

■ Editorial

# Sedentary Behavior, Chronic Diseases, and COVID-19

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Sedentary behavior refers to any waking behavior, such as using an electronic device, reading a book, or sitting in a car, with an energy expenditure of 1.5 metabolic equivalent for the task or less, while in a sitting, reclining, or lying position.<sup>1)</sup> Sedentary behavior is distinct from physical inactivity, which is defined as an insufficient level of physical activity to meet present recommendations.<sup>2)</sup> Individuals who are considered physically active under current guidelines may spend most of their waking time in sedentary behaviors.<sup>3)</sup> Prolonged, uninterrupted sedentary behavior is a modifiable risk factor for chronic diseases independent of physical activity level.<sup>4)</sup> The World Health Organization presented moderate evidence that a high level of sedentary behavior is associated with an increased risk of mortality from all causes, cardiovascular disease (CVD), and cancer, and the incidence of type 2 diabetes, CVD, and cancer.<sup>5)</sup> In the present issue, Concha and Mendoza<sup>6)</sup> reported that sedentary behavior was associated with the development of chronic kidney disease in most of the studies included in their systematic review.

Since the outbreak of coronavirus disease 2019 (COVID-19), most countries around the world have adopted social distancing measures to reduce transmission of COVID-19.<sup>7)</sup> The Korean government has also implemented a variety of measures to encourage staying at home, limit non-essential gatherings, and promote remote work and online learning.<sup>8)</sup> These measures may result in changes in daily lifestyle, including physical activity and sedentary behavior. Stockwell et al.<sup>9)</sup> demonstrated that physical activity decreased with concurrent increases in sedentary behavior during the lockdown due to the COVID-19 pandemic, irrespective of subpopulation. These findings were also consistently found in studies conducted in

Korea.<sup>10,11)</sup> Prolonged sedentary behavior during the COVID-19 pandemic may increase cardiometabolic risks and potentially exacerbate underlying chronic diseases.<sup>12)</sup> A Korean study revealed that change in body mass index (BMI) during COVID-19 pandemic was inversely associated with change in physical activity and positively associated with change in sedentary time.<sup>11)</sup> In a retrospective cohort study conducted at a hospital in Korea, cardiometabolic risks including BMI, blood pressure, lipid profiles, and glycated hemoglobin worsened, and the proportion of patients with metabolic syndrome significantly increased during the COVID-19 pandemic.<sup>13)</sup>

Given that the COVID-19 pandemic has been prolonged over a couple of years, the negative impact of COVID-19-related social distancing measures on health behaviors and chronic diseases is expected to be more serious. Sedentary behavior is recommended as a target to counter the negative health consequences of social restrictions. Interruption to sedentary behavior at home or at work can be achieved without increased risk of COVID-19 infection. Standing and walking for 2–5 minutes every 20–30 minutes of sedentary behavior can be effective in reducing the risk of chronic diseases.<sup>14)</sup> Ricci et al.<sup>15)</sup> proposed general recommendations to stay active and limit sedentary behavior during the COVID-19 pandemic. Policymakers and health professionals should provide and encourage practical strategies to reduce and interrupt sedentary behavior while implementing COVID-19-related social distancing measures.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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