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Nursing care for the risk of decreased cardiac output in mr. u with hypertension in the daikea room of iryou houjin aiwakai hospital (ikeda en)

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Abstract. Hypertension is a medical condition with an increase in blood pressure above normal, which can increase the risk of cardiovascular diseases such as ischemic heart disease and stroke. Uncontrolled hypertension can lower the risk of death from this disease. The prevalence of hypertension in Japan stands at 34.6% in men and 24.8% in women, with various risk factors such as obesity and high salt consumption. This study aims to describe nursing care in patients with a reduced risk of cardiac output due to hypertension at Iryou Houjin Aiwakai Hospital (Ikeda En), Okinawa, Japan. An assessment of the 76-year-old patient showed symptoms such as dyspnea, tachycardia, palpitations, and fatigue, which are associated with decreased cardiac output. The interventions carried out included the provision of Fowler positions, vital sign measurements, and oxygen therapy. The results showed a decrease in blood pressure after the intervention. The Fowler position is effective in lowering blood pressure and reducing symptoms of tightness in hypertensive patients with a reduced risk of cardiac output. Proper nursing care can reduce the risk of complications in hypertensive patients.

1 Introduction

Hypertension is a condition in which a person experiences an increase in blood pressure above normal (1) Hypertension can increase the risk of cardiovascular disease. Any increase of 20 mmHg of systolic blood pressure or 10 mmHg of diastolic blood pressure can increase the risk of death from ischemic heart disease and stroke (2). Based on data from *the World Health Organization* (WHO) in 2015, hypertension kills nearly 8 billion people every year in the world and nearly 1.5 million people every year in the Southeast Asian Region (3). In 2016 in Central Java, 611,358 people, or 11.55% were declared hypertension/high blood pressure (4) There are 181,948 people with hypertension in the Banyumas Regency, namely 107,110 women and 74,838 men (5). Hypertension is a major chronic disease that is recognized as one of the risk factors for cardiovascular disease in Japan. The prevalence of hypertension in Japan was 34.6% for men and 24.8% for women in 2016 (6).

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The increase in the prevalence of hypertension is caused by several factors, including age, gender and ethnicity. In addition, the higher the level of obesity a person, the higher the incidence of hypertension (7). According to Aprisal (8) the nursing diagnosis that can occur in hypertensive patients is the risk of decreased cardiac output, decreased cardiac output, acute pain, excess fluid volume, activity intolerance, coping ineffectiveness, risk of ineffective tissue perfusion, risk of injury, anxiety, and knowledge deficit. Meanwhile, the management of hypertension is by using drugs or by modifying lifestyle. The risk of decreased cardiac output is a condition that can be at risk of experiencing inadequacy of the heart pumping blood to meet the body's metabolic needs. The risk of decreased cardiac output can occur due to changes in heart rhythm, changes *in afterload*, changes in *preload*, and changes in cardiac contractility (9). In the problem of decreased cardiac output, the sympathetic nervous system will stimulate the heart to beat faster, as well as increase the volume of the sac by means of selective vasoconstriction of peripheral organs, so that more blood returns to the heart. If this is continuous, there will be changes in the lining of the arterial blood vessel wall which results in increased peripheral retention, which will cause hypertension (10).

Various ways are carried out to lower blood pressure both pharmacologically and non-pharmacologically. Pharmacological treatment is treatment using drugs. The drugs used such as anti-hypertensive drugs, diuretic drugs, and others are according to the stage and problem. One of the non-pharmacological treatments is by giving the Fowler position to lower blood pressure. Switching from a lying position to a sitting position reduces "*venous return* and stroke volume", i.e., reduces the decrease in pressure and volume of narrowing of blood vessels. The ventricles pump blood and increase peripheral vascular resistance/peripheral blood vessels which can cause the heart frequency to increase (11).

Based on the results of a research study conducted by Kusuma (12) stated that there is an effect of Fowler's position on blood pressure in hypertensive clients. The Fowler position is a position with a half-sitting or sitting body. The change in position causes less blood to go to the heart, and the change from lying down to a standing or sitting position for a relatively long time is a result of blood collecting in veins such as the liver, spleen, and other large veins. This reduces cardiac output and drops blood pressure.

The results of Purwadani (13) research, 10 respondents based on signs and symptoms before the fowler position were categorized as good as 1 person (10%), categorized as sufficient 8 people (80%), categorized as poor as 1 person (10%), and after giving the fowler position categorized as good as 0 people (0%), categorized as sufficient 3 people (30%), categorized as bad as many as 7 people (70%).

At Iryou Houjin Aiwakai Hospital (Ikeda En) Okinawa, Japan, there are 70 elderly people, and 42 of them have a history of high blood pressure (hypertension) due to high Body Mass Index (BMI), lack of exercise, high salt intake, low intake of vegetables and fruits, regular drinking of alcohol and smoking, and there are some of them who have a history of heart disease. Based on previous research, implementing non-pharmacological interventions such as the Fowler position has shown potential benefits in reducing blood pressure. However, further studies are needed to explore its long-term implications and integration into clinical nursing practice to enhance patient outcomes. The purpose of this case study is to provide a comprehensive overview of nursing care carried out in patients with a reduced risk of heart rate due to hypertension in the Daikea Room, Iryou Houjin Aiwakai Hospital (Ikeda En).

2 Method

2.1 Case Study Plan

The method used in this study is a case study with a nursing process approach, which includes the stages of review, planning, implementation, and evaluation. In the review stage, subjective and objective data of patients are collected through interviews, observations, and physical examinations. The planning stage involves determining the nursing diagnosis and preparing an action plan. The implementation stage is the implementation of the planned nursing intervention, while the evaluation focuses on assessing the effectiveness of the intervention and determining the next steps.

2.2 Location and Time of Research

Nursing care for Mr. U was carried out in the Daikea Room, Iryou Houjin Aiwakai Hospital (Ikeda-en). This care was given to patients with a diagnosis of hypertension on June 1-3, 2023.

2.3 Case Study Subject

The subject of this case study is an elderly patient with a medical diagnosis of Hypertension who was treated at Ikeda-en Hospital. These patients have a risk of decreased cardiac output identified through a nursing review.

2.4 Case Study Focus

The focus of the study in this case study is that the researcher conducts nursing care for the risk of reducing cardiac output in patients with hypertension at Ikeda-en Hospital.

2.5 Data Collection

Data collection in this study was carried out through three primary methods: interviews, observations, and physical examinations. Each method was chosen to provide comprehensive insights into the patient's condition, supporting the nursing process. An interview is a direct conversation with the patient, as well as the analysis of medical records, was conducted to gather subjective information about the patient's health history, symptoms, and concerns. This method is essential for establishing the patient's perspective, identifying health risks, and informing the nursing diagnosis. The observations carried out observing the patient's physical condition, reactions, attitudes, and behaviors allowed the researcher to assess the patient's immediate health status and emotional well-being. This method is particularly relevant in the nursing process as it helps to identify non-verbal cues that may not be captured through interviews alone, aiding in accurate diagnosis and tailored interventions. This physical examination includes clinical assessments such as physical examinations, laboratory tests, and radiological procedures. These diagnostic tools were chosen to obtain objective data that would confirm the nursing diagnosis, rule out other conditions, and guide the selection of appropriate interventions. The use of physical examinations ensures that the treatment plan is based on reliable, measurable data, contributing to effective patient care.

2.6 Data Analysis

In this study, the researcher uses data analysis by explaining the facts obtained and comparing them with existing theories, which are then outlined in the discussion opinion. The steps taken include first, data collection through interviews, observations, physical examinations, and documentation studies, which are then recorded in the form of field notes. Second, the presentation of data in descriptive form because the study was carried out directly on participants in nursing care activities. Finally, a conclusion in which the researcher evaluates the actions or interventions carried out on the case being studied and compares it with previous theories and research.

3 Results and Discussion

3.1 Result

3.1.1 Assessment

3.1.1.1 Identity of the patient and responsible person

The study was carried out on June 1, 2023, at 13:30 in Daikea room, Okinawa, Japan, based on assessments from the patient, family, and medical records. The patient is named Mr. U with the age of 76 years, male, Yamato ethnicity, Japan, address in Uehara, Ginowan-shi, Okinawa, Japan. The identity of the person in charge of the patient Mrs. N, female, address in Uehara, ginowan-shi Okinawa, Japan, works as a bank clerk, hub with the client, namely his wife.

3.1.1.2 Medical history

Mr. U's medical history assessment on June 1, 2023, revealed that he arrived at Iryou Houjin Aiwakai Hospital (Ikeda En) with shortness of breath as the primary complaint. In a previous history of the disease, the patient was known to have a history of hypertension and stroke, which is a serious risk factor for his current health condition. In the current history of the disease, on May 31, 2023, at 19:00, the patient arrived at the hospital with shortness of breath, dizziness, weakness, fatigue, and heart palpitations. The vital signs were checked in the Da ikea room, showing blood pressure of 170/100 mmHg, pulse of 88 beats per minute, respiratory rate of 25 times per minute, and body temperature of 36.5°C. Patients were immediately given medical therapy in the form of 8 liters of oxygen per minute to overcome shortness of breath, as well as drugs in the form of nitrokaf 2x2.5 mg and clopidogrel (CPG) 1x75 mg to help stabilize their cardiovascular condition. In addition, from the family history, the patient revealed that in his family there were members who also suffered from hypertension and heart disease. This family history further strengthens the patient's genetic predisposition to the cardiovascular disease he is currently experiencing.

3.1.1.3 Observation and physical examination

On June 1, 2023, a thorough observation and physical examination were conducted on Mr. U. The results of the study were that the patient's vital signs showed blood pressure of 170/100 mmHg, pulse 88 times per minute, breathing 25 times per minute, and body temperature of 36.5°C. High blood pressure signals hypertension, which is consistent with the patient's history of the disease. The patient was in a state of Compos Mentis (CM) with a

Glasgow Coma Scale (GCS) value of 10, consisting of E4 (spontaneous opening of the eyes), M1 (weak motor response/unable to perform movements as commanded), and V5 (responding verbally well). This is caused by motor disorders related to the stroke history he experienced, especially in the upper extremities. In terms of nutritional status, the patient's weight was 60 kg, height was 180 cm, with a Body Mass Index (BMI) of 18.5, which indicated an ideal weight but close to the lower limit of normal. The patient's attitude during the examination seemed calm, and the patient's personal hygiene was in good condition. Patients also show a good orientation towards time, place, and people. Heart examination revealed no ictus cordis, and palpation was weak. At auscultation, bowel noise is heard more than 20 times per minute, but without any other additional sounds. Muscle strength in the upper extremities, both right and left, indicates weakness in the absence of signs of edema, which is associated with the patient's history of stroke.

3.1.1.4 Assessment of gordon's functional health pattern

The results of an assessment of Gordon's functional health pattern on Mr. U conducted on June 1, 2023, showed several significant changes between before illness and after treatment. Before the illness, Mr. U and his family reported a decreased appetite. Mr. U eats little but often, with the amount of food consumed as much as one serving, and is helped by his family. After being treated, the family reported an increase in appetite in Mr. U, with a portion of food that remained one serving but this time assisted by a nurse. Before getting sick, Mr. U consumed 200 ml of fluid per day without feeling thirsty. After treatment, fluid intake increased to 230 ml, with an increased craving for drinking. Before getting sick, Mr. U defecated (BAB) once a day with a mushy consistency, brown color, and a distinctive smell. Defecation is done in the bathroom with assistance. After treatment, Bowel movements increased to 1-2 times a day with softer consistency but unchanged color and odor, still requiring assistance. The frequency of urination (BAK) before illness is three times a day with a clear yellow color and a distinctive urine smell. The BAK process is carried out with the help of the family. After treatment, the frequency of bowel movements increases to 6-8 times a day, with the same color and smell, but with the help of a nurse. Before he got sick, Mr. U complained of sleeping less than 6 hours, and his family stated that he often woke up at night. After treatment, sleep patterns improved, with Mr. U sleeping for more than 6 hours without complaints. Before getting sick, Mr. U bathed twice a day and brushed his teeth twice a day with the help. After treatment, the frequency of bathing decreases to once a week with the help of a nurse. However, Mr. U brushes his teeth more frequently, i.e. three times a day, without complaints. Before being treated, Mr. U did not carry out productive activities at home. After being treated, Mr. U began to do activities such as stretching, gymnastics, concentration exercises, and therapy.

3.1.1.5 Supporting examination

On May 29, 2023, Mr. U's supporting examination revealed several abnormal results. Leukocytes were recorded at 11.73 x 10^3/µL, above the normal range of 4.00-10.00 x 10^3/µL, indicating the presence of an infection or inflammatory process in the body. Neutrophils also increased with a value of 8.88 x 10^3/µL (normal 2.00-7.00 x 10^3/µL), and the percentage of neutrophils reached 75.70% (normal 50.0-70.0%), supporting the indication of active infection. In addition, PCT (Procalcitonin) with a value of 0.292 x 10^3/µL is also above the reference value of 1.08-2.82, which is usually related to bacterial infection or sepsis. In the Random Blood Sugar (GDA) **test,** blood sugar is recorded at 118 mg/dL (normal 74-106 mg/dL), slightly above the normal limit, which can indicate a disorder

of glucose metabolism. Potassium in the blood shows a decrease with a value of 2.76 mmol/L (normal 3.0-5.0 mmol/L), known as hypokalemia. This condition is important to note because hypokalemia can affect heart function, especially in patients with a history of hypertension. Chloride showed a slight increase in value at 108 mEq/L (normal 95-105 mEq/L), but this increase was relatively small and did not indicate a major problem. An ECG examination showed significant results, with a regular heart rhythm at a frequency of 90-100 times per minute. However, the presence of T-wave inversion on leads V1-V6 and QS on leads V1-V3 indicates the possibility of cardiac ischemia or old myocardial infarction. These findings are important to note given Mr. U's history of hypertension which can increase the risk of heart complications. Overall, the results of Mr. U's supporting examination on May 29, 2023, showed signs of infection, electrolyte imbalance, and significant changes in ECG results that led to the possibility of cardiac ischemia.

3.1.1.6 Drug therapy program

Mr. U's drug therapy during treatment at Iryou Houjin Aiwakai Hospital aimed at managing hypertension and maintaining heart function. One of the drugs given is Nitrokaf with a dose of 2.5 mg, the route of oral administration, and is given 2 times a day, before meals at 11.45. Nitrokaf is used to reduce and prevent angina (chest pain) due to coronary heart disease. This drug helps to dilate blood vessels so that blood flow to the heart becomes smoother, reducing the workload of the heart. In addition, Mr. U also received Cpg at a dose of 75 mg, the route of oral administration, and was given 1 time a day, before meals at 11.45 am. Cpg is used as an antiplatelet drug that works to thin the blood and prevent the formation of blood clots, which can reduce the risk of heart attack and stroke.

To lower blood pressure, Candesartan is given at a dose of 16 mg, through the route of oral administration, once a day, after meals at 12.35. Candesartan is an antihypertensive drug from the angiotensin receptor inhibitor (ARB) class that works by dilating blood vessels and helping to lower blood pressure, thereby reducing the burden on the heart. Mr. U also received Amlodipine at a dose of 2.5 mg, the route of oral administration, given 1 time a day, before meals at 11.45 am. Amlodipine is a calcium channel blocker that helps lower blood pressure by relaxing blood vessels so that blood can flow more easily.

To manage irregular heartbeats, Amiodarone drip is administered via intravenous (IV) infusion at a dose of 0.5 mg/hour, 1 time daily at 12.00 pm, along with lunch. Amiodarone serves to prevent and treat arrhythmias, which are conditions in which the heartbeat becomes too fast or irregular, which is very important in maintaining the stability of the patient's heart rhythm. Overall, Mr. U's drug therapy program is designed to control blood pressure, prevent heart complications, and maintain the stability of his heart rhythm in order to reduce the risk of decreased cardiac output which can worsen his hypertension condition.

3.1.2 Nursing Diagnosis

The nursing diagnosis that was established based on the data studied began by getting the problems, causes, and supporting nursing problems found in Mr. U, namely the risk of decreased cardiac output related to increased blood pressure, vasocontracture was characterized by the patient complaining of tightness, the patient said shortness accompanied by dizziness, weakness, and heart palpitations, blood pressure 170/100 mmHg, pulse 88x/min, breathing 25x/min, temperature 36.5 ^{o}C. Given 8 liters/minute of oxygen medical therapy, *Rhythm sinus* ECG (SR).

3.1.3 Nursing Intervention Plan

Mr. U, a patient who was admitted to the Daikea Room of Iryou Houjin Aiwakai Hospital (Ikeda En), was diagnosed with hypertension that is at risk of causing a decrease in cardiac output. Hypertension is a condition in which chronic blood pressure rises, which if left uncontrolled can weaken the heart and lead to heart failure. One of the complications that often occurs in hypertensive patients is decreased cardiac output, which is a condition in which the heart is unable to pump blood effectively throughout the body. The main nursing problem identified by Mr. U is the risk of decreased cardiac output. To overcome this problem, a nursing intervention plan has been developed that aims to prevent the occurrence of decreased cardiac output and maintain the stability of Mr. U's heart condition. The aim of this intervention is to identify, treat, and limit complications due to imbalances between myocardial oxygen supply and consumption. Observation activities include identification of secondary signs/symptoms of decreased cardiac output, blood pressure monitor, fluid intake and output monitor, daily weight monitor at the same time, oxygen saturation monitor, chest pain complaint monitor, 12-lead ECG monitor, cardiac laboratory value monitor, pacemaker function monitor, blood pressure and pulse frequency check before and after activity, Check your blood pressure and pulse rate before administering medication. Therapeutic measures include positioning the semi-fowler or Fowler patient with the legs down or a comfortable position, providing an appropriate cardiac diet, using elastic stockings or intermittent pneumatics, as indicated, facilitating the patient and family for lifestyle modifications, providing relaxation therapy to reduce stress, providing emotional and spiritual support, providing oxygen to maintain oxygen saturation >94%. The education provided includes encouraging physical activity according to tolerance, encouraging gradual physical activity, recommending quitting smoking, teaching patients and families to measure daily weight, and teaching patients and families to measure daily fluid intake and output. In addition, the collaboration provided is anti-arrhythmia and referral to cardiac rehabilitation programs.

3.1.4 Implementation

In the implementation that has been carried out by the author from June 1-3, 2023, there are several actions that are not carried out based on the interventions that have been determined, namely monitoring fluid intake and output, monitoring weight every day at the same time, 12-lead ECG monitor, arithmetic monitor, heart laboratory value monitor, heart function device monitor, providing heart diet due to language and time limitations.

3.1.5 Nursing Evaluation

The results of the evaluation on Mr. U were that on the first day (June 1, 2023), the patient complained of shortness of breath, dizziness, weakness, and heart palpitations. Objective examination shows high blood pressure and rapid respiratory rate. The ECG results showed that the heart rhythm was still regular. The patient was given oxygen therapy. Based on the evaluation, the main nursing problem identified was the risk of decreased cardiac output which had not been addressed. The nursing interventions carried out include the administration of oxygen, the Fowler position, and collaboration with the medical team in administering drugs. On the second day (June 2, 2023), the patient's complaints were similar, but the blood pressure decreased slightly and the respiratory rate slowed down, indicating slight improvement. However, the problem of the risk of decreased cardiac output is still not resolved. Nursing interventions continued. On the third day (June 3, 2023), patients reported

that complaints of shortness of breath decreased, and blood pressure further decreased. Based on this evaluation, the problem of reduced cardiac output risk is considered to be partially resolved. Oxygen therapy was not continued, but collaborative interventions in drug administration continued. The results of the standard evaluation of the outcome of nursing problems in Mr. U were on the first day (June 1, 2023), the patient's heart rhythm was stable, but the heart frequency was still low and blood pressure was high. The breathing pattern is quite good, although there are complaints of shortness of breath. The intervention was focused on increasing cardiac output and lowering blood pressure. On the second day (June 2, 2023), the heart rhythm remained stable, the heart frequency was still low, but blood pressure began to improve. On the third day (June 3, 2023), the heart rhythm was stable, the heart frequency improved, and the blood pressure was under control.

3.2 Discussion

3.2.1 Assessment

The assessment conducted on June 1, 2023, at 08:00 revealed that Mr. U, a 76-year-old resident of Uehara, Ginoan-shi, Okinawa, Japan, was experiencing symptoms of dyspnea, such as tightness and dizziness, which were addressed with the administration of 8 liters of oxygen per minute. According to Nathan et al. (14) associate hypertension and heart failure with shortness of breath. A decrease in the heart's ability to pump blood can worsen this condition, making shortness of breath more significant due to reduced blood flow throughout the body. It is common in patients with long-term hypertension leading to heart failure or related lung disease. Tachycardia was observed in Mr. U's physical examination with a respiratory rate (RR) of 25 breaths per minute and a pulse rate of 88 beats per minute. Grassi (15) revealed that increased sympathetic activity plays an important role in the body's response to hypertension. The sympathetic nervous system, through the release of norepinephrine, can increase the heart rate in an effort to maintain adequate blood pressure during hypertension. These sympathetic activations are often associated with an increased risk of damage to the target organs and blood pressure variability, which worsens hypertensive conditions if not treated properly. In addition, Grassi et al. (16) suggests that chronic hypertension tends to trigger an exaggerated sympathetic response, which in turn increases heart rate and adds to the load on the heart. In addition, sympathoinhibition therapy aimed at suppressing sympathetic activity has been shown to be effective in controlling blood pressure and reducing organ damage in hypertensive patients. The symptoms of tachycardia in theory appear in the case, where the physical examination of Mr. U is RR 25x/minute, pulse 88x/minute. Fatigue was another symptom reported by Mr. U, which is frequently seen in hypertensive patients, as Permatasari (17) describes, alongside other signs such as dizziness and blurred vision when hypertension is poorly managed. If hypertension is severe or left untreated, other symptoms such as headache, fatigue, vomiting, shortness of breath, and blurred vision can occur due to damage to the brain, eyes, heart, and kidneys. People with severe hypertension also sometimes experience a decrease in consciousness and even a coma. According to Anggraeni et al. (18) reported that disorders of the digestive system were found to be symptoms of loss of appetite, nausea and vomiting, edema in the lower extremities, and ascites, often occurring in patients with hypertension-related decreased cardiac output. Like the symptoms found in clients who often wake up at night, clients also say that appetite and drinking are a little but often.

3.2.2 Nursing Diagnosis

The nursing diagnosis for Mr. U was Risk for Decreased Cardiac Output, characterized by the heart's inadequate ability to pump blood and meet the body's metabolic needs (9) According to Novela (19) the risk of decreased cardiac output will disrupt the blood-vascular system, causing cells and tissues to experience a lack of oxygen and nutrient supply, causing changes in the alveolar-capillary membrane, edema, and increased venous pressure. Clinical manifestations of this risk include tachycardia, weakness, fatigue, and oliguria, all of which were present in Mr. U, as evidenced by his elevated blood pressure of 170/100 mmHg, tachycardia (pulse 88/min), and elevated RR (25/min). Based on the assessment obtained through interviews, observations, physical examinations, and medical records of patients. In the subjective data of patients complaining of tightness, patients said that tightness was accompanied by pressure, weakness, heart palpitations, and fatigue. Meanwhile, in the objective data, it was obtained that Mr. U had a blood pressure of 170/100 mmHg, pulse 88x/min RR: 25x/min, composmentis level of consciousness, given oxygen 8 liters/minute. The data is in accordance with the characteristic limitations of clients who experience a risk of decreased cardiac output with changes in the frequency or rhythm of the heart which is characterized by the presence of bradycardia, tachycardia, heart palpitations, and changes in the electrocardiogram (ECG).

3.2.3 Nursing Intervention

The planned nursing interventions aimed to manage decreased cardiac output (L.02008) through various strategies, with the primary outcome being the alleviation of symptoms such as dyspnea, dizziness, and fatigue within 3x24 hours. Medications such as amlodipine (a calcium channel blocker) and candesartan (an angiotensin receptor blocker) were prescribed to control Mr. U's blood pressure and reduce the risk of further complications. One of the interventions included positioning Mr. U in the Fowler's position to reduce respiratory distress. This intervention is in accordance with the opinion of the results of several journals related to the effect of fowler position on blood pressure reduction, according to Cobonaglu and Yilmaz (20), it was found that there was no significant difference in blood pressure between the supine (lying on the back) and semi-fowler positions. However, there was a significant decrease in blood pressure when the patient switched from a semi-fowler position to a fowler position. This shows that the fowler position is more effective in managing the patient's blood pressure.

The standing position is 107.9/73 mmHg because when standing, gravity causes blood to tend to collect in the legs, which can cause a slight drop in blood pressure in the head and upper body. However, the body automatically adjusts by increasing the heart rate and vascular resistance to maintain blood pressure. This may explain why blood pressure in a standing position is slightly higher. Lying position 102.9/66.6 mmHg In the lying position, the heart is in a more equal position to the rest of the body, which can lead to blood redistribution. Blood pressure tends to be lower in this position because there is no significant gravitational effect affecting blood distribution.

According to Manembu *et al*., (23) the average results of blood pressure in the sitting position were 117.9/79.2 mmHg, and the standing position was 124.7/87.5 mmHg because higher blood pressure when standing compared to the sitting position may be caused by the body's response to gravity and changes in blood flow. When standing, gravity causes blood to collect in the legs, which triggers the body to increase blood pressure by increasing vascular resistance and heart rate to maintain adequate blood flow to the brain and other vital organs. This is why blood pressure tends to be higher in a standing position than when sitting.

From the results of the two studies, the conclusion obtained is that there is an influence in the position of giving position on blood pressure in hypertensive patients.

3.2.4 Nursing Implementation

The nursing implementation focused on monitoring vital signs and assessing Mr. U's responses to interventions. According to Asih et al. (21) revealed that on the physical examination there were no abnormalities in the case of high blood pressure. The author measured and monitored vital signs, this is in accordance with Wilkinson's (24) opinion that patients with decreased cardiac output must collect and analyze the patient's cardiovascular, respiratory and body temperature data to determine and prevent complications. According to Nurarif and Kusuma (25), the measurement of vital signs of hypertensive patients is carried out because it is one of the goals of nursing from the nursing diagnosis of the risk of decreased cardiac output, namely vital signs within normal limits, positioning fowler patients, providing oxygen, monitoring changes in blood pressure, motivating patients to perform simple movements such as tilting right or left to prevent decubitus and doing simple movements/simple exercises to facilitate blood flow. Additional interventions included encouraging simple mobilization and repositioning Mr. U regularly to improve circulation and prevent complications such as decubitus ulcers. Collaboration with the medical in providing therapy to Mr. U patients in the form of 8 liters/minute of oxygen therapy if it improves oxygen administration is reduced. According to Piraino et al. (22), oxygen therapy aims to keep oxygen saturation levels (SpO2) above 90%, which is important for reducing symptoms of shortness of breath and preventing further complications in patients with respiratory distress. To manage blood pressure and prevent heart-related complications, medications such as clopidogrel, an antiplatelet agent, are used to prevent blood clots and reduce the risk of heart attack. Angiotensin II receptor inhibitors such as candesartan are usually prescribed to lower blood pressure and prevent complications such as stroke, heart attack, and kidney failure.

The way it works is when angiotensin II is inhibited, the blood vessels will weaken and dilate so that blood flow becomes smooth and pressure can drop. Amlodipine 1X2.5 mg, the drug amlodipine is a calcium channel blocker that dilates blood circulation and is useful for lowering blood pressure. Drip amiodaron 0.5 mg/hour. One of the non-pharmacological treatments is with the fowler position to lower blood pressure and tightness. Switching the lying position to the sitting position reduces the "*venous return and sroke volume*", that is, reducing the decrease in pressure and the narrowing of the blood vessels. The ventricles pump blood and increase peripheral vascular retention which can cause the heart frequency to increase and cause blood pressure to drop (11).

3.2.5 Nursing Evaluation

According to Wilkinson (2012), the success indicators of patients who have blood, pulse, and respiratory pressure in the normal range, can tolerate activity in the absence of changes in blood, pulse, and respiratory pressure, no pulmonary edema, peripheral and ascites edema, no cervical vein distension and normal skin color. In the case managed by the author for 3x24 hours, the patient had less than normal vital signs, namely blood pressure of more than 160/100 mmHg. From the response shown by the patient, the problem in the patient on June 1, 2023, the patient said that shortness of breath, tightness accompanied by dizziness, weakness, heart palpitations and weakness, vital signs of blood pressure 170/100 mmHg, pulse 88x/min, breathing 25x/min, temperature 36°C, given oxygenation 8x/min, problem

not resolved, further intervention of oxygenation, fowler position, collaboration in drug administration. The first day of treatment is often an adjustment period. Some conditions require time to respond to other medical therapies, such as medications or additional procedures, which may not be fully implemented (26).

On June 2, 2023, the patient said shortness, dizziness, weakness, heart palpitations, vital signs of blood pressure 165/100 mmHg, pulse 88x/min, respiration 23x/min, temperature 36°C, no further intervention of oxygen administration, fowler position, collaboration in drug administration. Some patients may need time to adjust to a new position. During the adaptation period, shortness of breath may still be felt until the body is fully adapted to the position (27). On June 3, 2023, after 3 days of treatment, Mr. U's condition showed partial improvement. His blood pressure was still elevated at 160/100 mmHg, but his dyspnea had resolved, and symptoms like dizziness and fatigue had decreased. The tightness was resolved, and in addition to the patient's activity said dizziness, and fatigue had decreased slightly, the patient had begun to be able to sleep >6 hours and on the patient's neck there was no venous distension, and overall the patient's skin color was normal. In addition, patients are also unable to tolerate activities. The intervention plan for the next phase includes discharge planning, with emphasis on home care and family support to manage his hypertension and cardiac health.

4 Conclusion

After providing nursing care to Mr. U with a medical diagnosis of hypertension at Iryou Houjin Aiwakai Hospital (Ikeda-en) on June 1-3, 2023, as well as discussing nursing management of the risk of decreased cardiac output, several important conclusions can be drawn. The assessment of Mr. U revealed symptoms including shortness of breath, dizziness, weakness, cough, and heart palpitations, with vital signs showing blood pressure of 170/100 mmHg, pulse 88x/min, respiration rate of 25x/min, and a temperature of 36.5°C. Based on these symptoms, the primary nursing problem identified was the risk of decreased cardiac output, primarily related to elevated blood pressure and vasoconstriction. The nursing interventions provided were formulated based on theoretical priorities and were adapted to the patient's specific conditions and needs, incorporating both independent and collaborative interventions. The implementation of nursing measures on Mr. U was carried out well as planned, but the evaluation results showed unsatisfactory development. Despite the reduction in shortness of breath, the patient's vital signs remained elevated after three days of treatment, with a blood pressure of 160/100 mmHg, pulse 88x/min, and respiration rate of 20x/min. Complaints of weakness persisted, indicating that the nursing interventions did not fully resolve the issue of decreased cardiac output.

Additionally, while the patient's SLKI (cardiac index) showed some improvement, it was not optimal, a critical gap identified during the evaluation process was the absence of an echocardiogram, which could have provided valuable insight into the underlying cardiac function. This highlights the importance of further diagnostic assessments, such as echocardiography, to comprehensively evaluate the patient's cardiac output and guide more precise interventions. This gap in diagnostic evaluation and the incomplete resolution of the decreased cardiac output risk underscores the need for continuous monitoring and follow-up interventions. Moving forward, it is essential to identify and address any underlying conditions more effectively, as well as to incorporate additional diagnostic tools into the nursing process to improve patient outcomes. The findings from this case suggest that future nursing interventions should include a more comprehensive assessment approach and

emphasize early detection and management to prevent long-term complications in hypertensive patients.

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