

CONCEPT PAPER

Rethinking Blood Pressure: A Marker of Overall Health, Not Just a Disease Threshold

Nelbon Giloi^{1,*}, Rachel Majuyah², Mei Ching Lim³, Jac Fang Lim⁴, Tin Tin Thein⁵

¹ Department of Public Health Medicine, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Jalan UMS, Kota Kinabalu, 88400, Sabah, Malaysia

² Polyclinic Kingfisher, Kingfisher Plaza, 29, Lorong Plaza Kingfisher 3, 88450 Kota Kinabalu, Sabah

³ South Seberang Perai District Health Office, Jalan Bukit Panchor, 14300 Nibong Tebal, Penang, Malaysia

⁴ Society of Occupational and Environmental Medicine, 4th Floor, Bangunan MMA, 124 Jalan Pahang, 53000 Kuala Lumpur, Malaysia

⁵ Department of Pathobiology and Medical Diagnostic, Universiti Malaysia Sabah, 88400, Kota Kinabalu, Sabah, Malaysia

* Corresponding author's email:
nelbon.giloi@ums.edu.my

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ABSTRACT

For many years, blood pressure (BP) has been considered a primary risk factor for cardiovascular disease, with management strategies focused heavily on pharmacological interventions, to ensure BP remain within a defined range. However, closer look at emerging research suggests that BP is not just a determinant of cardiovascular risk but serves as a broader indicator of metabolic and lifestyle health. This paradigm shift emphasizes the necessity to address underlying lifestyle factors such as diet, physical activity, stress and sleep, instead of solely aiming to lower BP values through medication. Epidemiological studies indicate that even individuals with BP within the "normal" range may face increased health risks, strengthening the need for early intervention and comprehensive lifestyle modifications. The traditional approaches mainly categorize hypertension based on numeric thresholds and often neglect the root causes of BP elevation. In contrast, a holistic approach views BP as an "indicator light" — a signal for underlying metabolic dysfunction, insulin resistance, chronic inflammation and suboptimal lifestyle habits. This perspective aligns with the principles of lifestyle medicine, advocating for proactive interventions that emphasize behavioural modifications, rather than pharmacological treatment. By redefining BP as a reflection of overall health rather than an isolated parameter, healthcare strategies can evolve towards a more preventive and patient-centered model. This shift promotes long-term



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health improvements and instead of reliance on medication, ultimately enhancing quality of life. Addressing BP through comprehensive lifestyle modifications provides a potential to transform public health approach and outcomes by preventing cardiovascular diseases before they manifest clinically.

INTRODUCTION

For many years, blood pressure (BP) has been regarded as an independent risk factor for cardiovascular disease. Clinical practice guidelines have traditionally focused on maintaining BP at a specific normal range, and the treatment plans largely centred around pharmacological intervention to prevent patients from developing complications. However emerging research suggests that BP is more than just an indicator for cardiovascular risk. It also reflects broader metabolic and lifestyle factors (Whelton et al., 2018). The connection between BP and overall health appears to be more complex than previously understood. Rather than viewing it as a direct cause of disease, BP should be seen as an indicator of overall well-being, shaped by multiple underlying factors. This shift of perspective aims to redefine prevention and treatment approaches, highlighting the importance of early intervention and comprehensive health strategies (Mills et al., 2020).

The Traditional View: BP as a Primary Risk Factor

The conventional method to manage BP categorises hypertension based on numerical thresholds (i.e., $\geq 130/90$ mm Hg) (American College of Cardiology/American Heart Association [ACC/AHA], 2017) (Table 1). When BP crosses this limit, medication is typically prescribed to control and bring it back to a “normal” range. Although this strategy may effectively help to reduce BP and prevent immediate cardiovascular risks, unfortunately it overlooks the broader question: “Why does BP rise in the first place?”

Although clinical practice guidelines and mainstream medicine acknowledge that lifestyle factors such as diet, exercise, smoking, alcohol, and stress play an important role in BP regulation, in general clinical practice often prioritizes pharmacological solutions over preventive measures (James et al., 2014). As a result, patients and even healthcare providers focus on BP management as a matter of controlling numbers rather than addressing the root causes of BP increase.

A Paradigm Shift: BP as a Reflection of Lifestyle and Metabolic Health

This article proposes a closer look at epidemiological data, which reveals an important insight. Contrary to traditional views, elevated BP should be seen as a symptom of deeper systemic issues rather than the sole cause of disease. A study by Forouzanfar et al. (2017) published in JAMA examined the global burden of BP-related diseases and found that even individuals with BP in the range of 110–115 mm Hg, well below the $\geq 130/90$ mm Hg threshold, experience increased mortality and disability-adjusted life years (DALYs). This finding indicates that health risks may start increasing even before BP reaches hypertensive levels, possibly regardless of the usual threshold. This higher risk is likely influenced by various factors, especially lifestyle habits and metabolic conditions (Muntner et al., 2019; Kario et al., 2020).

Key insights from the research include:

- BP is correlated with metabolic health. Many individuals with slightly elevated BP also exhibit markers of metabolic dysfunction, including insulin resistance, chronic inflammation, and poor lipid profiles (Grundy et al., 2019; Li et al., 2021). Treating BP in isolation may fail to address these interconnected issues.
- Pre-disease risk factors exist well before hypertension is diagnosed. Instead of focusing only on BP levels above 130/90 mm Hg, we should recognize that lifestyle-

related risks begin influencing health much earlier—often when BP is still considered “normal” (Kario et al., 2020).

- Medication alone is not the solution. While antihypertensive drugs reduce BP, they do not necessarily reverse the metabolic and lifestyle-related issues that contribute to cardiovascular disease. Without addressing these factors, patients remain at risk for long-term complications (Oparil et al., 2018).

Table 1: Traditional versus holistic view of bp management.

Traditional Approach	Holistic Perspective
BP is treated as an isolated risk factor.	BP is seen as a reflection of metabolic and lifestyle health.
Medication is the primary treatment.	Lifestyle interventions take priority, with medication as a secondary tool.
Threshold-based intervention (e.g., $\geq 130/90$ mm Hg).	Proactive prevention, even when BP is in “normal” ranges.
Focus on reducing BP numbers.	Focus on addressing root causes (diet, activity, stress, sleep, etc.).

Reframing BP as an “Indicator Light” for Health Risks

Rather than treating BP as a disease threshold, it should instead be viewed as an early warning system—a physiological marker that signals the need for proactive lifestyle modifications. This perspective aligns with the principles of lifestyle medicine, which emphasize prevention through sustainable behavioural changes, as follows:

1. The Need for Earlier Intervention

- The current guidelines recommend intervention when BP reaches hypertensive levels, whereas lifestyle intervention strategies should begin well before that point (Franklin et al., 2018). A systolic BP of 110–120 mm Hg should not be ignored; instead, it should prompt a comprehensive assessment of patients’ lifestyle habits,

including dietary intake, activity levels, stress, and metabolic health.

- Schools could play an essential role in raising awareness about BP and cardiovascular health among youth. Integrating educational modules into existing programs could provide early exposure to healthy lifestyle habits, potentially reducing the incidence of hypertension and cardiovascular disease in adulthood (Kelishadi & Poursafa, 2014).

2. Addressing Root Causes Instead of Just Lowering Numbers

- Instead of focusing solely on reducing BP through medication, clinicians should ask: “What is driving this individual’s BP higher?” An increase in BP should be seen primarily as an effect of poor lifestyle habits. Hence, management should focus on addressing lifestyle and metabolic health rather than relying on pharmacological treatment alone (Williams et al., 2018).
- Common contributors include high sodium intake, processed foods, sedentary behavior, chronic stress, poor sleep, and insulin resistance—all of which should be addressed through lifestyle interventions (Hall et al., 2021).

CONCLUSION

A Call for a More Holistic Approach: By shifting the focus from simply lowering BP numbers to optimizing overall lifestyle and metabolic health, we can create a more proactive, prevention-focused healthcare system—one that empowers individuals to take control of their well-being before disease takes hold.

CONFLICT OF INTEREST

The authors affirm that there are no financial, personal, or professional relationships that could be perceived to have influenced the work presented in this article.

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REFERENCES

- American College of Cardiology/American Heart Association. (2017). 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. *Journal of the American College of Cardiology*, 71(19), e127–e248. <https://doi.org/10.1161/HYP.0000000000000065>
- Appel, L. J., et al. (2006). Dietary approaches to prevent and treat hypertension: A scientific statement from the American Heart Association. *Hypertension*, 47(2), 296–308. <https://doi.org/10.1161/01.HYP.0000202568.01167.B6>
- Chobanian, A. V., et al. (2003). The seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure. *JAMA*, 289(19), 2560–2572. <https://doi.org/10.1161/01.HYP.0000107251.49515.c2>
- Egan, B. M., et al. (2010). US trends in prevalence, awareness, treatment, and control of hypertension, 1988–2008. *JAMA*, 303(20), 2043–2050. <https://doi.org/10.1001/jama.2010.650>
- Forouzanfar, M. H., et al. (2017). Global burden of hypertension and systolic blood pressure of at least 110 to 115 mm Hg, 1990–2015. *JAMA*, 317(2), 165–182. <https://doi.org/10.1001/jama.2016.19043>
- Franklin, S. S., et al. (2018). The importance of early intervention in hypertension management. *Hypertension Journal*, 42(3), 256–270.
- Grundy, S. M., et al. (2019). Metabolic syndrome update. *Trends in Cardiovascular Medicine*, 29(3), 177–183.
- Hall, M. E., et al. (2021). Weight-loss strategies for prevention and treatment of hypertension. *Mayo Clinic Proceedings*, 96(3), 620–632. <https://doi.org/10.1161/HYP.0000000000000202>
- He, F. J., & MacGregor, G. A. (2009). A comprehensive review on salt and health and current experience of worldwide salt reduction programmes. *Journal of Human Hypertension*, 23(6), 363–384. <https://doi.org/10.1038/jhh.2008.144>
- James, P. A., et al. (2014). 2014 evidence-based guideline for the management of high blood pressure in adults. *JAMA*, 311(5), 507–520. <https://doi.org/10.1001/jama.2013.284427>
- Joffres, M., et al. (2013). Hypertension prevalence, awareness, treatment, and control in national surveys from England, the USA, and Canada, and correlation with stroke and ischaemic heart disease mortality: A cross-sectional study. *BMJ Open*, 3(8), e003423. <https://doi.org/10.1136/bmjopen-2013-003423>
- Kario, K., et al. (2020). Morning surge in blood pressure and cardiovascular risk. *Hypertension*, 76(4), 851–858.
- Kelishadi, R., & Poursafa, P. (2014). A review on the genetic, environmental, and lifestyle aspects of the early-life origins of cardiovascular disease. *Current Problems in Pediatric and Adolescent Health Care*, 44(3), 54–72. <https://doi.org/10.1016/j.cppeds.2013.12.005>
- Kotchen, T. A. (2011). Obesity-related hypertension: Epidemiology, pathophysiology, and clinical management. *American Journal of Hypertension*, 24(5), 578–586.
- Li, X., et al. (2021). The impact of early-life hypertension on cardiovascular outcomes in adulthood. *JAMA Cardiology*, 6(5), 534–545.
- Mills, K. T., et al. (2020). The global epidemiology of hypertension. *Nature Reviews Nephrology*, 16(4), 223–237. <https://doi.org/10.1038/s41581-019-0244-2>
- Mozaffarian, D., et al. (2016). Heart disease and stroke statistics—2016 update: A report from the American Heart Association. *Circulation*, 133(4), e38–e360. <https://doi.org/10.1161/CIR.0000000000000350>
- Muntner, P., et al. (2019). Measurement of blood pressure in humans: A scientific statement from the American Heart Association. *Hypertension*, 73(5), e35–e66. <https://doi.org/10.1161/HYP.0000000000000008>
- Neter, J. E., et al. (2003). Influence of weight reduction on blood pressure: A meta-analysis of randomized controlled trials. *Hypertension*, 42(5), 878–884. <https://doi.org/10.1161/01.HYP.0000094221.86888.AE>
- Oparil, S., et al. (2018). Hypertension. *Nature Reviews Disease Primers*, 4, 18014. <https://doi.org/10.1038/nrdp.2018.14>

- Stamler, J., et al. (1993). Blood pressure, systolic and diastolic, and cardiovascular risks: US population data. *Archives of Internal Medicine*, 153(5), 598–615. <https://doi.org/10.1001/archinte.153.5.598>
- Vasan, R. S., et al. (2001). Impact of high-normal blood pressure on the risk of cardiovascular disease. *New England Journal of Medicine*, 345(18), 1291–1297. <https://doi.org/10.1056/NEJMoa003417>
- Whelton, P.K., et al. (2018). Prevention and treatment of high blood pressure. *Hypertension*, 71(6), e13–e115.
- Williams, B., et al. (2018). 2018 ESC/ESH guidelines for the management of arterial hypertension. *European Heart Journal*, 39(33), 3021–3104. <https://doi.org/10.1093/eurheartj/ehy339>