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Effectiveness of Roy's Adaptation Model-Based Interventions in Nursing Research: A Systematic Review

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Abstract

Background: Roy's Adaptation Model (RAM) conceptualizes individuals as adaptive systems that respond to environmental changes through coping mechanisms to maintain equilibrium. This model has been extensively applied as a theoretical framework in nursing practice and research to enhance the quality of care. The present study assessed the efficacy of Roy's Adaptation Model in guiding nursing research by analyzing recent publications that utilized RAM as a conceptual framework.

Methods: A literature review design with a narrative synthesis approach was employed. Literature searches were conducted in five electronic databases: Scopus, PubMed, ProQuest, ScienceDirect, and SAGEPub, for articles published from 2017 to 2021. The selection process included identification, screening, and eligibility assessment based on predefined inclusion and exclusion criteria. Methodological quality was evaluated using appraisal tools from the Cochrane Collaboration and the Joanna Briggs Institute (JBI). Of the 1,315 articles initially identified, 20 studies met the inclusion criteria and were included in the analysis.

Results: Most studies indicated that RAM-based interventions effectively improved patients' adaptive responses, reduced anxiety levels and clinical symptoms, and enhanced quality of life. The reviewed studies encompassed diverse populations and healthcare settings. Interventions guided by Roy's Adaptation Model consistently yielded positive outcomes, although variations in research methods and study designs affected the magnitude of reported effects.

Conclusion: Roy's Adaptation Model serves as an effective conceptual framework for developing nursing interventions across diverse healthcare settings.

Keywords: Roy's Adaptation Model, Nursing Theory, Nursing Research

BACKGROUND

Nursing is often perceived as a health profession that lacks recognition, reliability, and financial promise. However, recent global evidence demonstrates that the nursing profession plays a critical role in improving patient outcomes, strengthening healthcare systems, and advancing universal health coverage, particularly through evidence-based practice and theory-guided approaches. To enhance its standing among other professions, nursing must demonstrate its capacity to compete and achieve parity with other health disciplines. Developing and implementing nursing theory models through research is an effective strategy for establishing the profession's significance. Roy's Adaptation Model (RAM) is among the most widely used nursing research models (1). For approximately forty years, RAM has served as a foundational conceptual framework, influencing nursing education, guiding research, and shaping clinical practice (2). The development of high-quality nursing care is fundamentally grounded in theory-guided nursing practice (3).

RAM conceptualizes humans as adaptive systems capable of responding to various internal and external stimuli. According to RAM, the primary objectives of nursing are to promote treatment adherence and enhance life expectancy. The model facilitates holistic patient evaluation across four domains: physiology, role function, self-concept, and interdependence. Several studies have shown that interventions based on RAM are effective in improving patients' quality of life, psychological adaptation, and resilience. (4-7). Research on Roy's theoretical model provides a foundation for evidence-based practice (EBP), supporting nurses in clinical decision-making. EBP utilizes current evidence to guide healthcare decisions and relies on access to the latest research on specific clinical issues. It represents the most reliable basis for making informed decisions and delivering scientifically effective and efficient care. The theoretical assumptions of RAM have been validated in numerous empirical studies.

Despite the widespread application of RAM there is a lack of comprehensive synthesis of recent empirical evidence on its use as a conceptual framework in nursing research, particularly regarding the linkage between theoretical constructs and measurable clinical outcomes. This gap underscores the necessity for a systematic review that both maps the application of RAM and evaluates its effectiveness in guiding nursing interventions and improving patient outcomes. The present systematic review aims to examine recent studies on the conceptual use of RAM as a framework in nursing research. The findings are expected to provide an empirical foundation for delivering superior, high-quality nursing practice.

METHODS

Study Design

The systematic review conducted in this study adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (8). The present systematic review has been duly registered with PROSPERO, bearing the registration number CRD42023413389.

Search Methods

Despite numerous studies on RAM, current knowledge remains varied and inconclusive due to the complexity of its adaptability. This systematic review has five stages: (1) determination of inclusion and exclusion criteria, (2) identification of relevant search and study strategies, (3) selection of eligible studies involving the use of an iterative team approach, (4) mapping the data using a narrative synthesis approach, and (5) Identification of the risk of bias and study quality. A systematic review was conducted to examine and evaluate current studies that employ RAM as a conceptual framework to guide research on the effectiveness of a nursing intervention program. The PRISMA items were used as a guide for reporting this systematic review.

Inclusion and Exclusion Criteria

The PICO (Population, Intervention, Comparison, and Outcome) criteria guided the selection and search strategy for this systematic review. The population (P) included all studies involving pediatric to adult patients. The intervention (I) comprised all types of interventions based on Roy's conceptual framework. The comparison (C) group consisted of studies without interventions based on Roy's Adaptation Model. The outcome (O) focused on Roy's adaptation responses, including physiological response, self-concept, role function, and interdependence. Only studies with a quantitative design (mixed methods, randomized controlled trials, cohort, quasi-experimental, or cross-sectional) were included. Publications were limited to those published between 2017 and 2021 to reflect the rapid development of digital technology and ensure the inclusion of the most relevant and recent evidence. Exclusion criteria were as follows: (1) reviews, editorials, conference presentations, qualitative research, case reports, developmental design, or study protocols lacking reported results; (2) non-English publications; and (3) studies without nursing relevance.

Search Procedure

A literature search was performed on five databases (SCOPUS, PubMed, ProQuest, ScienceDirect, and SagePub). We use "Google Scholar" to find gray literature. We determine synonyms related to terms with keyword terms: 'nursing theory' AND Roy OR 'nursing theory' AND adaptation OR 'conceptual model' AND Roy OR 'conceptual framework' AND Roy OR 'nursing model' AND Roy OR 'nursing model' AND adaptation OR 'Roy's adaptation model' OR 'adaptation model' AND nursing OR 'Roy's theory' AND adaptation OR 'Roy model' AND nursing OR 'Roy model' AND adaptation OR 'Roy adaptation model' AND 'nursing research.' Boolean operators (AND/OR) and asterisks are used in keywords to expand and narrow searches. The search string comprises Medical Subject Headings (MeSH) terms, thesaurus terms, and free-text keywords. We have attached a link to view the article search strategy (Table 1-4) in supplementary file.

Study Selection

There were 1,303 articles from major database journals and 12 studies from gray literature on "Google Scholar". All studies were imported into the Reference Manager (Mendeley) and exported as CSV files for filtering in Microsoft Excel. Excel was used for the study screening procedure, and the reporting complies with the Preferred Reporting Items for PRISMA 2020 flow diagram.

The procedure of selecting research from 1.315 (1.303 from the electronic journal database and 12 from the "Google Scholar" gray literature) began by deleting duplicates. All authors independently reviewed titles and abstracts of possibly relevant papers. We identified 20 relevant studies, the full texts of which were independently read by the authors. Then, if any differences arose, the writers reached a consensus and reviewed the data collectively. Twenty studies were finally included in this systematic review (Figure 1).

Data extraction, analysis, and synthesis

As a guide, we constructed a table for data extraction using the PICO framework. The data extraction process uses Microsoft Excel spreadsheets. All authors independently reviewed all publications and extracted data, and any differences were resolved by consensus. If disagreements cannot be settled, a third opinion will be sought, but this will be unnecessary. Due to apparent heterogeneity across the study population, intervention types, and study designs, a meta-analysis was not feasible. Therefore, we conducted a narrative review of the results. A narrative synthesis is performed to evaluate the evidence, including the available features related to the elements of the PICO question framework. We conducted a meta-analysis by extracting data from Microsoft Excel

spreadsheets and comparing them with the two included investigations. We develop measures for each outcome, identify and summarize the synthesis, and provide the findings from the included research. We discussed it during the synthesis process and are open to feedback.

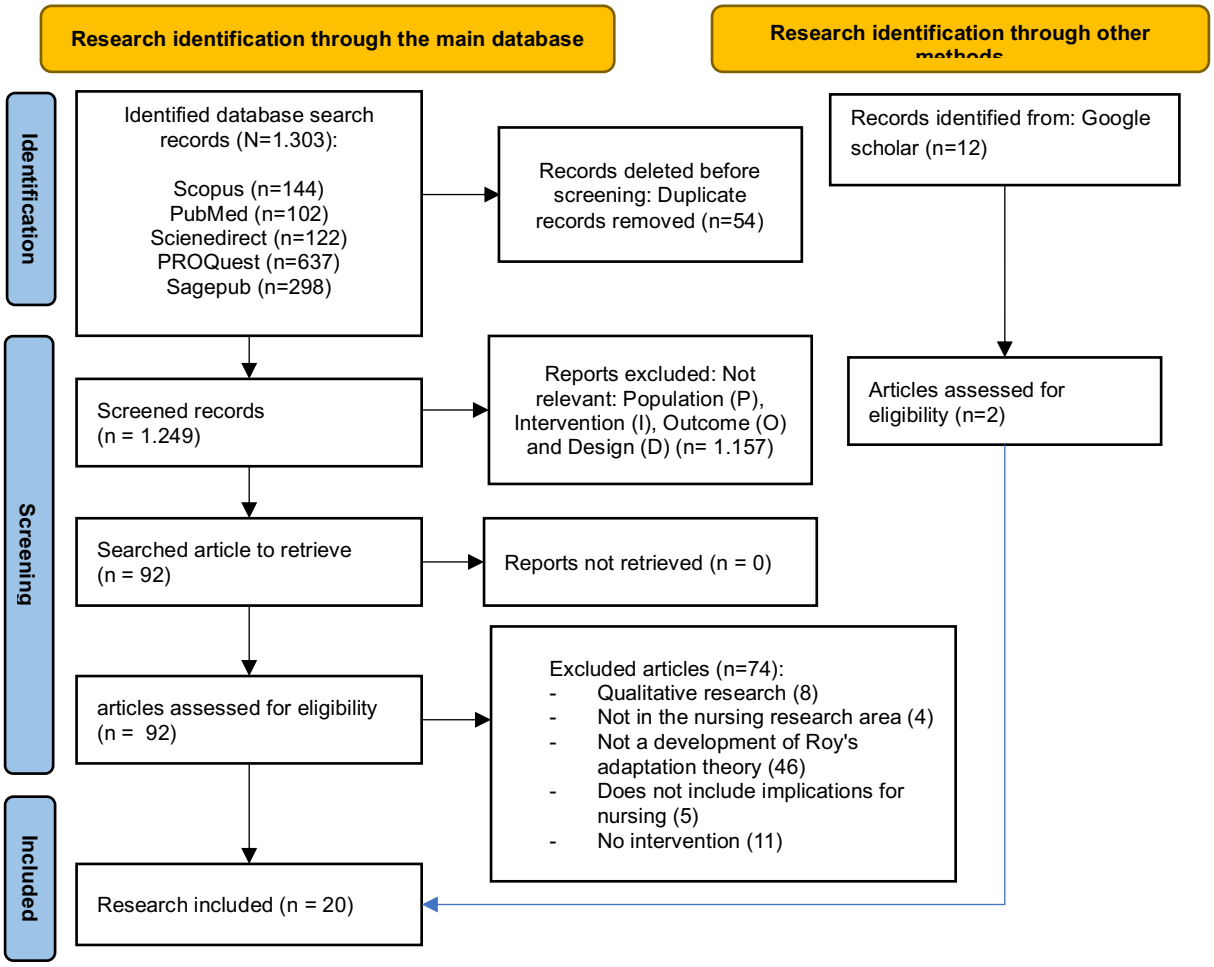


Figure 1. Flowchart used in selecting studies using PRISMA

Study Quality and Risk of Bias

We identified the quality of the studies, taking into account the risk of bias. This assessment aims to evaluate the methodological quality and determine how a study has addressed potential biases in design, conduct, and analysis. This systematic review uses three bias-evaluation tools to assess risk of bias: the ROBIN-I tool for non-randomized studies, the RoB 2.0 tool for randomized studies, and the JBI critical appraisal checklist for quasi-experimental studies. The non-randomized study that can be evaluated using ROBIN-I is a quantitative study that measures an intervention's efficacy (harm or benefit) without employing randomization to assign units (individuals or groups) to the comparison group. Seven domains were analyzed using ROBIN-I for research bias.

We used the RoB 2.0 tool to assess the risk of bias in an RCT. RoB 2.0 evaluates five potential categories of bias risk: (1) bias caused by the randomization procedure (the allocation order is not concealed, inadequate description of how randomization was conducted out, or basic disparities within

groups); (2) bias resulting from errors from the intended intervention (involving participant mobility between groups or divergence from the intended intervention) or the effects of starting and continuing the intervention (such as the poor blinding in the study or a participant's withdrawal); (3) bias as a result of lacking outcome data (such as a lack of intention-to-treat analysis or pooling of missing data when there was a substantial dropout, or where missing data were not uniformly distributed between groups); (4) bias in outcome measurements (including result raters who can influence outcome measurements or awareness about group assignments which can affect outcome measurements); and (5) bias in the reporting of results (including inadequate reporting of all research measures or preliminary statistical analysis, in this case of time-by-group interactions across studies).

Researchers used the JBI Checklist for Quasi-Experimental Studies to evaluate the quality of quasi-experimental studies. The JBI assessment instrument is a checklist questionnaire that outlines required elements, tasks, and considerations. Each study design poses a distinct set of questions. Researchers must evaluate the selected journal articles. The scoring results are low risk, medium risk, high risk, or unclear risk.

Non-randomized study

Table 1. Evaluate the risk of bias in non-randomized studies (ROBIN-I)

No	Study	D1	D2	D3	D4	D5	D6	D7	Overall
1	Culha (9)	!	!	+	!	+	!	+	!

Domain
D1: Confounding-related bias; D2: Bias in the study's participant selection; D3: Bias in the classification of procedures; D4: Bias resulting from deviations from the planned interventions; D5: Bias due to missing data; D6: Bias in the measurement of outcomes; D7: Bias in the determination of the reported outcome.
Judgment

Serious; - Moderate; ! Low; +

Randomized controlled trial (RCT)

Table 2. Evaluate the risk of bias in RCT studies (ROB-2.0)

No	Study	D1	D2	D3	D4	D5	Overall
1	Mansouri (10)	+	+	+	+	+	+
2	Hamzehpour (11)	!	+	+	+	+	+
3	Hajalimohammadi (12)	!	!	+	!	!	!
4	Abdolahi (13)	!	!	+	!	!	!
5	Otaghi (14)	!	-	-	-	!	-
6	Kavuran and Yurttaş (15)	+	+	+	+	!	+

7	Maleki (16)	!	!	+	-	!	!
8	Lok et al (17)	+	!	+	-	!	!
9	Kavradim and Özer (8)	+	!	+	!	!	!
10	Nobahar (19)	+	+	+	!	!	!
11	Alimohammadi (20)	!	!	+	-	!	!

Domain: D1 bias due to the randomization procedure; D2 bias due to differences in planned interventions; D4 bias due to missing outcome data; D3 bias in the measurement of the outcome; D5 Bias in the determination of the reported outcome.

Judgment: Low: + High: - Some concerns: !

Checklist for Quasi-Experimental Studies

Quality appraisalIn terms of the quality of the studies, a significant proportion of them can be categorised as "Good," as indicated by a JBI score exceeding 75%. Hence, it is possible to approach all studies through the utilizationof synthetic analysis.

Table 3. Evaluate the risk of bias in *Quasi-Experimental Studies* (JBI)

No	Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Overall
1	Baksi and Dicle (21)	Y	Y	Y	Y	N	Y	Y	Y	N	7/9 (78%)
2	Guo (22)	Y	Y	Y	Y	Y	N	Y	Y	Y	8/9 (89%)
3	Wang (23)	Y	Y	Y	Y	N	Y	Y	Y	N	7/9 (78%)
4	Amanak (24)	Y	Y	Y	Y	N	Y	Y	Y	Y	8/9 (89%)
5	Hatami and Hojjati (25)	Y	Y	Y	Y	Y	N	Y	Y	Y	8/9 (89%)
6	Dharma (26)	Y	Y	Y	Y	Y	Y	Y	Y	N	8/9 (89%)
7	Alidoost (27)	Y	Y	Y	Y	N	Y	Y	Y	N	8/9 (89%)
8	Elmoneim (28)	Y	Y	Y	Y	N	Y	Y	Y	N	8/9 (89%)

RESULT AND DISCUSSION

RESULT

A search of multiple scientific databases identified 20 studies that utilized the Roy Adaptation Model (RAM) as a conceptual framework to guide nursing research assessing the effectiveness of nursing intervention programs. From an initial pool of 1,315 articles retrieved from all pre-defined

databases, only 20 studies met the inclusion criteria for this systematic review. These studies demonstrate considerable variation in participant age ranges and diagnoses, although the types of interventions implemented are relatively consistent. All included studies employed RAM as the guiding conceptual framework and were conducted in clinical settings, such as hospitals and health centers, involving children, adults, and elderly patients. The findings indicate that the application of RAM in nursing research positively influences the quality of care and patient health outcomes. Interventions primarily consisted of education, training, and counseling based on the RAM framework. Educational interventions addressed a range of acute and chronic diseases of varying severity, requiring both long- and short-term care. These conditions included chronic obstructive pulmonary disease (COPD), heart failure, chronic kidney failure, Parkinson's disease, cancer, delirium, brain stroke, cerebrovascular accident (CVA), and asthma. The results demonstrate that RAM-based educational interventions are effective in addressing patient problems, reducing symptoms, and improving quality of life. (Table 4)

The study population was primarily adults (44%), and only 1 article was in the pediatric population (4%). All studies were conducted in clinical settings (100%), either in hospitals, clinics, or primary health care settings. The diagnoses across populations in the study varied widely. The most frequent diagnoses were heart disease and cancer (14%). The most common type of intervention was education/training (87%). (Table 5)

DISCUSSION

This review examines and evaluates recent studies that employ RAM as a conceptual framework to direct nursing research. The 20 articles above illustrate how researchers developed the main RAM framework for the intervention model. The previously illustrated study explicitly demonstrates the importance of using RAM in nursing research. Given its simplicity and easy application, this model can be used to improve the outcome of an intervention (29). RAM provides a practical framework for assessing individual adaptation regardless of age or condition. Every individual who experiences chronic diseases such as kidney failure, heart failure, COPD, or cancer will experience a crisis, such as loss of activity or aging, which decreases the patient's ability to adapt, leading to cognitive and sensory problems, a decreased level of independence, which can reduce the perception of health, and trigger maladaptive responses. However, the basic assumption of RAM theory is that every individual has the potential to overcome stressful situations and try to carry out the adaptation process (30).

The adaptation process comprises several stages: a stimulus (input) that influences behavior, the development of appropriate coping mechanisms, and the production of an adaptive or maladaptive response (31). Humans, according to RAM, are adaptable systems capable of adjusting to complicated issues throughout their lifetimes. Individuals can adapt to varying degrees, and the degree of adaptation influences the ability to respond favorably to a given circumstance. As a coping mechanism, an individual can also manage the stimuli in his life. The application of coping methods generates an individual's adaptive reaction (26). The RAM further emphasizes that nurses are concerned with human and environmental interactions that support optimal human growth and wellbeing. Thus, nurses assess individuals' adaptive state and devise interventions to transform negative stimuli into positive responses (24).

This systematic review shows that 80% of studies develop RAM-based education and counseling interventions. Education with RAM is a social support program that can assist patients in adapting effectively and efficiently (32). Education guided by Roy's adaptation model improves most of the coping strategies in veterans with lower extremity amputations, enhances hypertension management, improves adaptive response and quality of life in patients with heart failure, the adaptation of type 2 Diabetes Mellitus patients, manages stress symptoms, and improves coping strategies of brain tumor patients (6,11,17,17,33,34). Several studies explain the use of RAM in their research. Amanak et al

(2019) analyzed the effectiveness of RAM-based prenatal education in mothers with gestational hypertension. This study reported that the incidence of mild and severe preeclampsia in the group given education was lower than in the group that did not receive an education. The booklet provides four modes of adaptation based on RAM theory: physiological, self-concept, role function, and interdependence. This study identified non-adaptive behavior using RAM through semi-structured interviews. Then, after the problem was identified, the researcher provided coaching through educational booklets and assessed the outcome. These findings reveal that RAM-based educational interventions effectively control hypertension in pregnant women (24). Mohammadpour developed a RAM-based intervention program to eliminate or modify focal stimuli and minimize the effects of contextual and residual stimuli by increasing respondents' adaptive capacity (29). The program includes educational and counseling services delivered by nurses and mental health professionals. The therapy sessions include techniques for effective communication with husbands and other individuals, skills for joyful living, anger and stress management, and assisting pregnant mothers in expressing their feelings around childbirth. While the educational material addresses frequent pregnancy-related issues and how to address them, it also addresses the impact of stress on pregnancy and its effects on maternal and infant health, pregnancy-related physical well-being, physical exercise and fitness, effective interpersonal communication, and marital relationship skills. The same study was also conducted by Elmoneim on hysterectomy patients (28). Using RAM, the intervention program was designed to eliminate or change focal stimuli and reduce the impacts of residual and contextual stimuli by improving women's adaptive capacity. Training sessions and publications make up the educational resources. The women acquired relaxing techniques, such as walking, pelvic muscle strengthening exercises, lubricating gel, and efficient communication prior to sexual activity, demonstrating that the intervention positively affected sexual function following hysterectomy.

According to Roy's Adaptation Model (RAM), the success of education is supported by role dimensions, social support, and self-concept. Often, the severity of the disease is caused by ineffective physiological responses. In the concept of RAM, the role is defined as a person's expectations of others, so that if someone has problems in carrying out the role, it will certainly affect their ability to improve their health. In addition, as social beings, we rely on various forms of social support to manage acute and chronic diseases. Social support can increase the patient's self-confidence/self-efficacy, which impacts the patient's ability to perform self-care. At the same time, the self-concept is an adaptive response reflected in a person's behavior (35).

Moreover, the physiological mode is a person's way of responding to the environment, both physically and spiritually. These various factors are related to each other. Good social support can foster the development of a positive self-concept and enhance adaptive physiological responses, encompassing both physical and spiritual qualities (30). In conducting education based on RAM, training focuses on adapting the self-concept through techniques such as stress management, relaxation, and increased psychological support (36). In addition, group education can improve patient communication skills and increase adaptive attitudes (32). The central theme of the education or training provided is adaptation to the treatment being carried out and education on the lifestyle to be followed to improve healing and patients' quality of life (34). Quality of life is an individual's standard or perception of their position in life, which is greatly influenced by a person's physical health, social relationships, and level of independence (37).

A systematic review also reported that RAM is used to develop patient care plans. In developing a treatment plan based on RAM, researchers initially conducted a RAM-based assessment to identify focal, contextual, and residual stimuli and to determine participants' maladaptive behaviors across physiological, role function, self-concept, and interdependent modes. Then, based on the observed maladaptive behaviors, a treatment plan was developed and implemented for each participant.

Researchers improved each participant's maladaptive behavior across 4 modes of adaptation by manipulating their focal, contextual, and residual stimuli (15, 23). For instance, participants with muscle weakness (physiologic problems) resulting from limited mobility (stimulus emphasis) were advised to engage in physical activities like walking. In addition, Participants with constipation (physiological problems) caused by insufficient fluid intake, high-fiber foods (focal stimulation), and insufficient physical activity (contextual stimuli) were given a high-fiber diet (consisting of fruits and vegetables), adequate fluids, and were encouraged to engage in physical activity. Participants with maladaptive behavior in role functions and modes of interdependence are also provided with counseling services by psychologists (27). The findings suggest a positive effect of using RAM-based care plans in hemodialysis patients and depression in nursing home residents (15, 23).

In addition to developing interventions in the form of education, counseling, and treatment plans, this systematic review also reports on the use of Roy's adaptation model to develop other intervention programs, which have proven very effective in increasing overall intervention effectiveness. Research conducted by Dharma and Halina-Rahayu created an intervention program in the form of a RAM-based Caregiver empowerment program. This program aims to empower families to improve patients' quality of life and reduce their burden by training post-stroke patients to adapt. This study identified ten themes of appropriate adaptive response following stroke, including three themes of stimuli or stressors experienced by patients and their families, three themes of adaptive coping methods to control difficulties, and four themes of effective adaptive behavior. Then, the researcher integrated this qualitative theme with RAM to form a RAM-based caregiver empowerment program intervention model. Families are educated to support and facilitate patients in adapting to various limitations to attain the highest possible quality of life following a stroke (26).

The use of RAM among children remains minimal. Further studies are needed using populations of children in various settings and conditions. This systematic review's findings can serve as a foundation for evidence-based nursing practice, supporting the delivery of high-quality nursing care. The conceptual use of the RAM model is reliable and can assist nurses in detecting or assessing the patient's maladaptive stimuli and behaviors. Then, the identification results serve as the basis for nurses to determine treatment plans and are implemented based on the identified maladaptive behaviors.

Table 4. Description of studies according to the systematic review criteria

No	Author	Design	Population	Number of subjects	Intervention	Length of intervention	Result
1	Mansouri (10)	Randomized control trial	Patients with heart failure	76	oral and written educational programs/training based on Roy's adaptation model	4 weeks. 1 session/week.	Psychological factors, role function, independent-interdependent dimensions, and self-concept experienced a significant increase
2	Baksi and Dicle (21)	Quasi-experiment	Patients with a primary brain tumor (PBT)	95 Patients (45 interventions, 50 controls)	Education with a special booklet for PBT (Roy's adaptation approach)	Education lasts for 30-120 minutes in bed, then will be followed up by phone for 3 times	RAM is adequate on the dimensions of symptoms and disorders as well as social support in dealing with stress
3	Hamzehpour (11)	Triple-blind randomized control Trial	Patients admitted to the ICU with severe delirium	100 patients	RAM with face-to-face education and pamphlet training.	The educational activity lasts for 2 hours in 4 sessions	There was a significant difference between the control and intervention groups on day 4, and there was a decrease in delirium in the intervention group with RAM
4	Abdolahi (13)	Experimental study	Patients with heart failure	60 patients	Intervention in the form of a care plan with a face to face training program based on RAM	The activity lasted for 6 sessions for 1 month.	RAM implementation can reduce the patient's level of fatigue and increase the ability to carry out daily activities.
5	Culha(9)	Non-randomized intervention study	Patients with ovarian, cervical, and endometrial cancer, stage 1, 2, and 3.	72 patients, 36 controls and interventions	Training program with booklets.	The intervention lasted for 1 year.	Discharge training based on RAM can improve the quality of life and adaptation of patient coping.
6	Otaghi (14)	Semi-experimental study	Female patient with breast cancer	80 patients	Care plan/training based on Roy's adaptation model (RAM)	10 sessions in 1 month	Care plans based on RAM can improve the patient's spiritual health and adaptive behavior to life's stresses and problems.

7	Hajalimoham madi (12)	Clinical trial study	Elderly patients who have cancer and undergoing chemotherapy	130 people (65 controls and interventio ns)	Training	4 month	The training program using the RAM method can overcome the fatigue experienced by elderly patients when undergoing chemotherapy.
8	Kavuran and Yurttaş (15)	Clinical dan eksperimental study	Type 2 diabetic patient	130 patients	Education or training face-to-face with the media booklet with the theme "adaptation in diabetics."	4 month	Education with RAM has a positive impact on patients' diabetic care.
9	Guo (22)	Quasi eksperiment	Patients with Parkinson's disease	90 patients	Interventions based on RAM are psychological interventions (stimulation) such as suggesting reducing caffeine for 4-6 hours before going to bed and taking a warm bath. As well as role intervention, dependence and self-concept intervention.	1 month	Treatment with RAM can reduce sleep disturbances and increase iron absorption and quality of life.
10	Wang (23)	Quasi-experiment	Patients with heart failure	112 patients	RAM-based care plan	20 months	Guided interventions with RAM may improve the adaptive behavior of heart failure patients.
11	Maleki (16)	Clinical trial	Patients with cerebrovascula r accident (CVA)	50 patients	The intervention was based on the health team's training protocol, such as nurses, doctors, psychologists, and nutritionists.	8 weeks for 4 sessions	Treatment of CVA patients with a comprehensive RAM approach can improve the psychosocial dimensions of CVA patients
12	Amanak (24)	Quasi-experiment, case-control	Gestational hypertension	132 patients	Prenatal education with RAM approach	5 Sessions, 20-40 minutes/session	In the intervention group, 64.7% of pregnant women did not experience preeclampsia, while the control group was 23.4%.
13	Lok (17)	Randomized control trial	Alzheimer's patient	60 patients	RAM-based CST	7 Weeks	The level of cognitive function of the intervention group is higher than the control group

14	Kavradim and Özer (18)	Randomized control trial	Patients undergoing treatment for a myocardial infarction	33 patients	Education and follow up by phone based on RAM	12 weeks	There is an increase in self-efficacy, quality of life, and coping adaptation in the intervention group with RAM
15	Hatami and Hojjati (25)	Quasi-experiment	Mother with a child undergoing chemotherapy	36 patients	A training program based on Roy's adaptation	4 weeks	RAM can significantly reduce the burden of treatment in the chemotherapy process with non-invasive procedures
16	Dharma (26)	Quasi-experiment	Family caregivers for stroke patients	80 patients and families	Family empowerment with RAM-based program (CEP-BAM)	3 weeks	RAM-based programs (CEP-BAM) can improve the role of families and the quality of life of stroke patients
17	Monir Nobahar (19)	Randomized control trial	Patients undergoing hemodialysis	60 patients	Educational program with RAM (Expression, question and answer, discussion, group counseling sessions)	2 weeks	Educational programs with RAM can reduce somatic symptoms, levels of depression, anxiety, and insomnia in HD patients
18	Alidoost (27)	Quasi-experiment	elderly patient	60 patients	Care plan based on RAM	1,5 months	A nursing care plan based on RAM can reduce the level of depression in the elderly
19	Elmoneim (28)	Quasi-experiment	Mothers who underwent hysterectomy	60 patients	Educational supportive program based on RAM	4 weeks	Educational programs based on RAM have a positive impact on social functioning and spouse support
20	Alimohammad (20)	Semi experimental	Adult asthma patient	64 patients	Adaptation training based on RAM	Eight months	Adaptation training based on RAM can reduce mal-adaptation behavior in asthmatic patients

Table 5. Description (%) of studies

Component	Characteristic	(n=21)	Percentage (%)
Age (Year)	Adult	10	50%
	Elderly	3	14%
	Tidak jelas	7	33%
Setting	Clinical	21	100%
	Non-clinical	-	-
Diagnosis	Heart disease	3	15%
	Brain tumor	1	5%
	CKD	1	5%
	Cancer	4	20%
	DM	1	5%
	Parkinson	1	5%
	Stroke	2	5%
	CVA	1	5%
	Hypertension	1	5%
	Alzheimer	1	5%
	postpartum depression	1	5%
	Hysterectomy	1	5%
	Asthma	1	5%
	Depression	1	5%
Type of intervention	Education/ counseling/training	16	80%
	Care plan	3	15%
	Empowerment program	1	5%

CONCLUSION

The conceptual use of RAM theory in nursing research has been widely reported. RAM in nursing research can develop interventions for education, counseling, training programs, and community empowerment. Apart from developing an intervention, RAM is also used to develop a treatment plan that aims to enhance the standard of care. A RAM-based intervention, program, and treatment plan effectively improve patients' adaptive response and quality of life across various settings and conditions.

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AUTHOR'S CONTRIBUTION STATEMENT

IH drafted the manuscript. ASS & DAI critically revised the manuscript for important intellectual content. All authors have read and approved the manuscript and agreed to be accountable for all aspects of the work in this.

CONFLICT OF INTEREST

The author(s) declares that there is no conflict of interest.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

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