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APPLICATION OF ROY'S ADAPTATION OF NURSING THEORY TO CORONARY HEART DISEASE (CHD) CLIENTS IN THE INTENSIVE CARE UNIT

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Abstract

Miokard infark estimated one of the root cause death at 2020, disease of cardiovaskuler result death 25 million patient every year him. Medication of principal miokard infark is reperfusi by using drug of tromboliosis or wear mechanical way that is with intervention of kateterisasi heart is so called Percutaneous transluminal coronary Angioplasty (PTCA) pass/through puff (balloning) or installation of prop (stent). Reperfusi done in intensive care unit to facilitate monitor growth of client. Acceptance of patient in intensive care unit is threat to prosperity and life and also feel as sign will arrive death. Thereby will generate stress covering physical, psychology, social, and spiritual of finansial. Target of this writing is to give more comprehensive picture to applying of theory and concept adaptation Roy in giving treatment upbringing patient of miokard infark which in taking care of intensive treatment. Concept and especial treatment theory the applied is adaptation according to Roy, because client of miokard infark which was risk the happening of death, this matter is stressor needing mechanism of koping. Nurse assist to develop ability of adaptation to stressor. Other concept the supporting is caring of Watson. Through applying of concept, can improve optimal health for client of miokard infark so that health can be defended.

Keywords : CHD, adaptation, Roy

A. Background

CHD (Coronary Heart Disease) is estimated to be one of the leading causes of death worldwide. In 2020, cardiovascular disease caused 25 million deaths annually. Coronary heart disease is projected to become the number one cause of death and disability in Indonesia,and the number of patients continues to rise. Although there is no national data on the prevalence of CHD, the serious impact of this disease is evident. Cardiovascular diseases, including CHD, rank first as the cause of death, accounting for 16% of deaths according to the Household Health Survey (SKRT) in 1992. The percentage increased to 18.9% in the SKRT 1995. The results of Suskernas 2001 even showed a figure of 26.4^. One of the reasons is the change in lifestyle, especiallly the consumption of unhealthy food. In addition, prolonged work related stress also increases the risk of CHD (Yahya, 2003.; Adipranoto, 2003).

One of the main treatment methods for CHD is reperfusion, which can be achieved through thrombolytic therapy using clot dissolving medications or mechanical intervention using percutaneous transluminal coronary angioplasty (PTCA) with balloon angioplasty or stent placement. Additionally, coronary artery bypass grafting (CABG) surgery can be performed by creating bypass grafts on narrow or blocked coronary vessels. CABG is a faster coronary artery surgery procedure (Black & Hawks, 2001). Reperfusion is typically performed in an intensive care unit to facilitate patient monitoring.

Patients treated in the intensive care unit experience a perceived threat to their life and well being, and they may feel that it is a sign of impending death based on their own experiences or the experiences of others. This can lead to various forms of stress, including physical, psychological, social, spiritual, and financial stress. Patients receiving critical care are hilistic beings, comprising physiological, psychological, social and spiritual aspects.

Patients reactions to illness and admission to the intensive care enviroment depend on their past experiences with illness and hospitalization, personality characteristics, the sev erity of the disease or trauma, the support system available to them, cultural background, and their level of knoeledge about the disease or medical procedures. Patients admitted to the intensive care unit face situations that threaten their lives. The severity of their illness , the unfamiliar enviroment, separation from their families, and the use of medical equipment can cause significant stress (Hudak, Gallo & Morton, 1998).

Patients undergoing treatment in the intensive care unit for CHD require nurses to assist them and their families in coping with the critical period by developing adaltive abilities to stressors, According to Roy (1991) , facing various stressors requires coping mechanisms through regulatory and cognator processes. The role of the surgical nurse is to help enhance the patients adaptive to abnormal conditions in order to prevent worsening of their condition. To achieve this goal, Roy's adaption nursing concept will be the primary framework for providing nursing care to CHD patients.

OBJECTIVE

To provide a more comprehensive overview of the application of nursing concepts and theories in delivering nursing care to patients with CHD who are being treated in the intensive care unit.

B. Theoretical Review

1. Coronary Heart Disease

Given the large number of CHD patients and the resulting economic losses, comprehensive management is needed to eliminate blockages and prevent recurrent blockages (Black & Hawks, 2001).

The manifestations of a coronary attack are usually characterized by chest pain or angina pectoris caused by insufficient oxygen supply to the heart. This leads to a charge in cardiac metabolism from aerobic to anaerobic metabolism. The anaerobic metabolism shift results in the production of lactic acid and the initiation of an inflammatory process in the heart muscle.

Angina pectoris is a syndrome characterized by recurring discomfort in the chest and surrounding areas caused by myocardial ischemia but without necrosis. The discomfort is often described as a feeling of pressure squeezing, heaviness, fullness, burning, swelling, or even toothache like pain. The discomfort usually lasts for 1 to 15 minutes in the retrosternal area but can also radiate to the jaw, neck, shoulder, back, and left arm. Although rare, it can sometimes radiate to the right arm. Occasionally, symptoms may include easy fatique and shortness of breath during activity, caused by impaired function due to myocardial ischemia (Atmoko, 2003; Black & Hawks,2001)

The diagnosis of CHD is established based on the patient's medical history, as the diagnosis of angina is often based on the presence of typical chest pain characteristics, including :

- Location: Patients often experience chest pain in the sternum area or below the sternum, or on the left side of the chest. Sometimes the pain may radiate to the left arm or extend to the back, jaw, neck, or right arm.
- Quality of chest pain : Chest pain in angina typically occurs during physical activity. The pain subsides immediately when the patient stops the activity,. Angona attacks can also occur during nighttine sleep.
- Duration of chest pain : Angina attacks usually last for 1-5 minutes, although a feeling of discomfort in the chest may persist after the chest pain subsides. If the chest pain lasts for more than 20 minutes, the patients may be experiencing an acute myocardial infarction rather than typical angina pectoris.

A thorough and detailed medical history can help determine the likelihood of the patient having stable angina pectoris or possibly unstable angina, There are five key spects that need to be explored in the medical history regarding angina pectoris : location, quality, duration, triggering factors and factors that can alleviate chest pain. (Black & Hawks, 2001).

Physical examination is usuallu normal in patients with angina pectoris. However , conduting a physical examination during an

angina attack can provide additional useful information. The presence of a gallop rhythm, mitral regurgitation murmurs, split S2, or basal wet rales that disappear ,when the pain subsides can strengthen the diagnosis of CHD . Other findings from the physical examination may include signs of risk factors, such as high blood pressure. (Black & Hawks, 2001).

Every patient with symptoms suggestive of angina should undergo a 12 lead ECG, However , the ECG results will be normal in 50% of patients with angina pectoris. ST segmen depression or elevation enhances the possibility of angina and indicates eschemia at low workloads.(Pranoto, 2005).

Chest X rays in patients with angina pectoris are usually normal. Chest X rays are more likely to show abnormalities in patients with a history of myocardial infarction or in patients with chest pain not originating from the heart. The routine use of chest X rays in patients with angina is still questionable in terms of its benefits.

Exercise stress testing using EKG monitoring is a standardized procedure. In terms of cost, this test is the most affordable compared to echocardiography. To obtain optimal information, the protocol should be tailored to each patient to achieve at least 6 minutes of exercise. During the EKG heart rate and blood pressure should be closely monitored and recorded at each stage and also during ST segment abnormalities. The methods used in stress testing involve using a treadmill and stationary bicycle. (Black & Hawks, 2001; Pranoto, 2005).

The management of angina pectoris aims to prevent myocardial infarction and necrosis, reduce symptoms and frequency, and alleviate the severity of ischemia, thus improving the quality of live. The principles of managing angina pectoris involve oncreasing oxygen delivery (by enhancing coronary blood flow) and reducing oxygen demand (by reducing cardiac workload)

Patients admitted to the critical care unit perceive it as a threat to their life and well being, often feeling that being in the unit is a sign of impending death based on their own experiences or those of others. On the other hand, nurses perceive the critical care unit as a place to enhance patients lives by providing safety and nursing care. The difference in perception about critical care nursing between patients and nurses can lead to a breakdown in communication between them..

Disrupted communication, whether with family members or nurses, can increase stress and hinder the acceptance and understanding of the sick role. I many cultures, the behavior associated with the sick role is linked to a sense of helpessness. Anxiety is associated with thie sense of helplessness, which reinforces the regression in patients. Therefore coping models for anxiety and helplessness are recurring.

The relationship between stress, anxiety and coping is complex and is continuously demonstrated in various care situations. Stress is defined as astimulus that disrupts physiological and psychological functions. Physiological stress can be triggred by chest pain episodes, the placement of monitoring devices, bright lights, unfamiliar surroundings ,ringing phones, or the sound of nurses. Psychological stress can be caused by separation from family members (isolation), unfamiliarity with heakthcare providers, and role changees. Stress can be manifested by changes in the levels of stress hormones. Extreme levels of stress can damage body tissues and affect the adaptive response of the body's tissues. If coping mechanism are ineffective ,an inbalance occurs and the mind and body' responses increase in an attempt to restore balance.

2. Conceptual Model and Nursing Theory" Roy's Adaptation"

Roy (1991) proposed that every individual has the ability to adapt to their internal and external enviroment. The role of the nurse is to facilitate the clent's ability to adapt to changes in their basic needs. Humans are seen as holistic adaptive systems consisting of input, process, control, output and feedback.

Input is identified as stimuli, which are collections of information from both the internal and external enviroment trhat can elicit a response. Stimuli are divided into three levels : focal stimuli, which directly interaact with an individual, contextual stimuli, which are other stimuli that influence the situation and can be observed, measured, and subjectively expressed and residual stimuli, which are additional stimuli related to beliefs, attitudes and oast experiences that are difficult to observe.

Process refers to the stage where individuals process and understand the stimuli they receive. This process involves perception, understanding, and interpretation of the stimuli. Control involves an individual's ability to regulate and control their adaptave response to stimuli. Individuals use coping mechanisms and adaptive strategies to overcome the challeges they face.

Output is the result of the individual's adaptation process, which includes physical, psychological, social and spiritual responses. Output reflets how individuals adapt to the stimuli they receive. Feedback is the evaluation of the achieved output, whether it is effective or needs adjusment. This feedback can influence future adaptation processes.

The role of the nurse in Roy's adaptation model is to facilitate client adaptation by helping identify the stimuli that affect the client, understanding the adaptation process, and providing appropriate interventions to enhance client adaptation. Through an understanding of the concept of adaptation, nurses can procvide holistic nursing care focused on the client's basic needs.

The control process in individuals involves coping mechanisms , which are divided into subsystems : regulator, which is the physiological process of the body (biological) and cognator, which is the individual's cognitive process (psychosocial) The interaction between to maintain the person's integrity.

Output is categorized as adaptive or maladaptive responses. Adaptive responses are achieved when individual's are able to expand their range of stimuli, respond positively, and utilize coping mechanisms to fullest extent.

Roy (1991) developed the individual's internal process as an adaptive system by establishing effector systems. Which include four adaptive modes physiological, self coccept, role function and interdependence.

Assessment of behavior related to the client's level of adaptation includes physiological changes , adaptation of self concept, role function adaptation, and adaptation of interdependence. Physiological adaptation, according to Roy can be observed through oxygenation, circulation, nutrition, elimination, activity and rest, fluid and electrolyte balance, neurological function, and protective function . In general physiological adaptation in the case of clients with CHD receiving intensive care shows normal hemodynamic signs based on assessments such as arterial blood dan analysis, electrolyte levels, vital signs and *,central venous pressure* (CVP) (Roy, 1991; Leksana, 2003).

Another change is that the placement of monitoring devices and the atmosphere in the intensive care unit can cause stress for clients, and prolonged stress can lead to chronic / toxic stress. In this condition, the body's natural resistance decreases, ultimately affecting overall health. This can be observed through symptoms such as depression, sleep disturbamnces, persistent anxiety, as well as physical conditions like hypertension, migraines, weight gain, back pain, and diabetes, which can impact the need for rest and hemodynamic function, thus prolonging the duration of stay in the intensive care unit (Black & Hawks, 2001; Brunner & Suddarth. 2002).

Self concept adaptation in cases of CHD patients receiving intensive care carries the risk of hemodynamic disturbances, including individual coping mechanisms in response to threatening signs and fear of death. The client's perception is related to the presence of signs that threaten the occurrence of hemodynamics disturbances and the level of anxiety in accepting the changes that occur in CHD patients. Behavioral patterns, including stress and specific behaviour are believed to affect CHD patients . Individuals who are prone to CHD are often ambitious, always in a hurry, aggressive and ruthless. People displaying these personality traits are classified as Type A personalities (Brunner & Suddarth. 2002).

Role function adaptation in cases of CHD patients receiving intensive care and at risk of hemodynamics disturbances is related to the clients ability to adapt to changes in their role, as one of the treatments requires the clients to be bedridden. Interdependence adaptation involves the availbility of a support system within the family , the level of attachment to family members, the degree of dependency, and the clients independence during the intensive care treatment (Brunner & Suddarth. 2002).

In addition to assessing behavior, there is also an assessment of stimuli that affect the

client and contribute to adaptive disturbances . In the case of CHD patients receiving intensive care, assessment can be conducted through three focal stimuli : the main complaint such as chest pain due to myocardial oxygen deficiency, discomfort associayted with the placement of monitoring devices , such as mechanical ventilators and (*endotrakeal tube*) (Brunner & Suddarth. 2002).

Contextual stimuli include internal and external factors that exist within the clients and contribute to the main complaints. Internal factors as contextual stimuli include age. Comorbidities, diagnostic tests for establishing a diagnosis, and prior treatment experiences. Internal factors can be assessed through physical examinations, laboratory tests such as lipid profiles and cardiac enzymes, catheterization, EKG (electrocardiogram) ,PTCA and echocardiography. External factors include unfamiliar enviroments and the use of monitoring devices, which can cause significant stress for patients (Brunner & Suddarth. 2002; Leksana. 2003).

Residual stimuli involve exploring belifs, values and attitudes towards the adaptive changes experienced by the client and their past medical history. In the case of CHD patients receiving intensive care, examples of residual astimuli include a history of coronari artery disease (CAD), smoking, alcohol sonsumption, and medication use. These conditions serve as risk factyors that can worsen the hemodynamic condition (Arief, 2007.)

C. Discussion

The application of the adaptation theory according to Roy and the concept of caring behaviour according to Watson has been implemented in the nursing care of the three p[atients with coronary artery disease (CAD) who are being treated in the intensive care unit (ICU). In this section, the discussion will focus on the application of these theories to each patient.

The application of Roy's adaptation concept helps provide comprehensive nursing care for patients with CAD. During the assessment phase, information related to physiological and psychological adaptation can be gathered using Roy's assesssment includes focal, contextual, and residual stimuli assessment (Roy, 1991).

In all three cases, the assessment was conducted according to Roy's concept. Each individual exhibited different cognator and regulator responses due to the uniqueness of individuals and varying levels of adaptation . For examplres, all patients experienced chest pain as a focal stimulus. But each individual had different coping mechanisms. Only one patient showed signs of anxiety and had an effective coping mechasnism. When related to Roy's model, it can be concluded that the differences in individual assessment lie in the adaptation mechanisms of regulator and cognator functions in the body system, past experiences with chest pain, perception of the acceptance process for changes in health status and predisposing factyors such as diabetes mellitus and available family support.

By understanding these factors, nueses can design and appropriate interventions vbased on the specific adaptation needs of each patieent. Thia may include pain management, psychological support, education on lifestyle changes and disease management and involving the family in the care and recovery process. Through the application of Roy's adaptation concept , nurses can provide holistic nursing care focused in the recovery and improvement of quality of life for patients with CAD.

The application of Roy's adaptation concept requires the learning experience of using effective coping mechanisms. Without this, patients are at risk of adaptation failure. This condition can lead to a crisis situation, where physical and emotional stress can have a negative impact on heart vascularization. This is caused by an increase in the sympathetic nervous system. The sympathetic nervous system triggers vasoconstriction of blood vessels, increase heart rate and elevates respiratory frequency. Such conditions can worsen ischemia in the heart.

In the three cases being managed, the patients were able to adapt to the stressors, accept their condition, and cope with the changes in their health status, although one patient experienced anxiety related to uncertainly about recovery. All cases were maintained through medication administration and the patient's hemodynamics were stabilized.

The nursing diagnosis that arise in the three cases of CHD are essentially the same. They

include acute pain related to myocardial tissue ischemia , activity intolerance related to an imbalance between myocardial oxygen supply and demand resulting in ischemia, and anxiety / fear related to the threat of death or health changes . In one case an additional nursing diagnosis of potential impsaired skin integrity is identified due to the patient's weakened condition, makiung mobility difficult.

Nursing interventions conduted for all patients include promoting bed rest and reducing activity, minimizing factors that can induce Valsava maneuver, facilitating the fulfillment of basic needs, monitoring hemodynamics such as blood pressure, heart rate, respiratory rate, oxygen saturation, cardiac electrical activity, and urine output.Collaboration with the medical team is also essential for the administration of vasodilators, anticoagulants , pain relievers and cardiac , vitamins.

Other interventions are tailored to the specific nursing diagnosis for each patient. For the two patients experiencing anxiety, interventiiions focus on reducing anxiety by informing them about the results of their examinations to provide insight into the progress of their condition. Informational interventions about their illness have also been provided to address the problem of decreased knowledge in these two patients.

D. Conclusion

The occurrence of acute chest pain in the sternum or below thev sternum, or left sided chest pain requiring treatment in the intensive care unit poses , athreat to the patient. These changes require an adaptation process that involves enhancing individual coping mechanisms to achieve adaptive behaviors. The adaptation process is influenced by past experiences of heart attacks, poerception of events and support from family and nurses.

In conclusion , the occurrence of acute chest pain in patients with coronary heart disease requires intensive care and poses a threat to their well being. The adaptation process plays a crucial role in coping with these changes, and individuals need to enhence their coping mechanisms to exhibit adaptive behaviors. This adaptation process is influenced by past experiences of heart attacks, perception of events, and support from family and nurses.

In nursing care for patients with coronary heart disease in the intensive care unit , the concept and theory of Roy's adaptation nursing provide a comprehensive framework. A thorough assessment of factors related to physiological adaptation, psychological adaptation , and social support is essential. By understanding these factors, nueses can develop appropriate interventions and provide optimal care to promote adaptation and well being in patients with coronary heart disease.

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