

# YOUNG INVESTIGATORS:

## Why should we care about hypertension in children?

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A recent analysis reported a 2-4% prevalence of hypertension in American children and an increase from 14.8% to 16.3% in elevated blood pressure among children<sup>1</sup>. Yet these estimations seem very different in countries with large inequalities such as South Africa. A systematic review indicated that childhood hypertension prevalence ranged between 7.5% and 22.3%, dependent on location, region and culture<sup>2</sup>. With the current global population of children (under 15 years) estimated at approximately 2 billion and a median prevalence of hypertension at 6.75%, almost 134 million children suffer from hypertension. Of these, the majority of children are from developing countries.

Perhaps the most common contributing factor of paediatric hypertension is obesity. According to the recent UNICEF report on "The state of the world's children", at least 340 million adolescents worldwide between ages 5-19 years are overweight<sup>3</sup>. With the global increasing availability and cheap cost of processed foods and beverages, along with the increasing lack of physical activity, the prevalence of overweight children increased from 19% to 75.8% in the last 10 years in low-income countries<sup>3</sup>. This in itself is a global emergency with major economic implications, especially for low-, lower middle- and upper middle-income countries.

Although we cannot ignore the major impact of overweight and obesity on the development of high blood pressure, many other conditions may accompany the onset and development of childhood hypertension. Among these are diabetes mellitus (both types 1 and 2) including other metabolic syndrome risk factors<sup>4</sup>, as well as chronic kidney

disease and renal insufficiency<sup>5</sup>. In addition, secondary hypertension is more common in children and not proportional to age. These conditions may include complications such as hypertensive encephalopathy, cranial nerve palsy, resistant hypertension and heart failure, as well as a clinical history of urinary infections, gross haematuria or oedema, sleep problems and an unavoidable family history of hypertension<sup>6</sup>. Children with congenital heart disease including aortic coarctation are also subjected to an increased risk to develop hypertension<sup>7</sup>. Other (perhaps less common) conditions contributing to hypertension in children include renal parenchymal disease<sup>8</sup>, Cushing's syndrome<sup>9</sup>, pheochromocytoma<sup>10</sup> and primary aldosteronism<sup>11</sup>.

**More importantly, the increasing prevalence of primary hypertension in children remains a global health concern, especially with certain risk factors in rural regions and developing countries often overlooked.**

Among these risk factors are less clinical and more sociocultural contributors including poverty, infectious diseases, violence and injury, child abuse and sanitation<sup>12</sup>. These factors are often listed when describing the socioeconomic burden and ethnic inequalities that still exist in many countries. These adversities directly affect a child's development since they are often not educated, malnourished and under huge amounts of psychosocial stress<sup>13</sup> due to poverty and the reality of ethnic inequalities. High impact studies have shown that childhood blood pressure tracks into adulthood from as early as 4 years of age<sup>14,15</sup>, making children and adolescents

the most appropriate population to promote healthy lifestyle and prevent the early onset of elevated blood pressure.

So, should we care about childhood hypertension? Indeed, we have to. With recent evidence highlighting early life exposures to risk factors that may determine

the origin and trajectories of disease across the lifecourse<sup>16</sup>, monitoring blood pressure in children and adolescents should become a priority area for clinician and research scientists as well as in mainstream scientific programmes of hypertension related conferences.

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