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Letter to the Editor

Correlations of Regular Walking Exercise and Body Mass Index with Type 2 Diabetes Prevalence in Korean Adults during the COVID-19 Pandemic

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Dear Editor-in Chief

The outbreak of COVID-19 has brought about significant social and cultural changes, one of which is the fall in physical activities and the continuous exacerbation of type 2 diabetes (T2D) risk factors (1). A critical cause of increased obesity is reduced physical activity, which ultimately increases the risk of various chronic diseases such as diabetes. Thus, this study aimed to determine the correlations between the risk of T2D with the level of obesity and walking exercise as a type of regular physical activity in Korean adults in 2021 during the COVID-19 pandemic.

The data analyzed in this study was based on the Korea National Health and Nutrition Examination Survey (KNHANES) conducted in 2021. The data of 817 Korean adults (446 men and 371 women) with measurements of regular walking exercise, fasting glucose (FG), and glycated hemoglobin (HbA1c) were used, while the data of adolescents were excluded. Regular walking exercise was defined as 3 days or more of walking exercise per week. Body mass index (BMI) was calculated using a formula based on height and weight [BMI = weight (kg) / height $(m)^2$]. The diagnostic criteria of T2D followed the criteria suggested by the American Diabetes Association; FG ≥126 mg/dL or HbA1c ≥6.5% (2).

SPSS/Windows 26.0 (IBM Corp., Armonk, NY, USA) was used for statistical analysis. The variables regular walking exercise and BMI were each divided into upper and lower groups forming four groups: 1) Low BMI and regular walking (RW), 2) Low BMI and non-regular walking (NRW), 3) High BMI and RW, and 4) High BMI and NRW. The odds ratio (OR) and 95% confidence interval (CI) were obtained from a logistic regression analysis with adjustments for age, gender, alcohol drinking, and smoking. The risk of T2D was analyzed for the four groups formed by dividing the variables regular walking exercise and BMI into upper and lower groups, and the results are given in Table 1.

Table 1: Combined association of regular participation in walking activity and body mass index (BMI) levels on Type 2 diabetes

Total (n=817)	***BMI < 25kg/m²***		***25kg/m² ≤ BMI***	
	Regular Walking (n=513)	Non-regular Walking (n=44)	Regular Walking (n=219)	Non-regular Walking (n=41)
OR (95% CI) Crude				
	1	2.94(1.21-7.13)	3.90(2.39-6.38)	4.37(1.91-9.96)
Adjusted for age, sex, drinking, and smoking				
	1	2.69(1.01-7.18)	3.41(2.02-5.77)	4.91(2.02-11.93)
Abbreviations, OR: Odds Ratio, CI: confidence interval				

The analysis with adjustments for age, gender, alcohol drinking, and smoking indicated that the risk of T2D was 2.69(OR: 2.69, 95% CI: 1.01-7.18), 3.41 (OR: 3.41, 95% CI: 2.02-5.77), and 4.91(OR: 4.91, 95% CI: 2.02-11.93)-fold higher in the Low BMI and NRW, High BMI and RW, and High BMI and NRW groups, respectively, compared with that in the Low BMI and RW group. The differences were all statistically significant.

The risk of diabetes was significantly correlated with regular walking exercise and BMI in Korean adults during the COVID-19 pandemic. A fall in the level of regular physical activities led to increased body weight and decreased muscle mass, shown to have negative effects on the risk factors of metabolic diseases and increase the risk of T2D (3). Walking, as part of regular physical activities with adequate weight control would be a highly important method to ensure a healthy life in Korean adults.

In summary, an effective method to lower the risk of T2D in Korean adults is to increase regular walking exercise as part of physical activities in combination with adequate weight control. An emphasis is placed on future studies to identify the most effective types of physical activities in addition to regular walking exercise.

Conflict of Interest

The author declares that there is no conflict of interest.

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