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ROY ADAPTATION MODEL INTERVENTIONS FOR ENHANCING ADAPTATION AND SATISFACTION IN STROKE PATIENTS: A SYSTEMATIC REVIEW

Eriyana Hariyanti[1]*, Fery Agusman Motuho Mendrofa[2]
[1,2] Department of Nursing, Faculty of Nursing and Health Science, Universitas Karya Husada Semarang, Semarang, Indonesia
Email: 2310102@unkaha.ac.id

ABSTRAK

Stroke tetap menjadi salah satu penyebab utama disabilitas di seluruh dunia, yang secara signifikan memengaruhi kualitas hidup pasien dan sistem pelayanan kesehatan. Model Adaptasi Roy (Roy Adaptation Model/RAM) menawarkan kerangka teoretis yang komprehensif untuk intervensi keperawatan yang dapat meningkatkan proses adaptasi pasien stroke dan kepuasan mereka terhadap pelayanan. Telaah sistematis ini bertujuan untuk mengevaluasi efektivitas intervensi keperawatan berbasis RAM dalam meningkatkan proses adaptasi dan kepuasan pasien stroke. Pencarian literatur dilakukan secara sistematis melalui basis data PubMed, Google Scholar, dan ResearchGate untuk studi yang diterbitkan antara tahun 2014–2024. Pedoman PRISMA digunakan, dan penilaian kualitas dilakukan menggunakan Newcastle-Ottawa Scale dan Cochrane Risk of Bias tool. Dua penelaah independen menyaring artikel, mengekstraksi data, dan menilai kualitas, dengan perbedaan pendapat diselesaikan oleh penelaah ketiga. Hasil dari 206 artikel awal yang diidentifikasi, 8 studi memenuhi kriteria inklusi setelah menghapus duplikasi dan menerapkan penilaian kualitas. Tiga uji klinis acak (RCT) berkualitas tinggi menunjukkan peningkatan signifikan dalam adaptasi fisiologis (SMD = 0.72, 95% CI 0.45–0.99), dengan penurunan skor defisit neurologis (NIHSS) rata-rata sebesar 4,3 poin ($p < 0.001$) dan peningkatan skor Barthel Index sebesar 15,2 poin ($p < 0.001$). Adaptasi psikososial juga meningkat secara signifikan (SMD = 0.68, 95% CI 0.41–0.95). Kepuasan pasien meningkat rata-rata sebesar 67% ($p < 0.05$) pada kelompok intervensi dibandingkan kelompok kontrol. Dukungan keluarga muncul sebagai moderator penting dalam efektivitas intervensi. Kesimpulannya, intervensi keperawatan berbasis RAM efektif meningkatkan adaptasi fisiologis dan psikososial pada pasien stroke, menghasilkan peningkatan luaran fungsional dan kepuasan pasien yang lebih tinggi. Pendekatan holistik yang mencakup keempat mode adaptasi (fisiologis, konsep diri, fungsi peran, dan interdependensi) terbukti lebih unggul dibandingkan perawatan konvensional. Implementasi dalam praktik klinis direkomendasikan, dengan perhatian khusus pada keterlibatan sistem dukungan keluarga.

Kata kunci: Model Adaptasi Roy; Rehabilitasi Stroke; Adaptasi Pasien; Kepuasan Pasien; Telaah Sistematis; Intervensi Keperawatan

ABSTRACT

Stroke remains a leading cause of disability worldwide, significantly impacting patients' quality of life and healthcare systems. The Roy Adaptation Model (RAM) offers a comprehensive theoretical framework for nursing interventions that may improve stroke patients' adaptation processes and satisfaction with care. This systematic review aimed to evaluate the effectiveness of RAM-based nursing interventions in enhancing adaptation processes and satisfaction among stroke patients. A systematic literature search was conducted across PubMed, Google Scholar, and ResearchGate databases for studies published between 2014-2024. The PRISMA guidelines were followed, and quality assessment was performed using the Newcastle-Ottawa Scale and Cochrane Risk of Bias tool.

Two independent reviewers screened articles, extracted data, and assessed quality with disagreements resolved by a third reviewer. Results from 206 initially identified articles, 8 studies met the inclusion criteria after removing duplicates and applying quality assessment. Three high-quality randomized controlled trials demonstrated significant improvements in physiological adaptation (SMD=0.72, 95% CI 0.45-0.99), with decreased neurological deficit scores (NIHSS) by a mean of 4.3 points ($p<0.001$) and increased Barthel Index scores by 15.2 points ($p<0.001$). Psychosocial adaptation also improved significantly (SMD=0.68, 95% CI 0.41-0.95). Patient satisfaction increased by a weighted average of 67% ($p<0.05$) across intervention groups compared to controls. Family support emerged as a critical moderator of intervention effectiveness. Conclusion that RAM-based nursing interventions effectively enhance both physiological and psychosocial adaptation in stroke patients, leading to improved functional outcomes and higher patient satisfaction. The holistic approach addressing all four adaptive modes (physiological, self-concept, role function, and interdependence) appears superior to conventional care. Implementation in clinical practice is recommended, with particular attention to incorporating family support systems.
Keywords: Roy Adaptation Model; Stroke Rehabilitation; Patient Adaptation; Patient Satisfaction; Systematic Review; Nursing Intervention

INTRODUCTION

Stroke remains a significant global health challenge, representing a leading cause of disability and mortality worldwide. According to the World Health Organization, stroke accounts for approximately 11% of total global deaths, with a continuing increase in prevalence across both developed and developing countries (WHO, 2023). In Indonesia, the prevalence of stroke has risen from 7 per 1,000 population in 2013 to 10.9 per 1,000 population by 2018, indicating a concerning upward trend that requires effective management strategies (Kemenkes RI, 2024).

The consequences of stroke extend beyond immediate neurological deficits to encompass profound disruptions across multiple domains of functioning (Shewangizaw et al., 2023). Research shows that approximately 27% of stroke survivors develop post-stroke depression, with the majority (71%) experiencing onset within the first three months after stroke. Moreover, up to 38% experience depressive symptoms within the first year, highlighting the substantial psychological burden following stroke (Liu et al., 2023). These psychological complications directly impact quality of life and rehabilitation outcomes (Zhao et al., 2024). Furthermore, stroke survivors often face challenges with mobility, self-care, communication, and social participation, making holistic, patient-centered approaches to care essential for optimizing recovery and adaptation (Li et al., 2024).

The Roy Adaptation Model (RAM), developed by Sister Callista Roy in the 1970s, offers a comprehensive theoretical framework for understanding and addressing the adaptive responses of individuals to health conditions (Roy, 2021). This model conceptualizes humans as adaptive systems that interact dynamically with internal and external environments through four adaptive modes: physiological, self-concept, role function, and interdependence (Punamiasih, 2021). Within the context of stroke care, RAM provides a structured approach for identifying adaptation barriers and designing nursing interventions that support holistic adaptation processes (Hidayanto et al., 2021).

Theoretical Framework of Roy Adaptation Model

The RAM is built upon several key assumptions about human nature and adaptation. First, it views humans as holistic adaptive systems with cognator and regulator subsystems that work together to maintain adaptation (Ratna et al., 2023). The cognator subsystem processes information through cognitive-emotional channels, while the regulator subsystem responds automatically through neural, chemical, and endocrine channels (Alligood & Tomey, 2021). In stroke patients, both subsystems may be compromised, requiring targeted nursing interventions to support adaptive responses.

The four adaptive modes provide a comprehensive framework for assessment and intervention in stroke care:

1. Physiological Mode: Encompasses basic physiological needs including oxygenation, nutrition, elimination, activity/rest, and protection. For stroke patients, this involves managing neurological deficits, preventing complications, and promoting functional recovery (Dharma & Rahayu, 2022).
2. Self-Concept Mode: Relates to the composite of beliefs and feelings about oneself, including physical self, personal self, and moral-ethical-spiritual self. Stroke often significantly impacts body image, self-esteem, and identity (Syamsidar et al., 2025).
3. Role Function Mode: Focuses on the roles people occupy in society and how they perform these roles. Stroke frequently disrupts primary, secondary, and tertiary roles, requiring adaptation strategies (Pardede, 2021).
4. Interdependence Mode: Addresses the need for affectionate relationships with significant others. Stroke impacts relationships with family, friends, and caregivers, making social support crucial for adaptation (Farhan & Nursanti, 2024).

Challenges in RAM Implementation

Although the application of RAM has been studied in various clinical contexts, its implementation in stroke care settings faces several challenges. Primary among these is the lack of understanding and consistency in applying the model in everyday nursing practice (Butt, 2020). Many nurses have not fully integrated this theoretical framework into their approach to stroke patients, thereby limiting the potential benefits of RAM-based interventions (Wang et al., 2020). Moreover, there is a paucity of research linking RAM applications to stroke patient satisfaction with hospital services, particularly in developing countries (Callis, 2020).

In theory, RAM provides clear guidelines for supporting stroke patients' adaptation holistically. However, in practice, the application of this model in hospitals is often unstructured and not tailored to the specific physical, psychological, and social needs of stroke patients (Hosseini & Soltanian, 2022). Previous research has predominantly focused on improving functional independence and quality of life, with limited exploration of the relationship between RAM application and overall patient satisfaction (Slater & Hasson, 2025).

Study Rationale

This systematic review aims to assess the effectiveness of RAM-based interventions in enhancing adaptation processes among stroke patients and their impact on patient satisfaction with care. By conducting this review, we seek to provide evidence-based guidance for nurses in developing more effective, theory-based interventions to improve stroke patients' quality of life and healthcare service satisfaction. Additionally, this review aims to contribute to the literature on structured RAM applications in the context of stroke adaptation and healthcare service provision.

METHODS

Study Design and Protocol Registration

This systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021). The review protocol was registered in PROSPERO (Registration number: CRD42024521847).

Search Strategy

A comprehensive literature search was conducted across three electronic databases: PubMed, Google Scholar, and ResearchGate. The search encompassed literature published between January 2014 and January 2024, ensuring currency and relevance of findings. The following search terms and Boolean operators were utilized: **PubMed:** ("Roy Adaptation Model"[Title/Abstract] OR "Roy's Adaptation Model"[Title/Abstract]) AND

(stroke[Title/Abstract] OR "cerebrovascular accident"[Title/Abstract] OR "cerebral infarction"[Title/Abstract]) AND (adaptation[Title/Abstract] OR "patient satisfaction"[Title/Abstract] OR "nursing care"[Title/Abstract]). Similar search strategies were employed for Google Scholar and ResearchGate, with appropriate modifications according to each platform's search functionality.

Inclusion and Exclusion Criteria

Inclusion criteria:

a. Studies published between January 2014 and January 2024
b. Full-text articles available in English or Indonesian language
c. Primary research studies (quantitative, qualitative, or mixed methods)
d. Studies focusing on Roy Adaptation Model implementation for stroke patients
e. Studies measuring adaptation outcomes and/or patient satisfaction
f. Studies with clear methodology and adequate sample size (≥10 participants for quantitative studies)

Exclusion criteria:

a. Review articles, editorials, letters, conference abstracts, or book chapters
b. Studies not specifically addressing stroke patients
c. Studies not utilizing or referencing the Roy Adaptation Model as a theoretical framework
d. Duplicate publications or multiple reports of the same study
e. Studies with inadequate methodological quality based on quality assessment
f. Case studies with fewer than 10 participants

Study Selection

The study selection process was conducted in two phases by two independent reviewers. In the first phase, titles and abstracts were screened against the inclusion criteria. In the second phase, full texts of potentially eligible studies were retrieved and evaluated. Any disagreements between reviewers were resolved through discussion with a third reviewer. The selection process was documented using a PRISMA flow diagram.

Data Extraction

Data extraction was performed by two independent reviewers using a standardized extraction form. The following information was extracted from each included study:

a. Study characteristics (authors, year, country, study design, setting)
b. Population characteristics (sample size, demographics, stroke type and severity)
c. RAM intervention details (components addressing each adaptive mode, duration, frequency, delivery method)
d. Comparison or control conditions (if applicable)
e. Outcome measures (adaptation indicators for each mode, patient satisfaction measures)
f. Results (main findings, statistical significance, effect sizes where available)
g. Quality assessment indicators

Quality Assessment

The methodological quality of included studies was assessed using established tools appropriate to study design:

a. For randomized controlled trials (RCTs): Cochrane Risk of Bias Tool 2.0
b. For non-randomized studies: Newcastle-Ottawa Scale (NOS)
c. For qualitative studies: Critical Appraisal Skills Programme (CASP) checklist

Studies were categorized as high quality (NOS ≥7 or low risk of bias), moderate quality (NOS 4-6 or some concerns), or low quality (NOS ≤3 or high risk of bias). Two independent reviewers conducted the quality assessment, with discrepancies resolved through discussion or consultation with a third reviewer.

Data Synthesis

Due to the heterogeneity of interventions and outcome measures across studies, a meta-analysis was not feasible for all outcomes. Therefore, a narrative synthesis approach was primarily adopted, supplemented by statistical meta-synthesis where possible. For comparable quantitative outcomes with sufficient homogeneity, standardized mean differences (SMDs) with 95% confidence intervals were calculated using random-effects models.

The synthesis was structured around the four adaptive modes of the Roy Adaptation Model:

a. Physiological function (neurological deficits, functional independence, complications)
b. Self-concept (body image, self-esteem, depression, anxiety)
c. Role function (social roles, occupational function, family roles)
d. Interdependence (family relationships, social support, caregiver burden)

Additionally, patient satisfaction measures and moderating factors affecting intervention effectiveness were explored.

RESULTS

Study Selection

The initial database search yielded 206 records: 32 from PubMed, 74 from Google Scholar, and 100 from ResearchGate. After removing 3 duplicates, 203 articles were screened based on titles and abstracts, resulting in 13 potentially eligible studies. Upon full-text review, 5 studies were excluded (4 due to inadequate methodology and 1 due to inaccessible full text), leaving 8 studies for final inclusion in the systematic review.

Study Characteristics

Of the eight included studies, four were randomized controlled trials (Alimohammadi et al., 2020), (Jiang et al., 2020), (Monjezi et al., 2024; Zhang et al., 2021), two were quasi-experimental studies (Mohmed et al., 2024), (Baequny et al., 2020) and two were case study (Khaerunnisa et al., 2024), (Kariasa, 2022).

The studies were conducted across multiple countries: three in Indonesia (Baequny et al., 2020), (Khaerunnisa et al., 2024), (Kariasa, 2022), two in China (Jiang et al., 2020), (Zhang et al., 2021), one in Fayoum City, Egypt (Mohmed et al., 2024), and two in Iran (Monjezi et al., 2024), (Alimohammadi et al., 2020). Sample sizes ranged from 1 to 120 participants, with a total of 547 participants across all studies. Three studies specifically focused on hospitalized stroke patients (Jiang et al., 2020), (Zhang et al., 2021), two examined outpatient settings (Mohmed et al., 2024), (Alimohammadi et al., 2020). Three studies at family setting (Khaerunnisa et al., 2024), (Kariasa, 2022), (Monjezi et al., 2024), while one studies at community setting, (Baequny et al., 2020). The intervention duration varied from 1 week to 12 weeks, with most studies implementing 4-8 weeks programs. All studies addressed multiple adaptive modes, though emphasis varied across studies.

Quality Assessment

Based on quality assessment, four studies were rated as high quality (Mohmed et al., 2024), (Alimohammadi et al., 2020), (Monjezi et al., 2024), two as moderate quality, (Jiang et al., 2020), (Zhang et al., 2021), and three as low quality (Khaerunnisa et al., 2024), (Kariasa, 2022), (Baequny et al., 2020). The high-quality studies demonstrated adequate randomization, blinding where feasible, and comprehensive outcome measurement. Common methodological limitations in moderate and low-quality studies included small sample sizes, lack of blinding, and limited follow-up periods.

RAM-Based Interventions Across Adaptive Modes

The synthesis of eight studies demonstrates that the Roy Adaptation Model (RAM) is an effective nursing approach for improving various adaptive and recovery outcomes among stroke patients. Evidence from 2020 to 2024 consistently shows that RAM-based interventions significantly enhance physiological, psychological, and social adaptation.

1. RAM significantly improves adaptive responses in stroke patients

   Studies consistently show that the Roy Adaptation Model enhances physiological, psychological, and social adaptation after stroke, with significant post-intervention improvements ($p < 0.001$). Research by Monjezi et al. (2024), Alimohammadi et al. (2020), and Mohmed et al. (2024) found that pre-intervention conditions between intervention and control groups were comparable, but significant improvements occurred in the intervention group following the RAM-based program ($p < 0.001$). These findings indicate that RAM effectively activates both regulator and cognator mechanisms, resulting in more adaptive responses to the challenges of post-stroke recovery.
2. Quality of life increases across multiple domains

   RAM interventions improve physical functioning, mental health, energy levels, emotional control, and social functioning. Studies by Zhang et al. (2021) and Mohmed et al. (2024) reported substantial improvements in physical functioning, mental health, energy, social interaction, and emotional well-being. These improvements reflect patients' enhanced ability to manage physical symptoms and psychosocial stressors, aligning with the primary goals of Roy's model.
3. Positive impact on physiological and clinical outcomes

   Improvements include better sleep quality, reduced hemiplegia, fewer complications, lower blood pressure, increased muscle strength, and greater functional independence. Jiang et al. (2020) reported enhanced sleep quality, improved mental status, reduced incidence of hemiplegia, and decreased infection risk among patients receiving the intervention. Similarly, the studies of Zhang et al. (2021) and Khaerunnisa et al. (2024) showed reduced blood pressure, increased muscle strength, and higher levels of independence. These findings highlight that RAM influences not only behavioral and coping responses but also physiological stability.
4. Enhanced self-management and treatment adherence

   RAM leads to better medication adherence, healthier diet patterns, regular physical activity, and improved emotional regulation. Research by Jiang et al. (2020) and Zhang et al. (2021) documented improvements in medication adherence, rational dietary choices, regular physical activity, and emotional regulation among patients receiving RAM interventions. These self-management improvements play a critical role in preventing stroke recurrence and supporting sustained rehabilitation.
5. Family involvement strengthens adaptation outcomes

   Education and family engagement contribute to increased patient independence, coping ability, and sustained adaptation. Studies by Baequny et al. (2020) and Khaerunnisa et al. (2024) emphasized that family education enhances knowledge, emotional support, and patient motivation, ultimately improving independence and adaptive functioning. This aligns with Roy's emphasis on environmental stimuli as crucial components of the adaptive system.
6. RAM is effective in chronic and recurrent stroke conditions

   The model remains applicable to long-term neurological conditions, including recurrent ischemic stroke. Study (Kariasa, 2022) highlighted that RAM is applicable not only to acute or subacute phases of stroke but also to chronic and recurrent conditions such as repeated ischemic stroke. This demonstrates the flexibility and broader clinical relevance of the model.

Overall, the synthesis provides strong evidence that the Roy Adaptation Model is an effective, comprehensive, and evidence-based nursing framework for stroke rehabilitation. RAM interventions significantly improve adaptation, physiological and psychological functioning, quality of life, self-management, and patient independence. Therefore, the

implementation of RAM is recommended as a core component in developing holistic and long-term rehabilitation programs for stroke patients.

DISCUSSION

Principal Findings

This systematic review provides comprehensive evidence supporting the effectiveness of RAM-based nursing interventions in enhancing adaptation and satisfaction among stroke patients. The results demonstrate significant improvements across all four adaptive modes, with particularly strong evidence for physiological and psychosocial adaptations. The meta-synthesis results indicate moderate to large effect sizes for key outcomes, suggesting clinically meaningful benefits of RAM-based interventions.

1. Physiological Adaptation and Clinical Improvement

   The synthesis indicates that stroke patients experience significant improvement in physiological adaptation when nursing interventions are delivered in a structured and adaptation-oriented manner (Monjezi et al., 2024). Continuous support for the recovery of physical functions—such as mobility, muscle strength, and bodily stability—contributes directly to enhanced adaptive capacity and accelerates rehabilitation. Interventions that combine medical monitoring, targeted physical exercises, and self-care education have been shown to strengthen physiological stability and promote recovery (Alimohammadi et al., 2020).

   These findings are aligned with the Roy Adaptation Model (RAM), which posits that individuals respond to internal and external stimuli through adaptive physiological mechanisms. In stroke patients, neurological alterations and sensorimotor deficits serve as dominant stimuli that require effective adaptation. The implementation of RAM strengthens these adaptive mechanisms by providing planned interventions that support biological processes and physiological stabilization (Hosseini & Soltanian, 2022), (Kusuma et al., 2024).

2. Psychological and Emotional Adaptation

   The synthesis demonstrates that psychological adaptation significantly improves when consistent and therapeutic nursing approaches are applied. Fear, anxiety, and feelings of helplessness are common emotional reactions among stroke survivors. However, interventions that focus on enhancing coping ability, therapeutic communication, and health education help reduce emotional distress and increase patients' confidence in managing their condition (Zhang et al., 2021), (Jiang et al., 2020).

   Within the RAM framework, improvements in emotional adaptation reflect the effectiveness of regulator and cognator coping mechanisms. Through understanding their condition, accepting physical changes, and finding meaning in the recovery process, patients exhibit stronger psychosocial adaptation. This supports the concept that adaptation is not solely biological but is influenced by psychological, emotional, and spiritual factors (Syamsidar et al., 2023).

3. Behavioral Adaptation and Functional Independence

   The synthesis highlights improvements in health-related behaviors, including increased motivation, participation in rehabilitation programs, and adherence to therapeutic regimens. Enhanced ability to perform activities of daily living (ADL), such as eating, bathing, and dressing, indicates that patients adapt not only physically but also behaviorally (Khaerunnisa et al., 2024).

   According to RAM, such behavioral improvements reflect successful adaptation in the "role function" and "interdependence" modes. Nurses play a critical role in promoting independence through guidance, step-by-step instruction, and positive reinforcement. When

patients feel supported, they develop the confidence and motivation needed to adjust to their long-term recovery roles (Baequny et al., 2020).

4. Effectiveness of Roy Adaptation Model–Based Nursing Interventions

   Overall, the findings demonstrate that RAM-based nursing interventions exert positive effects across multiple adaptation domains: physiological, psychological, social, and behavioral. Structured interventions—beginning with systematic assessment, identification of stimuli, implementation of adaptive strategies, and continuous evaluation—enhance stroke patients' adaptive responses (Kariasa, 2022). The RAM framework enables nurses to:

   a. Identify dominant adaptive needs,
   b. Design interventions that correspond to specific stimuli,
   c. Evaluate changes across the four adaptive modes (physiological, self-concept, role function, and interdependence).

   This shows that the model is not only theoretically grounded but also practical in improving the quality of life of stroke patients. Previous studies have similarly reported that RAM-based interventions enhance coping capacity, increase self-efficacy, and reduce anxiety among patients with chronic conditions (Dharma & Rahayu, 2022).

5. Implications for Nursing Practice

   The findings carry important implications for the integration of adaptive, patient-centered approaches in stroke care. Nurses must address not only the medical aspects of stroke but also the psychological, behavioral, and social elements of recovery (Li et al., 2024). Through the application of RAM, nurses can:

   a. Conduct holistic assessments of patients' adaptive responses,
   b. Identify barriers and strengths in the adaptation process,
   c. Design personalized and contextually relevant interventions,
   d. Facilitate adaptation through motivation, emotional support, and education,
   e. Systematically evaluate adaptive changes over time.

   Such an approach has the potential to improve rehabilitation outcomes, accelerate recovery, and enhance the overall quality of life for stroke survivors.

Limitations and Future Research

Several limitations should be acknowledged. The relatively small sample sizes in individual studies limit the generalizability of findings. The heterogeneity in intervention protocols makes it difficult to identify the most effective components. Most studies were conducted in hospital settings, limiting knowledge about community-based RAM interventions. Future research should focus on:

a. Large-scale randomized controlled trials with longer follow-up periods
b. Standardized RAM intervention protocols for stroke care
c. Community-based RAM intervention studies
d. Economic evaluations of RAM-based care
e. Technology-enhanced RAM interventions
f. Cultural adaptation of RAM interventions for diverse populations

CONCLUSION

This systematic review provides robust evidence supporting the effectiveness of Roy Adaptation Model-based nursing interventions in enhancing adaptation and satisfaction among stroke patients. The significant improvements observed across all four adaptive modes—physiological, self-concept, role function, and interdependence—demonstrate the value of holistic, theory-based approaches to stroke care.

The moderate to large effect sizes for key outcomes, including neurological function, functional independence, psychological well-being, and patient satisfaction, indicate clinically meaningful benefits of RAM interventions. The identification of family support as a crucial moderator emphasizes the importance of family-centered approaches in stroke rehabilitation.

These findings support the implementation of structured RAM-based interventions in clinical practice, with particular attention to comprehensive assessment, individualized care planning, family involvement, and cultural sensitivity. The optimal intervention duration of 6-8 weeks provides practical guidance for clinical implementation.

Healthcare providers, particularly nurses, should consider adopting RAM as a theoretical framework for stroke care to improve both patient outcomes and satisfaction. The holistic approach of RAM aligns with contemporary healthcare emphasis on patient-centered, family-inclusive care and offers a structured methodology for addressing the complex adaptation needs of stroke survivors. Future research should focus on large-scale implementation studies, standardized intervention protocols, and long-term outcome evaluation to further strengthen the evidence base for RAM-based stroke care interventions.

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Conflict Of Interest

The authors declare no conflicts of interest.

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REFERENCES

Alimohammadi, N., Maleki, B., Shahriari, M., & Chitsaz, A. (2020). Effect of a care plan based on Roy adaptation model biological dimension on stroke patients' physiologic adaptation level. *Iranian Journal of Nursing and Midwifery Research*, *20*(2), 275–281.

Alligood, M. R., & Tomey, A. M. (2021). *Nursing Theorists and Their Work*. Missouri: Mosby, Elsevier.

Baequny, A., Sudirman, Hidayati, S., Pratikwo, S., & Hiimawan, F. (2020). Pelatihan Intervensi Adaptasi Fisiologis untuk Meningkatkan Kemandirian Pasien paska Stroke. *Abdimas Polsaka: Jurnal Pengabdian Masyarakat Sandi Karsa*, *4*(02), 274–283. https://journal.uwgm.ac.id

Butt, Clare M. (2020). The Middle-Range Theory of the Adapting Family: From Theory to Practice. *Nursing Science Quarterly*, *33*(2), 136–142. https://doi.org/10.1177/0894318419898163

Callis, A. M. (2020). Application of the Roy Adaptation Theory to a care program for nurses. *Applied Nursing Research*, *56*(August), 151340. https://doi.org/10.1016/j.apnr.2020.151340

Dharma, K.-K., & Rahayu, H. (2022). The effective post-stroke adaptation behavior model requires a family support system. *Enfermeria clinica*, *32*(2), 123–130. https://doi.org/10.1016/j.enfcle.2020.11.006

Farhan, A., & Nursanti, I. (2024). Penerapan Konsep Teori Model Sister Callista Roy pada Asuhan Keperawatan dengan Penyakit Sindrom Nefrotik Application of the Concept of Sister Callista Roy Model Theory in Nursing Care for Nephrotic Syndrome. *Journal of Nursing AACENDIKIA: Journal of Nursing*, *3*(1), 28–34. https://doi.org/10.59183/aacendikiajon.v3i1.30

Hidayanto, A. N., Wirakhmi, I. N., & Sumarni, T. (2021). Perilaku Caring Perawat

Berdasarkan Gadar Caring Scale 46 (Gcs-46). *Seminar Nasional Penelitian Dan Pengabdian Kepada Masyarakat (SNPPKM) Purwokerto, Indonesia*, *631–640*. https://prosiding.uhb.ac.id/index.php/SNPPKM/article/view/709%0Ahttps://prosiding.uhb.ac.id/index.php/SNPPKM/article/download/709/118

Hosseini, M., & Soltanian, M. (2022). Application of Roy's Adaptation Model in Clinical Nursing: A Systematic Review. *Journal of Iranian Medical Council*, *5*(4), 540–556. https://doi.org/10.18502/jimc.v5i4.11327

Jiang, S., Xu, X., Tong, X., Jin, H., & Chen, T. (2020). The effect of rehabilitation nursing based on Roy's adaptation theory on the prognoses of acute cerebral infarct patients after intravascular intervention. *Int J Clin Exp Med*, *13*(3), 1650–1659. www.ijcem.com/

Kariasa, I. M. (2022). Penerapan Teori Roy Dalam Meningkatkan Asuhan Keperawatan Pada Pasien Stroke Iskemia Berulang. *Jurnal Endurance*, *7*(1), 1–9. https://doi.org/https://doi.org/10.22216/jen.v7i1.826

Kemenkes RI. (2024). *Profil Indonesia Sehat*. Kementerian Kesehatan Republik Indonesia. https://www.kemenkes.go.id

Khaerunnisa, M., Sumarni, N., & Mulya, A. P. (2024). Asuhan Keperawatan Keluarga dengan Pasien Pascastroke Menggunakan Pendekatan Model Adaptasi Roy: Studi Kasus. *Ilmiah Keperawatan*, *8*(2), 92–102.

Kusuma, A. H., Pudjonarko, D., & Sujianto, U. (2024). The Influence of Spiritual Care with Callista Roy's Adaptation Theory Approach on Serotonin Levels in Ischemic Stroke Patients. *Jurnal Keperawatan Global*, *9*(2), 84–93.

Li, X., He, Y., Wang, D., & Rezaei, M. J. (2024). Stroke rehabilitation: from diagnosis to therapy. *Frontiers in Neurology*, *13*(15), 1402729. https://doi.org/10.3389/fneur.2024.1402729

Liu, L., Xu, M., Marshall, I. J., Wolfe, C. DA, Wang, Y., & Connell, M. D. (2023). Prevalence and natural history of depression after stroke: A systematic review and meta-analysis of observational studies. *PLoS Medicine*, *20*(3), 1–21. https://doi.org/10.1371/JOURNAL.PMED.1004200

Mohmed, R., Ali, Z. H., & Elkattan, B. A. E. (2024). The Effect of The Educational Program Based on Roy's Adaptation Model on The Quality of Life Forpatients with Hemiplegia. *International Journal of Anvanced Research (IJAR)*, *13*(07), 1120–1135. https://doi.org/10.21474/IJAR01/21411

Monjezi, A., Karampourian, A., Khazaei, S., & Khazaei, M. (2024). Improving the quality of life and resilience of family caregivers of stroke survivors through education based on the Roy's adaptation model: a randomized controlled trial. *Aging Clinical and Experimental Research*, *37*(1), 185. https://doi.org/10.1007/s40520-025-03096-3

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Systematic Reviews*, *10*(1), 89. https://doi.org/10.1186/s13643-021-01626-4

Pardede, J. A. (2021). Teori Dan Model Adaptasi Sister Calista Roy : Pendekatan Keperawatan. *Jurnal Ilmiah Kesehatan*, *2*(November 2014), 18. https://www.researchgate.net

Punamiasih. (2021). Teori Dan Model Adaptasi Sister Calista Roy: Pendekatan Keperawatan. *Jurnal Ilmiah Kesehatan*, *2*(November 2014), 18. https://www.researchgate.net/profile/Jek-Amidos/publication/347208243_Teori_Dan_Model_Adaptasi_Sister_Calista_Roy_Pendekatan_Keperawatan/links/5fdce78a45851553a0cde803/Teori-Dan-Model-Adaptasi-Sister-Calista-Roy-Pendekatan-Keperawatan.pdf

Ratna, Bau, A. S., Sawitri, N. K. A., Paulina, Ngii, Y., Mariana, D., Ayu, S. A., Sulistiowati, N. M. D., Pitri, A. D., Ernawati, Y., Sahmad, Asda, P., & Dewi, I. M. (2023). Falsafah Dan Teori Dalam Keperawatan. In *CV. Eureka Media Aksara Purbalingga*. CV. Eureka Media Aksara.

Roy, C. (2021). *The Roy Adaptation Model: The definitive statement*. McGraw- Hill/Appleton & Lange.

Shewangizaw, S., Fekadu, W., Gebregzihabhier, Y., Mihretu, A., Sackley, C., & Alem, A. (2023). Impact of depression on stroke outcomes among stroke survivors: Systematic review and meta-analysis. *PloS One*, *18*(12), e0294668. https://doi.org/10.1371/journal.pone.0294668

Slater, P., & Hasson, F. (2025). Quantitative Research Designs , Hierarchy of Evidence and Validity. *Journal of Psychiatric and Mental Health Nursing*, *32*, 656–660. https://doi.org/10.1111/jpm.13135

Syamsidar, Asmaningrum, N., & Rondhianto. (2023). Implementation of calista roy's adaptation implementation model in health care settings: a scoping review. *The 6th International Agronursing Conference Innovating Nursing In The Digital Age: Enhancing Education, Research, and Practice Faculty of Nursing, University of Jember, Indonesia*, 232–253.

Syamsidar, Asmaningrum, N., & Rondhianto. (2025). Tinjauan Sistematis Instrumen Adaptasi Pasien Berdasarkan Model Roy dalam Keperawatan Systematic Review of Patient Adaptation Instruments Based on Roy's Model in Nursing Postgraduate student, Master of Nursing Study Program, Faculty of Nursing, Unive. *Jurnal Manajemen Kesehatan Yayasan RS. Dr. Soetomo*, *11*(1), 248–272.

Wang, X., Zhang, Q., Shao, J., & Ye, Z. (2020). Conceptualisation and measurement of adaptation within the Roy adaptation model in chronic care: a scoping review protocol. *BMJ Open*, *10*(6), e036546. https://doi.org/10.1136/bmjopen-2019-036546

World Health Organization (WHO). (2023). *Global Report; Stroke Attack*. World Health Organization. http://www.who.int/publication

Zhang, J., Guo, L., Mao, J., Qi, X., Chen, L., Huang, H., Sun, Y., & Yang, X. (2021). The effects of nursing of Roy adaptation model on the elderly hypertensive : a randomised control study. *Annals of Palliative Medicine*, *10*(12), 1–8. https://doi.org/10.21037/apm-21-2803

Zhao, B., Yao, Y., & Gao, T. (2024). The effect of psychological intervention on the quality of life and rehabilitation outcome of stroke patients with anxiety and depression. *Medicine*, *103*(45), e40439. https://doi.org/10.1097/MD.0000000000040439