

Factors influencing subjective health of adults according to economic activity

Myoungjin Kwon^a, Sung Yun Ahn^{b*}, Sun Ae Kim^{c*}

Abstract

Background: The purpose of this study was to identify the factors affecting the subjective health of adults according to their economic activity. **Methods:** The data for this study were extracted from the 7th Korea National Health and Nutrition Examination Survey (KNHANES VII) conducted from 2016 to 2018. There were 12,418 participants, aged 30–69 years, who answered a question about their economic activity. In the study, socio-demographic, physical, and psychological characteristics were examined. Physical characteristics included body mass index (BMI), weight change and weight control in the past year, frequency of drinking and amount consumed at once, smoking, amount of sleep per day, and aerobic exercise. Psychological characteristics included subjective health, subjective body recognition, and stress. **Results:** The factors that influenced subjective health differed according to economic activity. The explanatory power of these factors in the economically active group was 10.3% ($F = 71.37, p < .001$) and 18.4% ($F = 71.85, p < .001$) in the non-economic group. **Conclusion:** The results of this study provide new evidence that may influence the field's ability to identify factors that contribute to the independent prediction of prevalence of disease and mortality by affecting adults' subjective health.

Keywords: subjective health, economic activity, adults, physical, psychological

1. Introduction

Subjective health is a subjective assessment or perception of an individual's health (Heo & An, 2014) and is a concept similar to self-assessed, self-evaluated, and perceived health. Recognizing and distinguishing risk factors for middle-aged and older adults is essential when identifying priorities for public health and clinical intervention (Ganna & Ingelsson, 2015). Further, subjective health has been shown to be a predictor of morbidity and mortality (Manor, Matthews & Power, 2001) and was found to be the strongest predictor for men and the fourth-strongest predictor for women in a five-year mortality index (Ganna & Ingelsson, 2015). Individual perception of subjective health serves as a reliable prognosticator of future medical service utilization and mortality (van der Linde et

al., 2013). Moreover, subjective health scores or grades correlate with chronic disease incidence and dysfunction (Ul-Haq, Mackay & Pell, 2014).

Economic conditions are important to subjective health because socio-demographic differences, such as economic status, could be associated with differences in individuals' perceptions of their health (Read, Grundy & Foverskov, 2016). Economic stress is associated with chronic mental stress and depression, which leads to a vicious cycle; this in turn, worsens their physical well-being (Huda, Hayes & Dibley, 2018; Karlsson, Nilsson, Lyttkens & Leeson, 2010). It is particularly risky in vulnerable populations, such as those who are unemployed, with low socioeconomic status, or with chronic illnesses. This is because economic well-being helps maintain a healthy life, reduces risk factors, and specially, increases access to appropriate treatment when health problems arise (He, Cheng, Bishwajit & Zou, 2018).

As life expectancy increases, additional preparation is needed to address the effects of the extended life span, and interest in living a long and healthy life rather than only living a long life (Lim & Auh, 2011). Preparation is necessary to live long and healthy. Middle age is important as a time to prepare for a healthy old age life.

^aAssociate Professor, Department of Nursing, Daejeon University, Daejeon, 34520, Korea; mjkwon@dju.kr

^bAssociate Professor, Department of Nursing, Pai Chai University, Daejeon, 35345, Korea; syahn@pcu.ac.kr

^cAssistant Professor, Department of Nursing, Korea National University of Transportation, Chungbuk, 27909, Korea, sakim@ut.ac.kr (author as responsible for communications, submission author)

*Correspondence: syahn@pcu.ac.kr (S.Y.A.); sakim@ut.ac.kr (S.A.K.)

Tel.: +82-42-520-5042 (S.Y.A.); +82-43-841-5173 (S.A.K.)

Fax: +82-70-4850-8461 (S.Y.A.); +82-43-841-5173 (S.A.K.)

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Middle age is an important time to find meaning in life and to modify and reconstruct identity (Kuther & Burnell, 2019). It is recognized as a turning point in life, and a period of important change. In addition, interpretations of life satisfaction in middle age, such as self-reported health, are linked to old age (Heintzelman & King, 2014), the perception of health in middle age has a significant impact on life in the middle age as well as old age.

Moreover, people who rate their subjective health as good report higher life satisfaction and quality of life than those who do not. Higher the life satisfaction, higher is an individual's sense of self-efficacy, and the greater is their likelihood of engaging in healthy activities (Grant, Wardle & Steptoe, 2009). In other words, those adults who have more positive subjective health awareness ultimately engage in more healthy behaviors and raising their subjective health awareness, which, in turn, contributes to further healthy behaviors.

Middle-aged adults in South Korea are raising their children and taking care of their parents on account of high education levels and economic power, but their preparations for retirement are insufficient (Moon & Kim, 2014). Therefore, it is very important for adults to maintain their current lives with income earned through economic activities and prepare for future life after adulthood. For Koreans, the meaning of income may differ from other countries due to Korea's cultural characteristics of wanting to pass on wealth to their children. Thus, those who have income are expected to be very different from those who do not have income.

Our understanding of subjective health and its influence on other aspects of life remains limited, in terms of both cause and consequences. Clear evidence on the health outcomes of adults is lacking. Identifying factors that affect subjective health can help researchers come closer to finding the causal influences, since subjective health is an independent predictor of morbidity and mortality. Therefore, the purpose of this study was to identify differences in factors affecting subjective health of individuals based on their income status. For the purpose of the study, those who engage in economic activity were classified as having actual income; those who did not engage in economic activity were classified as not having actual income. Additionally, this study attempted to arrive at results that may be representative and comparable to those of other nations. The data used in this study were collected by the government to establish national health care policies.

The findings could provide basic data to guide further research on subjective health awareness, contribute to public health policy development, and develop focused intervention programs for adults based on their economic activity.

2. Literature Review

Although there are differences among groups, previous studies have shown that subjective health is a strong predictor of health and death (Altman, Van Hook & Hilemeier, 2016). Previous studies have been conducted on variables related to subjective health.

In a previous study of 12,900 twins (Franz et al., 2017), it was found that subjective health differs according to age. Older people reported worse health than younger subjects did, and older people noted that this poorer health limited their activities.

Another using the General Social Survey (GSS), a nationally representative cross-sectional sample of noninstitutionalized English-speaking adults (aged 18 and over) in the United States, found that a happy marriage influences self-rated health. Results showed that people who have a happy marriage receive more social support as compared to those who have an unfortunate marriage, and thus have better self-rated health (Lawrence et al., 2019).

A study by Zhang (2017) found that attending prayer services influenced subjective health, indicating that religious activity was one of the important influencing variables.

The relationship between socio-economic position and subjective health was confirmed through a systematic review of 71 studies targeting European elderly. Results showed that low socio-economic position was accompanied by low subjective health, confirming the relationship between income and subjective health (Read, Grundy & Foverskov, 2016).

Some studies have shown that high socioeconomic status improves physical health (Van Groenou, Deeg & Penninx, 2003). Among socioeconomic indicators, income is related to health promotion in the population (Brodish, Massing & Tyroler, 2000). In a previous study, those variables that better represented the participants' status, such as income, were found to be more strongly associated with subjective health, which could be evaluated as subjective well-being (Pinquart & Sorensen, 2000). However, the economic condition and subjective health perception do not always show a consistent

relationship, the reason for which may be subjective to cultural differences in health concepts (Baron-Epel & Kaplan, 2001).

Thus, although economic conditions appear to be an important factor in subjective health awareness, research on its impact on subjective health has been insufficient.

3. Materials and Methods

3.1 Participants

The total number of participants enrolled in the 7th Korea National Health and Nutrition Examination Survey (KNHANES VII), conducted by the Ministry of Health and Welfare and the Korea Centers for Disease Control and Prevention (KCDC), was 24,269. This study included 12,418 adults aged 30 to 69 years, who responded to the question on their economic activity. Of these, 8,627 people (69.5%) reported engaging in economic activities, and 3,791 (30.5%) reported that they did not.

Participants were classified as those having an actual income and those without actual incomes, based on their response to the item on economic activity. The item on economic activity read as follows, "Have you worked for more than 1 hour for income purposes in the last week or have you worked as an unpaid family worker for more than 18 hours? Although I was originally working, leave of absence is included in the case of working." The participants were expected to choose 'Yes' or 'No' in response.

3.2 Measures

Data for this study were extracted from the KNHANES VII conducted in 2016-2018. The National Health and Nutrition Examination Survey is nationally representative and reliable data on the health level, health behavior, and food and nutrition intake of the population. It is used for shaping health policies, such as developing health promotion programs. Participants provided written informed consent at the start of the study.

In this study, socio-demographic, physical, and psychological characteristics were examined.

3.2.1 Socio-demographic characteristics.

The socio-demographic characteristics included gender, age, household income level, education level, and the number of household members. Age was divided into 30s, 40s, 50s, and 60s. Household income level was classified into upper, middle, and lower. Education level was divided into middle school graduate or less, high school graduate, and college graduate or higher; and the number of household members was

categorized as 1, 2, 3, or more than 3.

3.2.2 Physical characteristics.

Physical characteristics that contribute to health and disease were collected. These included body mass index (BMI), weight change and weight control over the past year, frequency of drinking alcohol and amount of alcohol consumed at once, smoking, the number of hours slept per day, and aerobic exercise. BMI was classified into less than 18.5kg/m², 18.5 to 25kg/m², and more than 25kg/m². Weight control over the past year was categorized as an effort to lose weight, gain weight, or maintain current weight. The frequency of drinking over the past year was grouped into less than once a month, two to four times a month, and more than twice a week. Alcohol consumption at one time was categorized as one to two drinks, three to six drinks, and more than or equal to seven drinks, regardless of the type of alcohol. The amount of sleep per day was divided into four to six hours, seven to eight hours, and nine to fifteen hours. Aerobic exercise is whether to practice moderate physical activity for at least two hours and thirty minutes, or high intensity physical activity for at least one hour and fifteen minutes, or a mixture of moderate and high intensity physical activity (one minute for high intensity, two minutes for medium intensity) per week.

3.2.3 Psychological characteristics.

The assessed psychological factors included subjective health, subjective body recognition, and stress. Subjective health was divided into the categories of healthy, moderate, and not healthy. Subjective body recognition was divided into the categories of thin, moderate, and obese. Finally, stress was divided into feeling less stress and feeling much stress.

3.3 Ethical consideration

The KCDC constructed a database that could not be identified according to the Personal Information Protection Act and Statistics Act. In addition, the investigation was conducted directly by the state for public welfare in accordance with the Bioethics Act. The data are open to the public, and the original data can be downloaded from the website of the KNHANES after receiving an ID and password from the institution for research. Accordingly, the researcher downloaded the data by using an ID and password received from the Centers for Disease Control and Prevention.

3.4 Statistical analysis

The data used in this study were extracted using a stratified cluster sampling method. A complex sample analysis method was used after correcting data by applying weights according to the KCDC's recommendation. The participants who responded to the item on economic activity were extracted from the raw data of the KNHANES VII, which had been collected using the stratified colony system extraction method, to examine its relationship with subjective health. After creating a complex sample planning file using the IBM SPSS 25.0 program (IBM Corp., Armonk, NY, USA), weight was assigned to analyze it, and the significance level was set to $p < .05$.

Socio-demographic characteristics, physical, and psychological factors were analyzed using frequency and percentage. The measured value was used for the frequency, but the value considering the weight was used as a percentage. Differences in socio-demographic characteristics by economic activity and differences in physical and

psychological factors were analyzed by chi-squared tests. The factors influencing subjective health were analyzed using linear regression analysis.

4. Findings

4.1 Socio-demographic characteristics of the participants

There were differences between the economic groups by gender, age, household income level, education level, and the number of household members (Table 1). In the economically active group, there were many men, and in the non-economically active group, there were many women. In the economically active group, 30s and 50s were higher than those who did not engage in economic activities, and household income was higher. Additionally, the educational level of the economically active group was higher. As for the number of household members, group of 3 or more were more engaged in economic activities ($p < .001$).

Table 1. Comparison of Socio-demographic characteristics between Groups (N=12,418)

Characteristics		Economic activity n(weight %)	No economic activity n(weight %)	$\chi^2(p)$
Gender	Men	4571(60.3)	808(23.4)	1406.36(<.001)
	Women	4056(39.7)	2983(76.6)	
Age	30's	1865(24.6)	727(22.0)	438.42(<.001)
	40's	2489(31.6)	735(22.3)	
	50's	2482(29.8)	861(25.0)	
	60's	1661(14.0)	1414(30.7)	
Household income level	Upper	3164(37.3)	946(25.2)	469.30(<.001)
	Middle	4806(56.1)	2062(55.5)	
	Lower	648(6.5)	770(19.3)	
Education level	≤Middle school	1863(17.8)	1172(27.6)	162.30(<.001)
	High school	2848(33.5)	1210(33.5)	
	≥College	3915(48.7)	1401(38.9)	
Number of household members	1	732(8.0)	390(8.6)	44.90(<.001)
	2	2211(22.9)	1184(28.4)	
	≥3	5684(69.1)	2217(63.0)	

4.2 Physical and psychological characteristics of participants

There were differences between the two groups for all physical and psychological characteristics, except aerobic exercise (Table 2). BMI was higher in the economically active group. In the non-economic group, a larger proportion of participants reported weight gain over the past year and more weight loss efforts were made. Alcohol consumption was more frequent in the economically active group, and the

amount of alcohol consumed at one time was higher than that of the non-economically active group. The smoking rate of economically active groups was higher. In the case of sleeping hours per day, 7-8 hours was more in the economically active group, and 9-15 hours in the non-economic group. In the non-economic group, the subjective body image was more often perceived as obese. The economically active group was more stressed and more physically exercised ($p < .05$).

Table 2. Comparison of Physical and Psychological characteristics between Groups (N=12,418)

Characteristics		Economic activity n(weight %)	No economic activity n(weight %)	$\chi^2(p)$
Body Mass Index (kg/m ²)	<18.5	202(2.4)	135(3.8)	36.66(<.001)
	18.5-24.9	5096(59.2)	2320(62.5)	
	≥25	3195(38.4)	1284(33.7)	
Weight change	Gain	2031(23.9)	1014(27.8)	20.81(<.001)
	Loss	954(11.3)	429(11.4)	
	No change	5629(64.8)	2342(60.8)	
Weight control	Reduction	3642(42.1)	1752(46.8)	37.10(<.001)
	Maintain	1684(19.3)	777(20.4)	
	Increase	404(4.8)	167(4.3)	
	No effort	2884(33.8)	1090(28.6)	
Frequency of drinking alcohol	≤1/month	3488(40.5)	2000(58.7)	318.01(<.001)
	2-4/month	2149(27.7)	719(22.4)	
	≥2/week	2427(31.8)	605(18.9)	
Amount of alcohol consumed at once (glass)	1-2	2307(29.3)	1271(48.8)	342.67(<.001)
	3-6	2567(37.3)	820(33.4)	
	≥7	2111(33.5)	390(17.8)	
Smoking	Yes	4066(52.4)	1022(28.7)	576.91(<.001)
	No	4544(47.6)	2763(71.3)	
Number of hours slept (/day)	4-6	2298(27.2)	1021(28.0)	63.47(<.001)
	7-8	3037(36.1)	1098(29.0)	
	9-15	3202(36.6)	1615(43.0)	
Subjective body recognition	Thin	1145(13.8)	489(13.1)	5.65(.001)
	Moderate	3427(39.4)	1453(37.7)	
	Obese	4042(46.8)	1844(49.1)	
Subjective health	Healthy	2609(30.7)	903(24.4)	179.49(<.001)
	Moderate	4783(55.4)	1941(51.7)	
	Not healthy	1235(13.9)	946(23.9)	
Stress	Feeling less	6231(71.9)	2834(74.1)	5.98(.001)
	Feeling a lot	2382(28.1)	950(25.9)	
Aerobic exercise	Yes	4860(55.3)	2126(54.2)	1.20(.122)
	No	3757(44.7)	1657(45.8)	

4.3 Factors affecting subjective health by economic activity

Table 3 shows the factors affecting subjective health based on economic activity. The explanatory power of the factors influencing subjective health in the economically active group was 10.3% ($F = 71.37$, $p < .001$) and 18.4% ($F = 71.85$, $p < .001$) in the non-economic group. For those engaged in economic activity, men perceived themselves to be healthier than women; however, no gender differences were found for those not engaged in economic activity. Compared to those in their 60s, those in their 40s and 50s perceived themselves as being not healthy, and those in their 50s not engaged in economic activities recognized that they were not healthy compared to those who were engaged in economic activity.

Those who were engaged in economic activities were less likely to describe themselves as being

healthy when they had lower BMIs compared to those with higher BMIs. Those who did not engage in economic activities and had a BMI less than 18.5kg/m² were more likely to report that they were not healthy than those with BMIs above 25kg/m². Those engaged in economic activity whose weight increased or decreased did not perceive themselves as healthy as compared to those who reported no weight change. Similarly, those who did not engage in economic activities perceived themselves as not healthy when their weight decreased compared to those who experienced no change in weight. Regarding weight control, participants who were economically active perceived themselves as healthy when their weight decreased or maintained compared to those whose weight increased, but there were no significant results for those who were not economically active.

As for the frequency of drinking alcohol,

participants engaged in economic activities who reported that they drank alcohol less than once a month were less likely to perceive themselves as not healthy compared to those who drank more than twice a week. In addition, those who did not engage in economic activities recognized that those who drink less than once a month and those who

drink two to four times a month were not healthy. Regarding the number of hours that a participant slept, participants not engaging in economic activity who reported sleeping four to six hours were more likely to consider themselves healthy than those who slept nine to fifteen hours.

Table 3. Factors affecting subjective health by economic activity (N=12,418)

Characteristics		Economic activity			No economic activity		
		β	t	p	β	t	p
Gender	Male	-.086	-5.73	<.001	.019	0.66	.508
	Female	1.0			1.0		
Age	30's	.011	0.52	.601	-.046	-1.43	.153
	40's	.047	2.30	.023	.001	0.01	.994
	50's	.057	3.23	.001	.082	2.94	.004
	60's	1.0			1.0		
Household income level	Upper	-.120	-4.10	<.001	-.270	-8.47	<.001
	Middle	-.085	-2.95	.004	-.235	-8.42	<.001
	Lower	1.0			1.0		
Education level	≤Middle school	.247	15.04	<.001	.303	10.32	<.001
	High school	.081	6.95	<.001	.134	6.95	<.001
	≥College	1.0			1.0		
Number of household members	1	.088	4.21	<.001	.121	4.46	<.001
	2	.054	3.78	<.001	.004	0.19	.843
	≥3	1.0			1.0		
Body Mass Index (kg/m ²)	<18.5	.121	2.74	.007	.136	2.68	.008
	18.5-24.9	.033	2.39	.018	.003	0.12	.90
	≥25	1.0			1.0		
Weight change	Gain	.059	5.24	<.001	.033	1.62	.106
	Loss	.052	3.41	.001	.073	2.49	.014
	No change	1.0			1.0		
Weight control	Reduction	-.074	-6.81	<.001	-.026	-1.10	.270
	Maintain	-.044	-3.07	.002	-.025	-1.10	.270
	Increase	-.020	-0.66	.507	.081	1.89	.060
	No effort	1.0			1.0		
Frequency of drinking alcohol	≤1/month	.038	2.74	.007	.049	2.02	.045
	2-4/month	-.011	-0.99	.320	.062	2.52	.012
	≥2/week	1.0			1.0		
Amount of alcohol consumed at once (glass)	1-2	-.071	-3.95	<.001	.098	2.94	.004
	3-6	-.068	-4.73	<.001	.039	1.22	.221
	≥7	1.0			1.0		
Number of hours slept (/day)	4-6	.003	0.22	.821	-.078	-3.63	<.001
	7-8	-.015	-1.30	.195	-.029	-1.57	.117
	9-15	1.0			1.0		
Subjective body recognition	Thin	-.067	-3.64	<.001	-.108	-3.33	.001
	Normal	-.204	-14.57	<.001	-.183	-9.14	<.001
	Obese	1.0			1.0		
Stress	Feeling less	-.231	-19.76	<.001	-.364	-16.90	<.001
	Feeling a lot	1.0			1.0		
Aerobic exercise	Yes	1.0			1.0		
	No	.109	11.39	<.001	.101	6.35	<.001
		R ² /F/p(0.103/71.37/<.001)			R ² /F/p(0.184/71.85/<.001)		

5. Results and Discussion

The results of this study aimed at identifying the factors associated with adults' subjective health based on their economic activity are discussed as follows. The results showed that all physical and psychological variables, except aerobic exercise, differed by economic activity group.

Those who were not engaged in economic activity were found to report more weight gain in one year than those who were economically active. This was consistent with findings reporting that those with the lowest income and a higher BMI (i.e., 80th percentile for BMI) gained weight faster than the highest income individuals with the same BMI (Truong & Sturm, 2005), given that economic activity and income are highly positively correlated.

Greater frequency of drinking and the amount of alcohol consumed at once were associated with engaging in economic activity, which is inconsistent with research suggesting that having a lower income was associated with higher odds of engaging in alcohol abstinence and heavy drinking, relative to light/moderate drinking (Cerdá, Johnson-Lawrence & Galea, 2011). Results reported in a previous study (Kim & Lee, 2015) suggested that unlike the US, which has relatively strong alcohol control policies, drinking norms in Korea strongly influence drinking behaviors, post-work drinking culture, and interpersonal drinking habits. In other words, drinking heavily for those engaged in economic activities in Korea inevitably involves their workplace drinking culture, suggesting that policies aimed at improving the same are needed to reduce the level of alcohol use among those who are economically active.

The results showing that sleeping more than nine hours a day was more common among those who were engaged in economic activity compared to those who were not, are consistent with previous results of a Korean sample who were part of the Comparative Analysis of Sleep Time in Multinational Time Usage Study (Jun, 2017; Eun & Cha, 2010). Our findings also support the theory proposed in previous analyses (Jun, 2017), drawing upon the results presented in an earlier study (Charzitheochari & Arber, 2009), that Korean adults have longer working and commuting hours than those living in other countries. These factors are inversely associated with the amount of sleep.

More people who engaged in economic activities reported perceiving themselves as healthy compared to those who were not; this is consistent with the findings reported by other studies of Korean adults (Nam & Nam, 2011; Jang, 2017) that reported that an increased ability to work was

associated with greater participation in economic activities.

Among those who were engaged in economic activities, men perceived themselves to be healthier than women did, but there were no gender differences for those adults who were not economically active. This finding is in line with the results of a previous study (Kang & Han, 2019), which reported that men in Korea and the US have better subjective health than women, while the converse was found in Europe. Hence, the results may be based on societal differences. One reason for the lack of significant gender differences between those who did not engage in economic activities was that traditional gender roles in Korea expect men who are healthy to be economically active, while men who were perceived to be in poor health are not expected to do so.

Our results showed that both economic groups reported that participants in their 50s were less likely to report themselves as healthy as compared to those in their 60s which were consistent with previous research (Kang & Han, 2019). A previous study (Baron-Epel & Kaplan, 2001) that identified a positive association between the answers to a general question on subjective health and an age-related question on subjective health might further explain these findings. While not observed in the group of participants who were 55- to 64 year old, those who were aged 65–75 years reported having "better health" when asked to compare their own health to other age groups (Baron-Epel & Kaplan, 2001), which suggests that the current results may be influenced by the characteristics of the same age group.

In both groups, those who reported higher household income and educational background were more likely to perceive themselves as healthy compared to those with less education and a lower income, which aligns with previous results (Kang & Han, 2019). This finding is consistent with the results of a previous study (Meyer, Castro-Schilo & Aguilar-Gaxiola, 2014), which reported that low socioeconomic status was negatively associated with self-reported health. One reason this might be the case is that those who report having high incomes and educational backgrounds take better care of their health compared to those with low incomes and less education. However, according to the results of a previous study (Li, Zhang & Muennig, 2018) that showed a strong correlation between participants' social class identification (SSCI) and self-rated health, another reason may be that individuals see themselves as being in good health because they are considered to be in the

upper class.

Both groups recognized that the smaller the number of household members, the less healthy they were. This result can be explained by studies demonstrating the risks of living alone to health (Klinenberg, 2016; Pantell et al., 2013).

Those in both economic activity groups were less likely to describe themselves as healthy when they had lower BMIs (underweight) than higher BMIs (overweight). However, the subjective body recognition in both groups showed that those who described themselves as thin or of moderate rate were more likely to report themselves as being healthy than those who described themselves as obese. These findings may be attributed to the fact that popular health news articles have reported that when one's BMI is 27, which is classified as overweight, the average life expectancy increases (Afzal et al., 2016), as well as different health articles indicating that obesity increases the prevalence of diseases. For both groups, those who reported a change in weight were less likely to perceive themselves as being healthy compared to those who reported no change. Conversely, economically active participants perceived themselves as healthy when their weight decreased or was maintained compared to those whose weight increased. These inconsistent results suggest that health may be perceived differently depending on the circumstances. However, given these contradictory results that were found when the same individual answered similar questions in this study, additional studies might be necessary to clarify the explanations for these findings.

For alcohol use, those engaged in economic activities were less likely to describe themselves as healthy when they drank alcohol less than once a month, compared to those who drank alcohol more than twice a week. Among the participants who were not economically active, those who reported drinking alcohol more than twice a week perceived themselves as less healthy than those who drank less than once a month or two to four times a month. This finding may be because those who are confident about their health are also confident about their participation in situations where alcohol is consumed in accordance with the existing workplace drinking culture (Kim & Lee, 2015) in Korean society. Those who were not engaged in economic activities could also be affected by this culture.

In the case of alcohol consumption, those who were economically active and reported consuming one alcoholic drink were more likely to perceive themselves as healthy compared to those who

reported having seven or more drinks at one time. However, those who did not engage in economic activities were more likely to report that they were unhealthy if they had one or two drinks compared to participants in other alcohol consumption levels. Thus, it may be likely that those who did not engage in economic activities were not in good health, making them unable to engage in economic activities or high-risk drinking. Therefore, they described themselves as not healthy even when they drank less. On the other hand, this finding might also be explained by economically active groups perceiving themselves as healthy when they drank a limited amount of alcohol since they could continue working while still being a part of the workplace drinking culture by maintaining their health, through avoidance of problematic alcohol use (Kim & Lee, 2015).

Those who did not engage in economic activities and reported having four to six hours of sleep were more likely to describe themselves as healthy as compared to those who slept for nine to fifteen hours. Individuals who were not economically active and reported getting four to six hours of sleep were more likely to be engaged in activities that they viewed as being equally important to economic activities—such as child rearing, caring for an aging family member, or volunteer and charity work. Further, those in objectively poor or compromised health were more likely to require increased sleep time due to bed rest and other health factors.

In both economic groups, individuals reporting low levels of stress were more likely to indicate that they were healthy than those reporting high levels, which is consistent with previous research (Eun & Cha, 2010). Similarly, those who did not engage in aerobic exercise were less likely to describe themselves as healthy compared to those who did, which reflects the results of earlier studies demonstrating that physical activities improve subjective health compared to a sedentary lifestyle (Kim, 2009). According to Park (Eun & Cha, 2010), those reporting high stress were more likely to develop negative lifestyle behaviors and have reduced health awareness, even if they had no current health problems. Our findings regarding aerobic exercise may be due to similar reasons.

6. Implications

The results of this study, which show the difference in subjective health according to economic activity, can contribute to the development of a theoretical prediction model for the occurrence of health problems. This is because

subjective health status becomes a major variable that can predict the occurrence of actual health problems. This brings researchers a step closer to recognizing the variables that independently contribute to the increased prevalence of disease and mortality rates. In the field of practice, these results could provide basic data that can also contribute to the establishment of health policies regarding health traits like obesity and alcohol use that vary according to one's engagement in economic activities.

7. Limitations and Future research directions

The limitation of this study and future research directions have been discussed in this section.

1. Since this study is a cross-sectional study, it is possible to establish a logical causal relationship, but there may be errors in the establishment. Therefore, using an experimental design or a longitudinal study to establish a clear causal relationship in the future is recommended.
2. This study deals with the Korean population and the characteristics of Korean culture may be reflected in its findings. Therefore, for generalization, we suggest research based on different cultural backgrounds.
3. As the results of this study have identified factors affecting subjective health, we propose an intervention study to improve subjective health.
4. Further studies on other factors affecting subjective health are recommended.

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