

The Effect of Roy Adaptation Model on the Adaptation Status of Patients after Surgical Intervention

Abstract

In studies conducted by nurses around the world and in Türkiye, the importance of interventions structured according to models and theories is emphasized in studies in the field of nursing since the use of models and theories in the management of the post-surgical period is limited. It is predicted that nurses can provide holistic care to patients after surgical interventions, with the use of models and theories in nursing care and practices. When the literature on surgical nursing is examined, it has been concluded that the Roy Adaptation Model (RAM) is the most used nursing model in the care and practices of surgical nursing. In this review, it is aimed to examine the effect of the RAM on the new adjustment of patients who underwent different surgical interventions after surgery. Within the scope of examining the compliance status while it was concluded that the nursing diagnoses made in line with the RAM were similar to the surgical patients who had undergone different surgical interventions, it was seen that more positive results were obtained in adapting the individuals to their new situations in the post-surgical period as a result of the care and practices that the nurses would develop for the sick individuals using the RAM. To increase the use of the RAM by clinical nurses in the surgical field, it is important to include it in basic nursing education and to emphasize its effectiveness in practice to increase the use of the model.

Keywords: Adaptation, roy adaptation model, surgery

Kıymet Öztepe Yeşilyurt 

Department of Nursing, Hakkari University, Faculty of Health Sciences, Hakkari, Türkiye

Introduction

Treatment and care of surgical patients differ according to the surgical intervention applied. It is important to provide safe and high-quality care to patients during their treatment, minimize medical errors, prevent the problems and complications that may develop during hospitalization, meet the care needs of patients, maintain a balanced and sufficient diet, and perform daily living activities.¹ Nurses prepare an environment for disclosing emotions, bringing out questions to be asked, minimizing worries and fears, teaching coping mechanisms, and providing efficient nursing care.² Treatment and care of surgical patients differ according to the intervention. For this reason, in the nursing care to be given to the patients who have undergone surgical intervention, it is emphasized that the patients should be diagnosed comprehensively by nurses in terms of complications caused by the surgery to be performed, their care should be well planned, and as a result, they should be followed up by a correct and careful evaluation.¹ It is a known fact that nurses use nursing models by putting the individual focus on standardizing the care; they plan to increase the adaptation of patients so that they can provide holistic care to patients.^{3,4} For this reason, when preparing pre-operative and post-operative nursing care plans for patients who will undergo surgical intervention, not only physical and functional adaptation but also psychological adaptation of patients should also be taken into account. In this context, Roy Adaptation Model (RAM) is a model commonly used in standardizing nursing care plans.³ However, although a large number of surgical interventions are performed in Turkey and in the world, a limited number of studies have been found that examine the experiences of patients who undergo surgical interventions based on nursing models. Based on this determination, the aim of this review is to examine how the care provided in line with RAM affects the adaptation of patients to their new post-operative condition in individuals who undergo surgical intervention.

Cite this article as: Öztepe Yeşilyurt K. The effect of roy adaptation model on the adaptation status of patients after surgical intervention. *J Educ Res Nurs.* 2023;20(3):277-283.

Corresponding author: Kıymet Öztepe Yeşilyurt
E-mail: kymtoztepe@hotmail.com

Received: October 12, 2021
Accepted: February 03, 2022
Publication Date: September 01, 2023



Copyright@Author(s) - Available online at
www.jer-nursing.org
Content of this journal is licensed under a
Creative Commons Attribution-NonCommercial
4.0 International License.

Roy Adaptation Model (RAM)

RAM, which was developed by Nurse Callista Roy and focuses on human adaptation, was put into practice in 1970 and revised in 1986 to guide nursing practices.⁴⁻⁷ In the model, Roy focused on human adaptation and defined human as living being that adapted to the environment by interacting with continually changing environmental stimuli.^{5,8} Basic concepts of RAM are defined as human, environment, health, and nursing and according to RAM, the environment includes focal stimulus, influencing stimulus, and possible stimuli affecting the individual.⁷⁻⁹ It can be seen that individuals adapt to these existing stimuli through innate or acquired coping ways and according to this model, responses of individuals to the four adaptation areas that make up the content of the model using coping mechanisms enable defining adaptation behaviors.¹⁰ Nurses help to meet the needs of individuals according to these four adaptation areas defined in RAM.^{7,9,11,12}

Modes of RAM

In Physiological Adaptation Mode

Behavior is the mode that includes giving a physiological response to stimuli in the environment, it focuses on protecting physiological integrity and describes the physical and chemical activities that take place in the body.^{7,12,13} This mode includes nine dimensions as oxygenation, elimination, nutrition, activity and rest, protection, senses, fluid electrolyte and acid-base balance, endocrine, and neurological functions.^{5,9}

In Self-Concept Adaptation Mode

Behavior is the whole beliefs and feelings of the individual about himself/herself at a specific time and this mode is explained in two dimensions as physical and personal self.^{7,12,13} It is associated with basic needs of psychic integrity such as body image, self-consistency, spiritual self, and self-expectancy.⁵

In Role Function Adaptation Mode

Behavior is related to the roles of individuals in society and includes informal roles that aim to protect social integrity.^{7,9,13} In this mode, the roles of individuals are addressed in three dimensions. The first one is roles defined according to age, gender, and developmental stages; the second is roles such as being a mother, father, and teacher in which developmental stages of individuals and their jobs related to their first roles are defined, and the third is defined as small jobs and duties individuals perform in their current developmental process.^{7,12,14}

In Interdependence Adaptation Mode

In this mode which includes the behaviors of individuals and groups, their mutual relationships, individuals' relationships with their significant others and support systems, individuals focus on giving and receiving value, love, respect, and interaction with others. The basic need of this mode is creating integrity in relationships, developing relationships, and creating a sense of trust.^{5,7,12,13}

Relationship of RAM with Nursing Care and Adaptation of Patients Who Undergo Surgical Intervention

The aim of this commonly used model in nursing is to accelerate, develop, and increase the adaptation processes of individuals in health-disease situations.^{5,15} It can be seen that although different surgical methods are applied in studies, nursing diagnoses, nursing care, and practices and results are similar (Table 1).

In this direction, there are studies in the literature examining the nursing care and practices applied after different surgical interventions, and it is seen that applying care according to RAM increases the adaptation status of individuals in the post-surgical process.^{5,7,8,13,22-24,27}

In this regard, studies evaluating patients with colostomy and ileostomy and the importance of providing holistic care to patients were emphasized and it was stated that colostomy caused significant changes in individuals' lives and RAM, which is used in the adaptation of individuals, is a suitable model.^{10,20} In another study by Sayar and Vural,²⁷ a patient who had colostomy was evaluated in terms of four adaptation modes, and the nursing diagnoses made were risk of deterioration of skin integrity in peristomal area, pain, deterioration in sleep patterns, fatigue, changes in bowel excretion, lack of knowledge in physiological adaptation mode; anxiety and impaired body image in self-concept adaptation mode; inability to fulfill roles in role function mode; inability to cope individually and within the family in interdependence adaptation mode and it was aimed for the patient to develop a successful adaptation response.²⁷

In addition to these studies, there are cancer surgery studies in which nursing care is applied using RAM.^{8,13,19} According to a qualitative study conducted by Simsek and Dicle¹³ on surgical patients who had a primary brain tumor, non-adaptation was reported in all adaptation modes and the nursing diagnoses included experiencing the side effects of medication, impaired daily living activities, lack of appetite, nausea, vomiting, fatigue, headache, deterioration in nutrition, deterioration in sight in physiological adaptation mode; feeling bad and uncertainty in self-concept adaptation mode; deterioration in maintaining gender role and business life; and deterioration in social relationships in interdependence adaptation mode.¹³ Furthermore, in Eren and Durmus Iskender's study,⁸ a patient who received chemotherapy and performed gastrectomy received nursing diagnoses of deterioration in physical movement in physiological adaptation mode; anxiety and lack of knowledge in self-concept adaptation mode; insufficient individual coping in role function adaptation mode and readiness to strengthen in family processes in interdependence adaptation mode and it was aimed for the patient to develop positive adaptation behaviors.⁸ In addition, in Acil and Aygin's study,¹⁹ it was emphasized that removal of all or part of the breast with a diagnosis of breast cancer caused problems such as depression, loss of sexual desire, and loss of femininity in women and that positive results can be obtained in nursing interventions using RAM to help individuals to adapt to their new states.¹⁹

RAM is also used in the care of patients who have undergone gynecological surgery.²¹⁻²³ According to a study conducted by Ustgorul et al,²³ a patient who had undergone total abdominal hysterectomy surgery and bladder repair was found to have nursing diagnoses of dehydration, impaired sleep pattern, decreased physical activity, lack of appetite, constipation, wound site infection in physiological adaptation mode; deterioration in body image, anxiety, weakness, hopelessness, ineffective individual coping, impaired sexual life, decreased self-esteem in self-concept adaptation mode; inability to fulfill roles, delay in post-operative recovery, interruption of breastfeeding, inability to fulfill the roles of mother and wife in role function adaptation mode; interruption of familial processes, social isolation, insufficient individual coping, impaired social relationships, and changes in parent-infant attachment in interdependence adaptation mode and it was aimed to provide nursing care to patient with a holistic approach.²³

Table 1. Use of RAM and nursing care regarding surgical interventions

Research article	Research design	Sample	Author/year	Results of studies
Live donor liver transplantation is the light at the end of a tunnel: A qualitative study based on Roy's Adaptation Model	Qualitative study	Liver transplantation patients (n=10)	Karayurt et al ⁷ 2014	It was seen that the patients' being careful about drug use was caused by the fear of losing the organ, the effort to survive, and the sense of responsibility toward close relatives because they received the organ from their relatives. It was concluded that since they considered transplantation as a second chance for life, they stated that being alive was more important for them than a major surgical incision; while it was concluded that their dependence increased due to situations such as pain and fatigue.
Investigation of adaptation after liver transplantation using Roy's Adaptation Model	Qualitative study	Liver transplantation patients (n=21)	Ordin et al ¹⁶ 2013	It was concluded that the first factor affecting patients' psychology was fear of organ rejection or complications and worries about the future since the problems of the patients developed due to immunosuppressive therapy and there was a striking and rapid change in their lives of the patients, the second factor was that they felt guilty or indebted to living donors/ donors' families, and the third factor was that they used many drugs in the early post-transplant period and had to live with the side effects of drugs.
An example to the use of model in nursing care the examination of a woman, with modified radical mastectomy according to the Roy Adaptation Model	Case report	Mastectomy patients (n=1)	Vicdan ¹⁷ 2010	It was found that as a result of the application of RAM, the patient ate, practiced deep breathing/coughing exercises, believed that she could overcome her illness, listening to music and talking to her daughter was good for her, wanted to use the breast prosthesis after recovery, prayed often, spent more time with her daughter and husband.
Effect of Roy's Adaptation Model-guided education on coping strategies of the veterans with lower extremities amputation: A double-blind randomized controlled clinical trial	Randomized controlled (double-blind) study	Veterans with lower extremities amputation (n=60)	Farsi and Azarmi ¹⁸ 2016	It was concluded that the majority of coping strategies such as face-to-face coping, planned problem solving, self-control, and accepting responsibility increased significantly, maladaptive coping strategies such as distancing and escaping were significantly decreased.
Nursing care based on the Roy Adaptation Model for a patient undergoing amputation surgery	Case report	Patient undergoing amputation surgery (n=1)	Kaya and Bilik ¹⁵ 2020	After the training given to the patient in line with RAM, it was seen that the patient stated he would be more careful about diabetes, his sleep pattern had improved, his pain had decreased, the wound healing progressed healthily, he was relieved by being informed, and he was hopeful about wearing a prosthesis.
Use of the Roy Adaptation Model in the nursing care of individuals with a colostomy opened due to rectum cancer: Case study	Case report	Rectum cancer's patients (n=1)	Vicdan and Tuna ¹⁰ 2015	As a result of applying RAM to the patient, it was found that the patient learned how to change the colostomy bag, thought there would be no deterioration in skin integrity as long as he performed the suitable care, learned about infection symptoms and could control himself, felt better when he could communicate with people around, he would try to get used to this situation, he had to change his job and would accept his friends' visits to socialize and the information given made him relaxed.
Analysis of a trauma case with perianal tissue loss according to Roy Adaptation Model	Case report	Perianal tissue loss's patients (n=1)	Acil and Aygin ¹⁹ 2017	With the application of RAM on the patient, the patient's pain decreased, no deterioration occurred in skin integrity in the colostomy region, no infection was found, no constipation developed, the patient had concerns about his body, he had loss of organ and function and accepted the change in his body as a result of the deterioration in body image, believed that this situation would change by showing patience, could not fulfill the care burden of his family, but accepted his disease and disease process, while he did not want to speak about it and there were deteriorations in verbal communication.

(Continued)

Table 1. Use of RAM and nursing care regarding surgical interventions (*Continued*)

Research article	Research design	Sample	Author/year	Results of studies
Nursing care prepared according to Roy's Adaptation Model of a patient following ileus pre-diagnosis and opening colostomy	Case report	Patients with colostomy (n=1)	Ilkaz et al ²⁰ 2018	It was concluded that the patient used spirometer effectively, oral nutrition was provided, pain decreased by listening to favorite music, participated in ostomy care and asked questions, built more effective communication with his relatives
Use of Roy Adaptation Model in nursing care following hysterectomy	Case report	Hysterectomy patients (n=1)	Vicdan and Demirel ²¹ 2015	It was concluded that the patient's pain decreased, there was a slight improvement in her sleep pattern, she stated that she would recover for her children due to her changing body image, she said that she was happy that the removal of her uterus would not prevent her sexual life, but that it was difficult for her social relations to be the same as before
Nursing care based on Roy Adaptation Model in a patient with heart transplantation	Case report	Patient with heart transplantation (n=1)	Akyol and Ibrahimoglu ³ 2020	It was concluded that there were no signs of infection in the patient and that his pain decreased in line with the applications; It was observed that the patient accepted the wound in his adaptation to the changing body image, and his thoughts about the fear of death were replaced by positive thoughts.
Examination of the adaptation states of patients with primary brain tumor according to the Roy Adaptation Model: A qualitative research	Qualitative research	Patients with primary brain tumor (n=17)	Simsek and Dicle ³⁵ 2013	As a result of nursing care applied to patients, some patients defined maladaptive behaviors as nausea-vomiting, inability to perform daily living activities due to motor function disorders, feeling psychologically bad, problems experienced with the effect of maladaptive behaviors in other adaptation modes, changes in body image, uncertainty about the future, fear and sadness continuing to affect their lives negatively, continuous headache, pain in their bodies, tingling in their teeth, decreased visual function, different visual disorders, decrease in the sense of smell, feeling of discomfort in visual function and in the ear. In terms of adaptive behavior, some patients stated that they paid attention to their diet, adapted to nutritional changes due to drug intake, showed positive maladaptive behaviors by using cognitive coping and positive health behaviors, felt psychologically better when they saw people who got sick and then got better, they stated that disease was something that came from God, they thanked God and tried to keep morale high.
Nursing care according to Roy Adaptation Model in A patient with chemotherapy-treated gastric cancer	Case report	Patients with gastric cancer (n=1)	Eren and Durmuş Iskender ⁸ 2019	The patient's statement that he would continue the interventions that would increase his physical mobility after the applied nursing interventions, that his anxiety has decreased, that his lack of knowledge about the treatment process has decreased, that he was ready to become stronger in the family processes are considered as positive responses, while the ineffectiveness of individual coping systems is evaluated as a negative response.
Using Roy Adaptation Model in nursing care for patients with congenital adrenal hyperplasia	Case report	Patients with vaginoplasty (n=1)	Tuna et al ²² 2017	According to the results of this study, it was observed that the patient's pain decreased but continued, tissue healing continued as usual, she did not look away while talking, she started to go to the playground in the service she received care, there were changes in his thought that vaginoplasty would prevent her from getting married, and positive adaptation behaviors such as her mother's stating that she was closer to the patient.
Use of Roy Adaptation Model in nursing care of a case with abnormal placental invasion	Case report	Patients with total abdominal hysterectomy and mesh repair (n=1)	Ustgorul et al ²³ 2018	A care plan in line with RAM was applied to the patient who had a long hospitalization (6 months) and intensive care hospitalization (1 month) after the surgical intervention, and it was observed that the postpartum woman's adaptation to the postpartum period and the interventions increased after the interventions.

(Continued)

Table 1. Use of RAM and nursing care regarding surgical interventions (*Continued*)

Research article	Research design	Sample	Author/year	Results of studies
Nursing approach based on the Roy Adaptation Model in a patient undergoing hemiglossectomy surgery for tongue cancer	Case report	Patients with tongue cancer (n=1)	Gurlek Kisacik and Cigerci ²⁴ 2019	The patient's revolt due to this disease and then turning to adaptive behavior by praying were evaluated as a positive response, while expressing that he felt useless due to loss of role, having feelings of uncertainty, fear, and hopelessness about the future, avoiding eye contact and reluctance to speak were negatively evaluated as responses.
Assessment of patients undergoing bariatric surgery according to the Roy Adaptation Model: Two case reports	Case report	Patients undergoing bariatric surgery (n=2)	Yilmaz and Yilmaz ²⁵ 2019	After surgery, the first patient had an increase in self-esteem, an increase in self-confidence, and social relations, and an improvement in body image with weight loss, while the desired improvement was not achieved in the second patient and he experienced social isolation. While it was observed that the quality of life of the first patient increased due to the results of lifestyle changes, the opposite was experienced in the second patient and it was concluded that the quality of life deteriorated due to the inability to adapt to the new lifestyle after surgery and all areas of adaptation were adversely affected, he did not use effective coping mechanisms and maladaptive behaviors developed.
The nursing care according to Roy Adaptation Model of a patient performed ileostomy with the diagnosis of sigmoid colon cancer: A case report	Case report	Patients with ileostomy (n=1)	Sahin et al ²⁶ 2021	After the nursing care given to the patient in line with the RAM, there was no deterioration in skin integrity, the patient stated that he learned stoma care, understood the importance of a balanced diet, there was no infection, the patient and his relatives paid attention to the hygiene rules in stoma care, fluid, and electrolyte imbalance did not develop, and changing the stoma bag did not disturb him as before, there was a positive development in his body image, he was able to meet the activities of daily living and he could change the stoma bag, and his family members supported him.

*Nursing care results are the same in studies included in the review (Table 1). RAM: Roy Adaptation Model.

In another study in this field,²¹ RAM was concluded to be a suitable mode for individuals who have hysterectomy to provide care where individuals' physiological, psychological, and social needs are met after hysterectomy.²¹ Furthermore, in Tuna et al's study,²² a patient who received vaginoplasty due to congenital adrenal hyperplasia was stated to received nursing diagnoses of pain and deterioration in skin integrity in physiological adaptation mode; deterioration in body image, low self-esteem, and anxiety in self-concept adaptation mode; readiness to strengthen in family processes in interdependence adaptation mode; and as a result of the nursing care provided, positive adaptation behaviors were found to develop.²²

It has been observed that this model is also used in nursing care and practices after liver transplantation surgery and that the adaptation behaviors of individuals are positively affected.⁷ According to a study, it was concluded that when compared with patients who received liver transplantation from cadavers, patients who received liver transplantation from a living donor experienced bio-psychosocial problems such as depression, anxiety, feelings of guilt toward the donor, hurting the donor and affecting the donor's life negatively and with the interventions that the nurse will develop individually, recipients can get positive results in their new lives after surgery, life quality of patients can increase, and mortality and morbidity rates can decrease.⁷ Furthermore, in a study by Oner et al,⁵ it was stated that since liver transplantation was a major surgical intervention and affects the rest of an individual's life, it was stated that pre-operative

and post-operative nursing diagnoses and implementation of care in line with RAM were closely related to the development of adaptive behaviors during the recovery period.⁵

Studies on this subject, in the study of Vicdan,¹⁷ one of the different surgical intervention applications in which RAM is used in nursing care, the use of RAM in nursing care and practices was found to be suitable in terms of trauma patients' adapting to the process of change they experienced and its use on other patients was stated to be necessary for nursing model/theories to be used more and to become more widespread.¹⁷ In another study conducted by Farsi and Azarmi¹⁸ with veterans with lower extremity amputation, RAM use was found to be suitable in these patients since it was concluded that most of the coping strategies such as face-to-face coping, planned problem solving, self-control, and taking responsibility increased significantly, while maladaptive coping skills such as distance and escape decreased significantly.¹⁸ In addition, in the study of Gurlek Kisacik and Cigerci,²⁴ it was observed that a patient who had undergone hemiglossectomy and tracheotomy received care for nursing diagnoses (according to RAM) of pain, anxiety, difficulty in swallowing, difficulty in chewing, impaired oral membrane, undernutrition, constipation, deterioration in sleep pattern, activity intolerance, fatigue and risk of infection in physiological adaptation mode; deterioration in body appearance, uncertainty about the future, anxiety, fear of death in self-concept adaptation mode; ineffective role performance in role function adaptation mode; deterioration in verbal



Figure 1. Examination of nursing diagnoses according to Roy Adaptation Model in patients undergoing surgery. *In the studies included in the review, it is seen that common nursing diagnoses are similar according to 4 compliance fields.

communication, interruption in family processes, and insufficient support systems in interdependence adaptation mode.²⁴

Besides these studies, in Acik and Aygin's study,¹⁹ it was found that relatives of the patient could not fulfill his care load and there were deteriorations in verbal communication since they did not want to speak a lot.¹⁹ In Karayurt et al's study,⁷ it was found that the dependence of patients increased since their post-surgery pain and fatigue states increased.⁷ In Tuna et al's study, it was found that the patient's pain decreased but continued.²² In Eren and Durmus Iskender's study, insufficiency in individual coping was found in the patient's role function mode.⁸ According to the results of these studies, it can be concluded that the patients could not adapt in every diagnosis after interventions.^{7,8,19,22}

In the light of the studies examining patients who received surgical intervention in different fields, it was stated that in individuals who received care according to RAM, individuals' adaptation behaviors to disease and treatment processes were positively affected and it was suitable for use in the clinical field.^{3,7,19,21-23,17} At the same time, the majority of these studies evaluated in this review,

- RAM was applied to only one patient and nursing care and practices were examined,
- It was seen that studies were generally carried out as case reports and this model has a limited use in the clinical field for a larger sample.

In this context, the limitations of this study are the insufficient number of studies in which RAM is applied by accessing a larger sample in

the surgical field and the fact that the nursing diagnoses in studies examined in the present study were reviewed and expressed in general according to RAMs 4 adaptation fields (Figure 1), the fact that the change in maladaptive behaviors created by focal stimuli as a result of nursing interventions made is a limitation of the present study.

Conclusion and Recommendations

This review examines the effectiveness of the care and practices applied according to the RAM to patients who have undergone different surgical interventions in adapting the patients to their new post-surgical conditions;

- It has been seen that with the use of Roy's Adaptation Model, the biopsychosocial problems created by surgical interventions in individuals can be solved.
- It has been concluded that individuals can adapt to their new situations in the post-surgical period.
- Knowing that theories and models increase the quality of care, it is seen that nurses can achieve positive results with practices and interventions; they will develop specifically for patients as a result of using RAM. To increase the use of RAM, one of the nursing theories and models, in the surgical field; there is a need:
 - To include it in the content of in-service training in health institutions
 - To use it in research studies to be carried out in larger populations in patients who have undergone different surgical interventions, instead of case reports, to make its application to become more widespread.

As a result, when nurses have knowledge about theories and models and can use them consciously, it becomes possible to analyze nursing care outcomes, and thus, a database will be created for nursing.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – K.Ö.Y.; Design – K.Ö.Y.; Supervision – K.Ö.Y.; Resources – K.Ö.Y.; Materials – K.Ö.Y.; Data Collection and/or Processing – K.Ö.Y.; Analysis and/or Interpretation – K.Ö.Y.; Literature Search – K.Ö.Y.; Writing – K.Ö.Y.; Critical Review – K.Ö.Y.

Declaration of Interests: The authors have no conflict of interest to declare.

Funding: The authors declared that this study has received no financial support.

References

- Dal U, Bulut H, Demir SG. The problems experienced by the patients at home after surgery. *Med J Bakirkoy*. 2012;8(1):34-40. [CrossRef]
- Aksoy G, Kanan N, Akyolcu N, Bakimi AOH, İcinde Aksoy G. *Cerrahi Hemsireligi*, vol 1. 2. Baskı. İstanbul: Nobel Tıp Kitabevleri; 2017:257-299.
- Akyol E, İbrahimoglu O. Nursing care based on Roy adaptation model in a patient with heart transplantation. *Turk J Cardiovasc Nurs*. 2020;11(26):140-148.
- Sisman H, Arslan S. Theory and models used in patient nursing in surgical nursing. *Arch Med Rev J*. 2020;29(2):150-161. [CrossRef]
- Oner H, Demirdag H, Akyolcu N, Kanan N. Using the Roy's adaptation model in nursing care of a patient who the planned liver transplantation. *Florence Nightingale J Nurs*. 2015;23(3):231-242.
- Kacaroglu VA, Gulseven Karabacak B. Models of nursing: Roy adaptation model. *AUHSJ*. 2014;4:255-259.
- Karayurt O, İseri O, Erol F. Live donor liver transplantation is the light at the end of a tunnel: a qualitative study based on Roy's adaptation model. *DEUHYO ED*. 2014;7(4):257-264.
- Eren H, Durmus Iskender M. Nursing care according to Roy adaptation model in a patient with chemotherapy treated gastric cancer. *Selcuk. Med J*. 2019;35(1):58-62. [CrossRef]
- Ursavaş FE, Karayurt Ö, İşeri Ö. Nursing approach based on Roy adaptation model in a patient undergoing breast conserving surgery for breast cancer. *J Breast Health*. 2014;10(3):134-140. [CrossRef]
- Vicdan AK, Tuna PT. Use of the Roy adaptation model in the nursing care of Individuals with a colostomy opened due to rectum cancer: case study. *Int Refereed J Nurs Res*. 2015;4:61-70. [CrossRef]
- Menekli T, Eyi S. Use of Roy adaptation model in nursing care of a case study. *Florence Nightingale J Nurs*. 2017;25(3):237-246. [CrossRef]
- Savci A, Bilik O. Integration of the model in to the nursing care: continuous care structured according to the Roy adaptation model in the patients with total knee replacement. *DEUHF ED*. 2015;8(2):145-154.
- Simsek AB, Dicle A. Examination of the adaptation states of patients with primary brain tumor according to the Roy adaptation model: a qualitative research. *J Neurol Sci*. 2013;34:88-107.
- Catal E, Dicle A. Analysis of early nursing care in coronary artery bypass graft patients according to the Roy adaptation model. *Hemsirelikte Arastirma Gelistirme Derg*. 2011;2:68-79.
- Kaya Ç, Bilik Ö. Nursing care based on the roy adaptation model for a patient undergoing amputation surgery. *Koc Univ Hemsirelik Egitim Arastirma Derg*. 2020;17(Ek sayı):131-139. [CrossRef]
- Ordin YS, Karayurt O, Wellard S. Investigation of adaptation after liver transplantation using Roy's adaptation model. *Nurs Health Sci*. 2013;15(1):31-38. [CrossRef]
- Vicdan AK. An example to the use of model in nursing care the examination of a woman, with modified radical mastectomy according to the Roy adaptation model. *Maltepe Univ Hemsirelik Bilim Sanati Derg*. 2010;2(3):106-118.
- Farsi Z, Azarmi S. Effect of Roy's adaptatin model – guided education on coping strategies of the veterans with lower extremities amputation: a double-blind randomized Controlled clinical trial. *Int J Community Based Nurs Midwifery*. 2016;4(2):127-136.
- Acil H, Aygin D. Analysis of a trauma case with perianal tissue loss according to Roy adaptation model. *Gumushane Univ J Health Sci*. 2017;6(4):313-319. [CrossRef]
- İlkaz N, Tastan S, İyigun E. Nursing care prepared according to Roy's adaptation model of a patient following ileus prediagnosis and opening colostomy. *Ege Univ Hemsirelik Fak Derg*. 2018;34(3):169-178.
- Vicdan AK, Demirel T. Use of Roy adaptation model in nursing care following hysterectomy. *Int Refereed J Gynaecol Dis Matern Child Health*. 2015;2(4):57-81.
- Tuna Hİ, Bas M, Kacaroglu VA, Tunc Tuna P. Using Roy adaptation model in nursing care for patients with congenital adrenal hyperplasia. *DEUHFED*. 2017;10(3):159-166.
- Ustgorul S, Baydar O, Yanikkerem E. Anormal plasenta İnvazyonlu bir Vakainin Hemsirelik Bakiminda Roy adaptasyon Modelinin Kullanimi. *Manisa Celal Bayar Univ J Inst Health Sci*. 2018;5(3):84-88.
- Gürlek Kısacık Ö, Ciğerci Y. Nursing approach based on the Roy adaptation model in a patient undergoing hemiglossectomy surgery for tongue cancer. *Koc Univ Hemsirelikte Egitim Arastirma Derg*. 2019;16(3):268-275. [CrossRef]
- Yılmaz M, Yılmaz P. Assessment of patients undergoing bariatric surgery according to the Roy adaptation model: two case reports. *Hacettepe Univ Hemsirelik Fak Derg*. 2019;6(1):65-73. [CrossRef]
- Sahin G, Basak T, Sezgunsay E. The nursing care according to Roy adaptation model of a patient performed ileostomy with diagnosis of sigmoid colon cancer: a case report. *J Nurs. University of Health Sciences*. 2021;3(1):45-52. [CrossRef]
- Sayar S, Vural F. Nursing care a according to Roy adaptation model in a patient with a colostomy opened due to rectum cancer: case report. *Turkiye Klinikleri J Nurs Sci*. 2017;9(1):91-98. [CrossRef]