Applying the Roy Adaptation Model to the Care of Clients with Quadriplegia

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The Roy Adaptation Model has provided a framework for nursing practice, education, and research for more than 20 years. This article focuses on the model's contribution to nursing practice. Adaptation, the goal of the model, serves as an effective guide for planning care for the client with quadriplegia. A case study is used to show the effectiveness of using the nursing process within the guidelines of the Roy Adaptation Model to promote adaptation in a client with quadriplegia who is coping with living in a long-term care facility.

Quadriplegia is a situational event that causes many physical, emotional, and social stressors. Traditionally, care for clients who have this condition focused on the physical dimension of the injury (Trieschmann, 1988)—for example, preventing medical complications and teaching techniques of mobility and activities of daily living. However, emphasis should be placed on psychosocial rehabilitation to help clients cope with the lifelong effects of spinal cord injury. Clients with quadriplegia can benefit from a holistic approach to care that focuses on promoting positive coping and adaptation.

The Roy Adaptation Model provides this approach. This conceptual model views the person as an adaptive system; the system is the recipient of nursing care (Andrews & Roy, 1991). Promotion of adaptation is nursing's goal, according to the model. Applying the nursing process within the framework of the model can help guide interventions that promote clients' adaptation.

Assumptions of the model

Roy's model (Andrews & Roy, 1991) describes the recipient of nursing care as a holistic adaptive system in constant interaction with the environment. The environment is "the world within and around the person" that stimulates adaptive responses (Andrews & Roy, 1991, p. 18). Health, according to the model, reflects the person's interaction with the environment and his or her subsequent level of adaptation. The goal of health is to become an "integrated and whole person" (p. 19).

The effect of stimuli: Three types of stimuli in the internal and external environ-

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Intended audience
This independent study offering is appropriate for all rehabilitation nurses.

Objectives
By reading this article, the learner will achieve the following objectives:
1. Define health according to the Roy Adaptation Model.
2. Explain the Roy Adaptation Model as you understand it from reading this article.
3. Discuss your personal beliefs about the usefulness of the Roy Adaptation Model with quadriplegic clients in a variety of care settings.
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stimuli affect the person’s ability to adapt (Andrews & Roy, 1986, 1991; Roy, 1984). Focal stimuli are those that immediately confront the individual and are the most critical in initiating behavior. Contextual stimuli are all additional stimuli that contribute to behavior and provide meaning to the situation for the individual. Residual stimuli include the values and beliefs that affect how the individual responds in a given situation. However, the influence of residual stimuli cannot always be evaluated. An individual's ability to adapt is determined by the effect of all three types of stimuli.

Coping mechanisms: Two subsystems, or coping mechanisms (Andrews & Roy, 1991), respond to the stimuli. The regulator subsystem responds automatically to stimuli through neural, chemical, and endocrine processes. The cognator subsystem responds through channels of perceptual information processing, learning, judgment, and emotion.

A person’s regulator and cognator subsystems function in four modes to meet his or her needs. These categories, or adaptive modes, according to Roy (Andrews & Roy, 1991), are (a) the physiological mode, (b) the self-concept mode, (c) the role-function mode, and (d) the interdependence mode. These four modes of adaptation also serve as modes of observable behavior that can be assessed by the nurse.

The Roy Adaptation Model addresses patients’ problems related to these adaptive modes. For example, adaptation in the physiological mode addresses problems related to the basic needs of physiological integrity. These can include a patient’s needs related to oxygenation, nutrition, elimination, activity and rest, and protection. Alterations in sensation, fluid and electrolyte balance, and neurological and endocrine function are additional problems that might be addressed within this mode. Adaptation in the self-concept mode relates to needs identified as psychic integrity and could include patient problems such as disturbance in body image, sexual dysfunction, and loss. Anxiety, powerlessness, guilt, and low self-esteem are further problems that may be addressed in this psychosocial adaptive mode. Role transition, role distance, and role conflict are examples of problems that affect social integrity and may be addressed within the role-function adaptive mode. Separation anxiety and loneliness are related to basic needs for affectional adequacy that may be addressed within the interdependence mode.

The nursing process

The various stimuli and modes of adaptation are central to the nursing process. The focus of nursing interventions is to manage stimuli in such a way as to promote a patient’s effective coping and adaptation (Andrews & Roy, 1991). The modes of adaptation serve as focal points for the six steps of the nursing process according to the model (Andrews & Roy, 1986, 1991; Roy, 1984). These steps include (a) assessment of behavior, (b) assessment of stimuli, (c) nursing diagnosis, (d) goal setting, (e) intervention, and (f) evaluation.

Assessment of behavior: Assessment of behavior provides data regarding whether the patient’s level of coping is effective in maintaining the integrity of his or her system. Assessment of behavior in each adaptive mode includes observable as well as nonobservable behavior. Observable behavior can be measured in some way by the nurse. In contrast, nonobservable behavior consists of subjective statements given by the patient.

Assessment of stimuli: Assessment of stimuli encompasses internal and external environmental influences that affect behavior. The nurse identifies focal, contextual, and residual stimuli that influence the patient’s behaviors in each adaptive mode.

Nursing diagnosis: The nursing diagnosis involves interpretation of the assessment of behavior and of stimuli that contribute to the behavior. The nurse then makes a statement of diagnosis that reflects the status of the patient’s adaptation.

Goal setting: Goal setting is reflected in the nurse’s statements of behavioral outcomes. The outcomes result from nursing care aimed (in this case) at promoting adaptation.

Intervention: Interventions focus on the management of focal and contextual stimuli that have an impact on behavior. The nurse manages stimuli by altering, removing, or maintaining stimuli to promote adaptation (Andrews & Roy, 1991).

Evaluation: The patient’s behavior is assessed once again during the evaluation portion of the nursing process to determine if it matches the behavior defined in the goal statement. In the event that behavioral goals are not met, the nurse must reassess the patient’s behavior.

Literature review

Use of the model in practice: The Roy Adaptation Model has been applied to the care of clients in various practice settings, including acute and critical care, obstetrics, pediatrics, oncology, and psychiatry. Additionally, the model has been applied successfully to the care of elderly clients in home settings.

Giger, Bower, and Miller (1987) used the nursing process within the framework of the model to guide the nursing care of a 23-year-old trauma victim in an intensive care unit. A client with peripartum cardiomyopathy was the focus of an article by Sirignano (1987) that demonstrated the application of the model to an individual experiencing adaptation problems in several body systems. Nash (1987), using the model, formulated nursing diagnoses for children with Kawasaki disease. The model served as the framework for Samarel and Fawcett's (1992) modified cancer support group, which included the intervention of coaching to enhance women's adaptation to the diagnosis and treatment of breast cancer. Use of the model was found to be successful in decreasing depression and increasing life satisfaction in a group of elderly clients in a senior citizen center (Hoch, 1987). Smith (1988) successfully used the model to manage contextual stimuli to promote adaptation to a variety of conditions—loneliness, isolation, aging, inactivity—in elderly residents living in an apartment building.

Critique of the model: Mitchell and Pilkington (1990) presented a discussion of the opportunities in and limitations of Roy’s model for both nurses and clients. The opportunities they identified for nurses included gaining new knowledge of how
individuals respond and "...adapt to complex life situations by studying the interrelationships between the four adaptive modes and the cognator and regulator subsystems" (p. 86). The limitations for nurses included the model's complex assessment process, which may be difficult to use in settings in which client situations can change rapidly. Roy (1976) addressed this issue in an earlier writing by emphasizing the importance of setting priorities when using the model. The client has an opportunity to participate in the plan of care when the model is used. Conversely, use of the model may present a limitation for the client if the nurse is viewed as the agent of change and the client remains passive.

Artinian (1990) identified four areas of conceptual ambiguity in the Roy model: (a) health and adaptation, (b) adaptation versus coping, (c) the person as an adaptive system, and (d) goals of adaptation. Suggestions for clarification of the concepts were made. Roy (1990), in response, noted that although major changes in the model were not indicated, "...a rethinking of some basic definitions and distinctions among the key concepts provides the stimulus for further theoretical and empirical growth" (p. 66).

Some individuals using the model have found it difficult to classify behavioral assessments exclusively into one adaptive mode (Limandri, 1986; Silva, 1987) because the self-concept, role-function, and interdependence adaptive modes overlap to some degree (Blue et al., 1989). However, the Roy model (Andrews & Roy, 1991) emphasized the importance of the concept of interrelatedness of the adaptive modes even though they are often treated as separate entities in client assessment.

Case study

The following case study is presented to demonstrate the effectiveness of using the nursing process within the model's guidelines to promote adaptation in a client with quadriplegia. An example of an application of the nursing process to the care of the client follows the case study.

Mr. Downing, a 53-year-old man diagnosed with quadriplegia resulting from an automobile accident, was admitted to a long-term care skilled nursing facility. Mr. Downing had been living at home with his wife until recently, when she became unable to care for him. Being a resident in a long-term care facility was challenging for Mr. Downing, and he was having difficulty with adapting to the change. His predominant concerns related to preventing pressure ulcers and coping with the fact that other individuals were making decisions about his care in areas such as diet and skin care. Mr. Downing stated that he would like to be more involved in his care and expressed interest in being able to cope more effectively in his new environment.

Application of the model to the case study

Application of the six steps of the nursing process to each of the four adaptive modes is presented in Figures 1 through 4. The nursing process within the framework of the model guided nursing activities aimed at promoting Mr. Downing's adaptation to his new environment.

Physiological mode: An assessment of Mr. Downing's physiological needs focused on protection and nutrition. A behavioral assessment in this mode revealed adaptation problems related to skin integrity. Assessment of stimuli revealed prolonged pressure to be the most critical factor in Mr. Downing's initiating the behavior. The nursing diagnosis related to impaired skin integrity was based on the work of the North American Nursing Diagnosis Association (Gordon, 1991). Goal setting focused on measurable behavioral outcomes that would promote adaptation. Interventions focused on managing the focal and contextual stimuli.

Interventions related to preventing the progression of pressure ulcers were based on guidelines published by the Panel for Prediction and Prevention of Pressure Ulcers in Adults (1992). An evaluation revealed that the goal of reducing the size of the reddened area on Mr. Downing's sacrum was met.

Self-concept mode: Assessment of the client's behavior in the self-concept mode included both physical and personal aspects of self-concept. A behavioral assessment of Mr. Downing revealed that he felt he had little control over the care being given to him. Stimuli that contributed to the behavior were assessed. A nursing diagnosis of powerlessness was formulated on the basis of work done by the North American Nursing Diagnosis Association (Gordon, 1991). Nursing interventions focused on decreasing the patient's feelings of powerlessness. On evaluation, it was noted that Mr. Downing had begun to discuss his preferences for care, thus decreasing his sense of powerlessness and meeting the established goal.

Role-function mode: Assessment of his behavior and stimuli in the role-function mode indicated that Mr. Downing had adaptation problems related to his role transition. The nursing diagnosis of ineffective role transition, related to his lack of knowledge about the role behaviors expected of a resident, reflected this adaptational status. The goal statement guided nursing interventions that focused on altering the contextual stimuli. An evaluation of this portion of the plan of care indicated that Mr. Downing gained new knowledge of his role as a resident, including an understanding of his right to participate in personal care decisions.

Interdependence mode: Assessment of the client's behavior and stimuli in the interdependence mode revealed successful adaptation, which was reflected in the nursing diagnosis (affectational adequacy related to his interdependent relationship with his family). Interventions focused on the goal of maintaining Mr. Downing's interdependence with his family. Upon evaluation, the nurse noted that the interdependent family relationship was being maintained.

Discussion

The model was successful in helping the nurse integrate the physical, psychological, and social aspects of Mr. Downing's care. Assessments of the four adaptive modes revealed an
### Figure 1. Application of the Nursing Process to the Physiological Adaptive Mode in One Client

<table>
<thead>
<tr>
<th>Assessment of Behavior</th>
<th>Goal Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nonobservable behavior</strong></td>
<td>Short-term goal</td>
</tr>
<tr>
<td>“I’m worried about getting bedsores again.”</td>
<td>Pressure ulcer will decrease in size to 1.5 cm within 1 week</td>
</tr>
<tr>
<td>“I would like to have a different mattress on my bed.”</td>
<td>Long-term goal</td>
</tr>
<tr>
<td>“I would like to have the type of lotion that I used at home.”</td>
<td>Skin will remain free of lesions during the client’s stay at the long-term facility</td>
</tr>
<tr>
<td>“I would like more meat in my diet.”</td>
<td><strong>Nursing Interventions</strong></td>
</tr>
<tr>
<td><strong>Observable behavior or measurement</strong></td>
<td>Perform skin assessment each day</td>
</tr>
<tr>
<td>Reddened area on sacrum: 3 cm of nonblanchable, intact skin</td>
<td>Ensure that client does not sit in a wheelchair for uninterrupted periods</td>
</tr>
<tr>
<td>Evidence of multiple surgeries on sacral and ischial areas for pressure ulcers</td>
<td>• Shift points under pressure at least once each hour</td>
</tr>
<tr>
<td>Client’s height: 6 ft</td>
<td>• Use a pressure-reducing device for seating surfaces</td>
</tr>
<tr>
<td>Client’s weight: 140 lbs</td>
<td>• Consider distribution of weight and pressure relief when positioning the client</td>
</tr>
<tr>
<td>Client eats approximately half of each meal</td>
<td><strong>Assessment of Stimuli</strong></td>
</tr>
<tr>
<td><strong>Focal stimuli</strong></td>
<td>Assess risk factors related to the development of pressure ulcers</td>
</tr>
<tr>
<td>Prolonged pressure on the sacrum and bony prominences</td>
<td>Turn the client at least every 2 hours when he is in bed</td>
</tr>
<tr>
<td><strong>Contextual stimuli</strong></td>
<td>Do not massage bony prominences</td>
</tr>
<tr>
<td>Confinement to wheelchair</td>
<td>Prevent further injury to the client’s skin due to friction and shear forces</td>
</tr>
<tr>
<td>Loss of sensation</td>
<td>• Lift the client with sheet rather than pull him up in bed</td>
</tr>
<tr>
<td>Inadequate amount of calories and protein in the diet</td>
<td>Assess the appropriateness of a special mattress and skin care products and use them, if appropriate</td>
</tr>
<tr>
<td><strong>Residual stimuli</strong></td>
<td>Include meat and additional protein sources in the client’s diet; include appropriate calories and nutrients in his diet</td>
</tr>
<tr>
<td>Awareness and ability to observe and analyze situations</td>
<td><strong>Evaluation</strong></td>
</tr>
<tr>
<td>Past experience with pressure ulcers</td>
<td>Short-term goal</td>
</tr>
<tr>
<td><strong>Nursing Diagnosis</strong></td>
<td>Reddened area on sacrum decreased to 1 cm within 1 week</td>
</tr>
<tr>
<td>Impaired skin integrity related to pressure on the sacral area secondary to immobility</td>
<td>Long-term goal</td>
</tr>
<tr>
<td>Skin has remained intact during stay</td>
<td></td>
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</tbody>
</table>

### Figure 2. Application of the Nursing Process to the Self-Concept Adaptive Mode in One Client

<table>
<thead>
<tr>
<th>Assessment of Behavior</th>
<th>Nursing Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical self</strong></td>
<td>Powerlessness related to change in lifestyle</td>
</tr>
<tr>
<td>“I feel that, being in this wheelchair, I have little power or control over care given to me.”</td>
<td><strong>Goal Setting</strong></td>
</tr>
<tr>
<td><strong>Personal self</strong></td>
<td>Short-term goal</td>
</tr>
<tr>
<td>“I just go along with what is decided about my care.”</td>
<td>Decrease in feeling of powerlessness manifested by the client’s discussing preferences related to personal care within 1 week</td>
</tr>
<tr>
<td>“I don’t make waves.”</td>
<td><strong>Nursing Interventions</strong></td>
</tr>
<tr>
<td>“I would like to be involved in decisions about my care.”</td>
<td>Help the client identify factors that contribute to feelings of powerlessness</td>
</tr>
<tr>
<td><strong>Assessment of Stimuli</strong></td>
<td>Encourage the client to express feelings about his care by approaching him with an accepting, nonjudgmental attitude</td>
</tr>
<tr>
<td><strong>Focal stimuli</strong></td>
<td>Invite the client to interdisciplinary conference to discuss his care concerns</td>
</tr>
<tr>
<td>Confinement to a long-term care facility due to paralysis and change in lifestyle</td>
<td><strong>Evaluation</strong></td>
</tr>
<tr>
<td><strong>Contextual stimuli</strong></td>
<td>Short-term goal</td>
</tr>
<tr>
<td>“I can’t change what has happened to me, but I would like to have a say in things around here.”</td>
<td>Within 1 week, client discussed with his primary nurse two preferences related to diet and skin care</td>
</tr>
<tr>
<td><strong>Residual stimuli</strong></td>
<td>Faith in God</td>
</tr>
</tbody>
</table>
### Figure 3. Application of the Nursing Process to the Role-Function Adaptive Mode in One Client

**Assessment of Behavior**

**Primary roles**
- 53-year-old, male

**Secondary roles**
- Husband, father, friend, resident of long-term care facility

**Tertiary roles**
- Reader, painter and craftsman, member of church group

**Imperative behaviors related to role of resident**
- Resides in a semiprivate room
- Attends craft classes each day
- Does not initiate or participate in decisions about his personal care

**Expressive behaviors related to role of resident**
- "I would like to know what my rights as a patient are."
- "I would like to be involved in decisions about my care."

**Assessment of Stimuli**

**Focal stimuli**
- Has been in the role of resident for 4 months

**Contextual stimuli**
- Limited knowledge of expected role performance behaviors related to participation in decisions about his personal care

**Residual stimuli**
- Awareness and ability to observe and analyze situations
- Faith in God

**Nursing Diagnosis**
- Ineffective role transition related to lack of knowledge about expected role behavior of a resident related to participation in decisions about his personal care

**Goal Setting**
- **Short-term goal**
  - Client will demonstrate a knowledge of the role of a resident related to his personal care decisions within 1 week

**Nursing Interventions**
- Discuss the American Hospital Association's (1974) *A Patient's Bill of Rights*, including the right to participate in decisions about one's own care
- Discuss policies of the agency regarding the roles and rights of residents
- Invite the client to join the residents' group on the unit

**Evaluation**
- **Short-term goal**
  - Client states within 1 week that the role of a resident includes the right to participate in personal care decisions

### Figure 4. Application of the Nursing Process to the Interdependence Adaptive Mode in One Client

**Assessment of Behavior**

**Regarding significant others**
- "The most important people to me are my family."
- "I make crafts for my son and daughter and their families."
- "My children plan outings for me."

**Assessment of Stimuli**

**Focal stimuli**
- Awareness of the need to show appreciation and caring for his family and to receive appreciation and caring in return

**Contextual stimuli**
- Presence of his family during weekly visits
- Client's seeing family as important in his life
- Nurturing ability of client and his family

**Residual stimuli**
- Value placed on the client's interrelationship with family

**Nursing Diagnosis**
- Experiencing affectional adequacy related to his interdependent relationship with his family

**Goal Setting**
- **Long-term goal**
  - Maintain the interdependence of the client and his significant others throughout his stay at a long-term facility

**Nursing Interventions**
- Assess ways in which a nurse can contribute to the interdependent relationship between a client and the client's family
- Meet with the client and his family to determine additional interdependence needs
- Assist the client and his family in preparing for outings

**Evaluation**
- **Long-term goal**
  - Client and his family continue to maintain a close relationship as evidenced by the client's weekly visits from and monthly outings with his family
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terrelatedness in behaviors. For example, Mr. Downing had a history of developing pressure ulcers and had a reddened area on his sacrum (physiological mode). Mr. Downing felt that he had little control over decisions made about the care of his skin (self-concept mode) and indicated that he wanted to be involved in decisions about his care. However, he lacked knowledge about effective role behaviors related to participation in decisions about his personal care, including how to prevent pressure ulcers (role-function mode). Assessment of the client’s relationship with his significant others revealed successful adaptation (interdependence mode). Through use of the nursing process, stimuli were managed to promote and maintain adaptation by using carefully targeted interventions.

Because the nursing process is continuous, behavior can be reassessed continuously to formulate new goals for the client. For example, Mr. Downing’s behaviors as assessed in the interdependence mode were adaptive in a positive sense. These assessment data could be applied to nursing interventions to strengthen the staff-client relationship with Mr. Downing. By helping Mr. Downing improve his adaptation status, the nurse was able to facilitate an improvement in his health status as well.

Summary

The Roy Adaptation Model provides a conceptual basis for guiding the nursing care of a client with quadriplegia in a long-term care setting. The model also can be applied to the care of clients in a wide variety of settings to promote adaptation. Use of the nursing process within the model’s framework can help the nurse effectively plan and implement care for clients who have adaptation problems.

References


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