

# Identification of Factors Influencing Subjective Health Status according to Gender- using Data from the Korean National Health and Nutrition Examination Survey

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## Abstract

**Objectives:** This study identified physical and psychological factors that influenced subjective health status by gender. **Methods/Statistical Analysis:** The subjects included 5,897 adults (2,516 men and 3,381 women) over 30 years of age selected from among 7,550 individuals who participated in the 2014 National Health and Nutrition Survey. The study included two categories of variables: demographic characteristics, and physical and psychological factors. IBM SPSS Statistics for Windows version 21.0 was based on composite sample plan file to analyze the data. **Findings:** The factors that influenced the subjective health status in men included economic status, education level and number of family members, quality of life, subjective body awareness, stress, and waist circumference with an explanatory power of 21.9%. In woman education level, quality of life, subjective body awareness, stress, and obesity, offered an explanatory power 22.9%. The gender differences were statistically significant for all variables **Improvements/Applications:** This study is significant in that it provides the basis for the development of nursing education and intervention programs for improving the subjective health status of adults.

**Keywords:** Subjective Health Status, Gender, Influencing Factor, Physical Factors, Psychological Factors.

## 1. Introduction

The concept of health has evolved over time and may also vary with age. While 20-30 years ago, the concept referred to a lack of physical disease and overall survival, the current concepts of health imply more than simply a lack of physical illness. World Health Organization (WHO) <sup>1</sup> defines "health state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". That is, the concept of health in modern society includes persistence, and health is optimized according to number of multi-dimensional factors.

Subjective health status refers to the comprehensive assessment of physical, physiological, psychological, and

social aspects by individuals, based on factors that standard medical tests cannot easily measure<sup>2</sup>. Prior research on the subjective perception of health status, rather than clinical measurements, has shown that this perception affects patient quality of life and satisfaction<sup>3,4</sup>. A positive perception promotes disease mitigation, as well as physical and mental health and increased access to social support systems; however, a negative perception of health may lead to disease, and may actually change the perception of the symptoms of chronic diseases<sup>5</sup>. Subjective health status has been shown to be correlated with objective health measures, thus, it is possible to predict overall physical condition prediction using subjective health assessment as a key indicator to measure integrated health<sup>6,7</sup>.

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Numerous studies have assessed health levels and their impacts on a subjective health status<sup>4,8</sup>, as well as the effects of various factors on subjective health status<sup>9</sup>, differences in subjective health status among subjects<sup>10</sup>, and the relationship between subjective health status and various factors<sup>11</sup>. Age<sup>12,13</sup>, gender<sup>12,14,15</sup>, level of education, income level<sup>16,17</sup>, lifestyle and exercise<sup>18</sup> have been significantly associated with subjective health. Among these factors, gender particularly affects factors associated with subjective physical condition. Men and women are exposed to different risks according to their different social positions and physiological vulnerabilities to certain risk factors<sup>1</sup>. Although many studies have reported differences in subjective health status according to gender<sup>19,20</sup>, most have assessed individuals 60 to 65 years of age or older, however. 48% of the population has been 30-59 years of age<sup>21</sup> over the past 30 years, and research on the subjective health status in adults rather than the elderly has been scarce. Depending on study subjects, different factors may affect the subjective views of their medical conditions, the analysis subjects the same to expand the factors that affect the subjective state of health of adult subjects over 30 years of age as a result of other prior studies can be a problem.

Subjective health is directly related to can negatively affect both health and quality of life<sup>22</sup>.

This study evaluated the key factors of subjective health status associated with maintaining quality of life and identified the factors that influenced the subjective health status of adults according to gender in order to provide a basis for promoting nursing of adult subjects, including mediation and education programs based on subjective health status.

## 2. Study Objectives

The specific objectives of this study were as follows.

- To examine gender differences in demographic characteristics and various physical and psychological factors in adults.
- To investigate the correlational relationships between physical and psychological factors by gender.
- To identify factors influencing subjective health status by gender.

## 3. Methodology

### 3.1 Study Subjects

We used raw data from “the sixth National Health and Nutrition Survey, Year 2.” Survey is a national survey with representative sampling at the national level as well as city and province level that provides reliable statistics regarding the health levels of Koreans, their health-related awareness and behavior, and their food and nutritional intakes. From a total of 7,550 respondents of the 2014 National Health and Nutrition Survey conducted by the Ministry of Health and Welfare and the Korea Centers for Disease Control and Prevention, 5,897 adults aged 30 years or older were included in this study. Of those, 2,516 were men and 3,381 were women.

### 3.2 Study Variables

- Demographic characteristics

The demographic variables included gender, age, economic status, education level, family size, marital status, and number of hours of sleep.

- Physical factors
- Obesity

Based on measurements, the subjects were categorized as “underweight,” “normal,” or “overweight.”

- Waist circumference
- Waist circumference was measured in cm.
- Body mass index(BMI)

BMI was calculated, as weight (kg)/height<sup>2</sup> (m).

- Psychological factors
- Subjective health status

The self-perception of health survey item used a five-point scale, with “very good” (scored as “1”) and at the other end with “very bad” (scores as “5”).

- Quality of life

Data from the EuroQol five Dimension (EQ-5D) questionnaire were used. The EQ-5D consists of five domains: mobility, self-care, everyday activities, pain/discomfort, and anxiety/depression, higher scores indicate lower quality of life.

- Subjective body awareness

Body self-perception was assessed using a five-point scale, with “very thin” and “very overweight” scored 1 and 5 points respectively.

- Stress

Stress was assessed using a four-point scale, where feeling “very much stressed” and “hardly stressed” were scored 1 and 4 points, respectively.

### 3.3 Data Analysis

The data were analyzed the IBM SPSS Statistics for Windows, version 21.0. A composite sample plan file, including stratification variables (variance estimation layer [kstrata], colony variables (EDs [psu]), variable weight (weight- associated health questionnaire and screening [wt\_itvex]) was produced, and analyzed. The significance level was set at 0.05.

## 4. Findings

### 4.1 General Subject Characteristics

The mean subject age for both men and women was 51.8 years. The highest proportion of both male and female subjects had a “medium-high” economic status level (736 men and 911 women). A high school education level was most common for both men and women (689 and 891,

respectively). Family sizes of 3-4 members were the most frequently reported in both men and women (1,243 and 1,580, respectively). There were more married than single individuals (2,108 men and 2,965 women). Men and women combined slept a mean 6.7 hours each day. There were significant gender differences in economic status, education level, number of family members, and marital status (Table 1).

### 4.2 Comparison of Physical and Psychological Factors between Genders

When asked about their subjective health status, most subjects (1,051 men and 1,522 women) reported feeling “normal”. The most common scores for quality of life were 4–5 points reported by 1,500 men and 1,773 women. The most frequent responses to subjective questions about body awareness and obesity were “normal” (855 men and 1,244 women; and 1,407 men and 2,156 women, respectively). In this study, 1,230 men and 1,678 women responded feeling “a little stress.” The mean waist circumferences were 84.9 cm in men and 78.4 cm in women, and the mean BMI were 24.1 and 23.3, respectively. The gen-

**Table 1.** Comparison of demographic characteristics according to gender

Characteristics n(%) / Mean(SD)	Male	Female	$\chi^2/t$	
	n(%) / Mean(SD)			
Age(year)		51.8(16.70)	51.8(17.19)	0.13
	30 $\geq$	285(11.3)	420(12.4)	
	31-50	901(35.8)	1173(34.7)	
	51-65	689(27.4)	955(28.2)	
	66 $\leq$	641(25.5)	833(24.6)	
Economic status	Low	440(17.6)	731(21.6)	4.21**
	Medium-Low	611(24.4)	847(25.2)	
	Medium-High	736(29.4)	911(27.1)	
	High	719(28.7)	870(25.9)	
Education level	Elementary School	355(17.4)	860(29.8)	8.88**
	Middle School	250(12.3)	289(10.0)	
	High School	689(27.4)	891(30.9)	
	College $\leq$	742(29.5)	847(29.3)	
Number of family members		3.0(1.22)	2.9(1.30)	0.64
	$\leq 2$	1000(39.7)	1408(41.6)	
	3-4	1243(49.4)	1580(46.7)	
	$5 \leq$	273(10.9)	393(11.6)	
Marital status	Married	2108(83.8)	2965(87.7)	3.89**
	Single	408(16.2)	415(12.3)	

Sleeping hours		6.7(1.35)	6.7(1.45)	0.82
	≤5	305(13.8)	545(16.1)	
	6-7	1211(48.1)	1573(46.5)	
	8-9	536(21.3)	78(23.1)	
	10≤	163(6.5)	249(7.4)	

\* $p < .05$ , \*\* $p < .01$

**Table 2.** Comparison of physical psychological factors according to gender

Characteristics n(%) / Mean(SD)		Male n(%) / Mean(SD)	Female	t/F
Subjective health status	Very Good	129(6.3)	111(3.8)	-6.20**
	Good	539(21.4)	653(22.4)	
	Normal	1051(51.1)	1522(52.2)	
	Bad	256(12.5)	477(16.3)	
	Very Bad	80(3.9)	155(5.3)	
Quality of life	1-3	301(12.0)	234(6.9)	-7.71**
	4-5	1500(59.6)	1773(52.4)	
	6-7	393(15.6)	758(22.4)	
	≥8	322(12.8)	616(18.2)	
Subjective body awareness	Very thin	128(6.0)	121(4.0)	-6.92**
	Thin	330(15.5)	304(10.1)	
	Normal	855(40.3)	1244(41.3)	
	Slightly overweight	677(31.9)	1076(35.7)	
	Very overweight	133(6.3)	266(8.8)	
Whether obesity	Underweight	72(3.1)	164(5.1)	7.72**
	Normal	1407(60.0)	2156(67.1)	
	Overweight	866(36.9)	895(27.8)	
Stress	So much Impression	83(3.9)	135(4.5)	3.63**
	Feeling a lot	372(17.5)	646(21.5)	
	A little feeling	1230(58.0)	1679(55.9)	
	Not hardly notice	435(20.5)	541(18.0)	
Waist circumference		84.9(8.89)	78.4(9.53)	25.88**
	80≤	673(26.7)	1909(56.5)	
	81-90	964(38.3)	850(25.1)	
	91-100	444(17.6)	265(7.8)	
	101≤	90(3.6)	57(1.7)	
BMI		24.1(3.25)	23.3(3.44)	9.49**
	18.5≤	72(2.9)	167(4.9)	
	18.6-22.9	775(30.8)	1413(41.8)	
	23-24.9	570(22.7)	671(19.8)	
	25≤	866(34.4)	908(26.9)	

\* $p < .05$ , \*\* $p < .01$

der differences in all variables were statistically significant (Table 2).

### 4.3 Factors Influencing Subjective Health Status according to Gender

The factors that significantly influenced the subjective health status in men included, economic status, education level, number of family members, quality of life, subjective body awareness, stress, and waist circumference, which accounted for an explanatory power of 21.9%. In woman, education level, quality of life, subjective body awareness, stress, and obesity account for an explanatory power of 22.9% (Table 3).

## 5. Discussion and Conclusion

In the present study, we compared demographic characteristics, and physical and psychological factors in men and women. There were significant gender differences in economic status, education level, and marital status among the demographic variables and in all of the physical and psychological factors examined in the study, that is, subjective health status, quality of life, subjective body awareness, obesity, stress, waist circumference, and BMI. In <sup>23</sup> reported gender differences in age, education level, and the ability to carry out activities of daily living, by <sup>24</sup> showed a gender difference in subjective health status. Upon examination of the results from the previous stud-

**Table 3.** Influencing factors on subjective health status according to gender

Gender	Characteristics	$\beta$	SE	t	R <sup>2</sup>	F	
Males	Economic status	Low	.29	.08	3.49	.219	12.89**
		Medium-Low	.14	.05	2.50		
		Medium-High	.09	.05	1.76		
		High	1.0				
	Education level	Elementary School	.18	.08	2.18		
		Middle School	.21	.07	2.77		
		High School	.09	.05	1.85		
		College $\leq$	1.0				
	Number of family member	$\leq 2$	.11	.07	1.50		
		3-4	.11	.06	1.91		
		$5 \leq$	1.0				
	Quality of life	$\leq 5$	-.79	.09	-8.02		
		6-7	-.48	.10	-4.42		
		$\geq 8$	1.0				
	Subjective body awareness	Very thin	.22	.16	1.37		
		Thin	-.14	.15	-0.93		
		Normal	-.28	.14	-2.03		
		Slightly overweight	-.19	.12	-1.54		
		Very overweight	1.0				
	Stress	So much impression	.49	.13	3.68		
		Feeling a lot	.46	.07	6.16		
		A little feeling	.25	.05	4.29		
		Not hardly notice	1.0				
	Waist circumference	$80 \leq$	-.35	.16	-2.10		
		81-90	-.24	.16	-1.55		
		91-100	-.09	.14	-0.67		
		$101 \leq$	1.0				

Females	Education level	Elementary school	.33	.06	5.05	.229	22.55**			
		Middle school	.26	.06	4.31					
		High school	.12	.03	3.67					
		College $\leq$	1.0							
	Quality of life	$\leq 5$	-.73	.07	-10.40					
		6-7	-.49	.07	-6.67					
		$\geq 8$	1.0							
	Subjective body awareness	Very thin	-.17	.10	-1.58					
		Thin	-.26	.09	-2.85					
		Normal	-.35	.07	-4.63					
		Slightly overweight	-.19	.06	-2.94					
		Very overweight	1.0							
	Stress	So much impression	.56	.09	5.85					
		Feeling a lot	.42	.05	7.37					
		A little feeling	.23	.04	5.09					
		Not hardly notice	1.0							
	Whether obesity	Underweight	.40	.10	3.99					
		Normal	.15	.06	2.54					
		Overweight	1.0							
	* $p < .05$ , ** $p < .01$									

ies and from the present study, there are similarities and differences regarding demographic characteristics, and physical and psychological factors. Previous studies were conducted with specific strata in the population such as the elderly, the socially disadvantaged, residents in rural areas, whereas this study studied a representative sample of adults of all age groups, and we believe this is why we found gender differences in a greater number of variables.

In the present study, 6.3% of men and 3.8% of women responded that their subjective health status was “very good,” similar to those in several previous studies<sup>8,15,25,26</sup>. Thus, men are more likely than women to positively assess their health. A study has argued that the gender difference is due to the ways in which men and women respond differently to physical, psychological, and social environmental conditions<sup>14</sup>. Women are sensitive to physical discomfort, have a tendency to regard any symptoms as physical illness, and consider illness or injury more seriously than men<sup>8</sup>. Therefore, factors in which gender differences exist should be considered in nursing education and intervention in the clinical setting, and the direction and level of education and intervention should be modified depending on the situation.

Factors that influence subjective health status were economic status, education level, number of family members, quality of life, subjective body awareness, stress, and waist circumference in men, and education level, quality of life, subjective body awareness, stress, and whether obesity in women. Earlier, in a study of factors relevant to subjective health assessment among the elderly<sup>23</sup> reported that education level positively affected subjective health assessment only in women. The findings were inconsistent with the present study’s findings, and we believe that the former should be interpreted within the context of the elderly generation in Korea, as the previous studies investigated only the elderly over 65 years of age. Women in the current generation of the elderly over 65 in Korea are less likely to have received higher education and lived most of their lives during a time when most women could not be socially active. Therefore, we speculate that education level positively affected subjective health status in women, but working status did not.

In men, the explanatory power of economic status, education level, quality of life, subjective body awareness, stress, and waist circumference to account for subjective health status was 21.9%, and in women, the explanatory

power of economic status, education level, quality of life, subjective body awareness, stress, waist circumference, and BMI was 22.9%. These levels are low, and suggest that other factors influencing subjective health status in adults were not included in the models. In order to improve the quality of life it is required improvement in subjective health<sup>22</sup>. Thus, a replication study should be conducted to identify factors influencing subjective health status by including physical factors such as disease-related symptoms, treatment approach, medication use, health-related behavior, etc., and social factors including social activities, and other lifestyle habits. Furthermore, for a more positive assessment of subjective health status, nursing education and interventional programs should be developed and managed, with factors influencing subjective health status differently in men and women taken into consideration even at the developmental stage.

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