

## **THE EFFECTIVENESS OF DEEP BREATH RELAXATION TECHNIQUE TO OVERCOME PAIN IN HYPERTENSION CLIENTS**

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### **ABSTRACT**

Hypertension is a major non-communicable disease that often causes pain such as headache and neck stiffness, which can reduce quality of life. Non-pharmacological interventions are needed to support pain management safely. To determine the effectiveness of deep breathing relaxation techniques in reducing pain among hypertensive clients at Tedakoen Day Care, Okinawa, Japan. This study used a descriptive case study design with a nursing care approach. The subject was an 89-year-old hypertensive client experiencing moderate pain. Pain levels were measured using the Numeric Rating Scale (NRS) before and after the intervention. Deep breathing relaxation was performed twice daily for 3 days. After the intervention, the client showed a decrease in pain scale and improvement in comfort. Vital signs, especially blood pressure, also showed a tendency to decrease. Deep breathing relaxation is effective as a non-pharmacological intervention to reduce pain in hypertensive clients.

Keywords: deep breathing relaxation; hypertension; non-pharmacological therapy; pain

### **INTRODUCTION**

Hypertension is a condition where a person experiences an increase in blood pressure above normal which can result in the rate of pain (morbidity) and death rate (mortality). Hypertension means blood pressure in the blood vessels of the heart that pumps blood through the heart and body organs (Sufa, Christantyawati, & jusnita, 2017). Blood pressure that exceeds 120/80 mmHg indicates a hypertensive condition. This condition often causes changes in blood vessels, which actually worsens blood pressure. Therefore, early treatment is crucial to prevent complications that can damage vital organs such as the heart, kidneys, and brain (Wulandari. 2023). Hypertension is a risk factor that causes early death, as well as the occurrence of heart failure and brain disorders. WHO data in 2015 shows that around 1.13 billion people in the world have hypertension, which means 1 out of 3 people in the world are diagnosed with hypertension. This number will continue to increase every year, it is estimated that in 2025 there will be 1.5 billion people affected by hypertension, according to estimates there are 10.44 million people who will die from hypertension and its complications every year. Age, social and economic factors can be attacked by hypertension. With age, the risk of hypertension becomes greater, this is caused by structural changes in large blood vessels so that the lumen becomes narrow and the blood vessel walls becomes stiffer and systolic blood pressure increases (Teloambanua, 2025).

Nationally from the results of Riskesdas in 2018 in Indonesia shows that the prevalence of the population with high blood pressure is 34.11%. The prevalence of high blood pressure in women (36,85%) is higher than in men (31,34%). The prevalence in urban areas is slightly higher (34,43%) compared to rural areas (33,72%). Prevalence increases with age (Falo, Laudiana, Ayubbana, 2023). Headache symptoms in hypertensive patients can arise due to increased blood flow to the brain due to the heart pumping blood more strongly. This condition makes the pressure in the blood vessels of the brain increase, presses the nerves, and triggers headaches. This pain is often felt in the neck, nape, and head, and if left unattended it can disturb comfort and reduce the quality of life.

Pain management can be done with pharmacological treatment, such as analgesics (for example, ibuprofen or paracetamol) that can be given orally (Setiadiy, 2024). Nurman (2017) Headaches experienced by hypertensive patients appear because the heart pumps blood more strongly, so that the blood flow to the brain increases. This causes pressure on the blood vessels of the brain and nerves, which then triggers pain in the neck, nape, and head. If not treated, this condition can interfere with comfort and quality of life. The management of this headache can be done by consuming painkillers such as ibuprofen or paracetamol, as well as non-pharmacological therapy. Therapy for hypertension can be done by non-pharmacological methods. Non-pharmacologically, patients will be taught deep breathing relaxation techniques. This technique is useful for lowering stress levels and chronic pain because it allows patients to control the body's response to tension and anxiety. By doing deep breathing relaxation techniques, there is a decrease in oxygen consumption, metabolism, respiratory frequency, heart rate, muscle tension, and blood pressure (Anggraini, 2020)

Potter & Perry (2010) explained that passive progressive deep breathing relaxation therapy has many positive benefits for health, including reducing headaches due to hypertension. This technique is part of non-pharmacological stress management, which aims to modify lifestyle (Hamarno, 2010), citing (Schwickert, 2006), stating that progressive muscle relaxation, autogenic exercise, breathing, and visualization are effective relaxation techniques. In particular, deep breath relaxation techniques help calm and harmonize the body, as well as empower individuals to overcome disorders. This technique is done by taking a deep breath, holding it, and exhaling it slowly, which is also useful for increasing lung ventilation and oxygen levels in the blood.

Based on a preliminary study at Day Care Tedakoen Okinawa Japan, it was found that hypertensive clients who experienced the main complaint of neck pain disappeared so that it interfered with the comfort of daily activities. One of the clients, Mrs. Y, complaining of moderate-intensity neck pain that appears when blood pressure increases, shows that hypertension has an impact not only on the physiological condition but also the client's comfort. Pain management in hypertension clients can be done through non-pharmacological approaches that are safe for the elderly, such as music therapy, hypertension gymnastics, and deep breathing relaxation techniques. Deep breath relaxation technique is considered the most practical because it helps reduce sympathetic nerve activity, increases relaxation, and has the potential to lower blood pressure and pain intensity.

## **METHOD**

This research adopts a descriptive case study design with a focus on the nursing care approach. This method was chosen specifically because it was able to provide a deep and comprehensive picture of the implementation of non-pharmacological interventions in the form of deep breathing therapy in hypertensive patients. Through this approach, researchers can document in detail all aspects related to the client's condition, the stages of the intervention process carried out, and evaluate the results obtained thoroughly. Thus, this case study not only describes, but also analyzes in depth the effectiveness and process of the therapy given. The subject used is one of the 89-year-old clients who has a headache caused by hypertension at the Tedakoen Okinawa Japan day care by conducting an assessment on Mrs. Y with the main complaint of the patient saying that he suffered from hypertension since 2018 the client complained of pain.

## RESULT AND DISCUSSION

The patient has the identity of Mrs. Y gender female, 89 years old, address Naha. The client is in Day care with the main complaint of neck pain that appears to disappear especially when blood pressure increases. At the beginning of the assessment, the client complained of pain in the back neck area with moderate intensity. Pain is felt to disturb comfort and daily activities. Pain assessment is done using Numeric Rating Scale (NRS) with a range of 0–10. In the initial measurement before the intervention, the pain scale was in the medium category. In addition, the client appears tense in the neck muscles, often massages the nape area, and shows an uncomfortable expression. The intervention in the form of deep breathing relaxation techniques is given for three consecutive days, with a duration of ±10–15 minutes per session. The technique is done by inhaling slowly through the nose, holding for a moment, then exhaling slowly through the mouth. During the execution, the client is directed to be in a comfortable position and focus attention on the breathing pattern.

After the first day of the intervention, the client reported a decrease in pain intensity and felt more relaxed. On the second day, pain complaints decreased and the client stated that sleep was more comfortable. On the third day, the neck pain was almost not felt and the client was able to do activities without significant disturbance. Overall, there is a decrease in the pain scale after being given a deep breathing relaxation technique. In addition, the client looks calmer, the grimacing expression is reduced, and shows increased comfort. This result shows that the deep breathing relaxation technique has a positive impact on reducing pain in hypertensive clients.

Table 1.  
Respondent characteristics (n= 1.)

Respondent characteristics	F	%
Age	89 years	100%
Gender	Female	100%
Diagnosis	Hypertension	100%

## DISCUSSION

This chapter discusses the difference between theory and practice in the implementation of nursing care comprehensively, which includes the assessment stage, diagnosis formulation, intervention planning, implementation, and evaluation. The discussion focused on a case study of nursing care on a client with hypertension conducted at Day Care Tedakoen, Okinawa, Japan, in 2025. Through this discussion, it is hoped that nursing problems can be analyzed, resolved, and further steps can be found to implement effective and efficient nursing care.

According to the theory listed in SDKI DPP PPNI (2017), there are several nursing diagnoses that may appear in clients with hypertension, including the risk of ineffective cerebral perfusion associated with increased blood pressure, acute pain associated with cerebral and ischemic vascular pressure, and sleep pattern disorders associated with environmental barriers. The three diagnoses are in accordance with the client's condition handled by the writer in the field. The diagnosis of ineffective cerebral perfusion is determined because in hypertensive clients there is a persistent increase in blood pressure that can interfere with blood flow and oxygen supply to the brain tissue. Hypertension causes changes in blood vessels in the form of vasoconstriction and a decrease in blood vessel elasticity which has an impact on the decrease in cerebral perfusion and increases the risk of neurological disorders if not treated immediately. Aderate cerebral perfusion is needed to

maintain metabolic function and neurological activity of the brain. In a state of high and uncontrolled blood pressure, the autoregulation mechanism of cerebral blood flow can be disrupted so that the brain is unable to maintain a stable blood flow. As a result, the supply of oxygen and nutrients to the brain tissue becomes not optimal and increases the risk of cerebral ischemia (Puspa, 2020).

Hartono (2020) stated that this diagnosis is a priority because it is directly related to the vital function of the brain and the safety of the client, and can develop into serious complications such as decreased consciousness and stroke. The diagnosis of acute pain was also established because the client complained of a headache in the back (neak) that disappeared and weighed for two days, accompanied by a grimacing and nervous expression. Acute pain is an unpleasant sensory and emotional experience due to tissue damage or potential tissue damage. This pain usually appears quickly and lasts less than six months. This diagnosis is a priority because unhandled pain will interfere with the client's daily activities, reduce comfort, and slow down the recovery process (Khotimah et al., 2024). The diagnosis of sleep pattern disorder is determined because the client reports difficulty in starting sleep, often waking up at night, and reduced sleep duration due to uncondusive lighting. The client also looks sleepy during the day and complains of not sleeping well. Sleep pattern disorder is a condition of changing the quality, quantity, and continuity of sleep that can affect physical and psychological functions. Environmental factors such as light, room temperature, and care activities at night can hinder the sleep process and increase the body's stress response (Nurhikmawati et al., 2024; SDKI, 2017).

After the assessment and diagnosis, the next step is to compile and implement nursing interventions that are tailored to the client's condition and institutional policies. Not all nursing plans are raised, but focused on the main problems experienced by the client. In the diagnosis of the risk of ineffective cerebral perfusion, the intervention carried out is the comprehensive monitoring of vital signs, including blood pressure, pulse, breathing, body temperature, pulse oxymetry, and pulse pressure. In addition, documentation of monitoring results and education is carried out to clients regarding the objectives and results of monitoring. In the diagnosis of acute pain, the intervention carried out is pain management through the assessment of pain characteristics, nonverbal response monitoring, and the provision of non-pharmacological techniques in the form of autogenic relaxation and environmental control. Education about the causes and strategies to reduce pain is also provided, as well as collaboration with the medical team for the administration of analgesics if necessary. In the diagnosis of sleep disorder, intervention in the form of sleep support is carried out by modifying the environment, setting a sleep schedule, reducing stress before bed, and providing education about healthy sleep habits.

Deep breathing relaxation is used as a non-pharmacological intervention in clients with moderate-scale neck pain because this technique focuses on regulating breathing patterns to reduce muscle tension and increase comfort (Potter & Perry, 2019). This technique is done in a sitting position or semifowler for optimal lung expansion (Kozier et al., 2018). The implementation is done by inhaling slowly through the nose, holding for a few seconds, and exhaling slowly through the mouth (Benson & Proctor, 2010). Exercises are done for 10-15 minutes, twice a day, for several days to obtain the maximum relaxation effect (American Pain Society, 2020; Yau & Loke, 2021). The evaluation results showed a decrease in the pain scale from 4 to 3–2 after repeated exercises. On the third day, the pain decreased to a scale of 1 and only appeared during certain activities. This change shows a decrease in neck muscle tension and increased relaxation (Prasetyo et al., 2020).

In addition, the client looks more relaxed, breathing is more regular, and does not experience side effects. Based on these results, deep breathing relaxation is considered effective in reducing the intensity of neck pain and increasing the comfort of hypertensive clients.

## CONCLUSION

The results of the case study showed that the application of deep breathing relaxation techniques in hypertensive clients at Day Care Tedakoen for three days had an effective impact on reducing blood pressure and pain. The client's initial blood pressure on the first day was 170/100 mmHg, then after a routine intervention for three days, the blood pressure decreased to 140/80 mmHg on the third day. These results show that deep breathing relaxation techniques contribute to controlling the client's physiological response and increasing comfort. The assessment was conducted on April 1, 2025 at 08.00, and the main complaints were found in the form of headache and dizziness in the neck. Based on data analysis, three nursing diagnoses were established, namely ineffective cerebral perfusion, acute pain, and sleep pattern disorders.

The diagnosis of ineffective cerebral perfusion was confirmed because the client's blood pressure was high (170/100 mmHg) and dizziness complaints that interfered with activity. The diagnosis of acute pain was confirmed because the client complained of heavy neck pain, disappeared, accompanied by a grimacing and restless expression. The diagnosis of sleep disorder was confirmed because the client complained of difficulty in starting sleep and visible dark circles under the eyes.

Nursing interventions are focused on monitoring vital signs, pain management, providing deep breathing relaxation techniques, and sleep support. Implementation includes pain assessment, blood pressure measurement, pulse, breathing, teaching deep breathing relaxation techniques, as well as advice to increase rest time. The evaluation showed a gradual decrease in the scale of pain and blood pressure, namely from NRS 5 and TD 170/100 mmHg on the first day, to NRS 3 and TD 160/80 mmHg on the second day, and NRS 2 and TD 140/80 mmHg on the third day. Thus, deep breathing relaxation techniques are proven to be effective in reducing pain and helping to control blood pressure in hypertensive clients.

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