

Case Report

Application of Betty Neuman Theory in Care of Stroke Patient

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Abstract

Introduction: Nursing is a recognizable and distinct body of knowledge comprising of framework, models, and theories. The integration of nursing theories into clinical practice help the nurses to recognize the unique contribution that nurses made to health care service. Integration of Neuman system model helps to assess the stressor that affects patient system. By the application of this model nurses are better able to apply three level of prevention as intervention to reduce patient from stress.

Aims: The study aims to assess the application of Neuman system model in stroke patient.

Methodology: This document illustrates the application of nursing process of Neuman system model into stroke patient.

Conclusion: Neuman system model is an effective model which can be easily applicable in stroke patient care. Stroke patient have multiple stressors. Nurses have a key role in reduction of these stressor by applying prevention as intervention of Neuman system model.

Keywords

- Stroke
- Stressors
- System model
- Variable
- Open system
- Patient care

INTRODUCTION

The brain has a centralized control over the all organ of the body. It has a control on everything whatever we do. Even it is functioning while sleeping. Brain has a very specialized cell and structure, which need sufficient oxygen and nutrient for its own life [1]. The brain cell dies if it not receives oxygen for up to six minutes. Deficiency of oxygen and nutrient to brain cell cause ischemia. This emergency condition needs medical attention and is known as a stroke [2]. A stroke occurs when the supply of blood to the brain is either interrupted or reduced. It can be ischemic and hemorrhage. Stroke is highly prevalent condition leading to chronic disability and death [3]. Multiple factors which lead to increase the risk of stroke are for example unhealthy diet, obesity, hypertension, diabetes mellitus, and tobacco use etc. Symptom of stroke depends upon how much part of brain tissue is involved and which area is affected. Its symptom range from numbness to complete paralysis of body part. This reduces patient quality of life and individual ability to carry out their normal roles and jobs task [4]. For the treatment of stroke health care professionals need to diagnose first type of stroke. The goal of stroke management is to minimize brain damage and preserve brain function. Stroke management involve to delay the progression of disability and to improve the quality of life [5,6].

Nurses have a key role in management of stroke patients. Nurses are the ones who provide care to patients according to need of patients who are not only physical but considering the

other aspect as well [7]. The important responsibility on nurses in the management of stroke patient is the interaction with patient and their families to improve patient health [8]. The purpose of nursing care is to improving the quality of life of patients. An effective way to promote nursing care is by applying nursing theories [9]. Nursing theories and model help to develop nursing knowledge in clinical area. In clinical area a wide variety of situation and phenomen as made a certain flexibility of using nursing theories and model in patient care [10]. It's an effective way to achieve the goal of practical application of clinical in educational research [11].

Betty Neuman theory with the name of Neuman system model is the most effective model which can be applied in these types of patients with long term disease. Neuman system model provide a framework for the nurses to provide a holistic care to the patients. This model discussed the stressor which affects human beings and what the intervention nurses take to help the patients to move toward the recovery. This model emphasis on three level of prevention. (Primary, secondary, and tertiary) [12].

LITERATURE REVIEW**Biography of theorist**

Newman system model provide a comprehensive approach for wellness focus nursing care. Betty Neuman was born in 11 September, 1924 in Lowel, Ohio. In 1947 she obtained diploma as a registered nurse from Peoples Hospital School of Nursing in

Akron, Ohio. She completes her Bachelor of Science in nursing in 1957 then Master of Science in mental health and public health consultation in 1966, from the University of California-Los Angeles. After that she worked as psychiatric head nurse and volunteer crises counselor. She worked as a lecturer of community health nursing in university of California loss angel in 1967. Because of her this experience she became a first California nurse licensed clinical fellowship of American association of marriage and family therapy. In 1970 she worked on the system model which as a guide for the graduating nursing students. In 1972 it was published first time. In 1985 she earns a Ph.D. in clinical psychology from Pacific Western University. In 1992, Neuman was given an Honorary Doctorate of Letters at the Neumann College in Aston, Pennsylvania. Finally, in 1998, the Grand Valley State University in Michigan gave her an Honorary Doctorate of Science.

Neuman system model

Neuman system model is a grand theory, (with a broader scope) which consists of global conceptual framework. It defines broad perspectives for nursing practice and includes diverse ways of viewing nursing phenomena that base on these perspectives. It provides a comprehensive foundation for scientific nursing practice, education and research. The development of this model was from her own basic philosophy of helping each other live, observation in clinical and teaching in mental health nursing [13]. Moreover, Neuman was influence and identified the knowledge from other adjunctive disciplines that contributed to this model.

In this model, individual or group is taken as a unique system, open system, with the continuous input of information and process, and output or feedback. Each client is a dynamic constant energy that changes with the environment. The common innate factor and representing energy resources are within the client system. This client system can achieve a negatotomy (a process of energy conservation that increases organization and complexity, moving the person toward stability) and entropy (a process of energy depletion moving the person toward illness or possible death). Each client system has variable (physical,

psychological, sociocultural, developmental, and spiritual) which are affected by certain universal stressors which exist in the environment. According to Neuman's model, the environment is categorized as internal, external and created environment respectively [11]. Environment could be defined as a totality of internal and external forces which affect human being. Created environment is needed to move a person to stability. The client system is affected by the universal stressor. These stressors affect the client line of defense (flexible line of defense, normal line of defense, and line of resistance). Every client has a normal response to the environmental stressor which is known as normal line of defense. This determines person's deviation from health. The normal line of defense is protected by another line which is known as flexible line of defense. When this flexible line of defense is not capable of protecting the normal line of defense then normal line of defense will be penetrated. Client system variables determine the nature and extent of injury to normal line of defense. Maximum penetration to the client systems creates resistance in system which is known as line of resistance. The state of stability is achieved when the client system adequately copes up with the stressors to attain and maintain an optimal level of health. Nurses role is to take prevention as intervention (Primary, secondary, tertiary) help the patient to move toward reconstitution phase. Neuman explains a lot of concepts in one model and presents in the pictorial diagram which clarify the theory. The pictorial diagram explains the relationship of all the concepts. A person core structure is protected by number of broken rings that represents the resource factors which help the client to defense against stressors. Arrows with dark line as well as dotted lines are used to show the effect of concepts on one another [14].

DISCUSSION: CASE SCENARIO

Mr XYZ a 67yr old bedridden male patient having a left sided stroke from previous two years. His past medical history revealed that he had diabetes mellitus and hypertension. He was taking treatment from Holy family hospital. He had complained of pain in legs, weakness of whole body, numbness of right hands finger. His CT scan shows ischemic changes. His lab report shows that

Table 1: Nursing diagnosis for this stroke patient is nutrition imbalance, activity intolerance, disturb sleep pattern, pain in physiological variable hopelessness, anxiety in psychological variable, social isolation in sociocultural variable and spiritual distress in spiritual.

Assessment	
Physiological	Pain Unable to perform daily life activity Difficulty falling sleep and insomnia No urinary control Numbness in right arm and hand.
Psychological	Tension regarding daughter marriage. Feel loss of care from sons Wants to business. Disruption of the concept of 'self' associated with the disease, decreased muscle strength, power, and weakness
Developmental	Age 67 years
Sociocultural	No friend circle
Spiritual	Not able to perform religious activity Patient stated that "I am sinful person so this illness from Allah"

Table 2: The goal and intervention which are applied on this stroke patient are mention.

Nursing diagnosis	Nursing goal	Level of prevention	Nursing Intervention	Nursing outcomes
Nutritional imbalance	Improving the quality of the patient/client's appetite, nutrition, and proper diet	Secondary	Eating in a quiet and clean environment Allow enough time to patient for eating Eating frequent meals in small amounts Offer food according to patient likes and dislikes	Trying to eat according to desire
Activity intolerance	Helping the patient/client carry out activities without depending on others	Secondary	Assist the patient in moving out of bed. Walk with assistance.	Patient trying to perform daily life activity with minimum assistance.
Urinary incontinence	Improve urinary incontinence by reducing number of incontinence Maintain skin integrity of perineal area	Secondary	Perform kegal muscle exercises. Reducing fluid intake in the evening to avoid waking up at night Refraining from beverages containing caffeine	Little improvement in urinary incontinence Skin integrity maintained
Disturb sleep	Improving the status and quality of sleep and rest	Secondary	Creating a quiet and peaceful environment Using cooling devices Using proper cover	Sleep pattern improves to 6 hrs.
Pain	Patient will feel free from pain.	Secondary	Non pharmacological treatment Mind diversion Message Exerxcise Administer medication	Pain reduces completely.
Psychological	Helping the patient control and reduce her stress and anxiety	Secondary	Allowing the patient to express feelings, moods, and behavior Encouraging her to talk with family members.	His anxiety and stress reduce and able to communicate concern with family.
Anxiety Hopelessness	Helping the patient have a proper and satisfactory relationship, as much as possible	Secondary and tertiary	Learning relaxation techniques and distraction of negative ideas Encourage the family member to discuss with patient about his feeling.	
Sociocultural	Promoting patient support and getting rid of loneliness	Secondary	Encouraging the family to call patient friends at home. Encouraging the family member to spend time with patient. Encouraging the patient to interact and communicate with neighbors to get rid of loneliness	Feeling much relax after meeting with neighbor friends. Feeling himself as a part of family after spending time with family members.
Spiritual	Improve patient religious activity.	Secondary	Assist the patient in reciting Quran, veruses etc. Assist him in offering prayer. Arrange spiritual person for his counseling.	Feeling very satisfied and comfortable. Happy and were more willing to perform religious activity.

APTT 33sec, Na 141, K4.2, Urea 1.1, Echo 61% ejection fraction.

Nursing theory process

Neuman provide a nursing process format which guides the nurses regarding assessment of patient information in holistic way. Neuman system model guides information processing and goal directed activities. Neuman system model comprises on three categories nursing diagnosis, nursing goal, nursing

outcomes [14].

Patients result evaluated according to Neumann system model

Nursing diagnosis: For making nursing diagnosis nurse have to collect comprehensive and holistic patient data in considering all the variable of patients. She determines what the environmental stressors which affect patient system. Then

validate the data before making a nursing diagnosis. Nursing diagnosis are prioritized according to relevant knowledge [14]. Nursing diagnosis for this stroke patient is nutrition imbalance, activity intolerance, disturbed sleep pattern, pain in physiological variable, hopelessness, anxiety in psychological variable, social isolation in sociocultural variable and spiritual distress in spiritual as shown in Table 1.

Nursing goal: According to Neuman system model the goal are determined by mutually agreeing between the nurse and patient. Mutual agreement on the goal and intervention are helpful for achieving the patient health. Nurse used three levels of prevention as intervention (primary, secondary, tertiary) for relieving patient stressor [14]. The goal and intervention which are applied on this stroke patient are mentioned in Table 2.

Nursing outcomes: Nursing outcomes show the evaluation of goal and intervention. Patient outcome is shown in Table 2. Positive response shown by the patient in the variable. Physiological symptom improved except urinary incontinence which needs more intervention to be improved. A patient outcome shows that he was feeling more satisfied and comfortable after performing religious activity. The patient discusses that because of performing religious activity his stress level is much reduced.

Theory concept and relationship: This model shows the relationship of client system with the environment health and nursing. The relationships among these concepts are logical and clearly defined. This model is easily applicable in nursing practice, education and research. Her categorization of client system into the five variable physiological, psychological, developmental, spiritual, sociocultural help the nurses to collect data in multiple perspectives. Her nursing process model is very effective in providing care to patient, three levels of prevention as intervention shows that it is applicable in community as well as in hospital setting. Generally this model is well adopted and suited for nursing care application in clinical setting.

CONCLUSION

The case scenario of Mr X is illustrating the utilization of this model in stroke patient care. This scenario demonstrated that the Neuman system model is very useful for caring of long term disease patient such as stroke. This model help the nurse to understand why patient act in certain way. She assesses all the stressors of that patient and then applied intervention accordingly. Overall the Neuman system model fit very well in current nursing practice. It guides nurses to work with their colleagues as well as with patient, family and communities. It

offers a board flexible multidisciplinary framework for the nurses. This model not only direct to the physiological perspective of person but it help to deal the patient in their psychological and spiritual manner as well.

RECOMMENDATION

Nurse should focus on the identification of stressor of patient.

Application of this model is recommended in the nursing care of patients/clients.

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