

## CASE REPORT

# Nursing Approach According to Roy Adaptation Model in a Patient with Implantable Cardioverter Defibrillator (ICD)

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### Abstract

The nursing profession is a professional health discipline based on philosophy, practice, and research enriched with various models and theories. This discipline develops knowledge and provides a special perspective to its practices using models and theories when planning and maintaining the care of individuals. The professionalism of the nursing profession depends on how strong its theoretical structure is and how much the theoretical structure is reflected in nursing practices. The use of nursing care models created in this direction ensures the fulfillment of nursing care in a holistic and systematic manner and also guides nurses. In this article, we present a nursing approach prepared by using the North American Nursing Diagnosis Association I diagnostic system within the scope of Roy's adaptation models of a patient with an implantable cardioverter defibrillator who was followed up in the cardiology clinic.

**Keywords:** Nursing theory, nursing diagnosis, psychosocial care

### Introduction

The nursing profession is a professional health discipline based on philosophy, practice, and research, which forms the framework with different models and theories. This discipline, while planning and maintaining the care of individuals, increases knowledge using models and theories, and provides a different perspective to their practices (Karabulutlu & Okanlı, 2011; Özer et al., 2009). The use of models and theories in nursing brings the nursing process to the forefront, ensuring a systematic mental process in determining the need for disease and treatment at the same time. The main goal of a professional discipline is to present scientific knowledge content that can be used in the practice of the profession (Biol, 2009, p. 451-452; Kaya et al., 2010; Öngün et al., 2020). Models bring a different perspective to nursing and direct nursing practices. Nursing models and theories enlighten nurses by systematizing nursing knowledge and initiatives (Velioğlu, 1999, p. 372-399). In addition, it plays an important role to ensure that patient care is scientific, professional, and evidence-based (Ilkaz et al., 2018; Pektekin, 2013, p. 111-118).

One of the most frequently used nursing care models today is the Roy Adaptation Model (RAM) developed by Sister

Calsista Roy. The model is an interactive model defined by Roy in the 1960s and put into practice in 1970 and focuses on the harmony between humans and environment (Fawcett & Desanto-Madeya, 2012). The model was last revised in 1986 to guide nursing practices (Alligood & Tomey, 2006, p. 307-333; Fawcett & Desanto-Madeya, 2012). Roy constituted the framework of her theory of human, environment, health, and nursing concepts. According to Roy, human is a biological, psychological, and social entity, an open system that constantly interacts with the changing environment. Roy defined the environmental stimuli affecting people into three groups.

1. Focal stimuli: These are the stimuli that come from outside and directly cause an adaptation response.
2. Contextual stimuli: Affecting stimuli are not the direct cause of the behavior; however, they are warnings that affect behavior.
3. Residual stimuli: Possible stimuli are stimuli that can affect the individual but cannot be measured objectively (for example, beliefs, past experiences, etc.)

Human beings have the ability to adapt to the changing environment. Health is the process of maintaining the integrity of an individual by constantly adapting to changes. If the

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individual's coping is insufficient in the model, it will result in illness. The model explains adaptation of the individual in health and disease situations with four adaptive forms. It provides physiological, psychological, and social adaptation of the individual with four adaptive forms by evaluating the adaptation levels of the model people.

1. Physiological field: It is related with the physical responses of an individual to stimuli originating from the environment.
2. I/self-concept area: It is the combination of beliefs and feelings that individuals have about themselves.
3. Role function area: It includes roles related to social integrity such as being a mother and father (Mendez & Cowie, 2001; Saglam et al., 2010).
4. Mutual commitment area: It covers an individual's relations with privileged people and support systems. Individuals maintain their psychic integrity by meeting needs such as satisfaction and love.

Roy defines nursing as "attempts to improve compliance in health and illness." She stated that the purpose of nursing is "to ensure the individual's adaptation by helping the individual to survive, grow, reproduce, and provide autonomy, thus increasing health, quality of life, and contributing to the dignity of death."

Heart failure is a chronic and degenerative disease that reduces an individual's daily vital activity, quality of life, and lifespan. Heart failure has become an important health problem because of its increasing incidence and high morbidity and mortality rates (Baykara et al., 2019; McMurray et al., 2012). As the pumping power of the heart decreases, symptoms and signs such as shortness of breath, fatigue, weakness, tachycardia, tachypnea, pulmonary rales, jugular veins, and edema in the ankles are observed during rest or physical activity (Cenik et al., 2016; Gregoratos et al., 1998). The treatment of heart failure includes lifestyle changes besides drug therapy and adaptation have positive effects on symptoms and prognosis (Lainscak et al., 2011) with implantation for primary and secondary prevention to increase survival and reduce the risk of sudden cardiac death. Cardioverter defibrillator (ICD) implantation has become an important treatment method (Karadakovan & Aslan, 2010). An ICD is a battery-operated implantable pacemaker device that consists of a generator and one or more electrodes that

can detect ventricular arrhythmias and provide therapy by delivering an electric shock. In the case of life-threatening arrhythmias, the electric shock creates fibrillation and tries to prevent the risk of sudden death by terminating the arrhythmia. The ICD has developed over the years thanks to the rapidly renewed technology and is placed in the pectoral area muscle and under the skin (Kelley & Ferreira, 2017). Although ICDs are very effective in reducing mortality in patients at risk of cardiac death, they cause psychosocial problems such as stress, fear, weakness, anxiety, and depression in patients. Emotional problems seen in patients with ICD are associated with changes in body image, painful shocks, and the possibility of device malfunction (Mert et al., 2012; Mosterd & Hoes, 2007; Sagar et al., 2015; White, 2000). In addition, lifestyle changes such as restriction of car use, anxiety about not continuing their current job, and changes in marital life and social relationships can affect the psychological and emotional well-being of patients with ICD. Therefore, the education of these patients is very important to increase their adaptation to the new lifestyle and their psychosocial well-being. In this report, we present a patient who had nursing care according to RAM and who was followed up in the cardiology service for a week and later by phone after discharge. The nursing care process steps in RAM included evaluation of behavior, evaluation of stimuli, nursing diagnosis, goal development, selection of nursing interventions, and evaluation of care (Özkahraman et al., 2012; Phillips & Harris, 2014; Roy et al., 2009; Tosun & Kadirođlu, 2016).

In this study, the North American Nursing Diagnosis Association (NANDA) diagnoses were used as a guide for nursing diagnoses.

\*\*The patient in the following case profile was hospitalized in the cardiology clinic between May 05 and May 13, 2020, and was followed up during shift hours. After he was discharged, he was followed up by phone between May 13 and May 19, 2020. In total, this process constituted a 14-day timeframe with one week clinic and one week home phone calls.\*\*

\*\*\*Before performing the study, the required informed consent form was obtained from the patient.\*\*\*

## Case Presentation

**Demographic Characteristics:** The patient was a 76-year-old male, H.C., single, and had nine children. He was a primary school graduate and retired.

**Physiological Field:** Approximately 10 years ago, he had coronary artery bypass graft surgery for multiple coronary artery disease. The patient presented to the state hospital's emergency in December 2019 with dyspnea on exertion, orthopnea, and swelling in the legs. His physical examination showed heart failure, and he was admitted to the hospital for further examination and treatment. Echocardiography showed severe left ventricle dysfunction with left ventricle ejection fraction of 30%. The patient underwent coronary angiography, and the bypass grafts were found to be intact,

### Main Points

- Nursing models and theories guide the nurse by systematizing nursing knowledge and activities.
- One of the most used nursing care models today is the Roy Adaptation Model developed by Sister Callista Roy.
- Heart failure has become an important health problem owing to its increasing incidence with each passing year and its high morbidity and mortality rates.
- Implantable cardioverter defibrillator (ICD) implantation for primary and secondary prevention has become an important treatment method in the treatment of heart failure to increase survival and reduce the risk of sudden cardiac death.
- Patients with ICD experience serious emotional problems such as fear of death.

and no significant stenosis was found. The patient's heart failure was treated, and he was discharged after five days. After three months, the patient applied to the state hospital again because of sudden chest pain, and acute MI was detected on the ECG. Coronary angiography was performed urgently, an occlusion in the diagonal saphenous vein graft was detected, and stent implantation was performed.

As there was no improvement in left ventricular systolic function after medical treatment during the one-month follow-up of the patient, planned hospitalization of the patient was done in May 2020, and an ICD was implanted in the left pectoral region. The vital signs were Blood Pressure 140/80, Pulse 54, o-Oxygen Saturation 92%, and temperature 36.6. The patient had edema in his legs. From his questions such as, "I will not survive" and "How long will the procedure take," it was understood that the patient's anxiety was high during the interview with the patient the evening before the ICD implantation procedure. As he could not sleep that night, he asked his doctor for sleeping pills. On the day after the implantation of the ICD, the patient stated that he had intense pain in the incisional area, and the necessary treatments were applied.

**Self-Concept Area:** When the patient's nutritional habits were questioned, it was determined that he did not attach any importance to his diet and was fed with salty, fatty, and flour foods. When the medications he used at home were questioned, it was determined that he did not take important drugs such as aspirin, Plavix, and diuretics regularly according to the information received from his doctor.

#### a. Physiological Field

**1. Identification of behavior:** The patient stated that he had intense pain at the intervention site on the first day postop.

#### 2. Identification of Stimulus:

Focal stimuli: ICD implantation in the patient (incision site)

Situational stimuli: Immobility

Possible stimuli: Previous surgery experiences

Nursing diagnosis: Pain

Goal: To reduce pain and provide comfort

Nursing interventions:

- The severity and characteristics of the pain will be evaluated.
- Factors that increase and decrease pain will be determined.
- The patient's attention will be diverted through non-pharmacological methods.
- The analgesic drugs in his order will be administered on time.

Evaluation: The patient's order of pain was nine out of ten (aldolan 25 mg). The sandbag was lifted for one to two minutes from time to time and placed again.

#### b. Self-Field

**1. Definition of Behavior:** The patient does not take important drugs on time and does not pay attention to his diet.

#### 2. Identification of Stimulus:

Focal stimuli: The patient's inability to grasp the severity of his illness sufficiently

Situational stimuli: Educational status

Possible stimuli: Family life, old habits

Nursing diagnosis: Lack of information

Goal: The patient's lack of information will be eliminated

Nursing interventions:

- The patient will be informed about the importance of his illness.
- Information will be given about the importance of medicines and the need to take them on time.
- He will be given a written description of how to use his medicines at home.
- He will be informed about the importance of nutrition and how it will be fed (both to himself and to the daughter and the groom taking care of him).

Evaluation: When feedback was received from the patient, he said he would pay attention and a written description of how to use his medication was given (daughter and son-in-law were involved in training).

#### c. Role Function Area

##### 1. Defining Behavior

Statement of the patient; When the patient was interviewed on the fifth day postop for discharge, he stated that he did not want to be discharged.

##### 2. Identifying Stimulus

Focus stimulus: Fear of death

Affecting stimulus: Lack of information

Possible stimulus: Previous hospital experience, had a battery hit the patient next to him three times (remembering this and being more afraid)

Nursing diagnosis: Difficulty in fulfilling its individual role

Goal: Providing correct information to patients, thereby reducing their fear and to be discharged safely.

Nursing Initiatives:

- Patients will be encouraged to share their fears and concerns
- They will be corrected and encouraged to ask questions.

Discharge training will be given including the family.

Evaluation: The patient stated that the question marks in his mind were reduced, he would not interfere with his controls, and that he would take his medication on time and correctly.

#### d. Mutual Commitment Area

##### 1. Description of Behavior:

The patient's statement expressing to his daughter that he would be a burden at home.

##### 2. Definition of Stimulus

Focus stimulus: ICD insertion

Affecting stimulus: The thought of restriction in movement and behavior

Possible stimulus: Samples he observed in his environment

Nursing diagnosis: Changing family process

Goal: To create a positive attitude in the individual

Nursing Initiatives:

- An environment where they can express their feelings with family members will be created.
- H.C will be encouraged to describe family relationships
- It will be ensured that he expresses his feelings and thoughts about whether there will be a change in his family role after the ICD is installed.
- Missing information and incorrect information will be corrected
- Will be encouraged to develop appropriate coping methods (spend time with the family, share problems, and find solutions) for problems that arise in the family process and social relationships, and to maintain communication and interaction with family members.

Evaluation: The patient stated that he is very happy that his children, and ex-spouses are always with him. The family said that the patient would hire the inpatient with his own pension.

\*\* The patient was discharged from the cardiology clinic on May 13, 2020. Before the patient was discharged, comprehensive discharge training was given about the ICD. The content of this training, included what physical activities he should avoid at home, what activities he can do comfortably, in which situations he should apply to the hospital, his nutrition, the use of medication, where and how he will have his dressing, which day he will come to have his stitches removed, and how he should be washed.

\*\* To determine the compliance of the patient with the ICD and the effectiveness of the trainings, the patient continued to be monitored over the phone within a week from the day of discharge.

## Discussion

In this study, we aimed to examine the nursing care of a patient with ICD using RAM. The use of models or theories in nursing enables nursing practices to be more comprehensive and provide holistic care to patients. The use of RAM is appropriate for nursing care, especially in terms of adaptation of patients with ICD to the processes they experience. It is necessary to use nursing models or theories in other patients and models so that it is used more and becomes widespread. The basic component of RAM is compatibility. ICD implantation is a process that requires patient compliance. With this model (RAM), which is based on harmony, it provides a physiological, psychological, and socially integrated approach to patients and patient-centered care.

The model allows to increase the scope of nursing practices and is often used as a guide for nursing practices.

Although nurses working in the clinic generally focus on the device function and technical aspects (monitor tracking, ECG tracking, and vital signs), we often ignore the psychosocial ef-

fects of the pacemaker on the patient. However, the fact that an artificial device will remain in the body until the end of life, the fear that the heart will not work if the device is broken, the thought that frequent controls are required for the rest of his life, or the thought that he will feel pain with shock may cause psychosocial problems such as fear, anxiety, stress, and depression in the individual. However, the success of the device is closely related to the patients accepting that the device is an important factor for a healthy life and their psychological adaptation. At this point, we, as nurses, spend time with the patient with the new ICD implanted, meet the training needs of the patient about the device after implantation, include the family in the care of the patient and inform them, creating a sense of trust between the patient and the nurse. This communication between the patient and the nurse facilitates the patient's adaptation to the device.

Monitoring over the phone within one week after discharge was a continuation of the care in the hospital, and daily evaluation of the patient's compliance with ICD helped reduce anxiety and stress in the patient. Being in contact with the patient during the period after he was discharged from the moment he was hospitalized and discharged, motivated the patient and his family to have control over the new situation of the individual. Thus, the individual and his family entered the process of adaptation by showing changes in their lifestyle as a result of the discharge education they received. However, the fear of death and the unknown fear of shock could not be completely eradicated. The one-week period was insufficient to evaluate this compliance.

As a result of this article, we can see that RAM guides nursing practices. The care plan made by following the steps of the model prevents data loss and ensures the correct planning of nursing care interventions. To increase the quality of health/nursing care, nurses are recommended to use RAM to prevent data loss and to determine correct diagnoses.

RAM was limited at this point, especially as a longer period was needed to evaluate harmony in the self-domain and role function area.

Generally speaking, the education of patients with ICD is a useful model for improving their psychosocial well-being and adaptation to the new lifestyle.

As a result of this article, we can see that RAM guides nursing practices. The care plan made by following the steps of the model prevents data loss and ensures the correct planning of nursing care interventions. To increase the quality of health/nursing care, nurses are recommended to use RAM to prevent data loss and to determine the correct diagnosis.

**Informed Consent:** Informed consent was obtained from the patient included in the study.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** The author has no conflicts of interest to declare.

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