Dash vs Medditeranean Diet: A Comparative Analysis of Blood Pressure Reduction in Hypertension

Dimas Agung Prihanggara[1] , Aristanto Prambudi[1] , Laurentius Johan Ardian[1]

[1] Faculty of Medicine, Universitas Pembangunan Nasional Veteran Jawa Timur

Corresponding Author

Dimas Agung Prihanggara

Faculty of Medicine, Universitas Pembangunan Nasional Veteran Jawa Timur

Jalan Rungkut Madya No. 191, Rungkut Kidul, Rungkut Subdistrict, Surabaya, East Java 60293

Tel/Fax: +6285156331008

E-mail: 23091010017@student.upnjatim.ac.id

ABSTRACT

Hypertension is a major global public health problem, and non-pharmacological management through dietary intervention is a key strategy. The DASH diet and the Mediterranean diet are both frequently recommended, but direct comparison of their superiority requires further analysis. This literature review critically compares evidence from five major studies examining the effectiveness of both diets in various clinical contexts. The synthesis shows heterogeneous findings. High-quality randomized controlled trials indicate that the Mediterranean diet combined with salt restriction achieves greater blood pressure reduction than the DASH diet. However, cross-sectional studies among patients already on antihypertensive medication found no significant association for either diet, suggesting a possible pharmacological ceiling effect. Confounding variables such as study population (adults vs. adolescents) and study design (RCT vs. observational) play an important role in interpreting results. In conclusion, both diets effectively lower blood pressure, but the Mediterranean diet shows superiority in specific clinical contexts, particularly when combined with sodium restriction. The Mediterranean diet may also offer more holistic cardiovascular benefits. Optimal dietary choice should be tailored to the patient's clinical profile, therapeutic goals, and overall management context.

Keyword : Hypertension; DASH diet; mediterranean diet; blood pressure; blood ressure reduction

Introduction

Hypertension, or high blood pressure, is a noncommunicable disease (NCD) whose prevalence continues to increase globally. This condition is often referred to as a "silent killer" because it often does not show clear symptoms until serious complications arise.[1] Hypertension is defined as consistently high systolic blood pressure above 140 mmHg and/or diastolic blood pressure above 90 mmHg[1]. Hypertension is a major risk factor for various life-threatening degenerative diseases,

including coronary heart disease, heart failure, stroke, and kidney failure[1]. Data from the World Health Organization (WHO) shows that approximately 1.13 billion individuals worldwide have hypertension, and this number is estimated to continue to increase to 1.5 billion people by 2025[1]. In Indonesia, hypertension is also a major health challenge, with 2018 Riskesdas data showing a prevalence of 34.1% in the adult population, placing South Kalimantan as the province with the highest prevalence (44.1%)[2].

Comprehensive management of hypertension involves two main approaches: pharmacological and non-pharmacological[1]. Although pharmacological therapy with antihypertensive drugs is effective in controlling blood pressure, lifestyle interventions remain the mainstay of prevention and treatment[3]. Lifestyle modifications, particularly dietary changes, are recommended as first-line interventions for controlling hypertension[4]. The two most prominent dietary patterns supported by strong scientific evidence are the Dietary Approaches to Stop Hypertension (DASH) diet and the Mediterranean diet.

The DASH diet is a diet specifically designed by the National Institutes of Health (NIH) with the main goal of lowering blood pressure[5]. This diet emphasizes high consumption of fruits, vegetables, whole grains, low-fat dairy products, and lean proteins such as poultry, fish, and nuts. Conversely, the DASH diet restricts sodium intake, red meat, sugary drinks, and foods high in saturated fat and cholesterol[6]. The mechanism of action of the DASH diet is multifactorial. In addition to its obvious sodium restriction, this diet is inherently rich in important minerals such as potassium, calcium, and magnesium, all of which play a crucial role in blood pressure regulation and vascular health[5]. This combination of nutrients works synergistically to produce a significant antihypertensive effect.

On the other hand, the Mediterranean diet is a diet inspired by the traditional eating habits of people in countries bordering the Mediterranean Sea, such as Greece and Italy[3]. This diet is characterized by high consumption of fruits, vegetables, nuts, and whole grains, with olive oil as the main source of fat. Moderate intake of fish and poultry is encouraged, while consumption of red and processed meat is severely restricted[6]. Although also proven effective in lowering blood pressure, the Mediterranean diet has historically been studied more for its broader cardiovascular benefits. Numerous studies have linked adherence to the Mediterranean diet with improved lipid profiles, better glycemic control, and, most importantly, reduced mortality from all causes[7]. These holistic benefits are thought to stem from the diet's high content of monounsaturated fats, antioxidants, and anti-inflammatory compounds.

Although both diets are consistently recommended in various clinical guidelines, direct (head-to-head) comparisons of their effectiveness in the literature are still limited, especially in diverse clinical contexts such as untreated patients versus those already receiving pharmacological therapy. Therefore, the purpose of this article is to conduct a literature review to comprehensively compare the effectiveness of the DASH Diet and the Mediterranean Diet in lowering blood pressure in

hypertensive patients, based on the latest scientific evidence available.

Material and Methods

This study used a literature review method. The search was conducted through PubMed, Scopus, and Google Scholar using the keywords "DASH Diet," "Mediterranean Diet," "Hypertension," and "Blood Pressure Reduction." A total of 50 articles were found in the initial search. The authors then selected articles based on the following inclusion criteria: (1) articles published between 2020 and 2025, (2) available in full text, (3) clinical trials or observational studies, and (4) comparing or discussing the effects of the two diets. Exclusion criteria included opinion articles, newspaper articles, and animal studies. Based on this selection, five main articles were analyzed in this review.

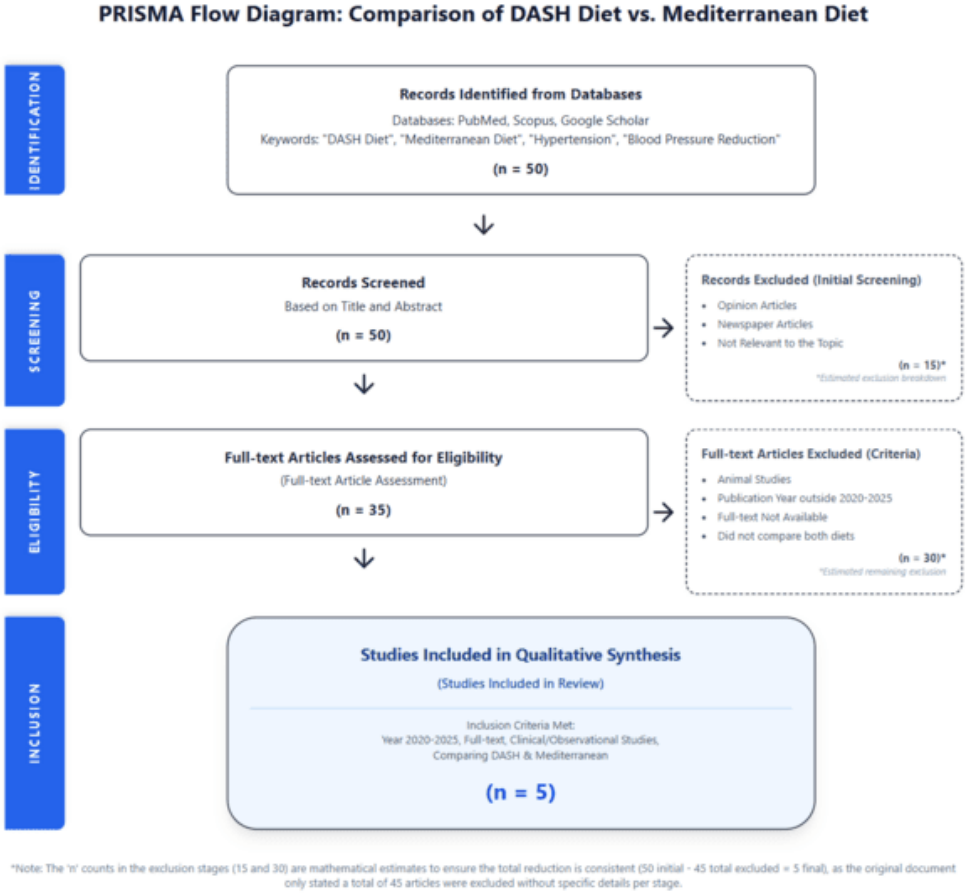

Figure 1. Prima Flow Diagram

Discussion

A comparative analysis between the DASH Diet and the Mediterranean Diet reveals a complex and nuanced evidence landscape. Although both diets consistently show benefits in hypertension management, their relative effectiveness may vary depending on study design, target population, and accompanying interventions such as salt restriction. To facilitate understanding, key findings from the main studies underlying this analysis are summarized in the following table.

Table 1. Literature Review of Key Studies Comparing the DASH and Mediterranean Diets in Blood Pressure Reduction

Author & Year	Study Title	Research Method	Subject Population	Key Findings Related to Blood Pressure
Wang, Liu, & Lee (2022) (8)	Associations of Adherence to the DASH Diet and the Mediterranean Diet With All-Cause Mortality in Subjects With Various Glucose Regulation States	Cross-sectional study with NHANES data analysis (1999–2010). Adherence was assessed using the DASH and aMED (alternative Mediterranean Diet Index).	28,905 adult participants (age >18 years) from NHANES.	Mediterranean Diet (aMED > median) was associated with a lower overall risk of death , while the DASH diet did not.
Filippou et al. (2024) (7)	Effect of DASH vs. Mediterranean diet accompanied by salt restriction on metabolic syndrome and cardiometabolic risk factors in adults with high normal blood pressure or grade 1 hypertension: secondary- al analyses of a randomized controlled trial	Randomized Controlled Trial (RCT), single-center, single-blinded, with 4 parallel groups for 3 months. Comparing the Control group, Salt Restriction group, DASH + Low Salt, and MedDiet + Low Salt.	240 adults who had never been treated for high normal blood pressure or grade 1 hypertension.	Mediterranean Diet (MDG) proved superior in lowering BP compared to the DASH Diet (DDG) in a salt-restricted setting.
Hassanzadeh-Rostami et al. (2025) (3)	Adherence to dietary approaches to stop hypertension (DASH), Mediterranean diet, and plant-based dietary pattern with systolic and diastolic blood pressure: A cross-sectional analysis	Cross-sectional study. Using a multivariate linear regression model to analyze the association between diet scores (DASH and Mediterranean) with SBP and DBP after adjusting for confounding factors.	226 adults with hypertension who were already taking antihypertensive medication.	No significant relationship was found between DASH or Mediterranean diet scores and SBP and DBP in this population.
Couch et al. (2020) (6)	Dietary approaches to stop hypertension dietary intervention improves blood pressure and vascular health in youth with elevated blood pressure.	A 18-month clinical trial. Comparing the DASH Diet intervention with the Regular Course group Diet	Adolescents aged 11 to 18 years old with above-normal blood pressure.	The DASH diet resulted in a significant reduction in systolic blood pressure (upper blood pressure) of 5.0 mm Hg at 6 months, and a reduction 2.4 mm Hg at 18 months
Mesas et al. (2022) (EHDLA Study) (6)	Is adherence to the Mediterranean diet and siesta individually or jointly associated with blood	Cohort Study (EHDLA study). Analyzing the association between adherence to the	Adolescents aged 12 to 17 years old living in the Ricote Valley.	Adolescents with low or moderate Mediterranean Diet adherence were more likely to have

pressure in Spanish adolescents ? Results from the EHDLA study.	Mediterranean diet (MD) and siesta (afternoon nap) with BP.	high-normal or hypertension compared to those with high adherence.

Effectiveness in Adults

Evidence from a randomized controlled trial (RCT) by Filippou et al. (2025) provides a strong direct comparison. This study compared four groups: control, low-salt diet only, DASH diet + low salt, and Mediterranean diet + low salt. The results showed that the Mediterranean diet combined with a low-salt diet was most effective in lowering blood pressure compared to the other groups[6]. This advantage is likely due to the olive oil (rich in MUFA) and antioxidants in the Mediterranean diet, which work better in improving blood vessels when salt intake is reduced.

In contrast, a cross-sectional study by Hassanzadeh-Rostami et al. (2025) found different results. In patients who were already regularly taking antihypertensive medication, adherence to the DASH or Mediterranean diets did not show a significant reduction in blood pressure[7]. This does not mean that the diet failed, but rather that a "ceiling effect" occurred. This means that because blood pressure had already been reduced by medication, the additional effects of the diet were difficult to see statistically. This shows that diet is most effective as prevention or initial therapy before medication is needed.

Effectiveness in Adolescents

Early dietary intervention is crucial. A clinical study by Couch et al. showed that implementing the DASH diet for 6 months in adolescents successfully lowered systolic blood pressure by 5.0 mmHg[8]. Similarly, the EHDLA cohort study by Mesas et al. found that adolescents adhering to the Mediterranean Diet had a lower risk of developing hypertension[9]. This proves that both diets are safe and effective when implemented from a young age.

Mortality Benefits (Death Rates)

In addition to blood pressure, we need to look at the long-term impact on life safety. A large study by Wang, Liu, & Lee (2022) of 28,000 participants found an interesting fact. People who adhered to the Mediterranean Diet had a lower risk of mortality, while the DASH Diet did not show a significant association with a reduction in mortality[10]. The DASH diet is indeed very specific for lowering blood pressure (focusing on minerals). However, the Mediterranean diet offers broader (holistic) benefits thanks to the anti-inflammatory properties of olive oil and nuts. So, for simply lowering blood pressure, both are good. However, for longevity and overall heart health, the Mediterranean diet appears to be superior.

Nutritional Mechanism Synthesis

The differences in the above results can be explained by the nutritional profiles of each diet. The following table summarizes the mechanisms of action of the main components of both diets.

Table 2. Comparison of Primary Nutritional Mechanisms

Nutritional Components	Focus of the DASH Diet	Mediterranean Diet Focus	Physiological Effects on the Body
Sodium (Na)	Very Low- (Strictly Limited)	Moderate (s not as strictly limited as in DASH)	Reduces blood volume and fluid retention.
Potassium (K) & Magnesium (Mg)	Very High (From fruits/vegetables)	High	Helps relax blood vessels (vasodilation).
Healthy Fats (MUFA)	Moderate	Very High (Olive Oil)	Anti-inflammatory and improves blood vessel lining function.
Protein	Low-fat milk & white meat	Fish & Nuts	A source of amino acids without excessive saturated fat.

While the DASH diet works very mechanistically through electrolyte balance (Na/K) to lower blood pressure, the Mediterranean diet works through anti-inflammatory pathways and systemic blood vessel repair (MUFA & Polyphenols). This is likely what gives the Mediterranean diet a broader impact on long-term mortality.

Conclusion

Based on a comprehensive literature review, it can be concluded that both the DASH Diet and the Mediterranean Diet are scientifically proven and highly effective dietary strategies for lowering blood pressure in hypertensive patients. Both should be considered valid and recommended non-pharmacological interventions.

However, a more meaningful analysis shows significant differences. Based on evidence from randomized controlled trials (RCTs), the Mediterranean diet combined with salt restriction shows superiority over the DASH diet in terms of the magnitude of blood pressure reduction.[7] The effectiveness of both diets is most evident in populations that have not yet received pharmacological treatment and as an early intervention in adolescents, highlighting their important role in primary prevention. Conversely, the effects may be more difficult to detect in patients whose blood pressure is already well controlled by medication, possibly due to a pharmacological "ceiling effect."

A broader view, considering long-term clinical outcomes, suggests that the Mediterranean Diet may offer additional benefits. Evidence from large cohort studies links adherence to the Mediterranean Diet with a reduction in all-cause mortality, a benefit not observed to a significant extent with the DASH Diet. This suggests that the cardiovascular benefits of the Mediterranean diet are more holistic, extending beyond mere blood pressure control. Therefore, the choice between the two diets should consider the patient's overall risk profile, long-term health goals, and individual preferences to ensure optimal adherence.

References

1. WHO. Hypertension [Internet]. World Health Organization. 2023. Available from: https://www.who.int.
2. Ministry of Health of the Republic of Indonesia. National Riskesdas Report 2018. Jakarta: Health Research and Development Agency; 2018.
3. Suprayitna M, Fatmawati BR, Prihatin K. Effectiveness of DASH Diet Education on Knowledge Levels About the DASH Diet in Hypertension Patients. *Jurnal Keperawatan 'Aisyiyah*. 2023;10(1):11-17.
4. Onwuzo C, et al. DASH Diet: A Review of Its Scientifically Proven Hypertension Reduction and Health Benefits. *Cureus*. 2023;15(9):e44692.
5. Susanti S. Differences in the Effectiveness of Low-Salt Diet and DASH Diet on Blood Pressure Reduction in Hypertensive Patients. *Nutri-Sains*. 2024;8(2):95-104.
6. Filippou CD, et al. Effect of DASH vs. Mediterranean diet accompanied by a salt restriction on metabolic syndrome... *Hellenic Journal of Cardiology*. 2025;85:24-37.
7. Hassanzadeh-Rostami Z, et al. Adherence to dietary approaches to stop hypertension (DASH), Mediterranean diet... *Caspian J Intern Med*. 2025;16(3):468-479.
8. Couch SC, et al. Dietary approaches to stop hypertension dietary intervention improves blood pressure... in youth. *Hypertension*. 2021;77. (Cited in Biju et al., 2025)..
9. Mesas AE, et al. Are adherence to the Mediterranean diet and siesta associated with blood pressure in Spanish adolescents? *Eur J Pediatr*. 2022. (Cited in Biju et al., 2025).
10. Wang JS, Liu WJ, Lee CL. Associations of Adherence to the DASH Diet and the Mediterranean Diet With All-Cause Mortality. *Front Nutr*. 2022;9:828792.