission for data access was obtained from the hospital nursing committee and relevant clinical departments.

Data analysis was conducted using descriptive statistics to identify dominant patterns and relationships. Frequencies and percentages were used to summarize categorical data, while thematic interpretation was applied in evaluating the alignment between observed nursing practices and the theoretical framework of Orem.

RESULTS

Patient characteristics

Based on summary data of 40 patients with neurological system disorders, characteristics analyzed include gender, age, education, occupation, and medical diagnosis.

Table 1: Case summary (n=40).

Characteristics	N	Percentage (%)
Gender		
Man	30	75
Woman	10	25
Age (in years)		
20-30	1	2.5
31-40	4	10
41-50	10	25
51-60	17	42.5
61-70	5	12.5
71-80	3	7.5
Education		
Junior high school	3	7.5
Senior high school	28	70.0
College	9	22.5
Work		
Doesn't work	5	12.5
Housewife	4	10.0
Civil servant	6	15.0
Self-employed	12	30.0
Laborer	9	22.5
Retired	4	10.0
Medical diagnosis		
Non-hemorrhagic stroke	20	50
Hemorrhagic stroke	10	25
Infection (Meningitis), HNP, epilepsy, head trauma, spinal cord trauma	10	25.0

Based on Table 1, it was found that the majority of participants were male (75%), and most were in the age group of 51-60 years (42.5%). In terms of education, most participants had completed senior high school (70%), and the most common occupation was self-employment (30%). Regarding medical diagnoses, non-hemorrhagic stroke was the most frequent condition reported (50%).

Based on Table 2 the most frequent NIHSS score range was 5-15, indicating moderate stroke severity, with a total of 17 patients. Based on Table 3, the most commonly identified nursing diagnosis was ineffective cerebral tissue perfusion (n=21), followed by decreased intracranial adaptive capacity (n=10). Based on Table 4, the analysis showed that the most prevalent risk factor was a history of hypertension, affecting 16 individuals.

Table 2: NIHSS case resume.

NIHSS score range	N	Percentage (%)	Clinical classification	Clinical description
20	5	12.5	Severe stroke	Shows severe neurological deficits.
16-18	8	20.0	Moderate to severe stroke	Requires close monitoring and aggressive intervention.
5-15	17	42.5	Moderate stroke	The majority of cases show a variable clinical presentation.
Total	30	75		

Table 3: Diagnosis nursing case resume.

Priority nursing diagnosis	N
Cerebral perfusion is not effective	21
Decrease adaptive intracranial	10
Disturbance mobility	3
Chronic pain	4
Risk injury	1
Disturbance gas exchange	1
Total	40

Table 4: Factors case risk resume focuses on non- hemorrhagic stroke and hemorrhagic stroke.

Risk factors	N	Percentage (%)	Analysis
History of hypertension	16	40.0	It is factor predisposition the most frequent main found in stroke patients.
History of diabetes mellitus	9	22.5	Diabetes contributes to damage vessels blood and increase risk of stroke.
Other/unknown	5	12.5	Possibility other factors such as style living, smoking, or not yet documented.

DISCUSSION

This study explored the characteristics and nursing care of patients with neurological disorders due to hemorrhagic and non-hemorrhagic stroke through the lens of SCDNT. The findings align with global stroke data and support the application of Orem's theory in specialist medical-surgical nursing care.

Patient demographics and risk factors

The demographic characteristics revealed that most patients were male (75%) and aged 51–60 years (42.5%), consistent with epidemiological data indicating that men have a higher risk of stroke due to modifiable factors like smoking and hypertension.^{1,2} Similar findings have been reported in studies which suggest that middle-aged men experience earlier onset of stroke owing to behavioral and lifestyle factors.³ This is also supported by reports

highlighting that age and gender disparities are influential in stroke burden and recovery outcomes.⁴

In comparison, other population studies have indicated that males consistently have higher stroke incidence across different regions, further validating the demographic profile seen in this study.⁵

The most prevalent risk factor identified was hypertension (40%), corroborating prior studies that highlight hypertension as the leading cause of both ischemic and hemorrhagic strokes.⁶ Controlling blood pressure has been shown to significantly reduce stroke incidence.⁷ Aggressive hypertension control is a key preventive strategy in stroke management guidelines.⁸

Likewise, unmanaged hypertension often contributes to symptom worsening and recurrence in mild stroke cases.⁹

Stroke severity and clinical classification

Regarding stroke severity, the NIHSS score range of 5–15 (42.5%) indicated moderate severity. This finding supports research indicating that patients with moderate NIHSS scores typically have variable recovery trajectories and require focused nursing interventions.¹⁰ NIHSS scores are also validated as strong predictors of post-stroke outcomes.¹¹ Several studies reinforce the role of NIHSS in guiding early management and predicting functional independence.²⁶ Early recognition of moderate NIHSS scores allows for timely intervention and rehabilitation planning.¹³

In contrast, studies such as those by Jauch et al and Saver have shown that early recognition of moderate NIHSS scores allows for timely thrombolysis and rehabilitation planning, reducing long-term disability.¹⁰

Nursing diagnoses and functional impairments

The most frequent nursing diagnosis was ineffective cerebral perfusion (52.5%), followed by decreased adaptive intracranial capacity and impaired mobility. These results reflect common post-stroke impairments documented in clinical studies, which emphasize the importance of early nursing assessment to support neurological recovery.¹⁴

Similarly, Li et al stressed the role of nurses in identifying and managing impaired perfusion and increased intracranial pressure.¹⁵ According to Iadecola and Anrather, neurovascular integrity disruption and immune response play a role in cerebral perfusion compromise during stroke, thus reinforcing the relevance of accurate nursing diagnoses.¹⁷

These findings align with research by LoPresti et al who emphasized that ongoing assessment of cerebral hemodynamics is crucial in post-stroke management and affects prognosis.¹⁶

Comparison with previous studies on Orem's theory

The application of Orem's theory in this study revealed that the majority of patients required wholly or partially compensatory care. Orem proposed that patients with acute neurological conditions often have self-care deficits requiring full support initially, transitioning to partial assistance as recovery progresses.¹⁰ Younas and Quennell confirmed that nursing theories like SCDNT provide a structured and patient-centered approach to care, especially in chronic and recovery phases.²⁰ Supporting this, Macmillan and Drummond discussed the long-term management of stroke patients using theoretical models to enhance self-care and quality of life.¹⁷ Teasell et al provided robust evidence on structured rehabilitative approaches and their impact on recovery when guided by theoretical frameworks.²¹

These conclusions are further supported by Goyal et al who noted that care models using structured guidance improve outcomes in patients post-thrombectomy, especially when nursing care is coordinated around patient independence goals.⁶

Implications for specialist nursing practice

These results demonstrate that utilizing Orem's theory allows nurse specialists to assess dependency levels accurately and design targeted interventions based on clinical severity. This structured framework improves clinical decision-making, documentation, and continuity of care. Polit and Beck emphasized that theory-guided practice enhances evidence-based nursing and bridges the gap between research and practice.²³ This is echoed by Yin who underscored the importance of applying theoretical constructs in real-world case analyses to produce consistent, replicable results.²⁴

The findings of this study highlight the continued need for theoretical integration in nursing curricula and clinical guidelines, as it directly affects patient engagement and stroke recovery outcomes. Future studies may further explore how Orem's model aligns with evolving digital health interventions in neurorehabilitation.

Limitations

Despite the valuable insights gained, this study has several limitations. First, the sample size was relatively small, with only 40 patient case summaries and 3 managed cases, which may limit the generalizability of the findings. Second, the study employed a retrospective design, relying on existing medical and nursing records, which may be subject to incomplete or inconsistent documentation. Third, the data were collected from a single geographic and institutional context, potentially introducing institutional bias and limiting external validity. Lastly, while the study applied Orem's self-care deficit theory to evaluate nursing practice, it did not compare this approach directly with alternative theoretical models, which may have provided a broader perspective on theory-guided care. Future research should consider prospective designs with larger, more diverse samples and comparative theoretical analyses to strengthen evidence-based practice in stroke nursing care.

CONCLUSION

The findings of this study emphasize the importance of structured, theory-based nursing care in managing patients with neurological disorders resulting from hemorrhagic and non-hemorrhagic stroke. Most patients exhibited moderate to severe deficits as reflected by NIHSS scores and required nursing diagnoses such as ineffective cerebral perfusion and impaired mobility. These clinical conditions necessitate varying levels of dependency and self-care support.

The application of Dorothea Orem's SCDNT was found to be highly relevant in guiding specialist medical-surgical nursing interventions. By categorizing patients into wholly, partially, and supportive-educative care systems, nurses can deliver individualized care that supports patient autonomy, enhances recovery, and prevents complications. This theory provides a conceptual framework for evaluating functional status, planning interventions, and improving clinical outcomes in stroke care.

Integrating Orem's model into stroke nursing care not only strengthens clinical decision-making but also promotes holistic and patient-centered practices aligned with current professional nursing standards. Therefore, it is recommended that nurse specialists consistently apply this theory in both acute and rehabilitative phases of stroke management to optimize patient outcomes.

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