Levine's Conceptual Model-Based Nursing Interventions For Blood Pressure Recovery In The Elderly

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Abstract.
Hypertension becomes a problem in old age, more than 50% of people with hypertension are over 60 years old. The application of nursing theory in the provision of nursing care needs to be continuously developed. One of the theories of nursing that can be applied to the elderly who have hypertension is the Levine conservation model. Nursing actions are based on four principles: energy conservation, conservation of structural integrity, conservation of personal integrity and conservation of social integrity. The purpose of this study was to identify the effect of Levine's conceptual model-based nursing interventions on the elderly.The design of this study used quasy experiments with pre and post control groups with a large sample of 20 respondents in each group. The sampling technique used is consecutive sampling with independent variables, namely Levine model-based nursing interventions (benson relaxation techniqued, deep breath relaxation techniqued, progressive muscle relaxation technique and health education), Dependent variable in this study were sleep disorders, pain, anxiety and family support. The research instruments used are sleep quality scale (SQS), Numeric rating scale, Hamilton anxiety rating scale and family support scale. The research was carried out at the Budi Sejahtera Banjarbaru Elderly Social Protection and Rehabilitation Institution (PPRSLU). The statistical test used in this study was man whitney test. The test results found that Levine-based interventions had an effect on sleep disorders (p=0.016), but had no effect on pain (p=0.67), anxiety (p=1.00), family support (p=0.63). In elderly with hypertension, nurses need to help the elderly so that the problem of hypertension is resolved and able to fight disability. Levine-based interventions can be applied for the recovery of symptoms of hypertension.

Keywords: *Levine intervention, blood pressure, recovery, and elderly.*

I. INTRODUCTION

Hypertension becomes a problem in old age, more than 50% of people with hypertension are over 60 years old. The largest diseases of death from noncommunicable diseases (NCDs) or non-communicable diseases are caused by cardiovascular diseases. The World Health Statistics reports that 57 million deaths in the world are caused by NCD disease. Hypertension is often asymptomatic, making it the silent killer of death and the main cause of heart disease, stroke, and kidney disease [1]. Hypertension in the elderly is caused by progressive age, changes in the elasticity of the aortic wall decrease, heart valves thicken to stiffen, increase peripheral vascular resistance and decrease elasticity in blood vessels so that blood pressure automatically rises and results in hypertension [2]. The levine conservation model can be applied in the nursing care of hypertension. The levine conservation model approach is used on the grounds that the elderly with hypertension will experience a change and most of these changes last for a long time so that the elderly need to adapt to any changes that occur with the results in the form of conservation. Through conservation, the elderly are able to face obstacles with the aim of health and strength to face incompetence [3]. The nursing profession provides supportive and therapeutic interventions based on scientific knowledge. Nursing actions based on four principles: energy conservation, structural integrity conservation, personal integrity conservation and social integrity conservation [4].

In the elderly with hypertension, nurses need to help the elderly so that the problem of hypertension is resolved and able to fight incompetence [5]. Levine's conservation model application has been applied to several patient care areas. Several studies on the application of Levine conservation have been conducted [8]. Applying the Levine conservation model in patients with long-term ventilation. Researchers evaluated protein fatigue and calories affecting malnutrition in adult patients who were getting long-term ventilation. The results showed that patients tend to experience fatigue during the weaning process. Levine's conservation application is also applied by [9] for effective patient wound management. Wound management

using Levine's four conservation models, namely energy conservation, structural integrity, personal integrity, and social integrity can provide clinical and financial benefits. The use of the Levine conservation model as a theoretical framework for wound management can also contribute to good nursing practices and cost-effectiveness. Individuals who experience hypertension often experience complex problems such as sleep disturbances, pain, anxiety, and low family support. So that individuals experience limitations in carrying out activities and are still dependent on other people around them [6]. Levine's conceptual model is a complex way that can influence individuals to be able to continue the functioning of life even though they will be faced with a very severe challenge. Levine's conceptual model aims to be able to nurture the needs of individuals who will use conservation principles.

So that it will improve the ability of individuals to intervene with levine's four conservation principles such as Principles of energy conservation. In this conservation principle, individuals will maintain balanced energy use, adequate rest, and sufficient nutritional needs so that sleep patterns can be met properly. Conservation of structural integrity, At this stage of sturcture integrity conservation aims to lower the intensity of pain felt by the individual. Conservation of personal integrity, At this stage the individual can increase and maintain self-confidence so that it is not dependent on others. Conservation of social integrity, At this stage the individual can communicate well with the family and can improve relations with the family and society [7]. Energy conservation aims to avoid excessive energy use that can result in sleep disturbances. At the stage of the process of maintaining the use of energy, the individual will continuously fight a challenge that exists around him. Energy conservation will require more energy to be able to overcome the problem of sleep disorders. At this stage the individual will limit the activities that can cause sleep disturbances to be disturbed [8].Levine's conceptual model has a positive impact on individuals continuously to maintain their lives and always respond to the environment around them. The elderly with hypertension often experience sleep disturbance problems that can cause their activities to be disrupted. So that the activities of the elderly cannot be completely carried out independently. Therefore, families and nurses play a role in helping adaptation so that the elderly are able to achieve optimal energy balance to be able to carry out their activities properly [9].

Structural integrity conservation aims to carry out treatment effectively, and can reduce the pain felt by the elderly. The elderly with hypertension often experience pain that can interfere with their activities so that the recovery process is disrupted. The duration of recovery can lead to a decrease in muscle tone and a decrease in muscle strength. The role of nurses and families in maintaining and restoring the body of the elderly so that they can fight the occurrence of a disease and will improve the recovery process more optimally [10]. This conservation of personal integrity of the individual will be able to increase good self-confidence and be able to reduce the anxiety he feels during the treatment process. Self-confidence is the easiest thing to attack when the patient is unable to resist the anxiety experienced by the elderly during treatment. Nurses and even families play a role in providing support during treatment. So that the elderly will get increased self-confidence, and can determine their own life [8]. Conservation of social integrity aims to improve the relationship of individuals with families, and communities in order to achieve good relationships. The elderly with hypertension often experience limited mobility which can lead to loss of independence to carry out daily activities. This can cause individuals to experience changes in fulfilling the needs of a better life. So that family empowerment, introduction to culture, ethnicity, religion, family support, and health education are needed [9]. The purpose of this study was to look at the effect of levine conceptual model-based nursing interventions on blood pressure recovery in the elderly.

II. METHODS

The design in this study was a quasy experiment with a pre and post control group, the research was carried out from February 1 to July 30, 2022, the research was carried out at the Elderly Social Protection and Rehabilitation Institution (PPRSLU) Budi Sejahtera Banjarbaru South Kalimantan. The population in this study was all elderly people who had hypertension and the sample used in this study was the elderly who had hypertension of 20 respondents in the intervention group and 20 respondents for the control group, independent variables in this study were levine-based nursing interventions (benson relaxation, deep breath

relaxation, rogressive muscle relaxation and health education), While the dependent variables in this study were sleep disorders, pain, anxiety and family support, the way of data collection was carried out by first carrying out pre-tests in both groups then the intervention group was given levine intervention while the control group was only given according to the procedural of the PPRSLU. The instrument used in this study were *sleep quality scale (SQS), numeric rating scale, Hamilton anxiety rating scale and family support scale*. The intervention was carried out for 6 days, after that the two groups were given a posttest and assessed, the data analysis used the man whitney test, the eligibility of ethics in this study was carried out on June 24, 2022 at the ethics commission of STIKES Intan Martapura with certificate number 002/KE/YBIP-SI/VI/2022.

III. RESULT AND DISCUSSION

Table 1. Characteristics of Respondents

Characteristics of Respondents	Intervention group		Control group	
	Frequency	%	Frequency	%
Education				
No	3	15	4	20
Elementary school	9	45	10	50
Middle education	7	35	6	30
Post graduate	1	5	0	0
Total	20	100	20	100
Ages				
60-65 years old	8	40	6	30
70-79 years old	8	40	11	55
80-89 years old	4	20	3	15
Total	20	100	20	100
Gender				
Female	12	60	12	60
Male	8	40	8	40
Total	20	100	20	100
Marrietal status				
Married	1	5	1	5
Widow/widower	19	95	19	95
Total	20	100	20	100
Duration of treatment				
<1 year	4	20	6	30
1-5 years	11	55	7	35
>5 years	5	25	7	35
Total	20	100	20	100

Table 2. Differences in scores and analysis in the intervention group and the control group

Variable	Intervention		P value	Control	
	Pre Test	Post Test		Pre Test	Post Test
	Mean rank	Mean rank		Mean rank	Mean rank
Sleep disorder	23,2	23,28	0,016	17,80	17,72
Pain	17,98	19,8	0,67	23,02	21,20
Anxiety	18	20	1,00	23	20,5
Family support	20,1	21	0,63	20,5	20
Blood pressure	16,55	18,4	0,21	20,45	22,6

Levine's conceptual model affects sleep disturbances, there is an increase in the average in measurements after the intervention, while in the control group there is a decrease in the average sleep disorders. This suggests that Levine's conceptual model contributed to a decrease in sleep disturbances in the treatment group. The nursing intervention performed in this study to improve sleep in hypertensive elderly is Benson's relaxation technique. Research [21]. states that Benson's relaxation technique can improve sleep quality in elderly patients. Research [22] suggests that Benson's relaxation technique may improve the sleep duration of patients with coronary heart disease. Benson relaxation can improve sleep quality because it can

stimulate the production of endorphin hormones. This hormone is related to the neurotransmitter serotonin which has a role in the sleep process. Serotonin is also related to melatonin which can maintain sleep so that the NREM and REM phases become long and the duration of sleep becomes increased [11]. Sleep is one of the basic human needs that serves to restore the balance of normal body functions, temperature regulation and normal energy reserves [12].The implementation of Benson Relaxation Therapy with regular and properly performed breath exercises will make the body more relaxed, relieve tension when experiencing stress and free from threats. The feeling of relaxation will be passed on to the hypothalamus to produce Corticotropin Releasing Factor (CRF).

Furthermore CRF stimulates the pituitary gland to increase the production of Proopioidmelanocortin (POMC) so that the production of enkephalin by the adrenal medulla increases. The pituitary gland also produces endorphin β as a neurotransmitter that affects mood to relax. Increased encephalin β endorphin and the elderly will feel more relaxed and comfortable in their sleep and the feedback from this is that the secretion of the hormone cortisol (Stress Hormone) is all high at the beginning of the morning, but low at the end of the afternoon, plasma cortisol levels range between the highest levels of approximately 20 µg / dL, one hour before sunrise in the morning and the lowest is approximately 5 µg/dL, around midnight. This effect results from a 24-hour signal cycle change from the hypothalamus that gives rise to cortisol secretion. If a person changes his daily sleep habits, there will be a change in this cycle as well [13]. In people who experience poor sleep quality which results in their body fatigue during the day, complaining of drowsiness, when benson relaxation techniques are carried out in the morning between 7 - 8 am so that the complaints felt in the client disappear or decrease due to benson relaxation work to relieve tension, Providing a sense of relaxation to the client, in the afternoon this technique is carried out around 4-5 pm stress which previously made poor sleep quality expected to be reduced and helped again by relaxation activities again at night and this activity is carried out intensely and regularly 2 times a day. Benson Relaxation Therapy activities, activities that are not burdensome for clients and do not require costs in their implementation, making it easier for clients to be able to carry them out regularly and independently [14]. Based on research [23] states that.

Benson's relaxation techniques can work if they are supported by a good environment. The individual can consciously loosen the muscles of the body, so that the individual will concentrate himself for 10-15 minutes at the stage already chosen, and can behave on thoughts that can interfere. The purpose of Benson's relaxation technique can lower the level of anxiety, mood disorders, body discomfort, and activity of the autonomic nervous system and can affect a person's sleep quality. Levine's conceptual model had no effect on pain, there was an average increase in measurements after intervention, while in the control group there was a decrease in mean. This suggests that Levine's conceptual model contributed to the reduction of pain in the treatment group. Lispe's research (2016) states that Levine's conceptual model is able to identify individual needs for conservation of structural intergrity. The application of Levine's conceptual model is an appropriate action with the needs of the individual experiencing pain. Levine's conceptual model-based nursing intervention is the most appropriate course of action to reduce pain experienced by hypertensive seniors. The intervention is an action that plays an important role in reducing pain [15]. Pain is a sensory and emotional experience that results in actual and potential tissue damage that describes a condition of discomfort in hypertensive patients [16].The nursing intervention carried out in this study to reduce pain in hypertensive elderly is a deep breath relaxation technique. This research corresponds to [24] states that deep breath relaxation techniques are effective in reducing pain in hypertensive patients. The deep breath relaxation technique is able to stimulate the body to release endogenous opoids, namely endorphins and encaphalin. Endorphin hormone is a substance similar to morphine that can inhibit the transmission of pain to the brain.

So this pain neuron will send signals to the brain which results in synpasis between peripheral neurons and neurons that go to the brain where the p subtasntion should be to produce impulses. This will block the release of substance p from sensory neurons resulting in less pain [17]. Relaxation is an action to relieve mentally and physically from tension and stress so as to increase tolerance to pain. A simple relaxation technique consists of abdominal breathing with a slow, rhythmic frequency. The patient can close

his eyes and breathe slowly and comfortably. A constant rhythm can be maintained by counting silently and slowly with each inhalation ("inhale, two, three") [18]. Distraction is focusing the patient's attention on something other than pain, or it can be interpreted otherwise that distraction is an act of transferring the patient's attention to something outside of pain. Thus, it is hoped that the patient will not be focused on pain anymore and can reduce the patient's alertness to pain and even increase tolerance to pain.Distractions are thought to decrease pain perception by stimulating the desenden control system, resulting in fewer pain stimuli being transmitted to the brain. The effectiveness of the tract depends on the patient's ability to receive and evoke sensory input in addition to pain [19]. This technique is usually not effective in patients who experience severe pain or acute pain. This is due to severe or acute pain, the patient is unable to concentrate properly and is not good enough to participate in complex mental and physical activities. Guided imagination is using one's imagination in a specially designed way to achieve a certain positive effect. This action requires sufficient concentration [20].

The client's environmental conditions attempt to support for this action. Commotion, noise, pungent odors, or very bright lights need to be considered so as not to disturb the client to constitute.In elderly patients, a nurse should conduct a more detailed assessment when an elderly person reports pain. Often the elderly have more than one source of pain. Sometimes different diseases suffered by the elderly cause the same symptoms. Some elderly people sometimes resign themselves to what they feel, they consider that it is an inevitable consequence of aging. Although many elderly people seek health care because of pain, others are reluctant to seek help, even when experiencing severe pain, because they consider that the pain felt is part of the normal aging process that occurs in every elderly person.Levine's conceptual model has no effect on anxiety, research [25] stated that there was no meaningful difference in anxiety levels between the groups before and after the intervention. This can be possible because the respondent has been suffering from hypertension for a long time or the respondent is used to the disease. The same study was conducted by [26] about the influence of psychoeducation on the level of anxiety of hypertensive patients. In the intervention group, psychoeducation was carried out about hypertension and then progressive muscle relaxation techniques and deep breathing were carried out, there was no difference in the level of anxiety in the intervention group. This is in accordance with the statement that there are times when education and training are considered less than optimal.

Respondents were less motivated to do training and did not apply in life. However, there was an increase in the average in measurements after the intervention, while in the control group there was a decrease in the average. This suggests that Levine's conceptual model contributed to anxiety levels in the treatment group. Age can also be one of the factors that can influence the level of anxiety. The average age in the intervention group was > 60 years. Research [27] stating the age of > 60 years can affect anxiety levels. This suggests that anxiety levels increase as respondents age. Research [28] states adulthood can affect severe anxiety levels and experience a high prevalence of pain.The nursing intervention carried out in this study to reduce anxiety in hypertensive patients is a progressive muscle relaxation technique. Research [29]. states that progressive muscle relaxation techniques can reduce anxiety levels in preoperative patients who have fractures. Progressive muscle relaxation techniques are respondents' way of stressing and relaxing all muscles sequentially and focusing attention on the differences in feelings experienced in a relaxed state and when the muscles are tense. Progressive muscle relaxation technique as an action that trains respondents to stay relaxed in reducing anxiety [30]. [31] said that progressive muscle relaxation techniques can be used to reduce anxiety that can suppress sympathetic nerves and suppress the tension experienced by respondents reciprocally so that there will be counter conditioning (removal) of tension. Muscle relaxation will run simultaneously with the autonomic response of the parasympathetic sarap. This parasympathetic nervous system will control the activity that takes place in the state of the body's anxious response. So that anxiety will be further reduced by the intervention of progressive muscle relaxation techniques. Therapeutic nonpharmacology is effective for lowering anxiety [36].

Research [32] states that progressive muscle relaxation techniques are effective in reducing anxious states in limb fracture patients undergoing surgery. Research [33]. states that there is an influence of progressive muscle relaxation techniques in helping colorectal cancer patients to decrease the patient's

response to anxiety. Levine's conceptual model had no effect on family support, there was an increase in the average in measurements after the intervention, while in the control group there was a decrease in the mean. This suggests that Levine's conceptual model contributes to family support in the treatment group. The results showed that in the family support intervention group became good after Levine's conceptual-based nursing intervention was carried out. Research [34] explained that one of the factors that can affect hypertensive patients is family support. Family support is needed in hypertensive patients because with family support, it can help individuals develop more effective coping mechanisms so that blood pressure returns to normal.This family support can be in the form of task orientation that can be given to family, friends, even neighbors [35]. Research [9] states Levine's conceptual model-based nursing interventions against family support provide a clear structure for care in adults. Levine's conservation model can provide useful core values in the care of hypertensive patients so that families are able to care for and care for patients in long-term care.The nursing intervention carried out in this study to improve family support in hypertensive elderly is to provide health education.

IV. CONCLUSION

There is an influence of conceptual model-based nursing intervention programs Levine on sleep disorders, No influence of Levine's conceptual model-based nursing intervention program on pain, No influence of Levine's conceptual model-based nursing intervention program on anxiety, No influence of Levine's conceptual model-based nursing intervention program on family support.

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