

## Editorial



# Millennial Blood Pressure Alert: Suboptimal Hypertension Management in Children, Adolescents, and Young Adults

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Hypertension has been recognized as a disease of aging and traditionally is referred to as a chronic adulthood disease. Rapid changes in lifestyle such as increased consumption of processed food with excessive calories, a sedentary working environment, and video game playing instead of outdoor physical activity have increased the prevalence of lifestyle diseases, including hypertension, dyslipidemia, and metabolic syndrome, in young adults, adolescents, and even children. Most cases of newly diagnosed hypertension in youth are essential rather than secondary. According to the clinical practice guideline provided by American Academy of Pediatrics, annual blood pressure (BP) measurement is recommended for children  $\geq 3$  year of age.<sup>1)</sup> An extensive evaluation for secondary causes of hypertension, including renovascular disease, adrenal gland pathology, and endocrine diseases, is not recommended for children  $\geq 6$  years of age who are obese and have no history of relevant physical findings suggestive of a secondary cause of hypertension.

Hypertension results in end organ damage, even in a patient whose disease is well-controlled.<sup>2)</sup> In the Coronary Artery Risk Development in Young Adults study, patients who had hypertension onset at age  $< 35$  years showed increased risk of left ventricular hypertrophy, coronary calcification, albuminuria, and diastolic dysfunction during middle age.<sup>3)</sup> Because hypertension is an important and modifiable risk factor, early diagnosis and treatment are important to prevent cardiovascular events in middle age.

The high prevalence of hypertension as well as other lifestyle-related chronic diseases in the younger generation causes several important problems. First, it can lead to poor quality of life due to serious cardiovascular disease for a considerable period of life. The management of hypertension in early age is a critically important and urgent task to maintain healthy longevity in an aging population. Second, it has a direct negative impact on industrial productivity, and it leads to a substantial increase in social healthcare costs. Third, it adversely affects the subsequent generation. Offspring of parents who both had early onset hypertension have a significant risk for hypertension.<sup>4)</sup>

Lee et al.<sup>5)</sup> raised the issue of suboptimal hypertension treatment in the younger population. A public event was hosted by the Korean Society of Hypertension (KSH) and the Korea

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Disease Control and Prevention Agency (KDCA) to raise awareness of hypertension among the general public worldwide, and the event was held according to the global International Society of Hypertension (ISH) protocol. The volunteers were comprised of 9,950 adults over 18 years of age, and 29.3% of these were hypertensive, BP  $\geq$ 140/90 mmHg. Although the study was cross-sectional in which BP was measured once in most participants, consistent with the results of the existing literature, systolic BP increased with age, and diastolic BP was highest in patients in the 50s, with an inverted U-shaped pattern. About 21% of the participants had not measured their BP in the last 12 months. Among the hypertensive patients, 47.6% were receiving treatment, but the rate of those receiving treatment was low at younger age and in men. Among hypertensive individuals, 6.3% of those under the age of 30 and 8.6% of those under the age of 30–39 were aware of their hypertension.

These results are consistent with those of Korean nationwide survey data. The diagnosis and treatment of hypertension have increased steadily, and the rate of hypertension treatment reached 63% in 2018, although the rate of hypertension treatment was as low as 14% in the younger generation under the age of 40.<sup>6)</sup>

The health issues of the younger generation are not a domestic problem of only Korea. A recent study conducted by an American health insurance provider indicated that people aged 22–36 in 2017 were less healthy than same-aged people in 2014. Hypertension, dyslipidemia, and type 2 diabetes mellitus increased by 10%, 7%, and 19%, respectively, in 2017 compared to 2014.<sup>7)</sup> Although younger-aged people rarely visit the hospital and their diagnoses can be delayed, it is thought that the prevalence of major lifestyle-related diseases has increased in the younger age group. Historically, younger generations were not exposed to lifestyle diseases. Even if their youth, millennials are less healthy than older generations. Exposure to environmental factors might be different from previous generations, and suboptimal awareness and treatment of hypertension status must be considered in a similar context. Several factors seem to be contributing to the increased incidence of hypertension: sodium intake, additives in processed food, insufficient physical activity, obesity, persistent sympathetic stimulation, and factors related to late childbirth, including low birth weight and weight gain during the neonatal period and infancy.<sup>8)</sup> Early diagnosis, therapeutic lifestyle modification in the early stage of life, and pharmacological treatment are critical.

Children should be instructed about healthy lifestyle habits early in their schooling. Special precautions for drinking, smoking, and obesity should be provided. Particularly, male students and young adults should be screened for hypertension and metabolic diseases. Finally, hypertension and other lifestyle-related diseases of the younger generation need more attention in terms of national health policy.

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