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The influence of health-related lifestyles on sedentary behaviors in Korean young adults.

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Abstract

Background: Sedentary behavior has emerged as a major public health issue threatening the health of the Korean young adults. The purpose of this study was to identify the influence of health-related lifestyle on sedentary behavior in young adults.
Methods: The subjects were 191 young adults who were 19-25 years old. A structured questionnaire was used to investigate the subjects' sex, age, family history of illness, smoking, alcohol consumption, body mass index, daily average sleep time, breakfast habit, physical activity, and sedentary time. The collected data were analyzed by mean, standard deviation, t-test, ANOVA, and multiple logistic regression.
Results: There were statistically significant differences in sedentary behavior by age (F=4.024, p=.019), smoking (F=9.114, p=.000), and alcohol consumption (F=4.102, p=.018). The factors affecting sedentary behavior in young adults were smoking (ß=.214, p=.003) and alcohol consumption (ß=.176, p=.014).
Conclusion: The study results suggest that a program should be developed taking into account lifestyle habits like smoking and drinking to reduce sedentary behavior in young adults.

Keywords: Young adults, Lifestyle, Health, Sedentary behavior.

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Introduction

Healthy lifestyles have a positive impact on health, well-being, and quality of life [1]. Many previous studies have suggested regular physical activity, smoking cessation, moderate drinking or drinking cessation, proper body weight maintenance, 7-8 hours of sleep a day, and having breakfast as healthy lifestyles [2,3]. It is important to establish and maintain a healthy lifestyle in young adulthood, when passing from adolescence to adulthood. Previous studies have shown that sedentary behaviors (SBs) begin to increase during adolescence and increase further in young adulthood [4,5]. SBs, including watching TV, playing games, using a smartphone, and using the Internet, have become a major health threat to the health of young adults [6]. SB is defined as a sit-down or lying behavior, with the energy expenditure not exceeding 1.5 metabolic equivalents of task (METs; 1 MET=3.5 ml/kg/min) [7]. SB increases the risk factors of being overweight or obese and cardiovascular disease, and decreases the bone strength [8-10]. SBs are also associated with a decrease in positive emotions and cognitive functions and an increase in depression and anxiety [11-14]. Therefore, it is necessary to understand the relationship between health-related lifestyle and sedentary behavior to improve the health of young adults.

In a prospective study on elementary school students, SB was associated with gender, age, Body Mass Index (BMI), family function, weight status, and waist circumference-to-height ratio [15]. In a cohort study on 18- to 97-year-olds, unfavorable alcohol consumption, unfavorable candy or cake consumption, and unfavorable physical activity were found to be predictors of sustained SB [16]. In a study that systematically reviewed 16 articles, heritability and early-childhood BMI were reported as the predictors of sedentary time in young people over 18 years of age [17]. There have been limited studies, however, on the relationship between health-related lifestyle and SB in young adults. Therefore, this study aimed to provide the fundamental data necessary for the development of an effective intervention for promoting the health of young adults by investigating the relationship between health-related lifestyle and SB in Korean young adults.

Methods

Subjects

Young adults aged 19-25 years living in three cities in Seoul and Kangwondo were eligible for inclusion in the study. When estimated with a 0.05 significance level, a 0.15 effect size, 0.08 power, and 12 predictor variables for regression analysis using the G*Power Version 3.1.9.2 program, the required sample size was 135, but 191 persons involved in the survey were included in the analysis.

The study protocol was approved by the Institutional Review Board (IRB), and written consent was taken from each of the subjects after the details of the study were explained to them.

Outcome measures

The study instrument was a structured questionnaire consisting of general characteristics, health-related lifestyles, and SBs. For the general characteristics, gender, age, and family history of illness were investigated. The health-related lifestyles included smoking, alcohol consumption, daily average sleep time, BMI, breakfast habit, and physical activity [18]. Based on the 2008 physical activity guidelines for Americans, [19] which recommends at least more than 150 minutes of exercise per week for adults, the physical activity was analyzed by classifying it into below 150 minutes and 150 or more minutes per week [20]. SB was calculated as the sum of time spent watching TV, using a computer, and using a smartphone by referring to previous studies [21-24].

Statistical analysis

The t-test and ANOVA were conducted to determine the difference in SB according to the general characteristics and health-related lifestyles of the study subjects, and for the post-hoc analysis, the Scheffé test was used. With the variables having a significant difference in SB in the result of the univariate analysis as predictors, multiple logistic regression was performed to evaluate if there was an independent association with SB. All the analyses were performed with the IBM SPSS 20.0 program (IBM Corp., Armonk, NY, USA), and the statistical significance level was set as 0.05.

Results

General characteristics of subjects

There were 191 study subjects, 60 of them men (31.4%) and 131 women (68.6%). The mean age of the subjects was 19.8 ± 1.44 years, and 141 subjects (73.8%) had no family history of illness. The mean sedentary time was 5.8 ± 2.97 hours (Table 1).

Variables	Categories	N (%) or M ± SD
Gender	Male	60 (31.4)
	Female	131 (68.6)
Age (year)	<21	116 (60.7)
	≥ 21	75 (39.3)
Family history	Yes	50 (26.2)
	No	141 (73.8)
Smoking	Non-smoking	159 (83.2)
	Past smoking	9 (4.7)
	Current smoking	23 (12.1)
Alcohol consumption	Non-drinking	52 (27.2)
	Past drinking	11 (5.8)
	Current drinking	128 (67.0)
Quality of sleep	Good	74 (38.8)
	Usual	90 (47.1)
	Bad	27 (14.1)
BMI	<18.5	22 (11.5)
	18.5-22.9	124 (64.9)
	23.0-24.9	24 (12.6)
	>25.0	21 (11.0)

Breakfast	Regular	70 (36.6)
	Sometimes	90 (47.1)
	No	36 (18.8)
Physical activity (minute/week)	<150	170 (89.0)
	≥ 150	21 (11.0)
Sedentary behavior (hour/day)		5.8 ± 2.97

Table 1. Characteristics of participants.

Difference of sedentary behavior according to characteristics

The SB of the subjects had a statistically significant difference according to age (F=4.024, p=.019), smoking (F=9.114, p=.000), and alcohol consumption (F=4.102, p=.018). For the results of the post-hoc test, the sedentary time of those aged 21 years or older was 7.04 ± 3.99 hours, longer than the sedentary time of those aged below 21 (5.22±2.83 hours). The sedentary times of the current and past smokers were 7.64 ± 4.85 and 9.37 ± 5.19 hours, respectively, longer than the sedentary times of those without any experience of smoking (5.56 ± 2.59 hours). Additionally, the sedentary time of the current drinkers was 6.23 ± 3.19 hours, longer than the sedentary time of those without any experience of drinking (4.88 ± 2.41 hours) (Table 2).

Variables	**Categories**	**Sedentary behavior**		
		M ± SD	**t or F**	**p**
Gender	Male	6.01 ± 3.43	0.594	.553
	Female	5.73 ± 2.74		
Age (year)	<21	5.22 ± 2.83a	4.024 a<b	.019
	≥ 21	7.04 ± 3.99b		
Family history	Yes	5.39 ± 2.73	-1.178	.240
	No	5.97 ± 3.04		
Smoking	Non-smoking	5.56 ± 2.59a	9.114 a<b	.000
	Past smoking	9.37 ± 5.19b		
	Current smoking	7.64 ± 4.85b		
alcohol consumption	Non-drinking	4.88 ± 2.41a	4.102 a<b	.018
	Past drinking	5.41 ± 1.22		
	Current drinking	6.23 ± 3.19b		
Quality of sleep	Good	5.42 ± 2.96	1.235	.293
	Usual	6.15 ± 3.02		
	Bad	5.79 ± 2.74		
BMI	<18.5	6.14 ± 2.53	0.450	.718
	18.5-22.9	5.63 ± 2.95		
	23.0-24.9	6.15 ± 3.31		
	>25.0	6.19 ± 3.21		
Breakfast	Regular	6.09 ± 3.33	0.970	.381
	Sometimes	5.83 ± 2.87		
	No	5.24 ± 2.38		
Physical activity (minute/week)	<150	5.81 ± 2.94	-0.106	.916
	≥ 150	5.88 ± 3.25		

Table 2. Difference of sedentary behavior according to characteristics.

Factors influencing on sedentary behavior

Based on the results of the regression analysis, the predictors affecting the SB of the young adult subjects were smoking (ß=.214, p=.003) and alcohol consumption (ß=.176, p=.014). These variables explained 47.2% of the SB of the subjects (F=37.30, p=0.000) (Table 3).

Variables	B	SE	Beta	t	p	R2
Age	0.109	0.300	0.025	0.363	.717	47.2
Smoking	1.497	0.495	0.214	3.023	.003	
Drinking alcohol	0.588	0.236	0.176	2.489	.014	
Contrast	2.546	0.903		2.820	.005	

Table 3. Factors influencing on sedentary behavior.

Discussion

For the results of this study, the mean sedentary time calculated by summing up the times spent watching TV, using a computer, and using a smartphone was 5.8 ± 2.97 hours, longer than the sedentary time of 595 young adults aged 18-35 years in the United States [25].

The present study did not include the time spent sitting at a desk; if the time is included, the sedentary time is likely to increase even more. Therefore, practical guidelines for reducing SB and increasing physical activity in Korean young adults should be prepared.

As for the degree of SB according to the general characteristics and health-related lifestyles, no significant difference depending on gender, quality of sleep, BMI, and physical activity was shown. The sedentary time, however, was statistically significantly longer in the older group than in the younger group, in the current or past smokers than in the non-smokers, and in the current drinkers than in the non-drinkers. Kaufman et al. [26] reported that SB was significantly higher in the current smokers and current drinkers than in the non-smokers and non-drinkers, respectively, showing similar results as the present study. In previous study conducted on adolescents, women were found to be more likely to have a sedentary lifestyle than men [27]. There was no difference, however, according to gender in the present study on adults. In a study on Brazilian workers, the older and more educated workers showed an increase in SB [28]. Pilcher et al. [29] said that the SB decreased the quality of sleep, showing a slightly different result from the present study. Kakinami et al. [30] and Duraccio et al. [31] reported, however, that SBs are not associated with physical activity or quality of sleep, supporting the results of the present study. The relationships between SB and physical activity, quality of sleep, and gender are still controversial, suggesting that further research using various subjects is needed.

The multiple-regression analysis showed that smoking and drinking were the predictors affecting SB. The results of the present study are similar to those of a previous study that was a large longitudinal cohort study [16,32,33]. In a study on adults aged 30-75 years, smoking was found to be correlated with SB in women [34]. In a study that investigated the risk of colorectal cancer, smoking and alcohol use were associated with sedentary lifestyle in both men and women [35]. These results suggest that programs taking into account health-related lifestyles like smoking and drinking should be developed to reduce SB.

The limitations of this study are as follows. First, as a self-reporting questionnaire was used to measure the physical activity and sedentary behavior of the study subjects, the physical activity and sedentary behavior may be underestimated or overestimated. Therefore, it is necessary to supplement it with objective measurement using an accelerometer, etc. in the future. Second, the sedentary behaviors in this study included only watching TV, using a computer, and using a smartphone, which are the most common; other types of sedentary behavior were not considered. This should be taken into account when comparing the results of this study with those of other parallel studies.

Conclusion

This study was conducted to provide fundamental data for reducing the Sedentary Behaviors (SBs) of young adults by identifying the degree of SB and determining the predictors affecting it in the Korean young adults. The results of this study showed that the SB of young adults was different depending on the age, smoking status, and drinking status, and was influenced by the smoking and drinking statuses. To reduce sedentary behaviors, programs taking into account health-related lifestyles like smoking and drinking should be developed.

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