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RESEARCH

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DIAGNOSES, OUTCOMES AND NURSING INTERVENTIONS APPLIED TO PATIENTS UNDERGOING CARDIOVASCULAR REHABILITATION

Diagnósticos, resultados e intervenções de enfermagem aplicados ao paciente em reabilitação cardiovascular
Diagnósticos, resultados e intervenciones de enfermería aplicadas a pacientes en rehabilitación cardiovascular

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ABSTRACT

Objective: to describe Nursing diagnoses, outcomes and interventions for people undergoing Cardiovascular Rehabilitation, based on Nursing taxonomies and the Medium Range Theory for Nursing in Cardiovascular Rehabilitation. **Method:** exploratory and descriptive study, with a qualitative approach, with 6 patients undergoing cardiovascular rehabilitation. The International Nursing Diagnoses taxonomy, the Nursing Outcomes Classification, the recommendations of the Nursing Interventions Classification, and, basically, the Medium Range Theory for Nursing in Cardiovascular Rehabilitation were used. **Results:** the titles of the most frequent nursing diagnoses among those identified were: Anxiety (38.4%), Disturbed sleep pattern (15.3%), Impaired comfort (15.3%), Decreased involvement in diversified activities (15.3%), Parental role conflict (15.3%). The diagnostic statements made it possible to structure 17 expected results and 21 nursing interventions. **Final considerations:** the process of Cardiovascular Rehabilitation experienced involves physical, social, cultural and psychological changes, requiring effective Nursing strategies aimed at the person and the family.

DESCRIPTORS: Nursing process; Nursing theories; Cardiac rehabilitation.

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RESUMO

Objective: descrever os diagnósticos, resultados e intervenções de Enfermagem à pessoas em reabilitação Cardiovascular, fundamentados em taxonomias de Enfermagem e na Teoria de Médio Alcance para Enfermagem em Reabilitação Cardiovascular. **Método:** estudo exploratório e descritivo, com abordagem qualitativa com 6 pacientes em reabilitação cardiovascular. Utilizou-se taxonomia International Nursing Diagnoses, a Nursing Outcomes Classification, as recomendações da Nursing Interventions Classification, e de forma basilar, a Teoria de Médio Alcance para Enfermagem em Reabilitação Cardiovascular. **Resultados:** os títulos de diagnósticos de enfermagem mais frequentes entre os identificados, foram: Ansiedade (38,4%), Padrão de sono perturbado (15,3%), Conforto prejudicado (15,3%), Diminuição do envolvimento de atividades diversivas (15,3%), Conflito de papel parental (15,3%). As afirmativas diagnósticas possibilitaram a estruturação de 17 resultados esperados e 21 intervenções de enfermagem. **Conclusão:** o processo de Reabilitação Cardiovascular vivido envolve alterações físicas, sociais, culturais e psicológicas, requerendo estratégias de Enfermagem efetivas voltadas para a pessoa e para os familiares.

DESCRIPTORS: Processo de enfermagem; Teorias de enfermagem; Reabilitação cardíaca.

RESUMEN

Objetivos: describir los diagnósticos, resultados e intervenciones de Enfermería para personas en Rehabilitación Cardiovascular, con base en las Taxonomías de Enfermería y la Teoría de Rango Medio para Enfermería en Rehabilitación Cardiovascular. **Método:** estudio exploratorio y descriptivo, con abordaje cualitativo, con 6 pacientes en rehabilitación cardiovascular. Se utilizó la taxonomía de los Diagnósticos Internacionales de Enfermería, la Clasificación de Resultados de Enfermería, las recomendaciones de la Clasificación de Intervenciones de Enfermería y, básicamente, la Teoría del Rango Medio para Enfermería en Rehabilitación Cardiovascular. **Resultados:** los títulos de los diagnósticos de enfermería más frecuentes entre los identificados fueron: Ansiedad (38,4%), Patrón de sueño perturbado (15,3%), Conforto deteriorado (15,3%), Disminución de la participación en actividades diversificadas (15,3%), Conflicto de rol de los padres (15,3%). Los enunciados diagnósticos permitieron estructurar 17 resultados esperados y 21 intervenciones de enfermería. **Consideraciones finales:** el proceso de Rehabilitación Cardiovascular vivido implica cambios físicos, sociales, culturales y psicológicos, requiriendo estrategias de Enfermería eficaces dirigidas a la persona y la familia.

DESCRIPTORES: Insuficiencia renal crónica; Diálisis renal; Perfil de impacto de enfermedad.

INTRODUCTION

Cardiovascular Rehabilitation is considered as a set of activities capable of reducing total and cardiac mortality, in addition to the number of cardiovascular events, also reducing hospitalizations, is recommended in all clinical practice guides.¹

In a complementary way, CVR is considered an adaptation process that must be implemented after a cardiovascular event, that is, followed by a pathophysiological condition that affects the cardiac system and promotes physical, social, psychological and spiritual changes, likely to occur in the environment of the health-disease process.²

Thus, nurses, in particular, as one of the professionals who contribute to the rehabilitation of these patients, need to consider that the purpose of clinical care is to reduce losses resulting from the cardiovascular event. Therefore, clinical nursing care for patients requiring CVR should be based on knowledge of the clinical situation presented, as well as knowledge specific to nursing that underpins care, such as nursing theories.

Nursing theories have a variety of sources that support them and are classified according to complexity and degree of abstraction. Thus, there are the Medium Range Theories (MCT) or medium range theories that are limited in the sphere of action and less abstract.³

At this juncture, the Enf-CVR TMA has its own Nursing Process, based both on Roy's Adaptation Model and on what is

recommended by Resolution 358/2009 of the Federal Nursing Council.⁴ The phases of the nursing process are: assessment of rehabilitative behavior and stimulus for CVR; nursing diagnosis; planning of rehabilitative care; rehabilitative nursing intervention and evaluation of rehabilitative care.²

Seen from this perspective, the Nursing Process determines the existence of some elements that are inherent to it, such as the ability to formulate diagnoses, description of the results achieved and the choice of the most appropriate interventions for each situation, thus constituting an evidence-based practice.

In this perspective, the use of the nursing diagnoses of the North American Nursing Diagnosis Association (NANDA-I) enables the identification of patient problems with a view to restoring and promoting health. In turn, the nursing intervention classification - Nursing

Interventions Classification (NIC) describes the treatments performed by nurses to improve patient outcomes, and the nursing outcome classification - Nursing Outcomes Classification (NOC) are actual states, behaviors or individual, family or community perceptions that can be measured in the course of a response to one or more interventions.^{5,6,7}

It is then noted the importance of identifying nursing diagnoses, outcomes and interventions to subsidize differentiated care, appropriate to the individual needs of each patient based on clinical reasoning and decision making.

Thus, the following research question was established: what are the nursing diagnoses, outcomes and interventions of patients in CVR according to the NANDA-I, NOC and NIC classifications, based on the Mid-Range Theory for Cardiovascular Rehabilitation Nursing?

The objective of the study was to describe the nursing diagnoses, outcomes and interventions for people in cardiovascular rehabilitation, based on nursing taxonomies and the Mid-Range Theory for Cardiovascular Rehabilitation Nursing.

METHOD

This is an exploratory and descriptive study, with a qualitative approach, carried out in a national reference center in health care, studies and research in the cardiovascular, thoracic and pulmonary areas located in the state of Ceará, Brazil.

Data collection was carried out between October and November 2021. The study population consisted of patients undergoing cardiovascular rehabilitation, that is, people who experienced a cardiovascular event. Patients who experienced a first acute coronary cardiovascular event and underwent a surgical procedure were included. Patients who did not present cognitive (communication capacity) and clinical (cardiorespiratory and/or neurological decompensation) conditions that would allow participation were excluded. Under these conditions, the sample consisted of 06 participants.

The intervention with the implementation of the Nursing Process (NP), based on the Enf-CVR TMA, was carried out in a hospital environment. Thus, three meetings were held for these patients. These followed 5 stages, namely: the first stage, identified as the first meeting with the research participant. At this time, the participant's identification and characterization instrument, Free and Informed Consent Form, anamnesis guide and script for physical examination were completed.

The second stage, carried out by the researchers in an external environment, according to the clinical reasoning suggested by Alfaro-Lefreve for the identification of nursing diagnoses.⁸ This interpretation is achieved by analyzing the behaviors and stimuli evaluated. The nursing diagnoses were directed to CVR, based on the Enf-CVR TMA and from the International Nursing Diagnoses: Definitions and Classification- NANDA-I 2021-2023.⁵

The third step consists of, based on the nursing diagnoses, interventions were planned using the Nursing Outcomes Classification (NOC).⁶ The fourth step identifies the rehabilitative nursing intervention: in the second meeting with the research participant, the researchers implemented interventions evidenced as necessary and guided by the Enf-CVR TMA. These interventions were implemented according to the Nursing Interventions Classification (NIC).⁷ The fifth step consists of the evaluation of rehabilitative care.

Ethical recommendations were preserved, and the study was approved by the Research Ethics Committee of Hospi-

tal de Messejana Dr. Carlos Alberto Studart Gomes (CEP-HM), with favorable opinion No. 4.825.055, CAAE: 42010920.1.3001.5039, approval date July 29, 2020.

RESULTS

Assessment of rehabilitative behavior and stimulus for CVR

In the first stage, assessment of rehabilitative behavior and stimulus for CVR is basic to verify whether the person who experienced a cardiovascular event can or has been able to rehabilitate himself through his own behavior.

In this perspective, it is convenient to describe the sociodemographic characterization of the participants regarding age, gender, religion, level of education, family income, who contributes to the income, the immovable household, number of people living in the household, according to Table 1.

Table 1 - Sociodemographic characterization of participants in the intervention group and the control group. Fortaleza, Ceará, Brazil, 2021

Characteristics/ Variables	Frequency/Average
Age (median)	40 (32 – 54)
Gender	
Male	3 (50,0)
Female	3 (50,0)
Marital status	
Single	2 (66,7)
Married/Stable Union	4 (50,0)
Divorced	0 (00,0)
Religion	
Catholic	4 (80,0)
Evangelical	2 (40,0)
Other	0 (00,0)
Level of education	
Primary education	2 (50,0)
Secondary education	4 (50,0)
Performs professional activity	
No	4 (50,0)

Yes	2 (50,0)
Family income (median)	1100 (1100 – 2200)
Who contributes the income	
Patient	2 (40,0)
Partner	2 (66,7)
Child(ren)	0 (00,0)
Other	1 (50,0)
Domicile property	
Own	6 (54,5)
Lives with relatives or friends	0 (00,0)
Number of persons living in the household	3 (2 – 4)

Mean age was 40 years and gender was equal in both females and males in this study. Regarding religion, Catholics were prevalent, and regarding education level, patients with high school education were more prevalent. Regarding family income, patients with a monthly income of one minimum wage prevailed and, although most patients did not have professional activities, they contributed to the income. Regarding the household and the number of people living in it, own households prevailed, with an average of three people in the same household.

With the completion of the first stage of the nursing process, we proceed to the second stage, Nursing Diagnoses.

Nursing Diagnoses

Thus, after the data collection, the diagnostic reasoning was used to make the judgments, as shown in Table 1.

Based on the data presented in Table 1, it appears that the most common nursing diagnosis titles were: Anxiety (38.4%), Disturbed sleep pattern (15.3%), Impaired comfort (15.3%), Decreased involvement of diversionary activities (15.3%), Parental role conflict (15.3%). Risk of impaired religiosity (4.3%), Fatigue (4.3%), Ineffective health maintenance behaviors (4.3%), Readiness for enhanced exercise engagement (4.3%), Willingness

Source: prepared by the author.

Chart I - Nursing diagnoses based on the Enf-CVR TMA, based on anamnesis and physical examination. Fortaleza, Ceará, Brazil, 2021

PHYSICAL CONTEXT

- Impaired walking related to insufficient physical endurance, evidenced by difficulty walking;
- Impaired comfort related to unpleasant environmental stimuli, evidenced by expression of discomfort;
- Stressor-related fatigue, evidenced by expressed lack of energy;
- Readiness for improved engagement with exercise, evidenced by expressing a desire to improve autonomy for activities of daily living;
- Risk of decreased activity tolerance, related to impaired physical mobility;
- Acute pain, related to the agent of physical injury, evidenced by positioning to relieve pain;
- Impaired comfort, related to unpleasant environmental stimuli, evidenced by anxiety.

SOCIAL CONTEXT

- Decreased involvement in diversionary activities related to environmental restrictions, evidenced by expressing dissatisfaction with the situation;
- Parental role conflict related to feeling intimidated by modality restrictions, evidenced by reporting concern for the family;
- Ineffective health maintenance behaviors, related to ineffective coping strategies, evidenced by inadequate health literacy;
- Decreased engagement of diversionary activities related to environmental constraints, evidenced by expressing dissatisfaction with the situation;
- Parental role conflict related to feeling intimidated by modality restrictions, evidenced by reporting concern for family;
- Ineffective health maintenance behaviors, related to ineffective coping strategies, evidenced by inadequate health literacy;
- Increased family coping disposition, evidenced by expressing a desire to choose experiences that optimize well-being.

PSYCHOLOGICAL CONTEXT	<ul style="list-style-type: none"> -Anxiety related to stressors of the hospital environment itself, evidenced by the expression about life events; -Disturbed sleep pattern related to physical immobilization, evidenced by reports of difficulty sleeping; -Anxiety related to the threat to the current condition, evidenced by concern about the current situation; -Anxiety related to mental disorder, evidenced by expression of anxiety about life events; -Stressor-related anxiety, evidenced by expression of anxiety about life events; -Disturbed sleep pattern related to physical immobilization, evidenced by report of difficulty sleeping; -Anxiety related to pain, evidenced by irritable mood.
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ESPRITUAL CONTEXT	<ul style="list-style-type: none"> -Risk of impaired religiosity related to anxiety and depression; -Readiness for greater spiritual well-being, evidenced by expression of desire to improve capacity for self-comfort.
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Source: prepared by the author.

for increased family coping (4.3%), Readiness for increased spiritual well-being (4.3%), Risk of decreased activity tolerance (4.3%), and Acute pain (4.3%). Each patient presented one or more nursing diagnoses, totaling 13 ED titles.

Planning rehabilitative care

The key outcomes of cardiac rehabilitation as part of the care plan are shown in Table 2.

After the completion of the third stage of the nursing process, we move on to the fourth stage, the implementation of rehabilitative care.

Chart 2 - Planning of rehabilitative care, after judgment of Nursing Diagnoses based on the Enf-CVR TMA. Fortaleza, Ceará, Brazil, 2021

PHYSICAL CONTEXT	<ul style="list-style-type: none"> -Locomotion; -Level of discomfort; -Level of fatigue; -Self-care: Activities of Daily Living (ADL); -Lifestyle balance -Pain control; -Level of discomfort;
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SOCIAL CONTEXT	<ul style="list-style-type: none"> -Psychosocial adaptation: change of life -Family support during treatment -Personal resilience -Coping -Family support during treatment;
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PSYCHOLOGICAL CONTEXT	<ul style="list-style-type: none"> -Self-control of anxiety; -Sleep; -Quality of life;
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ESPRITUAL CONTEXT	<ul style="list-style-type: none"> -Health conditions; -Personal well-being.
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Source: prepared by the author.

Rehabilitative nursing intervention

The fourth step, intervention, once the goals regarding CVR behaviors have been established, the nurse must determine how to intervene to help the person achieve the goals. Upon selecting one of the appropriate approaches for nursing intervention, the nurse should determine and initiate the steps that will serve to alter the stimulus appropriately.

In this study, one to three interventions were listed for each ED, as shown in Table 3.

Chart 3 - Rehabilitative interventions based on the Enf-CVR TMA. Fortaleza, Ceará, Brazil, 2021

PHYSICAL CONTEXT	<ul style="list-style-type: none"> -Environment control: comfort; -Energy control; -Improved self-efficacy; -Promotion of body mechanics; -Increased functional capacity; -Exercise promotion: strength training; -Pain control: acute; Assistance in self-care: essential activities of daily living;
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SOCIAL CONTEXT	<ul style="list-style-type: none"> -Reduction of stress by changes; -Health education; -Family support; -Improved socialization; -Promotion of family involvement;
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PSYCHOLOGICAL CONTEXT	<ul style="list-style-type: none"> -Emotional support; -Discharge planning; -Counseling; -Energy management; -Behavior management; -Case management; -Promotion of normality;
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ESPRITUAL CONTEXT	<ul style="list-style-type: none"> -Promotion of hope.
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Source: prepared by the author.

Evaluation of rehabilitative care

Evaluation, the last step of the EP, involves assessing the effectiveness of the nursing intervention in relation to the person's behavior. Was the goal determined in step 4 achieved? To do this, the nurse assesses the person's behavior after the interventions have been implemented. The intervention is judged effective if the person's behavior meets the initial goals, the CVR.

DISCUSSION

CVR is an effective adjunctive therapy in the treatment of patients after acute coronary events.¹ Related studies present a variety of results, which report that women with heart disease have adverse psychosocial profiles and low participation in Cardiac Rehabilitation (CR) programs.⁹

Thus, the current recommendation of CVR for women in secondary prevention. In general, the benefits of CVR programs are similar to those of men, although some studies suggest that in women there is a greater impact of functional class on quality of life. Nevertheless, permanence in the program is less likely than in men.¹

In addition, it is important to note that about 80% of the world's population has some religious affiliation and faith has been identified as a mobilizing force in the lives of individuals and communities. In view of this, there is a body of evidence that demonstrates a strong relationship between spirituality, religion, religiosity and the processes of health, illness and healing, composing, together with the physical, psychological and social aspects, the integral vision of the human being.¹⁰

Based on this assumption, the prevalence of CVD is higher in developing countries and socioeconomic status, low education and income, low status employment, as well as living in poor residential areas are associated with increased risk for CVD.¹⁰

Based on this assumption, the titles of the nursing diagnoses that were presented, anxiety stands out, which is defined as an emotional response to a diffuse threat, in which the individual anticipates imminent non-specific danger, catastrophe or misfortune.⁵ It is prevalent in the postoperative period of cardiac surgery, as it is an emotional condition that is directly related to fear. This same anxiety may also interfere with the postoperative recovery process, since it may be prolonged in the eyes of patients.¹¹

Therefore, the importance of including the assessment of anxiety and depression symptoms in the preoperative period of cardiac surgeries is reinforced, with the aim of both improving surgical risk stratification and favoring the postoperative recovery of patients undergoing these procedures.

The title of nursing diagnosis Impaired walking, defined as limitation of independent movement within the environment, on foot, presents in about 30% to 60% of patients in the postoperative period of cardiac surgery related to generalized weakness related to immobility. Stimulation and the performance of bed exercises are essential components of nursing care, from the performance of bed bath, change of

decubitus, among others, and enable nurses to participate in the fight against immobility.^{5,12}

The disturbed sleep pattern is the awakening for a limited time, due to external factors.⁵ This ED seems to be related to hospitalization and, consequently, to a change of environment, in addition to concern about the state of health; the noises inherent in the environment; anxiety, resulting from the strange environment and health problems; and pain, caused by surgical trauma, myocardial ischemia or immobility in bed.¹³

From the clinical reasoning process to highlight the essential results, it is emphasized that regarding the expected result of Self-control of anxiety, when defined by personal actions to eliminate or reduce feelings of apprehension, tension or malaise from an unidentifiable source, it is a goal that must be outlined by the nurse, when dealing with patients with ED Anxiety.⁶

For this purpose, the NOC nursing outcome scale for self-control of anxiety can be applied. In the nursing outcome assessment scale, anxiety self-control is scored from 1 to 5, the variables "never demonstrated" to "consistently demonstrated". As a demonstration of the application of this scale, the following results were evaluated: monitors the intensity of anxiety; reduces environmental stimuli when anxious; seeks information to reduce anxiety; plans coping strategies; uses relaxation techniques; maintains role performance and social relationships; maintains adequate sleep; and monitors physical and behavioral manifestations.¹⁴

Regarding the outcome Locomotion, personal actions to walk from one place to another independently, with or without an assistive device, should also be a goal set by the patient in CVR.⁶ In this sense, it is important to emphasize that after the immediate post-cardiac surgery period, greater mobilization in bed and the beginning of locomotion are necessary, being the time to encourage the patient to perform self-care activities.¹⁵

As for sleep, natural periodic suspension of consciousness during which the body recovers, it is a goal set by the nurse.⁶ Due to the importance of this outcome for CVR patients, studies reinforce that there are several factors that can lead to changes in the quality of sleep of these patients, such as: problems related to surgical wounds, drug therapy, appetite changes, emotional changes and neuromuscular disorders.¹⁶

For the quality of the nursing care provided, the nurse must organize and plan the care based on the application of the methodological steps of the nursing process, in order to intervene according to the patient's needs, in an individualized way, promoting rapid recovery and early dehospitalization.

Regarding the intervention Emotional support, offering tranquility, acceptance and encouragement during periods of stress, activities recommended by the NIC were developed, such as supporting the use of appropriate defense mechanisms; stay with the patient and provide the guarantee of safety and protection during periods of anxiety; encourage the patient to talk to decrease the emotional response.⁷

For Discharge planning, preparing for transfer of a patient from one level of care to another, within the same health care institution or to another location, coordinating the efforts of different health care professionals to ensure timely discharge; monitoring discharge preparedness; encouraging self-care as appropriate; organizing caregiver support as appropriate.⁷

Counseling, use of an interactive process of helping with needs, problems, or feelings of the patient and significant others to improve or support coping, problem solving, and interpersonal relationships; establish therapeutic relationship based on trust and respect; demonstrate empathy, warmth, and authenticity; encourage expression of feelings; assist the patient to identify the problem or situation that is causing distress; determine how family behavior affects the patient.⁷

Increasing functional capacity, maximizing physical functionality to prevent a decline in activities of daily living, setting realistic functional goals; addressing pathological processes that may be the cause of functional decline; modifying tasks or environments; encouraging the patient to begin exercise.⁷

Exercise promotion: strength training, facilitation of regular muscular resistance training to maintain or increase muscular strength, do pre-exercise assessment to identify risks of exercising; assist patient to express beliefs regarding muscular fitness; guide to rest for a while after each set of exercises.⁷

Energy control, regulating energy expenditure to treat or prevent fatigue and optimize function, assess patient's physiological condition for impairments resulting in fatigue; encourage verbalization of feelings about limitations; monitor/record patient's sleep pattern and number of hours of sleep; assist patient in understanding principles of energy conservation; help patient identify preferred activities.⁷

Behavior control, assist patient in controlling negative behavior, hold patient accountable for his/her behavior; set limits for patient; determine routines; avoid arguing with patient; discourage passive-aggressive behavior.⁷

Environmental control: comfort, manipulate environment to promote maximum comfort, determine patient and family goals for environmental control and optimal comfort; provide clean and safe environment; determine cause of discomfort such as wet dressing, wrinkled bedding, and environmental irritants; facilitate hygiene measures to keep patient comfortable.⁷

CONCLUSION

In this study, it was evidenced that people in CVR experience impairments in physical, social, cultural and psychological aspects, leading to disinterest and lack of motivation to perform basic life activities. The diagnostic statements were structured according to the problems evidenced, resulting in the foundation of 13 diagnoses and 21 nursing interventions. In addition, the importance of care based on TMA for CVR Nursing was realized, aiming at a care based on promoting

the return to the activities performed by patients before the cardiovascular event suffered.

This fact leads to the understanding that a clinical practice based on the standardized language system, as well as on Nursing based on theories, enables comprehensive, humanized and safe care.

It is believed that new studies using the TMA for CVR Nursing are needed as an alternative for planning, implementing and evaluating intervention in academic research and in nurses' clinical practice.

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