ДРУЖЕСТВО НА КАРДИОЛОЗИТЕ В БЪЛГАРИЯ
Българска кардиология
том XXXII, 2026, № 2
ОБЗОРИ
REVIEWS

doi: 10.3897/bgcardio.32.e189966

TAILORING THE DASH DIET FOR HYPERTENSION CONTROL IN LOWER-MIDDLE-INCOME COUNTRIES: A CULTURALLY AND SOCIOECONOMICALLY ADAPTED FRAMEWORK FOR SRI LANKA

Hansinie Jayasuriya[1*], Kombuge Hiruni Maleesha[2], Sarvananda Letchuman[3*]

[1]NHS Wales, University Hospital of Wales – United Kingdom
[2]Department of Biochemistry, Faculty of Medicine, Uva Wellassa University – Badulla, Sri Lanka
[3]Molecular Nutritional and Biochemistry Laboratory, University of Peradeniya – Kandy, Sri Lanka

АДАПТИРАНЕ НА ДИЕТАТА DASH ЗА КОНТРОЛ НА ХИПЕРТОНИЯТА В СТРАНИ С НИСЪК СРЕДЕН ДОХОД: КУЛТУРНО И СОЦИАЛНО-ИКОНОМИЧЕСКИ АДАПТИРАНА РАМКА ЗА ШРИ ЛАНКА

Хансини Джаясурия[1*], Комбуге Хируни Малееша[2], Сарвананда Лечуман[3*]

[1]NHS Уелс, Университетска болница на Уелс – Великобритания
[2]Катедра по биохимия, Медицински факултет, Университет „Ува Веласа“ – Бадула, Шри Ланка
[3]Лаборатория по молекулярна хранителна и биохимия, Университет в Перадения – Канди, Шри Ланка

Abstract. Cardiovascular diseases (CVDs) are a leading cause of non-communicable disease mortality worldwide, with a disproportionate burden in lower-middle-income countries (LMIC). Hypertension is a significant risk factor for CVDs, and its prevalence is on the rise, posing considerable challenges to public health. This paper provides a narrative overview of the global burden of hypertension, emphasizing its disproportionate impact on LMICs, and then shifts its focus to Sri Lanka, a South Asian lower-middle-income country, where one-third of the adults are hypertensive and discusses awareness, diagnosis, and control rates in the country. The core of this paper explores the evolution of dietary interventions, specifically the Dietary Approaches to Stop Hypertension (DASH) diet, in managing hypertension. From the inception of the DASH study in 1994 to its subsequent impact on blood pressure reduction, the article presents a detailed analysis of the diet's components and effectiveness. A significant contribution is proposing a culturally and socio-economically adapted DASH diet tailored to the Sri Lankan setting. Addressing challenges related to adherence and compliance, the article emphasizes the importance of community involvement and policy changes to sustain DASH. The conclusion highlights the research gap in Sri Lanka, where very limited studies have explored the exclusive use of the DASH diet. By outlining contextual challenges and key research priorities, this paper aims to inform prospective research in Sri Lanka and comparable LMIC settings, underscoring the importance of tailoring dietary interventions to specific cultural and socio-economic contexts for effective hypertension control.

Key words: DASH diet, hypertension, cardiovascular diseases. lower-middle-income countries

Address for correspondence: Sarvananda Letchuman, MD, e-mail: sarvacool18@gmail.com; Hansinie Jayasuriya, MD, e-mail: hansinie.jayasuriya2@wales.nhs.uk

Резюме. Сърдечносъдовите заболявания са една от основните причини за смъртността от незаразни заболявания в световен мащаб, като тежестта им е непропорционално голяма в страните с ниски средни доходи. Хипертонията е значителен рисков фактор за сърдечносъдови заболявания, а разпространението ѝ нараства, което поставя сериозни предизвикателства пред общественото здраве. Настоящият обзор на глобалното бреме на хипертонията подчертава непропорционалното ѝ въздействие върху страните с ниски средни доходи, след което насочва внимание към Шри Ланка – южноазиатска страна с ниски средни доходи, където 1/3 от възрастните страдат от хипертония – и обсъжда нивата на осведоменост, диагностика и контрол в страната. В основната част на тази статия се разглежда развитието на диетичните интервенции (по-специално Диетични подходи за спиране на хипертонията – DASH) при управлението на хипертонията. От началото на проучването DASH през 1994 г. до последващото му въздействие върху понижаването на кръвното налягане, статията представя подробен анализ на съставките и ефективността на диетата. Значителен принос е предложението за културно и социално-икономически адаптирана диета DASH, съобразена с условията в Шри Ланка. Разглеждайки предизвикателствата, свързани с придържането към диетата и спазването ѝ статията подчертава важността на участието на общността и промените в

This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

политиката за поддържане на диетата DASH. В заключението се изтъква липсата на научни изследвания в Шри Ланка, където са проведени много ограничен брой проучвания, изследващи изключителното прилагане на диетата DASH. Настоящата статия цели чрез очертаване на контекстуалните предизвикателства и ключовите приоритети в научните изследвания да предостави информация за бъдещи научни проучвания в Шри Ланка и в сходни страни с ниски средни доходи, като подчертава важността на адаптирането на диетичните интервенции към конкретните културни и социално-икономически контексти за ефективен контрол на хипертонията.

Ключови думи: Диетични подходи за спиране на хипертонията, диета DASH, хипертония, сърдечносъдови заболявания

Адрес за кореспонденция: Сарвананда Летчуман, e-mail: sarvacool18@gmail.com; Хансиние Джаясурия, e-mail: hansinie.jayasuriya2@wales.nhs.uk

Introduction

The majority of Non communicable disease (NCD) deaths worldwide, which account for around 17.9 million per year, are caused by cardiovascular diseases (CVDs). In the United States (US), over 900,000 deaths occur annually due to CVDs. The global trend of CVD has been exhibiting a massive increase in recent years [1]. Mortality rates for all CVDs increased, and the global cardiovascular mortality rate increased by nearly 41% between 1990 and 2013 [2]. Notably, more than 75% of these NCD-related deaths occur in lower-middle-income countries (LMICs) [3]. A study that focused on differences in CVD mortality rates across different regions and countries from 1990 to 2017 depicted that while the mortality rates decreased in high-income countries and the rates in LMICs were steady [4]. One of the major risk factors for CVDs is hypertension (HTN) or high blood pressure, which is prevalent and is rising in LMICs [5] and controlling HTN remains a significant clinical and public health issue [6].

According to the 2017 American College of Cardiology (ACC) and American Heart Association (AHA) hypertension guidelines, HTN is diagnosed when a systolic blood pressure (SBP) of 130mmHg or above and a diastolic blood pressure (DBP) of 80 mmHg or above is recorded twice or more on two different occasions [7]. HTN is associated with several modifiable risk factors including unhealthy diets such as excessive salt intake, a diet high in saturated fat and trans fats, reduced intake of fruits and vegetables along with physical inactivity, consumption of tobacco and alcohol, and being overweight or obese [3].

Globally, HTN affects more than one billion people [8] according to the 2021 Global Burden of Disease (GBD) Study, approximately 10.9 million deaths were reported globally with an estimated 226 million disability-adjusted life years (DALYs) associated with HTN [9]. An increase in SBP is linked with increased risks of ischemic stroke, myocardial infarction, abdominal aortic aneurysm, and end-stage renal disease. The incidence of dementia is also elevated in midlife and later-life HTN [10]. Dietary modifications are widely acknowledged as an effective lifestyle intervention for lowering Blood Pressure (BP) and preventing HTN, often at a lower cost compared to conventional pharmacological treatments. A growing body of research supports the DASH diet as an effective strategy for the prevention and management of HTN [11]; accordingly, this review examines its composition, underlying mechanisms and clinical impact on BP regulation.

The silent epidemic

Worldwide, 1.28 billion individuals between the ages of 30 and 79 are reported to have HTN, with the majority (two-thirds) residing in LMICs. HTN has often been referred to as “the silent killer,” as nearly 46% of individuals remain unaware of their condition until the initial manifestation, such as myocardial infarction or stroke, occurs [3,12]. Sri Lanka is a south Asian LMIC with a population of over 20 million [13]. In a study conducted on over 4500 individuals from Sri Lanka in 2014, Katulanda et al. [14] concluded that HTN affects one-third of Sri Lanka’s adult population. World Health Organization (WHO) facts on HTN in Sri Lanka reveal that of 26.2% of hypertensive adults which is equal to 3.6 million in number, only 1.4 million are aware of the diagnosis, and BP remains uncontrolled in 3.2 million – Figure 1 [15]. Unhealthy diets with high salt and low vegetable and fruit intake remain significant risk factors for HTN. It has multiple effects on the health of impacted resource-constrained health systems in LMICs. Additionally, it has significant societal, developmental, and economic costs [10].

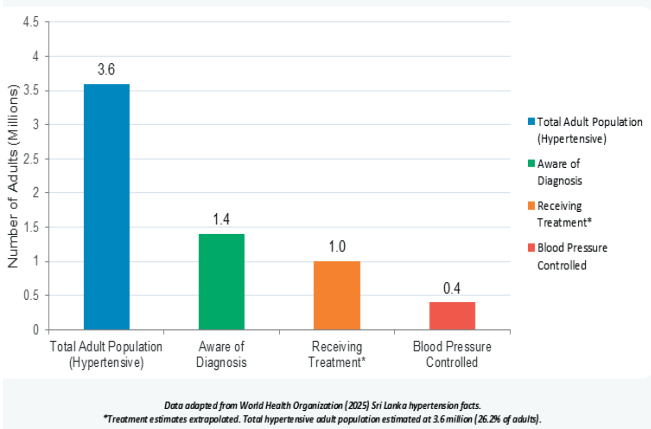

Fig. 1. Hypertension Awareness, Diagnosis, and Control Cascade in Sri Lanka

Role of diet in hypertension prevention and management

HTN is caused by a combination of environmental and genetic factors and their interactions. A large body of evidence from animal studies, epidemiologic studies, meta-analyses, and randomised controlled trials (RCTs) has shown that specific dietary patterns and individual dietary elements play a significant role in the development of HTN [11]. Until the 1990s, non-pharmacological BP reduction efforts relied on a combination of weight control, reduced salt/sodium intake, reduced alcohol intake, and, to a lesser extent, increased dietary potassium. Previous research on the relationship between diet and BP found that nutrients like potassium (K), calcium (Ca), magnesium (Mg), protein, and fibre had small and inconsistent effects on BP. However, most of these studies were retrospective in nature and relied on diet recall [16].

Meta-analyses of randomized trials provide evidence that moderate reduction in sodium intake induces significant decreases in SBP and DBP in both hypertensive and normotensive individuals and shown high rates of dietary potassium intake increase plasma potassium concentration, consequently inhibiting free radical formation, smooth muscle proliferation and thrombus formation providing protection against cardiovascular diseases [17, 18]. Several meta-analyses have been conducted to examine the association between fruits and vegetables consumption and the risk of HTN. The results underscore the importance of increasing dietary intake of fruits and vegetables to prevent the risk of developing HTN [19-21]. A variety of dietary approaches have been investigated for their impact on HTN, including the DASH and Mediterranean diets.

Overview of the DASH diet

The DASH originated in the 1990s [51]. In 1992, the National Institute of Health (NIH) started funding multiple research projects to investigate if certain dietary interventions were effective in treating HTN. The findings revealed that diet alone could decrease SBP by approximately 6 to 11 mm Hg. This effect was observed both in individuals with HTN and those with normal BP. As a result, DASH has been recommended as the first-line non-pharmacological therapy along with lifestyle modification [22].

The first phase of the DASH study began in 1994 by Appel and his colleagues [16, 23]. This clinical trial detected the effect of dietary patterns on BP in 429 normotensive and hypertensive subjects with exclusion criteria for both groups. The study used three types of diets; a control, fruits and vegetable diet, and a combination or a diet high in fruits, vegetables, low-fat dairy products, and low in saturated and total fat (what is known as DASH today) [16]. The combination diet/ DASH diet lowered SBP and DBP, by 11.4 and 5.5 mmHg more, respectively, more than the control diet in 133 subjects with HTN ($P < 0.001$ for each). The reductions in the combination diet vs control diet were 3.5 ($P < 0.001$) and 2.1 mm Hg ($P = 0.003$), respectively, among the 326 individuals without HTN [23].

The DASH diet includes approximately 5 servings of vegetables, about 5 servings of fruits, 7 servings of grains, 2 servings of low-fat dairy products, and two or fewer servings of lean meat products per day, and nuts and seeds 2 to 3 times per week. These recommendations are based on standard DASH serving size definitions. One serving of vegetables is defined as 1 cup of raw leafy vegetable, ½ cup cut-up raw or cooked vegetable, one serving of fruits is equal to 1 medium fruit or ½ cup of fresh, frozen, or canned fruit or ¼ cup of dried fruit or ½ cup fruit juice. 1 serving of grains corresponds to 1 slice of whole-grain bread or half a cup of cooked rice, pasta or cereal. A serving of low-fat dairy is one cup of milk or yogurt, while a serving of lean meat, poultry, or fish is approximately 30 grams of cooked product. For nuts and seeds, one serving is typically defined as one-third cup of nuts or two tablespoons of seeds [24].

Thus, the DASH diet encourages a higher intake of protective nutrients such as potassium (K), calcium (Ca), magnesium (Mg), fibre, and vegetable proteins while decreasing the intake of refined carbohydrates and saturated fat [25]. The DASH diet also advises against higher intakes of sweetened beverages and sweets, emphasizing long-term dietary changes over short-term dietary restrictions – Fig. 2 [26].

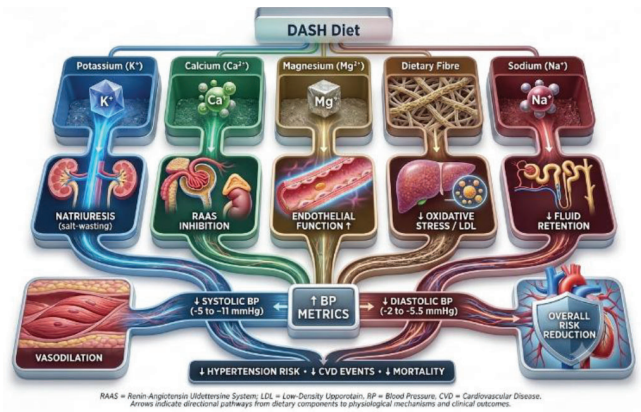

Fig. 2. Proposed mechanisms underlying blood pressure reduction by the DASH diet

Scientific evidence supporting the DASH diet

Koley et al. (2023) reported that adherence to adapted DASH diet significantly reduce SBP but not DBP in a short-term pilot study conducted in a south Asian setting and recommended further studies with larger samples and a longer follow-up in Fig. 3.

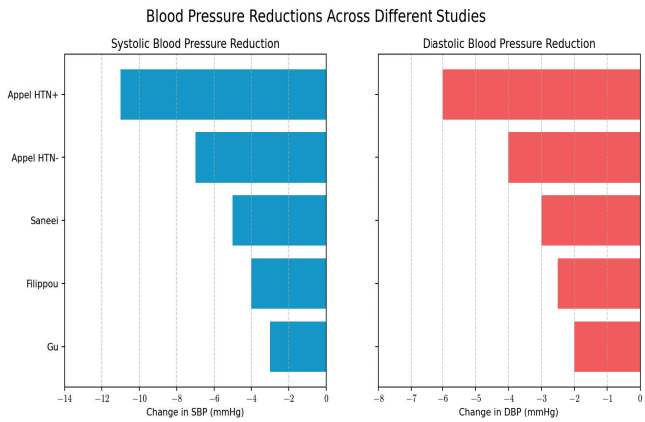

Fig. 3. Blood Pressure Reduction Across Different Studies

DASH diet has shown a great effect of lowering BP especially alongside low sodium intake (< 100 mmol/day) and yielding more benefits than either diet on its own [27]. Its effectiveness has been recapitulated in a variety of populations, such as normotensive UK subjects and South Asian cohorts although a stronger effect on SBP than on DBP has been suggested and requires additional large-scale, long-term studies [28-30]. Saneei et al. [31] in their systematic review and meta-analysis of 17 studies with 2561 participants that included 17 RCTs reported that the DASH diet was associated with significant reduction in both SBP and DBP among adults. This dietary pattern is considered cost-effective and feasible and suggest potential applications in the primary and secondary prevention of HTN and its complications.

Another study conducted by Tiong et al. [33] reported a county-specific variation in cardio-metabolic association including BP with DASH diet and its dietary components in a retrospective study involving 2533 individuals from the Philippines and 3072 individuals from Malaysia, both southeast Asian countries. Anthropometric and BP measurements, biochemical measurements, dietary assessment and DASH score developed by Fung et al. [32] were utilized in the study. However, the study was limited by its cross-sectional nature, the potential for reporting errors due to self-reporting dietary intakes and the use of non-validated food frequency questionnaire, which included only 22 broad food groups.

Additionally, the questionnaire was tailored to local dietary habits which may be a more accurate capture of the dietary patterns, but limits direct comparability with findings from other populations. The findings emphasize the need for territory-specific tailoring of dietary interventions to improve cardiometabolic risk profiles.

Ralapanawa et al. [34], attempted to identify dietary patterns of hypertensive patients in a tertiary hospital care setting in Sri Lanka with greater emphasis on sodium intake and recommended a DASH diet to lower HTN. Still, the study does not elaborate a DASH diet suitable to the context. Olayiwola et al. (2024) revealed that the DASH diet may improve estimated Pulse Wave Velocity (ePWV), indicating decrease arterial stiffness and better cardiovascular health in individuals with hypertension.

A meta-analysis of four randomized controlled trials (RCTs) reported that DASH diet significantly increases glutathione levels, protecting cells from oxidative damage and decrease lipid peroxidation and malondialdehyde (MDA) levels [35].

Adherence and compliance to the DASH diet

Although there are proven benefits of DASH diet in lowering BP it is important to investigate adherence and compliance to this diet regime. Diet is one of the main lifestyle factors and lifestyle modification is a complex process [36]. The DASH diet is regarded as a significant advancement in nutritional science, and after 20 years of its first introduction in 2017 [37]. Steinburg et al. report that adherence to the DASH diet is poor where it originated. And attributes poor adherence to the current food environment where high-energy, nutritionally poor foods are widely available at low costs and nutritionally rich foods like fruits and vegetables are scarce in areas with low income.

Despite this main challenge, DASH can be implemented in low socio-economic environments. Involvement at the community level and policymakers to change the food environment are crucial. And efforts should be made to understand howindividuals can work within their environment to improve adherence [38].

Since 1997 hundreds of studies have been conducted across different contexts, and subgroups, to prove the effect of DASH on HTN. The DASH diet has proven to be an effective addition to the pharmacological management of HTN and any condition presenting with metabolic syndrome. It has also been found to prevent heart failure and colorectal cancer [24]. A meta-analysis conducted by Graudal & Jurgens (2015) concluded that BP differences between ethnicities to changes in sodium intake appear to be smaller than previously observed and could be attributed to differences in socio-economic and genetic factors which are yet to be identified but did not take DASH diet as an inclusion criterion [39]. Since the DASH diet originated in the US and was initially designed for the US population, it is critical to understand how cultural beliefs and dietary practices in other parts of the world, especially in Asia, differ from those of the US [40]. The DASH diet has been shown to reduce BP in Western populations; however, the utilisation of DASH diets in Asian settings is unclear [27, 33].

To date, only a few studies have been published on the DASH diet for preventing or treating HTN in a Sri Lankan setting, either alone or in combination with

Table 1. Recommended daily servings and standard portion sizes in the modified DASH diet to Sri Lankans

Food Category	Servings	Size per serving	Commonly available food
Grains	6-8 per day	1 slice of bread 1/2 – 1 cup dry cereal 1/2 cup cooked rice, pasta, or grain	Whole wheat bread, Brown rice, White rice, pasta, spaghetti, string hoppers, hoppers
Vegetables	4-5 per day	1 cup raw leafy greens 1/2 cup chopped raw or cooked vegetables 1/2 cup vegetable juice	Carrots, green beans, okra, brinjal, pumpkin, cabbage, ridged gourd, bitter gourd, silk squash, potato, sweet potato, manioc Carrot juice and tomato juice with no added salt or sugar
Fruits	4-5 per day	1 medium fruit 1/2 cup cut fresh, frozen, or canned fruit 1/4 cup dried fruit 1/2 cup 100% fruit juice	Banana, mango, pineapple, mandarin, June plum, guava Limit juice to one serving a day
Poultry, fish, lean meat	1/2 -3/4 a cup or 200 grams a day	1/2 -3/4 a cup or 200 grams	Select lean meat and trim visible fat and remove the skin from poultry. Avoid frying, better boiled.
Low-fat, non-fat dairy products	2-3 a day	1 cup milk or yoghurt 1 1/2-ounce cheese	Low-fat, non-fat milk, non-sweetened yoghurt
Fat and oils	2 per day	1 teaspoon soft margarine 1 teaspoon vegetable oil	Soft margarine, vegetable oils (canola, corn, olive or safflower, coconut)
Nuts seeds, dry beans, seeds	4-5 weekly	1/3 cup or 1 1/2-ounce nuts 2 tablespoons peanut butter 2 tablespoons or 1/2-ounce seeds 1/2 cup cooked beans or dry peas	Peanuts, almonds, pumpkin seeds, sesame seeds, Cucumber seeds, dhal, cowpea
Sweets	5 per week	1 tablespoon jelly, 1/2 cup sorbet/ ice cream, 1 small cookie	Jelly, candy, jam
Salt	1/2 teaspoon per day		Iodine fortified salt

pharmacological therapy. Therefore, it's beneficial to examine the BP-lowering effects of a culturally, and socio-economically appropriate DASH diet in Sri Lanka. Accordingly, Table 1 present a proposed framework aligned with local dietary practices and existing evidence from Asian DASH adaptation studies for future intervention studies [45-48].

Discussion

HTN remains a significant public health challenge as it contributes to premature morbidity and mortality worldwide [41]. The DASH diet has been scientifically proven to play a crucial role in the prevention and management of HTN. These findings are in accordance with the AHA which endorses the DASH diet as a first-line, non-pharmacological approach to prevent HTN. Furthermore, when compared to other dietary patterns such as Mediterranean diet or low-carbohydrate diets, the DASH diet is unique in its specific development to focus BP reduction [42].

This review synthesizes evidence from clinical trials and subsequent meta-analyses revealing that adherence to the DASH diet significantly lowers both SBP and DBP in hypertensive and non-hypertensive individuals. In addition to its antihypertensive effects, a reduction in cardiometabolic risk is seen by lowering total cholesterol and low-density lipoproteins cholesterol (LDL-C) levels [42, 44]. The above beneficial outcomes are attributed to the diet's emphasis on food high in fibre, potassium, calcium and magnesium and low in sodium, saturated fats and cholesterol [25].

The core question is how to realize those benefits into routine practice particularly in LMICs such as Sri Lanka. Nevertheless, factors such as food preferences, cultural dietary habits and access to recommended food may influence an individual's compliance with the DASH diet. In Sri Lanka, the prevailing food environment constrains adherence to DASH, high sodium norms, limited affordability and availability of fruits, vegetables and low-fat dairy and school/workplace canteens dominated by refined items. Therefore, beyond individual counselling, environmental and policy supports are needed. A Sri Lankan adapted DASH diet should work with locally available staples (moderated rice portions; dhal; frequent leafy greens; fish/seafood where available), pair them with sodium reduction strategies, minimize cost, and consider seasonal and regional food patterns. Peer support, cooking demonstrations together with setting standards for school and workplace canteens to align with DASH principles and population measures enable sustained adherence. It is needed to identify effective and culturally adaptable strategies to promote adherence across diverse populations. Incorporating the DASH diet into HTN management and public health policy interventions, offers healthcare providers and policymakers the ability to implement a long-term solution to control silent yet serious global health concern. Overall, the DASH diet offers a credible, non-pharmacological strategy for HTN

control, but the real impact relies on context-specific implementation and policy support.

Conclusion

The review highlights the DASH dietary pattern as an effective non-pharmacological approach to managing HTN globally, with growing relevance for LMIC such as Sri Lanka. However, Sri Lankan evidence on the exclusive use of the DASH diet is limited. In practice, adherence to DASH diet depends on the local food environment, thereby limiting its real-world impact. Accordingly, Sri Lanka needs culturally and economically tailored adaptations, community involvement and supportive policy environments for sustained implementation. Before scale up, adherence, affordability and equity must be assessed. Overall, dietary approaches such as DASH are promising, but effectiveness relies on tailoring to the local context and integrating them into preventing health initiatives.

Consent for publication: We certify this manuscript has not been published elsewhere and submitted to another Journal.

Competing interests: The author(s) declare that they have no competing interests.

Acknowledgment: Thanking the co-authors for the immense support they have extended to write this article.

Funding: This work did not receive any specific grant from funding agencies in the public, commercial or nonprofit sectors

Authors Contributions: The authors confirm contribution to the paper as follows: study conception and design: Dr. HJ; data collection: KHM, all authors; analysis and interpretation of results: SL and all authors; draft manuscript: all authors. All authors reviewed the results and approved the final version of the manuscript.

References

1. Gaidai O, Cao Y, Loginov S. Global Cardiovascular Diseases Death Rate Prediction. Curr Probl Cardiol. 2023;48(5):101622. doi: 10.1016/j.cpcardiol.2023.101622.

2. O'Rourke K, Vander Zanden A, Shepard D, et al. Cardiovascular Disease Worldwide, 1990-2013.: JAMA. 2015;314;(18):1905. doi:10.1001/jama.2015.14994.

3. World Health Organization . 2021.

4. Jagannathan R, Patel SA, Ali MK, Narayan KMV. Global Updates on Cardiovascular Disease Mortality Trends and Attribution of Traditional Risk Factors. Curr Diab Rep. 2019;19(7):44. doi: 10.1007/s11892-019-1161-2.

5. Jongen VW, Lalla-Edward ST, Vos AG et al. Hypertension in a rural community in South Africa: what they know, what they think they know and what they recommend. BMC Public Health, 2019, Vol. 19(1): 341.

6. Ogunniyi MO, Commodore-Mensah Y, Ferdinand KC. Race, Ethnicity, Hypertension, and Heart Disease: JACC Focus Seminar 1/9. 2021, J Am Coll Cardiol. 78(24):2460-2470.

7. Flack JM, Adekola B. Blood pressure and the new ACC/AHA hypertension guidelines. Trends Cardiovasc Med, 2020;30(3):160-164. doi: 10.1016/j.tcm.2019.05.003..

8. Dzau VJ, Hodgkinson CP. Precision Hypertension. Hypertension, 2024;81:702-708.

9. GBD 2021 Risk Factors Collaborators. Global burden and strength of evidence for 88 risk factors in 204 countries and 811 subnational locations, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. Lancet. 2024;403(10440):2162-2203. doi: 10.1016/S0140-6736(24)00933-4. Erratum in: Lancet. 2024;404(10449):244. doi: 10.1016/S0140-6736(24)01458-2.

10. Schutte AE, Srinivasapura Venkateshmurthy N, Mohan S, Prabhakaran D. Hypertension in Low- and Middle-Income Countries. Circ Res. 2021;128(7):808-826. doi: 10.1161/CIRCRESAHA.120.318729.

11. Bazzano LA, Green T, Harrison TN, Reynolds K. Dietary approaches to prevent hypertension., Curr Hypertens Rep. 2013, 15(6):694-702.

12. Davis BR, Hannekens CH, Greenwald J et al. New Clinical Challenges in Hypertension Management: The 'Old Silent Killer' Is Alive and Well. Am J Med. 2024 Dec;137(12):1154-1156. doi: 10.1016/j.amjmed.2024.07.005.

13. Data for Sri Lanka. The World Bank. 2017.

14. Katulanda P, Ranasinghe P, Jayawardena R et al. The prevalence, predictors and associations of hypertension in Sri Lanka: a cross-sectional population based national survey. Clin Exp Hypertens. 2014;36(7):484-91. doi: 10.3109/10641963.2013.863321.

15. Saklayen MG, Deshpande NV. Timeline of History of Hypertension Treatment. Front Cardiovasc Med. 2016 Feb 23;3:3. doi: 10.3389/fcvm.2016.00003.

16. He FJ, MacGregor GA. Effect of modest salt reduction on blood pressure: a meta-analysis of randomized trials. Implications for public health. J Hum Hypertens. 2002 Nov;16(11):761-70. doi: 10.1038/sj.jhh.1001459.

17. Young DB, Lin H, McCabe RD. Potassium's cardiovascular protective mechanisms. Am J Physiol. 1995 Apr;268(4 Pt 2):R825-37. doi: 10.1152/ajpregu.1995.268.4.R825.

18. Wu L, Sun D, He Y. Fruit and vegetables consumption and incident hypertension: dose-response meta-analysis of prospective cohort studies. J Hum Hypertens. 2016 Oct;30(10):573-80. doi: 10.1038/jhh.2016.44.

19. Li B, Li F, Wang L, Zhang D. Fruit and Vegetables Consumption and Risk of Hypertension: A Meta-Analysis. J Clin Hypertens (Greenwich). 2016 May;18(5):468-76. doi: 10.1111/jch.12777.

20. Madsen H, Sen A, Aune D. Fruit and vegetable consumption and the risk of hypertension: a systematic review and meta-analysis of prospective studies. Eur J Nutr. 2023 Aug;62(5):1941-1955. doi: 10.1007/s00394-023-03145-5.

21. Challa HJ, Ameer MA, Uppaluri KR. DASH Diet To Stop Hypertension. 23 Jan 2023. In: StatPearls [Internet].

22. Appel LJ, Moore TJ, Obarzanek E et al. A clinical trial of the effects of dietary patterns on blood pressure. DASH Collaborative Research Group. N Engl J Med. 1997;336(16):1117-24. doi: 10.1056/NEJM199704173361601.

23. Challa HJ, Ameer MA, Uppaluri KR. DASH Diet To Stop Hypertension. StatPearls Publishing, 23 January 2023, In: StatPearls [Internet]. Treasure Island (FL).

24. Siervo M, Lara J, Chowdhury S et al. Effects of the Dietary Approach to Stop Hypertension (DASH) diet on cardiovascular risk factors: a systematic review and meta-analysis. Br J Nutr. 2015 Jan 14;113(1):1-15.

25. Charchar FJ, Prestes PR, Mills C, Ching SM et al. Lifestyle management of hypertension: International Society of Hypertension position paper endorsed by the World Hypertension League and European Society of Hypertension. J Hypertens. 2024;42(1):23-49. doi: 10.1097/HJH.0000000000003563.

26. Sacks FM, Svetkey LP, Vollmer WM et al.; DASH-Sodium Collaborative Research Group. Effects on blood pressure of reduced dietary sodium and the Dietary Approaches to Stop Hypertension (DASH) diet. DASH-Sodium Collaborative Research Group. N Engl J Med. 2001;344(1):3-10. doi: 10.1056/NEJM200101043440101.

27. Hikmat F, Appel LJ. Effects of the DASH diet on blood pressure in patients with and without metabolic syndrome: results from the DASH trial. J Hum Hypertens. 2014;28(3):170-5. doi: 10.1038/jhh.2013.52.

28. Harnden KE, Frayn KN, Hodson L. Dietary Approaches to Stop Hypertension (DASH) diet: applicability and acceptability to a UK population. J Hum Nutr Diet. 2010;23(1):3-10. doi: 10.1111/j.1365-277X.2009.01007.x.

29. Koley M, Mundle M, Ghosh S, Saha S. A short-term pilot study investigating the efficacy of DASH diet in reducing systolic and/or diastolic blood pressure in patients with essential hypertension. Asian Journal of Pharmaceutical and Clinical Research, 2013;6:169-172.

30. Saneei P, Salehi-Abargouei A, Esmaillzadeh A, Azadbakht L. Influence of Dietary Approaches to Stop Hypertension (DASH) diet on blood pressure: a systematic review and meta-analysis on randomized controlled trials. Nutr Metab Cardiovasc Dis. 2014;24(12):1253-61. doi: 10.1016/j.numecd.2014.06.008.

31. Fung TT, Chiuve SE, McCullough ML et al. Adherence to a DASH-style diet and risk of coronary heart disease and stroke in women. Arch Intern Med. 2008;168(7):713-20. doi: 10.1001/archinte.168.7.713. Erratum in: Arch Intern Med. 2008 Jun 23;168(12):1276.

32. Tiong XT, Nursara Shahirah A, Pun VC et al. The association of the dietary approach to stop hypertension (DASH) diet with blood pressure, glucose and lipid profiles in Malaysian and Philippines populations. Nutr Metab Cardiovasc Dis. 2018;28(8):856-863. doi: 10.1016/j.numecd.2018.04.014.

33. Ralapanawa U, Nanayakkara N, Jayawickreme KP et al. Analysis and identification of symptoms and risk factors in a cohort of chronic hypertensive patients in a tertiary care hospital in Sri Lanka. Clin Exp Hypertens. 2019;41(5):409-413. doi: 10.1080/10641963.2018.1501055.

34. Lin PH, Allen JD, Li YJ et al. Blood Pressure-Lowering Mechanisms of the DASH Dietary Pattern. J Nutr Metab. 2012;2012:472396. doi: 10.1155/2012/472396.

35. Bully P, Sánchez Á, Zabaleta-del-Olmo E et al. Evidence from interventions based on theoretical models for lifestyle modification (physical activity, diet, alcohol and tobacco use) in primary care settings: A systematic review. Prev Med. 2015;76 Suppl:S76-93. doi: 10.1016/j.ypmed.2014.12.020.

36. Steinberg D, Bennett GG, Svetkey L. The DASH Diet, 20 Years Later. JAMA. 2017;317(15):1529-1530. doi: 10.1001/jama.2017.1628.

37. Kwan MW, Wong MC, Wang HH et al. Compliance with the Dietary Approaches to Stop Hypertension (DASH) diet: a systematic review. PLoS One. 2013 Oct 30;8(10):e78412. doi: 10.1371/journal.pone.0078412.

38. Graudal N, Jürgens G. The blood pressure sensitivity to changes in sodium intake is similar in Asians, Blacks and Whites. An analysis of 92 randomized controlled trials. Front Physiol. 2015;6:157. doi: 10.3389/fphys.2015.00157.

39. Song Y, Lobene AJ, Wang Y, Hill Gallant KM. The DASH Diet and Cardiometabolic Health and Chronic Kidney Disease: A Narrative Review of the Evidence in East Asian Countries. Nutrients. 2021;13(3):984. doi: 10.3390/nu13030984.

40. Filippou CD, Tsioufis CP, Thomopoulos CG et al. Dietary Approaches to Stop Hypertension (DASH) Diet and Blood Pressure Reduction in Adults with and without Hypertension: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Adv Nutr. 2020;11(5):1150-1160. doi: 10.1093/advances/nmaa041.

41. Diab A, Dastmalchi LN, Gulati M, Michos ED. A Heart-Healthy Diet for Cardiovascular Disease Prevention: Where Are We Now? Vasc Health Risk Manag. 2023;19:237-253. doi: 10.2147/VHRM.S379874.

42. Alexander L, Christensen SM, Richardson L et al. Nutrition and physical activity: An Obesity Medicine Association (OMA) Clinical Practice Statement 2022. Obes Pillars. 2022; 1:100005. doi: 10.1016/j.obpill.2021.100005.

43. Gaidai O, Cao Y, Loginov S. Global Cardiovascular Diseases Death Rate Prediction. Curr Probl Cardiol, 2023;48(5):101622.

44. Food-based dietary guidelines for Sri Lankans: Practitioner's handbook. 2020. Ministry of Health, Sri Lanka. https://nutrition.health.gov.lk/wp-content/uploads/2020/12/FBDG-Practitioners-Handbook-Final-English.pdf

45. Healthy diet. 29 April 2020. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/healthy-diet.

46. Song Y, Lobene AJ, Wang Y et al. The DASH Diet and Cardiometabolic Health and Chronic Kidney Disease: A Narrative Review of the Evidence in East Asian Countries. Nutrients. 2021;13(3):984. https://doi.org/10.3390/nu13030984

47. Chang HC, Cheng HM, Chen CH et al. Dietary intervention for the management of hypertension in Asia. J Clin Hypernets (Greenwich). 2021;23(3):538-544. doi: 10.1111/jch.14116.

48. Cristina DL. Potential Benefits of the Dietary Approaches to Stop Hypertension in Cardiovascular Disease. J Biomed Res Environment Sci. 2025;6(6):808-814. https://doi.org/10.37871/jbres2133