

Trends of Diabetes Epidemic in Korea

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The prevalence of diabetes is on the rise across the globe [1], and Korea is no exception. Diabetes is a common chronic disease, but it serves as a major cause of blindness, chronic kidney disease, coronary heart disease, and stroke, and is also one of the leading cause of death in the world [1]. Thus, the increasing prevalence of this disease is a heavy burden for both patient and society. Population-based data are crucial to analyze the disease burden, contribute to developing a public health policy, evaluate the effectiveness of various preventive measures for reducing burden of the disease, and expand the health-related knowledge around the nation [2]. In this issue of the *Diabetes and Metabolism journal*, two original research articles examine the epidemiology of diabetes using population-based data. In one article, Won et al. [3] examined the prevalence of diabetes among Korean adults. In another article, Kim et al. [4] assessed the recent trends of all-cause and cardiovascular disease (CVD) mortality rates among persons with diabetes in Korea.

The study by Won et al. [3] provides the most up-to-date data on the prevalence of diabetes among Korean adults. The authors analyzed data from the sixth (2013 to 2014) Korea National Health and Nutrition Examination Survey (KNHANES). The KNHANES was performed by the Korean Centers for Disease Control and Prevention, and the participants in this survey represents the Korean adult population [5]. The prevalence of diabetes in Korean adults aged ≥ 30 years was 13.7%, which is estimated to be about 4.8 million adults with diabetes. With the global increase in prevalence of diabetes in adults over the last decade [1], the prevalence of diabetes in Korean adults has also increased by 5.1%, from 8.6% in 2001 to 13.7% in 2016. Of even greater concern is the fact that the estimated

population with impaired fasting glucose (IFG) was about 8.3 million, which leads to a prediction that the prevalence of diabetes will increase further in the future since IFG is viewed as one of the high-risk categories for the future development of diabetes. Approximately 25% of patients with IFG and impaired glucose tolerance progress to diabetes over an observation period of 3 to 5 years [6]. Consistent with the results observed in other nationwide studies [7,8], diabetes was more common in people with low income level than people with high income level and was more prevalent in men than in women in most age groups. The authors note that the proportion of undiagnosed diabetes was considerable (29.3%). However, patients with diagnosed diabetes who were being treated was around 90%, and 43.5% of them achieved glycosylated hemoglobin levels less than 7%.

Unlike the increased prevalence of diabetes, the incidence of CVD and the CVD-related mortality have declined substantially among persons with diabetes over the past decade in high-income countries [9,10]. This trend was also observed in Korean diabetic patients. The study by Kim et al. [4] provide data on the trends of all-cause and cardiovascular mortality among persons with diabetes in Korea. All-cause and CVD mortality rates continuously decreased in patients with diabetes from 2003 to 2013. The gap in mortality between individuals with or without diabetes continuously decreased over time. However, as the authors note, it is interesting that the reduction in CVD mortality was primarily attributed to a reduction in mortality from ischemic stroke, rather than from ischemic heart disease. In a Swedish population that has diabetes, the decline in CVD mortality was mainly due to a decline in mor-

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tality from ischemic heart disease [9]. Over the last decade in United States, the decline in the incidence of myocardial infarction in diabetic patients was greater than the decline in stroke [10].

United Kingdom Prospective Diabetes Study follow-up trials have shown the importance of glucose-lowering therapy in reducing the risk of CVD among patients with type 2 diabetes mellitus (T2DM) [11]. On the basis of Steno-2 study, multifactorial risk reduction strategies beyond glycemic control including lipid-lowering therapy with statin and blood pressure control have been shown to reduce the risk of CVD in patients with T2DM [12]. The evidences obtained from the Action to Control Cardiovascular Risk in Diabetes study added fuel to the movement toward more individualized treatment and goal setting for T2DM [13]. Clinical application of the findings from these trial and improvements in risk factor management are believed to have improved cardiovascular outcomes in patients with diabetes over the recent two decades. Advances in revascularization may have also played a role [9].

These epidemiologic findings related to the Korean population with diabetes show two important trends. One is that the prevalence of diabetes has increased in recent decades. The other is that the mortality from CVD in diabetic patients have declined substantially. Given these trends and the increasing life span, the duration of life with serious diabetes complication will increase [14]. These continued diabetes-related morbidities such as CVD, end-stage renal disease, and amputation will be another major challenges to our communities in coming years. Efforts should be made to reduce these burden.

CONFLICTS OF INTEREST

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

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