

Analysis and Expansion of the Roy Adaptation Model: A Contribution to Holistic Nursing

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THE ROY adaptation model offers nursing a unique, emerging theoretical framework through which the profession can define its body of knowledge. Roy believes that the developing body of nursing knowledge now contains verifiable theories and general laws related to: (1) persons as holistic beings and (2) the role of nursing in promoting the person's maximum potential, health and harmonious interaction with the environment.¹ However, to date, Roy's still developing adaptation model has neither made its theoretical concepts or propositions explicit, nor stated how these components relate to one another. Since the authors believe in the intrinsic value of the adaptation model and that the identification of its components is essential to theory development, the model has been analyzed to present:

- an identification of Roy's basic assumptions, concepts and propositions;
- a symbolic diagram depicting the rela-

tionship among these components; and

- a development of one basic concept—health-illness.

The process of theory development and substantiation, while professionally rewarding, is hard intellectual work that should progress sequentially. A clear statement of the theoretical components—the assumptions, concepts and propositions—is the first requirement in this process. The propositional statements then provide the source for support or rejection.² It is through the application of the entire developmental process that a more scientific basis for further examination of the model's significance and viability can be developed, and that nursing will be able to define and validate its foundations.

THEORETICAL COMPONENTS

Basic Assumptions

Many of the assumptions previously outlined by Roy describe relationships among concepts and are, at this point, propositions.³ It is possible, however, to derive a more definitive account of the assumptions underlying the model. The following statements, if accepted as the model's assumptions, aid in identifying its concepts which indicate a theory's subject matter.

1. A person is a biopsychosocial being who functions as a totality.
2. Persons are in constant interaction with a continually changing internal and external environment.
3. A person uses innate and acquired mechanisms which are biologic, psychologic and social in origin to cope with this changing environment.
4. One dimension of a person's life is health and illness, which forms a continuum along which he or she can be located at any given time.
5. Persons encounter multiple stimuli, to which responses must be made, at any point on the health-illness continuum.
6. A person's responses to these stimuli may be either adaptive or inefficient.
7. Nursing, a scientific, practice-oriented discipline, is concerned with persons as total beings who respond to stimuli at given points along the health-illness continuum.^{3,4(p11-19),5}

Concepts

Through an inductive-deductive analysis of the adaptation framework, five major concepts were identified: (1) person, (2) environment, (3) adaptation, (4) health-illness and (5) nursing. The following summaries of each represent a synthesis of Roy's ideas.

CONCEPT OF 'PERSON'

Roy describes persons as open adaptive systems, or biopsychosocial beings, who function as totalities in constant interaction with a changing internal or external environment.^{4(p11),5} To date, Roy's development of the "person" concept is accomplished only in terms of the individual although she believes that with additional theorizing her ideas can be applied to groups. [Authors' note: For the purposes of this article the term *person* will carry Roy's present meaning—the individual.]

A person's psychological nature includes anatomical parts that function

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physiologically as a whole, contributing to biological constancy. Their psychological natures include the meaningful behavior produced by a complex biological function that is organized in such a way as to provide stability in perceiving, learning and acting. Socially, a person's behavior is related to that of others (family, community, work groups, etc.).^(p11)

Roy contends that a person's system functions as a totality through two adaptive mechanisms: the *cognator* and the *regulator*.

The cognator identifies, stores and relates environmental stimuli to effect symbolic responses. It acts consciously by thought and decision, and unconsciously through defense mechanisms. Cognator ineffectiveness is behaviorally evidenced by the presence of one or more of the following: (1) need-state unawareness, (2) the unsuccessful identification of a goal object, (3) the inability to select the means to achieve an identified end and (4) the failure to attain the goal object.⁶ When converse behaviors of the preceding occur, one could hypothesize that cognator effectiveness exists.

The regulator mechanism operates essentially through the autonomic nervous system which establishes reflex action for coping with stimuli by approach, attack or

flight. Observable symptoms of undue regulator activity include tachycardia, elevated blood pressure, tension, excitement and appetite loss.⁶ Verbal and visual descriptions of the mechanisms' exact pathways are still being developed. The terminal points of these pathways (through which behavioral responses are finally achieved) are called effectors. They describe the cognator and the regulator separately while emphasizing that their function is, in fact, interactive.⁵

According to Roy, the effective or ineffective functioning of these mechanisms is manifested (in varying degrees) in areas or forms known as adaptive modes. *Modes are ways of doing or acting.* Modes are the intervening variables and organizing concepts between need-changes and behavior. Four basic areas of need underlie adaptive modes—physiological, self-concept, role function and interdependence. Roy's conviction that humans function as totalities brought about the belief that the modes affect and interact with each other. The adaptive mechanisms and modes have been included under the concept of human since these subconcepts address how and in what areas individuals function in response to a changing environment.⁷

CONCEPT OF ENVIRONMENT

Roy conceives environment as the stimuli to the person's open system. These stimuli arise from both internal and external sources and can be categorized into three types: (1) *focal*—the degree of change immediately confronting the person, (2) *contextual*—all other environmental stimuli present, and (3) *residual*—those beliefs, attitudes, traits and experiences that have

an indeterminate effect on the presenting situation.^{3(p137)}

More specifically, these stimuli or inputs are labeled stressors, as they provoke the adaptive mechanisms to function. With human adaptive systems the stimuli involve a variable standard against which feedback can be compared so as to direct further output. Roy and Roberts proposed that the input is represented by the person's stimuli adaptation level.⁵ Understanding the stimuli adaptation level requires analyzing the third concept—adaptation.

CONCEPT OF ADAPTATION

Adaptation, both as process and end state, is a person's response to the environment that promotes his or her general goals, including survival, growth, reproduction and self-actualization.⁵

Roy views the process of adaptation as occurring when a stressor, or focal stimulus, mediated by the contextual and residual stimuli, partially produces an interaction (stress). Stress interaction also includes the stimulation of the adaptive mechanisms that produce response in the modes. Roy and Roberts consider stress interactive of both demand and response.⁵ In essence, the process of adaptation is initiated by the focal stimulus (stressor) provoking the cognator and regulator to function, creating a need in the modes to make a response, preferably adaptive.

In discussing adaptation as an end state, Roy relies on Helson's theory that a person's ability to adapt is dependent upon focal stimulus and the adaptation level when coping with change.⁴ Adaptation levels are conceived as constantly chang-

ing zones determined by the pooled effects of the focal, contextual and residual stimuli. These pooled effects are the combination of the type and severity of the focal stimulus (stressor), and the extent to which existing contextual and residual stimuli are able to mediate its effects. Roy states that the person's adaptation level is a function of the gradient between the focal stimulus and the adaptation level. When the focal stimulus falls within the person's adaptation level, the response is adaptive. When the focal stimulus falls outside the adaptation level, the person responds inefficiently.⁶

Roy further views the adaptive end-state behaviors as corresponding to a given level of activity. Conversely, the level of activity reflects the state of adaptation: the end state of adaptation is one of dynamic equilibrium involving heightened as well as lowered responses and performance. These responses have been labeled as either predominant or complementary. Roy and the authors have defined predominant responses as those behaviors produced in a direct effort to adapt to the focal stimulus.⁷ They can be either adaptive or inefficient. Complementary responses are those behaviors that represent a freeing of individual energies to return to a usual or enhanced performance level after the individual has adapted to the focal stimulus. In the adaptive end state, predominant response is decreased, freeing energy to increase the person's complementary responses.⁸

Roy implies, but does not state, a corollary to the subconcept of the adaptive end state: inefficient behaviors result from an increase in a person's predominant

response producing a decrease in complementary responses. Roy maintains that these inefficient behaviors can disrupt or inhibit the person's integrity and general goals resulting in a failure to meet need excesses or deficits producing adaptation problems.⁹

For example, the adaptive process begins when a person develops a fever and elevated white blood cell count in response to a bacterial infection (focal stimulus). If these normal physiological responses are effective, the adaptive end state is produced—the pathogens are destroyed, the temperature and white blood cell count return to normal and the person has energies to return to dynamic equilibrium. If these initial adaptive responses prove ineffective, the person's illness may be prolonged, or his or her condition may deteriorate requiring more or different energies to combat the infection. This latter situation does not promote well-being and an adaptation problem exists in the individual's health-illness status. (For a composite view of the relationships between the concepts of person, environment and adaptation see Figure 1.)

CONCEPT OF HEALTH-ILLNESS

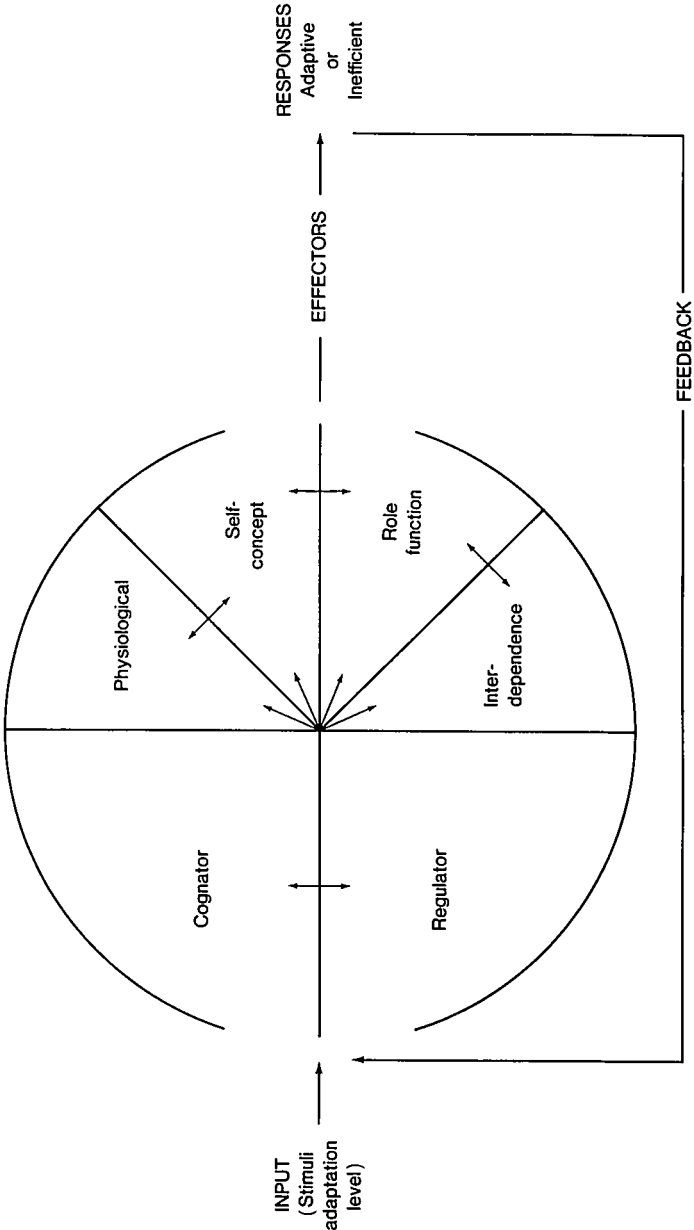
Roy views health-illness, the fourth identified concept, as one dimension of the person's life. She believes health-illness occurs along a continuum that includes: (1) peak wellness, (2) high-level wellness, (3) good health, (4) normal health, (5) poor health, (6) extreme poor health and (7) death. As the person moves along the continuum, adaptation problems will be encountered.^{4(p18)}

The terms along Roy's health-illness continuum are neither theoretically nor operationally defined and the scope seems too narrow to permit the placement and examination of certain behaviors.

Although Roy has conceptually identified a health-illness continuum, the terms along it are neither theoretically nor operationally defined and the scope seems too narrow to permit the placement and examination of certain behaviors. The lack of definitions produces difficulty in classifying some responses. For example, suppose a patient, following a cerebrovascular accident, is aphasic, but actively attempts to reestablish speech patterns. How is this person's position on the health-illness continuum to be identified? The attempt to speak is definitely an adaptive process—the person is seeking to maintain integrity by trying to communicate. How is the adaptive response to be categorized? Is it normal health? Good health? Also, how is the adaptive response to be viewed in the context of the existing aphasia?

It was questions like these and the resulting confusion that helped identify the need to establish definitions for the points along the continuum. Some behaviors, e.g., the adaptive response, could not be considered at any one specific point. As a result, it was necessary to develop general theoretical definitions for the points along the continuum, and herein introduce a new idea, that of transition. (See boxed material.)

FIGURE 1. RELATIONSHIP BETWEEN CONCEPTS OF PERSON, ENVIRONMENT AND ADAPTATION



Source: Roy, S. C. Adaptation model. *Supplementary Material for Nurse Theorists General Sessions. The Second Annual Nurse Educators Conference*, New York, December 1978.

GENERAL THEORETICAL DEFINITIONS OF TERMS ALONG THE HEALTH-ILLNESS CONTINUUM

Death: The end state whereby the person's ability to respond to the internal and external environment ceases.

Extreme poor health: The end state whereby the person demonstrates inefficient behaviors that can lead to a permanent inability to be adaptive within the personal and family environments.

Poor health: The end state whereby the person demonstrates inefficient behaviors that can lead to a temporary inability to be adaptive within the personal, family and work environments.

Normal health: The end state whereby the person demonstrates adaptive behaviors that require all the individual's energy to maintain a dynamic equilibrium within the personal, family and work environments.

Good health: The end state whereby the person demonstrates adaptive behaviors that free energy to promote integrity and

general goals within the personal, family, work and societal environments.

High-level wellness: The end state whereby the person demonstrates adaptive behaviors that free energy to promote integrity, general goals and self-expression with mutual understanding within the personal, family, work and societal environments.

Peak wellness: The end state whereby the person demonstrates adaptive behaviors that free energy to promote integrity, general goals and self-expression with love within the personal, family, work and societal environments as well as past and future generations.

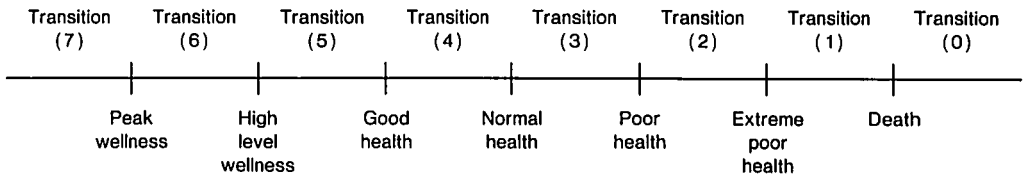
Transition: A process whereby those behaviors evidenced by the person may be efficient or inefficient according to society's norms. These behaviors represent a person's attempts to adapt under present conditions in the environment and occur during movement from one end state to another on the health-illness continuum.

These definitions are offered as a departure point, but theoretical definitions must be developed in each of the modes before any operational definitions can emerge.

Transition provides latitude for the judgment and placement of behaviors while the person is moving between specific points along the continuum. Transitional phases occur between each of the continuum's points, as well as beyond

death and peak wellness (see Figure 2). Including transitional phases beyond death and peak wellness expands the model's scope further, allowing for the exploration of certain other behaviors and phenomena, such as the Lazarus syndrome, therapeutic touch, extrasensory perception, etc.

Using the definitions and revised continuum can provide a clearer estimate of a person's health-illness status. As in the

FIGURE 2. HEALTH-ILLNESS CONTINUUM

Source: Roy, S. C. *Introduction to Nursing: An Adaptation Model* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1976).

example of the aphasic person, the definitions and continuum help categorize the person's status as extreme poor health in the physiological mode due to the aphasia. However, the person's effort to reestablish speech patterns represents an attempt to maintain independence (interdependence mode) and promote integrity of body and self-image (self-concept mode). So, although physiologically the individual could be considered in extreme poor health, adaptive processes were occurring in other modes. Because of these adaptive behaviors, the person could be considered in transitional phase 2 (see Figure 2). Adaptation as a process occurs in the transitional phases; the adaptive end state occurs when the person advances from one point to another.

CONCEPT OF NURSING

Nursing, defined as a scientific, practice-oriented discipline, views persons as total biopsychosocial beings with modes of adapting to a constantly changing environment.^{4(p19)} It is concerned with the total person at given points along the health-illness continuum. Specifically, adaptation nursing focuses on the person as he or she responds to the stimuli due to his or her position on the continuum.⁶ According to

the model, it is the person who must actively adapt, whose resources must be used to cope. To support the person in his or her own adaptation, Roy outlines a six-step nursing process:

1. Assess the client's behaviors in each of the modes and determine whether they are adaptive or inefficient.
2. Assess the stimuli that influence those behaviors and classify them as to whether they are focal, contextual or residual. All stimuli (both positive and negative) must be considered if a valid situational assessment is to be achieved.
3. Identify and state the adaptation problem.
4. Establish goals in terms of desired behaviors.
5. Manipulate those stimuli that will promote adaptation. *Manipulation* refers to removing, changing, increasing or decreasing the stimuli so that adaptive behaviors are reinforced and inefficient ones modified.
6. Evaluate the person's response to nursing intervention in terms of meeting the established goals.^{4(p21-39)}

Roy stresses that nurses using the nursing process must always give primary consideration to the person's needs, strengths and views.⁸ Nursing promotes

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the client's adaptation in health-illness situations only with that person's active participation.

The boundaries of nursing function lie solely in assisting people as they move through one of the transitional phases toward a desired adaptive end state. The nurse, using the nursing process, and clients, through active participation, work in a collaborative effort. Nursing can provide health promotion, maintenance and education only if people actively enter the health-illness setting and participate toward an adaptive end state thus entering one of the transitional phases. Nursing function ceases when people demonstrate behaviorally that they have achieved the desired end state. This end state provides a measurement of the adaptive process that has occurred. The operational definitions for both adaptive process and end state behaviors will emerge through nursing research methodology and practice.

Propositions

Propositions are statements that assert conceptual relationships and provide a basis for deriving hypothetical predictions.¹ The following propositional statements provide a more scientific base for testing the Roy adaptation model:

1. If input into the person arises from

internal and external stimuli, then these stimuli create a stress interaction, provoking the cognator and the regulator mechanisms to function.

2. If mechanism function is manifested in the modes and basic needs underlie the modes, then the person's behavior in the modes is a manifestation of mechanism function in order to meet a need.

3. If adaptation levels are indicative of the person's ability to cope with focal stimuli, then the person's behavioral response is a function of the gradient between the focal stimulus and the adaptation level.

4. If adaptation as a process is to occur, then the stress interaction that provokes the cognator and regulator mechanism to function must result in behavioral responses that promote the person's integrity and general goals.

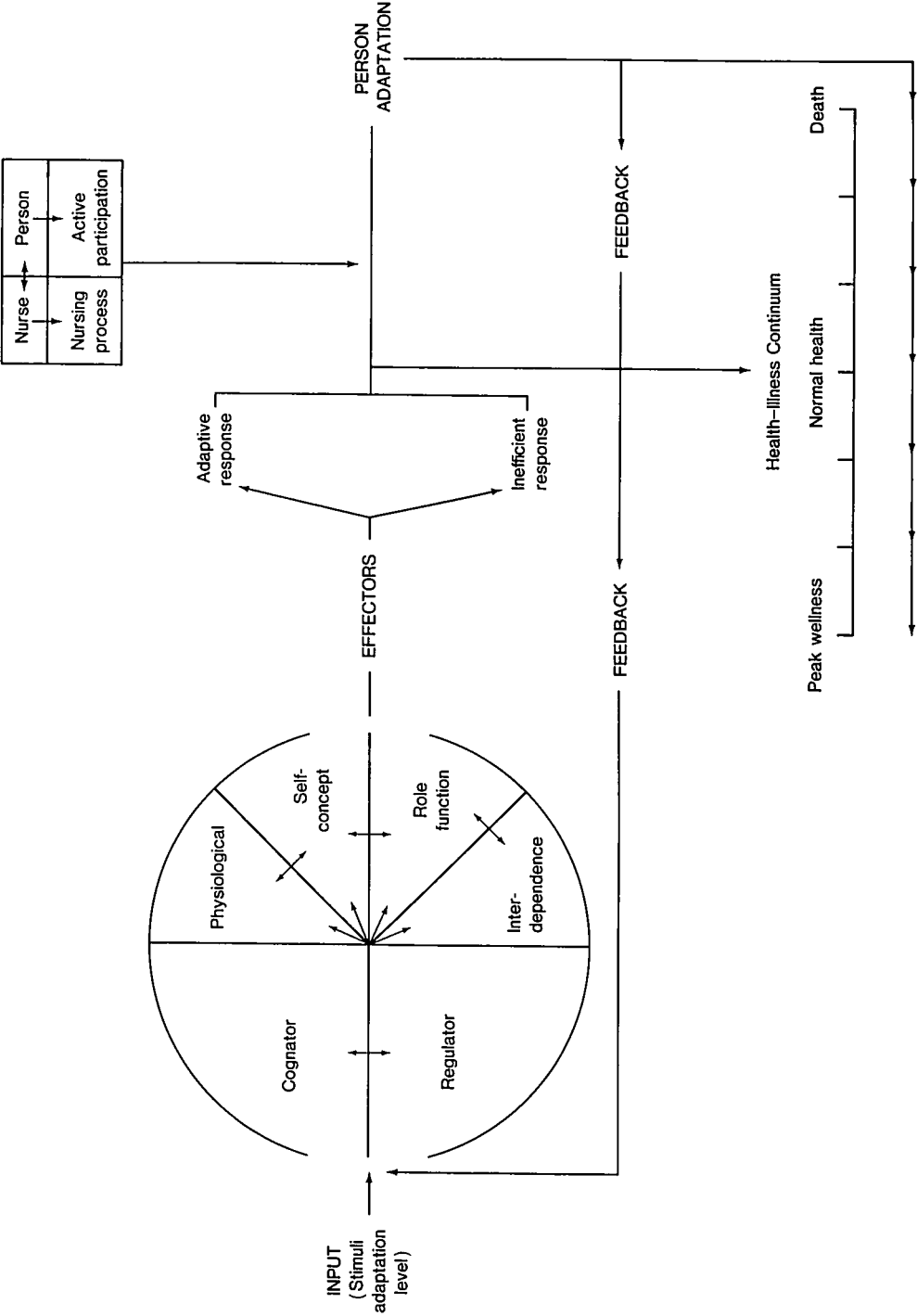
5. If adaptation as an end state occurs, then there exists a state of dynamic equilibrium involving both heightened and lowered performance and responses; there is a decrease in the person's predominant response and an increase in the complementary response.

6. If either the adaptive process occurs or the desired adaptive end state is achieved, then the person's wellness is advanced along the health-illness continuum.

7. If the nurse uses the nursing process along with the person's active participation, then the person's adaptation along the health-illness continuum is promoted.

Analysis of the adaptation model helped in the creation of a diagram that depicts the relationships perceived among the components. (See Figure 3.)

FIGURE 3. CONCEPTUAL MODEL OF THE RELATIONSHIPS BETWEEN ROY'S CONCEPTS



Source: Roy, S. C. Adaptation model. *Supplementary Material for Nurse Theorists General Sessions. The Second Annual Nurse Educators Conference, New York, December 1978.*

DEFINING NURSING'S BOUNDARIES

The Roy adaptation model provides nursing with a singular framework for defining and establishing its foundations and building its body of knowledge. Validating the model, however, remains difficult since the scientific basis for its examination is vague. This analysis and expansion provides a more professional foundation for exploring its significance and value. The identification of the model's theoretical components and the diagram that depicts the relationships among them furnishes refinement and clarification. The suggested propositions supply a more systematic source for deriving hypotheses

that can test, through research, the model's validity. The theoretical definitions of the points along the health-illness continuum are a step toward permitting nursing to make a more knowledgeable and operational estimate of the person's position and movement. The introduction of the idea of transitional phases within the continuum further expands the concept by allowing the placement and examination of certain, heretofore unclassifiable, behaviors. Therefore, this analysis and expansion of the Roy adaptation model allows nursing to explicate its boundaries of function, contributing to the identification and advancement of a holistic nursing approach.

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