

# The effect of nutrition education based on DASH diet on dietary knowledge among patients with hypertension

*By Clarisa Devi Larasati*

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## The effect of nutrition education based on DASH diet on dietary knowledge among patients with hypertension

Clarisa Devi Larasati, Vinami Yulian\*

Fakultas Ilmu Kesehatan, Universitas Muhammadiyah Surakarta  
Corresponding author: \*E-mail: [j230225164@student.ums.ac.id](mailto:j230225164@student.ums.ac.id)

### Abstract

**Introduction:** Hypertension is a non-communicable disease with a relatively high prevalence and numerous complications that threaten sufferers. The primary cause of hypertension is the lack of knowledge among patients, leading to uncontrolled consumption of foods high in saturated fats and sodium. Therefore, education on hypertension diet control, such as the DASH diet, is necessary. Increasing knowledge is important because the higher the knowledge, the greater the motivation of hypertension patients to take care of their health.

**Purpose:** To know the effectiveness of nutrition education based on DASH diet on dietary knowledge among patients with hypertension.

**Method:** A one-group quasi-experimental pretest-posttest study. The population consisted of 10 individuals with hypertension in Ngrombo Village. The intervention was in the form of DASH diet education program covering 5 variables according to the Indonesian Nursing Outcome Standards. A questionnaire consisting of 25 statements with responses marked in the "yes" or "no" checkboxes was used with a total possible score of 0 to 25 points. The intervention was conducted for 45 minutes. Data were collected before and after the intervention as pre-test and post-test data. The Wilcoxon Signed Rank test was then employed to analyze the collected data.

**Results:** There is an effect of DASH diet education on the knowledge level of the hypertension diet in hypertension patients, with the Wilcoxon Signed Rank test showing an Asymp.Sig value of  $< 0.05$ .

**Conclusion:** The DASH diet intervention in nursing interventions can significantly increase knowledge about the DASH diet for hypertension patients. Health education on the DASH diet is an intervention that can improve knowledge.

**Keywords:** DASH Diet; Hypertension; Level of Knowledge; Nutrition Education; Patients.

### INTRODUCTION

Hypertension is a condition where blood pressure is at 140/90 mmHg or higher in two or more measurements (Khasanah, 2022). A person is considered to have hypertension if the diagnosis is obtained during treatment or in two or more outpatient visits and has a history of antihypertensive medication prescriptions for more than 1 month in the previous year (Yoon, You, Oh, Lee, Lee, Kang, & Park, 2022). The World Health Organization (WHO) estimates that the global prevalence of hypertension is currently 22% of the total population, with

Southeast Asia ranking third highest with a prevalence of 25% (Maulidah, 2022). Currently, the prevalence rate of hypertension among Indonesians aged 18 and over increased from 25.8% to 34.1% (658,201 people) in 2018 (Ministry of Health of the Republic of Indonesia, 2019). This increase is closely related to a decline in satisfaction with the quality of life among those with hypertension (Axon, Turner, & Buckley, 2015). In Central Java, 37.57% of the population aged 18 and over has hypertension (Ministry of Health of the Republic of Indonesia,

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2019). Specifically in Sukoharjo Regency, blood pressure measurements for residents aged 18 and over show that 26,789 (6.14%) out of 436,621 (61.94%) suffer from hypertension (Central Bureau of Statistics of Sukoharjo Regency, 2021). Uncontrolled hypertension can lead to various complications such as heart disease (myocardial infarction, coronary heart disease, and heart failure), stroke, encephalopathy, and chronic kidney failure. These complications can significantly impact the psychological well-being of patients due to their low quality of life, especially in cases of stroke, kidney failure, and heart failure (Nuraini, 2015).

Adherence to a healthy diet is an integral part of clinical guidelines for the prevention and control of hypertension, requiring a comprehensive approach and understanding of the relationship between diet and hypertension (Zoltani, Arablou, Jayedi, & Salehi-Abarouguei, 2020). The DASH diet, established by the National Heart, Lung, and Blood Institute (NHLBI), provides basic recommendations for a balanced healthy diet, including vegetables, fruits, whole grains, fish, poultry, nuts, and healthy oils. The DASH diet also recommends sodium intake of 2,300 mg/day or 1,500 mg/day for high-risk individuals (e.g., those with hypertension or type 2 diabetes). This diet emphasizes consuming foods rich in potassium, calcium, magnesium, protein, and fiber (Alnooh, Alessa, Hawley, & de Witte, 2022).

Educational interventions can significantly increase knowledge about the DASH diet and motivate hypertensive patients to improve their eating habits and prevent hypertension complications (Suprayitna, Fatmawati, & Prihatin, 2023). One focus of health education for hypertensive patients is modifying their diet to control blood pressure. Proper dietary management for hypertensive patients can be achieved by incorporating the DASH diet approach into their eating habits, which includes limiting salt, fats, and increasing fiber intake.

Hypertension is a non-communicable disease requiring special attention and long-term care, necessitating measures to prevent it from worsening or causing complications. Increasing knowledge about the DASH diet is crucial in optimizing

hypertension prevention to prevent its worsening or the emergence of complications, as it can affect the psychological condition and motivation of hypertensive patients to maintain healthy eating habits and avoid foods that can raise blood pressure (Suprayitna, Fatmawati, & Prihatin, 2023). Regulating the diet by consuming vegetables and fruits can control blood pressure (Madsen, Sen, & Aune, 2023). Using the DASH diet principles to manage eating habits can prevent and control hypertension and prevent other hypertension-related diseases like heart failure, kidney failure, and stroke (Filippou, Thomopoulos, Kouremeti, Sotiropoulou, Nihoyannopoulos, Tousoulis, & Tsioufis, 2021; Wickman, Enkhmaa, Ridberg, Romero, Cadeiras, Meyers, & Steinberg, 2021).

## RESEARCH METHOD

This was a one-group, quasi-experimental pretest-posttest study. The study population consisted of 10 individuals with hypertension in Ngrombo Village.

The intervention, in the form of DASH diet education, was conducted by a professional nurse for the participants, covering 5 variables according to the Indonesian Nursing Outcome Standards: interest in learning, ability to explain knowledge on a topic, ability to describe experiences relevant to the topic, appropriateness of questions concerning encountered problems, and incorrect perceptions about a problem.

Data collection was conducted using a questionnaire consisting of 25 statements, with responses marked in the "yes" or "no" checkboxes. A "yes" response equals 1 point, while a "no" response equals 0 points, resulting in a total possible score of 0 to 25 points per questionnaire.

The education and questionnaire completion were conducted for 45 minutes. Data were collected before the intervention as pre-test data and after the intervention as post-test data. The data were analyzed using the Wilcoxon Signed Rank test to determine the effect of DASH diet education on the knowledge level of a healthy diet in hypertension patients.

Clarisa Devi Larasati, Vinami Yulian\*

3  
kultas Ilmu Kesehatan, Universitas Muhammadiyah Surakarta  
Corresponding author: \*E-mail: j230225164@student.ums.ac.id

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1 RESEARCH RESULTS

Table 1. The Characteristics of Participants (N=10)

Variable	Results
<b>Age (n/%)</b> (Mean±SD)(Range)(Year)	(52.60±5.873)(40-60)
40 – 50 years old	3/30.0
51 – 60 years old	7/70.0
<b>Gender (n/%)</b>	
Male	4/40.0
Female	6/60.0
<b>Education Level (n/%)</b>	
Uneducated	1/10.0
Elementary school	4/40.0
Junior high school	3/30.0
Senior high school	2/20.0
<b>Income (n/%)</b>	
≤Rp 2.215.482	6/60.0
>Rp 2.215.482	4/40.0

Table 1 indicates that the average age of participants is 52.60, with a standard deviation of 5.873, ranging from 40 to 60 years. The majority of participants, 70.0%, fall within the 51-60 age range. The gender distribution shows a higher proportion of females at 60.0%, compared to males at 40.0%. Most participants have an education level of primary school (40.0%), followed by junior high school (30.0%). Regarding income, based on the regional minimum wage, 60.0% of participants earn ≤Rp 2,215,482, while 40.0% earn more than Rp 2,215,482.

Table 2. The effectiveness of nutrition education based on DASH diet on dietary knowledge

Variable	Value*	
	Asymp. Sig. (2-tailed)	Z
Interest in learning	0.002	-3,162 b
Ability to explain knowledge about a topic	0.004	-2,889 b
The ability to explain experiences relevant to the topic	0.003	-2,972 b
Appropriate questions with problems encountered	0.002	-3,162 b
Wrong perception about a problem	0.003	-2,970 b

\*Wilcoxon Signed Rank

Statistical analysis using the Wilcoxon Signed Rank test in table 2 revealed a significant difference (p-value < 0.05) in scores on the Indonesian Nursing Outcome Standards between pre-test and post-test, suggesting an improvement in participants' knowledge about the DASH diet.

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3 kultas Ilmu Kesehatan, Universitas Muhammadiyah Surakarta  
Corresponding author: \*E-mail: j230225164@student.ums.ac.id

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## DISCUSSION

Based on nursing care with an evidence-based nursing approach, the results obtained indicate that there is an effect of DASH diet education on the level of knowledge about the hypertension diet in hypertension patients. The expected result of health promotion or education is health behavior or behavior to maintain and improve health that is conducive to the target of health promotion (Nur Atmodjo, 2012).

There is an effect of providing health education about the DASH diet on the knowledge level of hypertension patients (Lubis, 2019). Additionally, the impact of education about the DASH diet also affects the awareness score of the dangers of hypertension (Nopriani, Wiryansyah, & Apriani, 2023).

Hypertension tends to require relatively long-term care and carries the risk of complications. If hypertension is not treated for a long period, it will cause damage to blood vessels throughout the body, complications such as stroke, diabetic retinopathy, kidney damage, kidney failure, and coronary heart disease. This is what causes hypertension patients to worry about their condition (Laka, Widodo, & Rahayu, 2018).

Most participants had not received health education about DASH diet knowledge. The knowledge of hypertension patients about the DASH diet before education was poor, and after the DASH diet education, the participants' knowledge increased. This proves the effect of the intervention regarding DASH diet education for hypertension patients. There is an effect of health education on adherence to the hypertension diet (Devi & Putri, 2021).

Education has also been shown to have a positive impact on controlling blood pressure in hypertension patients. The DASH diet has proven effective for controlling blood pressure in hypertension patients, both adults and the elderly, because the DASH diet uses the principle of low sodium, high fiber, calcium, potassium, magnesium, fiber, and limits saturated fat and cholesterol (Rachmawati, Sintowati, Lestari, & Agustina, 2021).

With increased knowledge in hypertension patients, diet adherence can be improved. The increase in knowledge also coincides with the synchronization process of the experiences encountered, especially in the application of the diet

and the obstacles and comfort it brings (Hikmawati, Marasabessy, & Pelu, 2022). Repeated discussions and refreshers on the DASH diet enhance understanding while providing a forum for exchanging experiences in applying the DASH diet according to each patient's capabilities.

## CONCLUSION

The DASH diet intervention in nursing interventions can significantly increase knowledge about the DASH diet for hypertension patients. Health education on the DASH diet is an intervention that can improve knowledge.

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Fakultas Ilmu Kesehatan, Universitas Muhammadiyah Surakarta  
Corresponding author: \*E-mail: j230225164@student.ums.ac.id

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Fakultas Ilmu Kesehatan, Universitas Muhammadiyah Surakarta  
Corresponding author: \*E-mail: j230225164@student.ums.ac.id

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