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Health education on a low-salt diet to reduce high blood pressure in patients with hypertension

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Abstract
Hypertension, or high blood pressure, is an increase in blood pressure in the arteries. The term "hyper" means excessive, and "tension" refers to pressure, so hypertension is a disorder of the circulatory system that causes blood pressure to rise above normal levels. Specifically, hypertension is characterized by blood pressure readings above the optimal limits of 120 mmHg for systolic and 80 mmHg for diastolic. This condition can trigger serious health issues such as stroke, heart failure, and is a leading cause of chronic kidney failure. Hypertension, often referred to as a cardiovascular disease, is commonly known as the "silent killer" because it typically presents no symptoms, leading individuals to unknowingly experience complications in vital organs. Diet plays a crucial role in managing hypertension. Adhering to a proper diet is essential for those suffering from this condition. Patients with hypertension should consistently follow a hypertension-friendly diet to prevent further complications, regardless of the presence or absence of symptoms. This adherence is vital to ensure that their blood pressure remains stable, helping them avoid hypertensive crises and related complications. One effective dietary approach to reduce hypertension is adopting a low-salt diet. Implementing a low-salt diet can significantly help lower blood pressure. Research by Niga et al. (2023) supports this, concluding that a low-salt diet effectively reduces blood pressure in hypertensive patients after a 14-day intervention. The study found that participants experienced a decrease in blood pressure from an initial assessment of 159/99 mmHg to 142/83 mmHg by following a type III low-salt diet, which involved adding only one teaspoon of salt to their daily meals. In conclusion, implementing a low-salt diet is an effective strategy for helping to lower blood pressure in individuals with hypertension.

Keywords: Hypertension; community nursing; adult nursing; prevention; health education

Introduction
Chronic disease is a health condition characterized by symptoms that persist for more than three months, with a generally slow recovery process (Hacker, 2024). Chronic diseases take a long time to heal and tend to be more complex and persistent, significantly affecting the quality of life for patients who may experience a decline in well-being due to the prolonged nature of their conditions (Thomas et al., 2023). According to World Health Organization (WHO) data from 2021, approximately 1.2 billion people worldwide have hypertension, meaning that 1 in 2 individuals is diagnosed with this condition (NCD Risk Factor Collaboration (NCD-RisC), 2021). The prevalence of hypertension continues to rise annually, with estimates suggesting that by 2035, 1.5 billion people will be affected (Mills, Stefanescu, & He, 2020). Furthermore, it is estimated that 9.4 million people die each year from hypertension and its complications. In Central Java, the prevalence of hypertension reached 37.57%. Notably, the prevalence is higher in women at 40.17% compared to men at 34.83%. Urban areas show a prevalence of 38.11%, slightly higher than the 37.01% in rural areas. The Central Java Health Profile for 2021 indicates that Semarang City has the highest number of hypertension cases, totaling 67.101, with a prevalence rate of 19.56%. Semarang City also ranks first for hypertension incidence among the productive age group, with 510 reported cases. The number of hypertension cases in Semarang City has been increasing each year (Casmuti & Fibriana, 2023).

Hypertension is prevalent among various age groups, with 31.6% in the 31-44 age range, 45.3% in the 45-54 age range, and 55.2% in the 55-64 age range. Of those diagnosed with hypertension, 8.8% are aware of their condition, while 13.3% do not take medication, and 32.3% do not adhere to their prescribed treatment (Astutik, Puspikawati, Dewi, Mandagi, & Sebayang, 2020). The risk factor of hypertension includes not consuming enough vegetables and fruits, lacking physical activity, being smokers, having central obesity, and being generally obese (Pilakkadavath & Shaffi, 2016). Diet is a crucial factor in managing hypertension. Adherence to a proper diet is essential for individuals with hypertension to prevent further complications (Ozemek, Laddu, Arena, & Lavie, 2018). Patients must consistently follow a hypertensive diet, regardless of the presence or absence of symptoms. This adherence is vital to maintain stable blood pressure and avoid hypertension-related complications (Bazzano, Green, Harrison, & Reynolds, 2013).

The foods consumed can directly or indirectly affect blood pressure stability. Nutrients such as fat and sodium are closely related to the onset of hypertension. A regular diet can help normalize hypertension by reducing salt intake, limiting fatty foods, increasing fiber consumption, and engaging in physical activity.

Hypertension-related health problems can arise from various factors, one of which is an unhealthy diet. Many individuals today prefer foods that are low in fiber, high in fat, high in sugar, and high in salt or sodium, all of which can trigger hypertension. Changing the attitudes of hypertensive patients toward healthier habits is a critical component of health programs. One effective strategy is to provide education on dietary management to control high blood pressure through a low-salt diet (Suckling & Swift, 2015). This approach is a natural method for managing hypertension without serious side effects. Reducing salt intake, increasing fiber consumption, avoiding harmful habits such as smoking and excessive coffee consumption, utilizing vegetables and spices, and adhering to medication regimens can significantly help lower blood pressure (Grillo, Salvi, Coruzzi, Salvi, & Parati, 2019). One effective method to reduce hypertension is to maintain a low-salt diet. This effort aims to assist individuals with high blood pressure. Research supports this, concluding that a low-salt diet effectively lowers blood pressure in patients with hypertension (Gupta et al., 2023). Health education on a low-salt diet is crucial for patients with hypertension, as it empowers them to make informed dietary choices that can significantly impact their blood pressure management. Understanding the relationship between sodium intake and hypertension can learn how excessive salt consumption contributes to elevated blood pressure and associated health risks. Educational programs provide patients with practical strategies for reducing salt in their diets, such as reading food labels, choosing fresh or minimally processed foods, and using herbs and spices for flavor instead of salt. Furthermore, health education fosters awareness of the importance of adhering to dietary recommendations consistently, regardless of symptom presence, to maintain stable blood pressure levels and prevent complications. Ultimately, effective health education not only enhances patients' knowledge and skills but also promotes a proactive approach to managing their condition, leading to improved health outcomes and a better quality of life. Therefore, the study aimed to provide health education along with practical guidance on following a low-salt diet for patients with hypertension in the community.

Case Description

The assessment was conducted on July 16, 2024, through interviews, direct observation, and physical examinations. The results indicated that the client, Mrs. R, is a 52-year-old female with hypertension. She reported experiencing headaches for the past three days, which she described as persistent and worsening during times of stress or excessive activity. The client expressed anxiety about her condition and mentioned that she has a history of hypertension for the past two years. She also stated that no family members have a history of hypertension. Upon assessment, her blood pressure was recorded at 159/99 mmHg, with a normal palpable pulse, although she appeared weak. Mrs. R indicated that she occasionally takes over-the-counter headache medication to alleviate her pain. She reported consuming salty foods almost every day, frequently eating fried foods, rarely eating fruits and vegetables, and exercising infrequently. She maintains a regular eating schedule of three meals a day and only seeks treatment at the Health Center when she feels unwell. The implementation of interventions to address the risk of cerebral perfusion was carried out over five days, with five interventions administered to Mrs. R. On July 16, 2024, the low-salt diet was introduced. However, Mrs. R expressed difficulty managing her diet. Her activities are limited to home, and she reported continued dizziness, a heavy feeling in her neck, a cold sensation in her heart, decreased skin turgor, pale skin, and a normal pulse upon vital sign assessment. The vital signs recorded were: blood pressure 159/99 mmHg, heart rate 85 beats per minute, temperature 36.5ºC, and respiratory rate 20 breaths per minute. Mrs. R is classified as having mild hypertension and is prescribed a low-salt diet (Diet III), which allows for a maximum of one teaspoon of salt per day in her meals. For her meal plan, Mrs. R prepared stir-fried mustard greens with one teaspoon of salt for breakfast. She continued to consume the same dishes for lunch, while her afternoon menu included spinach stew without any added salt. Blood pressure measurements taken in the afternoon showed a reading of 157/95 mmHg.

Discussion

The assessment of the patient focuses on her condition and vital signs. The researcher needs to evaluate the client's comfort, mobility, nutrition, and energy levels. Based on the case management results for hypertension, Mrs. R, a 52-year-old Muslim patient, presented with a blood pressure reading of 159/99 mmHg and was diagnosed with hypertension. In the nursing assessment for hypertension, the primary focus is on the risk of ineffective cerebral perfusion, as indicated by her high blood pressure. According to research, hypertension is commonly found in individuals aged 50 and above (Oliveros et al., 2020). Blood pressure tends to increase with age due to factors such as the narrowing of blood vessels and the loss of tissue elasticity, which heightens the risk of hypertension as individuals grow older. To prevent the risk of ineffective cerebral perfusion, one effective non-pharmacological intervention for hypertensive patients is the management of a low-salt diet. This approach is recognized as an alternative non-pharmacological treatment. Sodium intake is a significant determinant of blood pressure. Studies indicate that reducing sodium intake over a two-week period can effectively lower blood pressure in adults with pre-hypertension or hypertension (Graudal, Hubeck-Graudal, & Jurgens, 2020; Aronow, 2017). These findings support the role of dietary

sodium reduction as a lifestyle intervention for managing blood pressure. In the study by Cashman et al. (2019), participants were provided with a list of foods containing common salt (both salty and naturally salty) at the beginning of the salt restriction period. They were instructed to limit their consumption of these foods as much as possible. In our study, after implementing the low-salt diet for five days, with a daily allowance of one teaspoon of salt, there was a significant decrease in Mrs. R's blood pressure. On the first day of the intervention, her blood pressure was recorded at 159/99 mmHg, which decreased to 142/83 mmHg following the dietary changes.

Nurses play a pivotal role in providing health education to patients with hypertension, particularly in promoting a low-salt diet as a cornerstone of effective blood pressure management. Through patient-centered communication, nurses assess the individual's dietary habits, cultural preferences, and readiness for lifestyle changes (Himmelfarb, Commodore-Mensah, & Hill, 2016). They educate patients on the relationship between excessive salt intake and hypertension, highlighting how reducing sodium consumption can prevent complications like stroke or heart disease. Nurses also empower patients by providing practical strategies, such as reading food labels, cooking with herbs instead of salt, and avoiding processed foods. In addition, they support ongoing adherence by offering counseling, monitoring progress, and addressing challenges, ensuring that patients and their families understand the importance of dietary modifications in achieving long-term health goals (Stephen et al., 2022). This holistic approach not only enhances patients' self-management but also contributes to better outcomes in hypertension control. One of the primary barriers is the lack of awareness or understanding among patients about the health risks of excessive salt intake and its link to hypertension. Cultural dietary habits, where salt-rich foods are a staple, can also make it challenging for patients to accept and adhere to dietary changes. Additionally, socioeconomic factors, such as limited access to healthier food options or the cost of fresh, low-sodium alternatives, can hinder compliance (Miao, Wang, & Liu, 2020). Misconceptions, such as the belief that cutting salt entirely diminishes food flavor or enjoyment, further complicate efforts. To address these barriers, nurses can use culturally sensitive and tailored educational approaches that align with patients' lifestyles and preferences. For instance, they can introduce simple, affordable recipes that use herbs and spices to enhance flavor without salt. Visual aids, cooking demonstrations, and community workshops can help bridge knowledge gaps and make learning more interactive and relatable. Moreover, providing practical strategies, like teaching label reading and highlighting budget-friendly low-sodium food choices, empowers patients to make informed decisions.

Another solution involves fostering a supportive environment through collaboration with family members and caregivers, as they often influence dietary habits at home. Nurses can also advocate for community-wide initiatives, such as increasing the availability of low-sodium food options in local markets or raising public awareness about hypertension and sodium intake. Follow-up and reinforcement through routine check-ups, mobile health tools, or group education sessions ensure that patients remain motivated and committed to their dietary goals. Addressing barriers holistically can enhance the effectiveness of health education and promote sustainable lifestyle changes.

Conclusion

Health education on a low-salt diet is a crucial intervention in managing hypertension and reducing the risk of associated complications such as cardiovascular disease. By empowering patients with knowledge and practical strategies, nurses can facilitate sustainable dietary changes that contribute to better blood pressure control and overall health outcomes. Despite the effectiveness of such education, challenges such as cultural dietary habits, socioeconomic barriers, and patient misconceptions persist, underscoring the need for tailored, patient-centered approaches. Future research should explore innovative and scalable methods for delivering low-salt diet education, such as leveraging digital health technologies, mobile applications, and telehealth platforms. Additionally, studies focusing on the impact of culturally adapted interventions and community-based support systems can provide valuable insights for improving patient adherence. Evaluating the long-term outcomes of health education programs on hypertension control and quality of life will further guide best practices in this critical area of care.

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