Strong association of Reduced Walking Time with Anxiety Prevalence in Adult population

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Introduction

➢ There is an emerging evidence that reduced walking time is related to anxiety.

➢ Aim of this study is to examine the association of reduced walking time with anxiety prevalence in Korean adult population.

Method

➢ A total of 126,475 adults aged over 18 who underwent a structured survey of physical activity and mental health test were enrolled as a part of Tertiary hospital Cohort Study from 2012 to 2019.

➢ Anxiety prevalence was evaluated by the Clinically Useful Anxiety Outcome Scale (CUXOS) questionnaire.

➢ **Presence of anxiety** was defined as **CUXOS>20**.

➢ Participants were grouped into **3 categories** by **walking time**:
  (1) ≥60min/day, (2) 30-60min/day, and (3) <30min/day.

➢ We performed binomial logistic regression analysis for risks of having anxiety according to walking time.

➢ Adjustments were performed by possible confounding factors such as age, sex, screening center, alcohol intake, smoking status, education level, hypertension, diabetes, LDL-C, and exercise frequency.

Results

Table 1. Baseline characteristics of study population in Men and Women.

Characteristics	Total	Men	Women	* P value
Number of subjects (n)	112,500	61,660	50,840	
Screenig center, Seoul (%)	69.5	69.5	69.6	0.683
Age (years)	45.7 ± 11.5	46.1 ± 11.3	45.2 ± 11.8	<0.001
Height (cm)	166.7 ± 8.62	172.5 ± 6.0	159.6 ± 5.5	<0.001
Weight (kg)	66.1 ± 12.8	73.8 ± 10.5	56.9± 8.3	<0.001
Waist circumference(cm)	82.0 ± 9.6	86.4± 8.0	76.6 ± 8.5	<0.001
Fat mass (kg)	17.7 ± 5.9	17.6 ± 6.0	17.8 ± 5.8	<0.001
Percent body fat (%)	26.7 ± 6.7	23.5 ± 5.4	30.7 ± 6.1	<0.001
ASM (kg)	20.3 ± 4.9	24.0 ± 3.0	15.8 ± 2.2	<0.001
SMI [a] (kg/m2)	7.2 ± 1.1	8.0 ± 0.7	6.2 ± 0.7	<0.001
Current smoker (%)	16.6	29.4	2.1	<0.001
Heavy drinking [b] (%)	14	22.3	5.4	<0.001
High education level [c] (%)	54.6	77.7	62.6	<0.001
Walking time(min/day)	60.1 ± 38.6	60.6 ± 74.6	59.5 ± 77.7	<0.001
Vigorous exercise(days/week)	1.1 ± 1.7	1.2 ± 1.7	1.0 ± 1.6	<0.001
Comorbidities				
Hypertension (%)	17.7	23.1	11.3	<0.001
Diabetes mellitus (%)	5.1	6.9	3	<0.001
Dyslipidemia (%)	19.3	22.9	14.9	<0.001
Laboratory findings				
Vit D(ng/mL)	18.1 ± 8.2	18.8 ± 7.7	17.1 ± 8.7	<0.001
Total cholesterol (mg/dL)	193.3 ± 35.2	194.7 ± 35.5	191.5 ± 34.8	<0.001
LDL-C (mg/dL)	125.2 ± 33.5	129.5 ± 33.0	120.0 ± 33.4	<0.001
HDL-C (mg/dL)	59.3 ± 15.9	53.6 ± 13.4	66.2 ± 16.0	<0.001
Triglycerides (mg/dL)	114.1 ± 81.7	134.5 ± 94.5	89.3 ± 53.1	<0.001
Fasting gluccose(mg/dL)	97.9 ± 17.0	100.9 ± 18.5	94.2 ± 14.2	<0.001
HbA1c (%)	5.6 ± 0.6	5.7 ± 0.6	5.6 ± 0.5	<0.001
Creatinine (mg/dL)	0.84 ± 0.21	0.96 ± 0.18	0.69 ± 0.14	<0.001
Albumin (g/dL)	4.67 ± 0.27	4.73 ± 0.26	4.60 ± 0.26	<0.001
AST (IU/L)	23.2 ± 14.5	25.2 ± 16.2	20.7 ± 11.8	<0.001

Values are mean ± SD or percentage. * Using Chi-square test for categorical variable or Student t-test for continuous variable.
a SMI = ASM/height(m)2. b Men≥ 30g/day, Women≥ 20g/day. c ≥college graduate. ASM, appendicular skeletal muscle mass; SMI, skeletal muscle mass index; vit D, vitamin D; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; AST, aspartate aminotransferase.

Figure 1. Comparison of means of CUXOS scores between categories of walking time (≥60min/day, 30-60min/day, <30min/day).

✓ **Mean of CUXOS score** was *highest* in participants with **walking <30min/day**, *followed by walking 30-60min/day and by walking ≥60min/day group.*

Table 2. Association of Walking time with Presence of Anxiety in subgroups of study participants by sex.

	Walking time			
	≥60min/day, OR (95% CI)	30-60min/day, OR (95% CI)	<30min/day, OR (95% CI)	P for trend
Men				
Model 1	1 (reference)	1.056 (0.940-1.186)	1.157 (1.035-1.292)	0.011
Model 2	1 (reference)	1.067 (0.929-1.225)	1.193 (1.047-1.359)	0.009
Model 3	1 (reference)	1.077 (0.949-1.222)	1.144 (1.014-1.291)	0.027
Model 4	1 (reference)	1.082 (0.954-1.228)	1.134 (1.004-1.281)	0.038
Women				
Model 1	1 (reference)	1.125 (1.007-1.256)	1.217 (1.096-1.350)	<0.001
Model 2	1 (reference)	1.159 (1.018-1.321)	1.322 (1.169-1.495)	<0.001
Model 3	1 (reference)	1.161 (1.032-1.306)	1.301 (1.164 -1.455)	<0.001
Model 4	1 (reference)	1.136 (1.009-1.280)	1.277 (1.141-1.429)	<0.001

Model 1: Crude
Model 2: Adjusted for Age, Screening center, Alcohol intake, Smoking status, Education level
Model 3: Model 2 + additionally adjusted for history of Hypertension, history of Diabetes mellitus, LDL-C
Model 4: Model 3 + additionally adjusted for Vigorous exercise frequency.
Abbreviation: vit D, vitamin D; LDL-C, Low-Density Lipoprotein-Cholesterol; CI, confidence interval; OR, odds ratio.

✓ **In Men,** *compared to walking ≥60min/day*, participants with **walking<30min/day** were **highly associated with anxiety prevalence.**
✓ **In Women,** *compared to walking ≥60min/day*, participants with **walking as 30-60min/day or walking<30min/day** were **highly associated with anxiety prevalence.**

Conclusion

➢ We presented that **reduced walking time** was positively associated with **increased prevalence of anxiety** in both men and women showing the *associations were relatively stronger in women* than in men.

➢ It is necessary to **prevent anxiety** by **adjusting or increasing the daily walking time** in adults *especially* for **women.**