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Editorial

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Smoking and Cardiovascular Disease in Young Adults: Can We Restore the Risk by Cessation Alone?

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▸ See the article "The Association of Smoking Status and Clustering of Obesity and Depression on the Risk of Early–Onset Cardiovascular Disease in Young Adults: A Nationwide Cohort Study" in volume 53 on page 17.

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Cardiovascular disease (CVD) is one of the leading causes of morbidity and mortality in Korea.[1] Although the absolute rate of CVD mortality is much lower in young adults than in middle-aged or older adults, premature CVD still holds the fourth and third leading cause of death among those in their 20s and 30s, respectively, without significant improvement over the last 10 years.[1][2] Given the prolonged years lived with disability and years of life lost associated with premature CVD events, public health initiatives focusing on CVD prevention in young adults are urgently needed.

Tobacco smoking, an important modifiable risk factor for CVD, is distinguished from other cardio-metabolic risk factors in that it disproportionately affects young adults. Unlike hypertension, diabetes, or dyslipidemia, the prevalence of which increases steeply with age, tobacco smoking has been reported to be most prevalent among adults aged <50 years in Korea.[3] However, most of the available evidence on the adverse health effects of smoking in Koreans has been derived from middle-aged or older adults.[4]

In this issue of the *Korean Circulation Journal*, Kim et al.[5] provided valuable new data on the potential cardiovascular impact of tobacco smoking in young adults. Using the Korean National Health Insurance Service (NHIS) database, the authors identified over 3 million adults aged 20–39 years who underwent 2 consecutive health examinations at 2-year intervals and followed them up for a median of 6 years to investigate the association of smoking habit with premature CVD risk. Not surprisingly, the risk of CVD was the highest among continual smokers, followed sequentially by starters, quitters, and non-smokers. There also existed a dose-response relationship between smoking intensity or duration and CVD risk. Interestingly, the accompanying obesity and depression augmented the smoking-related risk of CVD in an additive manner, although the authors have not provided the results of formal statistical testing for interaction.

This new study extends the previous findings from older age groups and suggests that the efforts to encourage smoking cessation and, more importantly, to prevent smoking initiation are of great significance to younger adults as well. Even though the finding that CVD risk was

Data Sharing Statement

The data generated in this study are available from the corresponding author upon reasonable request.

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still higher in smoking quitters than in non-smokers can be somewhat disappointing, such observation should be interpreted cautiously given the relatively short follow-up duration of the study (median 6 years). The co-existence of obesity or depression, which tends to cluster with tobacco smoking but has been underrecognized, also appears to be a condition that requires critical attention. Overall, the present study delivers an important message that integrated, multidisciplinary approaches would be essential to fulfill the unmet clinical needs of young adults for CVD prevention.

Despite the authors' considerable efforts, several questions still remain unanswered on the topic. First, the duration of smoking cessation needed to restore an elevated CVD risk to an ideal level should be further delineated. A previous observational study from the U.S. has shown that former heavy smokers' CVD risk remained significantly elevated for at least 5 to 10 years and possibly for 25 years after cessation relative to never smokers.[6] In a 50-year follow-up of the British Doctors Study, ex-smokers who quitted before age 44 had similar life expectancy as non-smokers, whereas those who quitted at older ages did not restore survival to a non-smoking level.[7] Second, whether smoking reduction, instead of cessation, can prevent premature CVD events needs to be demonstrated. In a recent Korean NHIS study, only smoking cessation, but not reduction, was associated with a reduced CVD risk;[4] this study, however, did not include adults aged <40 years. Third, the increasing use of non-combustible nicotine or tobacco product (NNTP) calls for studies regarding its health outcomes among young adults. In another Korean NHIS study, although not restricted to young adults, switching to NNTP among combustible tobacco smokers was associated with higher risk of short-term CVD risk than completely quitting without NNTP.[8] Last, future studies to identify or develop optimal strategies for simultaneous management of other accompanying risk factors,[9][10] including, but not limited to, obesity and depression, are highly warranted.

Premature CVD should be preventable. In reality, the decline in premature CVD mortality has reached stagnation. Now with the increasing prevalence of cardiovascular risk factors, CVD poses a serious health threat to the young adult population. As tobacco smoking is still common relative to other risk factors, public health initiatives should administer strategies to further discourage smoking in young adults. Smoking cessation alone, however, may not sufficiently restore CVD risk to an ideal level. Holistic approaches with concerted management of clustered CVD risk factors are needed to improve overall cardiovascular health among young adults and bring the stagnation of premature CVD mortality to an end.

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