PERSPECTIVES IN HYPERTENSION

Missed opportunities: Improving pediatric hypertension recognition and care

RAHUL CHANCHLANI
Department of Pediatrics, McMaster Children's Hospital, McMaster University, Hamilton, Canada

RUAN KRUGER
Hypertension in Africa research Team (HART), North-West University, Potchefstroom, South Africa

Why hypertension in children and youth matters

Hypertension is a leading preventable cause of morbidity and death worldwide. Over the last three decades, the prevalence of hypertension has doubled globally, yet less than half of affected individuals are diagnosed, and even fewer receive adequate treatment.[1] This concern also extends to children and adolescents, where hypertension frequently begins but is often overlooked. Despite mounting evidence on the prevalence and long-term consequences of childhood hypertension, there remains a concerning lack of awareness among both healthcare providers and families. This poor recognition contributes to suboptimal screening practices and delays in diagnosis, increasing the risk of cardiovascular and kidney complications in early adulthood. Early detection and effective management of pediatric hypertension are crucial to mitigating these risks and reducing the burden of disease across the lifespan.

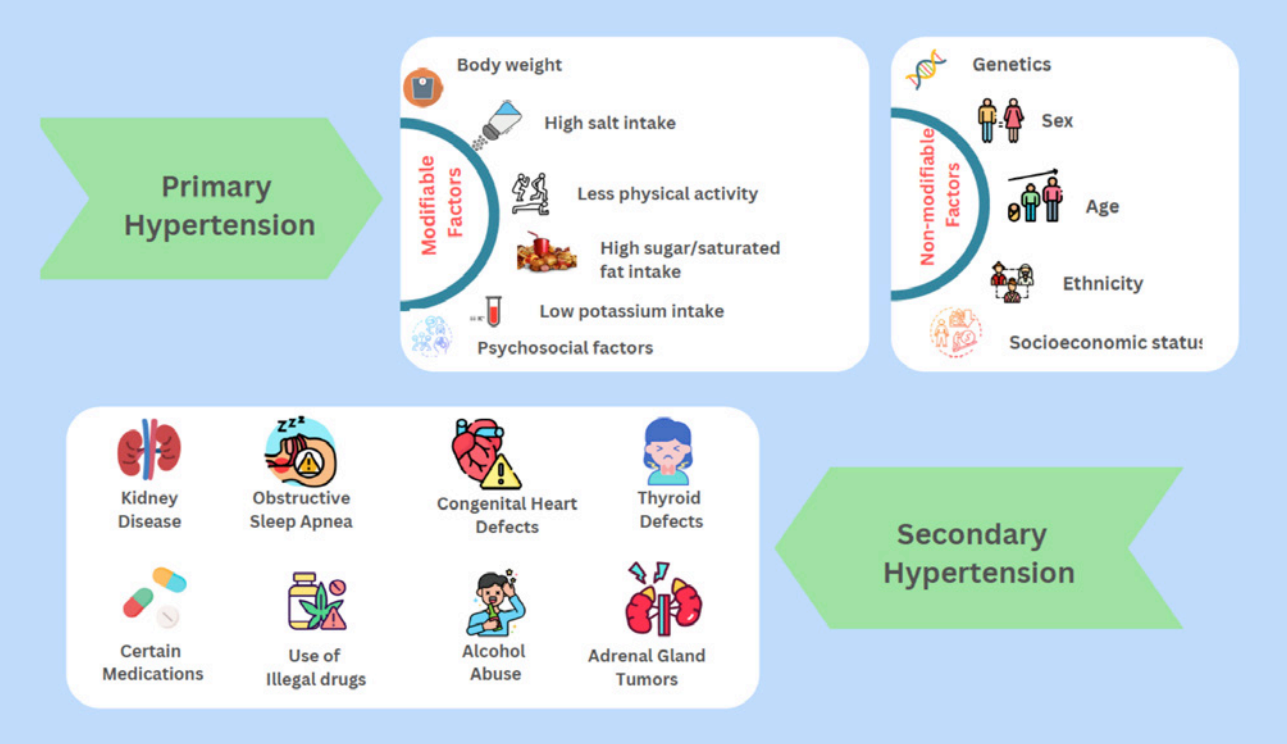
How common is primary hypertension in youth?

The prevalence of primary pediatric hypertension has risen markedly in recent years, primarily due to increasing rates of childhood obesity, excessive salt intake, low physical activity, and a growing intake of processed foods. Studies suggest that 5–8% of children and adolescents have hypertension, and an additional 10–14% have elevated BP, often referred to as prehypertension.[2] A meta-analysis revealed that the prevalence of hypertension in children increased from just over 1% in the 1990s to 7% between 2010 and 2014.[3] While this alarming trend highlights the need for heightened awareness and targeted interventions to address the growing burden of pediatric hypertension, it is noteworthy to add that these global prevalence rates are highly underrepresented of LMICs.

Current challenges in pediatric hypertension care

Despite the rising prevalence, pediatric hypertension care remains inadequate. Many healthcare providers remain unfamiliar with the complex hypertension diagnostic criteria, which rely on age, sex, and height percentiles rather than fixed thresholds. In addition, conflicting guidelines contribute to underdiagnosis, with organizations such as the American Academy of Pediatrics and Hypertension Canada advocating for annual BP screening starting at age 3, while others, including the U.S. Preventive Services Task Force, do not recommend routine screening.[4] In practice, screening and follow-up care are insufficient. Studies from the USA reveal that only 15–33% of children undergo annual BP measurements, and fewer receive appropriate follow-up for elevated readings.[5] Fewer than 25% of children with hypertension are accurately diagnosed, less than half receive lifestyle counseling, and only 6% are

Figure 1: Risk Factors of Pediatric Hypertension



prescribed antihypertensive medications when indicated.[6] Families, too, often underestimate the significance of hypertension in children, perceiving hypertension as a condition that primarily affects adults, which highlights the need to upscale health education even at household level.

What increases the risk of primary hypertension in youth?

Pediatric hypertension is multifactorial, with both genetic and environmental factors playing significant roles.[7] Currently, primary hypertension is the main driver in context of increasing rates of obesity due to unhealthy dietary intake, high salt and low potassium intake and sedentary lifestyle among children (**Figure 1**).

Consequences of untreated hypertension in youth

Progression or tracking to Adult Hypertension

Children with hypertension are at significant risk of persistent hypertension in adulthood.[8]

Cardiovascular outcomes

Hypertension can cause structural and functional changes in the heart and blood vessels, including left ventricular hypertrophy (LVH) and arterial stiffness.[9,10] These are precursors to severe cardiovascular diseases and events in later life.

Increased Risk of Long-Term Complications

Studies link childhood hypertension with a higher likelihood of early cardiovascular and kidney events.[11] Jacobs et al. (2022) showed that childhood combined-risk z score were strongly associated with cardiovascular events in midlife, and especially higher relative risk for fatal and non-fatal cardiovascular events in adults younger than 47 years.[10]

Strategies to optimize pediatric BP screening and hypertension care

To optimize pediatric blood pressure (BP) screening and hypertension care worldwide, a comprehensive, multi-faceted approach is essential (**Figure 2**). This includes implementing standardized screening protocols across healthcare settings, developing unified international guidelines in collaboration with organizations like ISH, and integrating BP measurement into routine care such as annual well-child visits and school health checkups. Using validated BP devices designed for children can improve accuracy and reduce variability in measurements.

Enhancing provider education and training through continuous medical education (CME), distributing resources like reference guides and management algorithms, and focusing on educating providers

in rural and underserved areas can significantly improve care. Leveraging health information technology, such as incorporating alerts within electronic medical records (EMRs) to remind providers to check BP and using data analytics for targeted interventions, is also crucial. Expanding telehealth services for follow-up consultations and BP monitoring can particularly benefit families in remote areas.

Promoting family and community awareness through education campaigns, school-based or pharmacy-based programs, and community outreach can help educate parents and caregivers about the importance of regular BP checks and healthy lifestyle choices. Improving access to care and resources by establishing multidisciplinary hypertension clinics, ensuring affordable home BP monitors, and advocating for policies that reduce barriers to care is vital.

Fostering research and surveillance by creating centralized registries to track pediatric hypertension cases, supporting implementation studies, and prioritizing research on underrepresented populations can address health inequities. Finally, incentivizing quality care by developing performance metrics to assess BP screening rates and management outcomes in pediatric care settings can drive improvements in care and outcomes.

Why we need to act now?

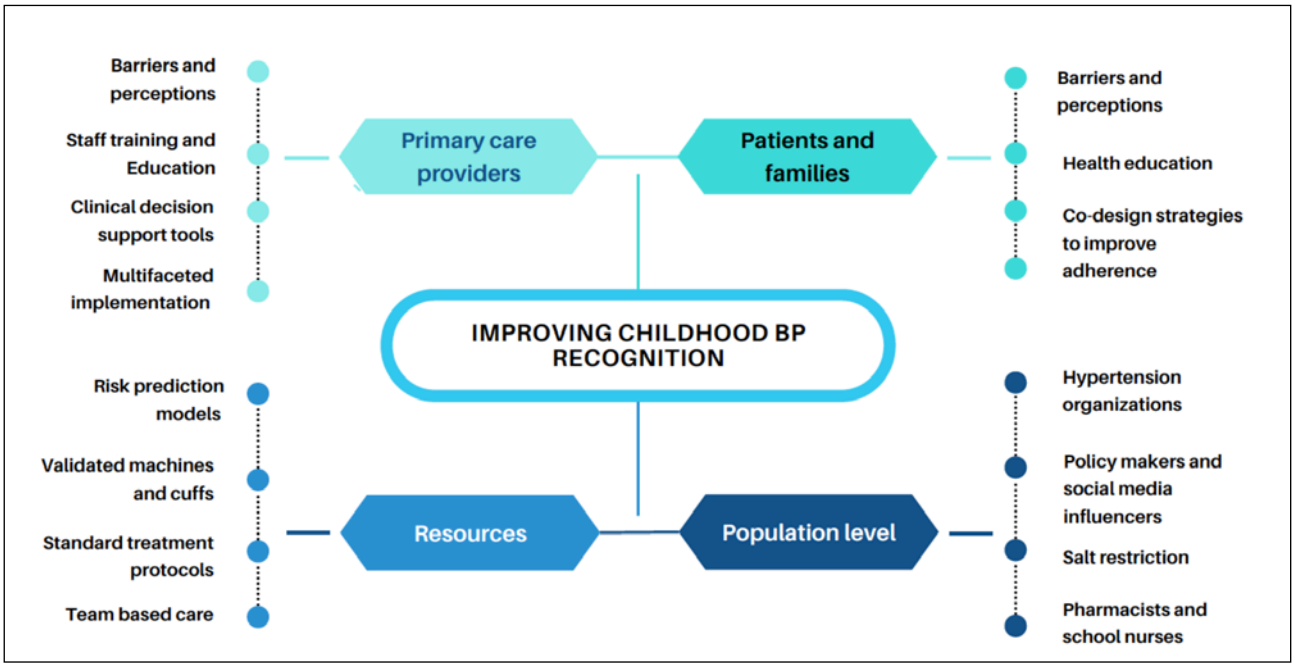
Hypertension in children is not just a future health concern; it is a public health issue today. Screening blood pressure can identify those at risk, particularly children with obesity, a family history of hypertension, or other risk factors. Early interventions – including dietary changes, increased physical activity, and medical management when necessary – can effectively lower BP and prevent complications.

Unfortunately, most children with high BP remain undiagnosed and untreated due to systemic gaps in care. Addressing these issues requires:

- Improved awareness among healthcare providers and caregivers
- Proper recordkeeping of blood pressure vitals in pediatric patient files
- Clearer, evidence-based guidelines for screening and management
- Enhanced access to diagnostic and therapeutic resources

By prioritizing pediatric hypertension as a public health concern, we can significantly reduce the risk of serious illnesses in adulthood.[12] This enhanced focus on pediatric hypertension can serve as a cornerstone for healthier communities, underscoring the importance of preventive care in transforming health outcomes globally.

Figure 2: Strategies to improve pediatric hypertension recognition and management



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Rahul Chanchlani – chanchlr@mcmaster.ca

Ruan Kruger – Ruan.Kruger@nwu.ac.za