

Analysis of Factors Affecting the Subjective Health Status of Middle-aged and Elderly in Korean

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한국인 중·장년층의 주관적 건강상태에 영향을 미치는 요인 분석

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Abstract This study aims to investigate the status of perceived health status, subjective body recognition, and weight change according to age. In addition, the main factors of interest of middle-aged and elderly people were analyzed. This is a secondary data analysis study using data from the 7th Korea National Health and Nutrition Examination Survey(KNHANES VIII-3, 2016-2018), Korea Centers for Disease Control and Prevention. The data were analyzed using IBM SPSS 21.0 program. Frequency analysis and chi-square test method was conducted. The significance level was set at $p < .01$. As a result of the analysis, subjective body recognition and perceived health status were identified to have a statistically significant positive relationship ($r=0.256$, $p<.01$). Perceived health status and weight change measured for a year also showed a statistically significant positive relationship ($r=0.303$, $p<.01$). Therefore, it is anticipated that the findings of this study are used as basic data for seeking ways for better health, quality of life, and well-being, as the study examines subjective health status and various variables applicable to middle-aged people.

Key Words : Perceived health status, Subjective body recognition, Weight change, KNHANES, Life cycle

요약 본 연구의 목적은 연령에 따른 지각된 건강상태, 주관적 체형인식 및 체중변화와의 상관관계를 알아보고자 하였다. 본 연구에서는 질병관리본부 제7차 국민건강영양조사(KNHANES VIII-3, 2016-2018) 자료를 활용한 2차 자료 분석 연구이다. 수집된 자료는 IBM SPSS 21.0 프로그램을 이용하여 빈도분석 및 카이제곱 검정을 실시하였다. 유의수준은 $p < .01$ 로 설정하였다. 분석결과, 주관적 신체인식과 건강상태 지각은 통계적으로 유의한 양의 관계가 있었다($r=0.256$, $p<.01$). 1년 동안 지각된 건강상태와 체중 변화 사이에는 통계적으로 유의한 양의 관계가 있었다($r=0.303$, $p<.01$). 그러므로, 중장년층을 위한 주관적 건강상태와 다양한 변인들을 알아봄으로써 더 나은 건강, 삶의 질, 그리고 웰빙을 위한 대책들을 찾기 위한 기초자료로 활용되기를 기대한다.

키워드 : 지각된 건강상태, 주관적 체형인식, 체중변화, 국민건강영양조사, 생애주기

1. Introduction

With the gradual increase in aging societies, there has been a surge in interest in subjective measures of well-being, including mental and physical health, happiness, and life satisfaction.

The population of 25-49 years old in Korea

exceeded 36.8% in 2020, reached 34.9% in 2025, and is expected to decrease to 32.8% in 2030. The population of 50-64 years old in Korea exceeded 23.9% in 2020, reached 24.8% in 2025, and is expected to decrease to 24.2% in 2030. The population aged 65 and over in Korea exceeded 43.3% in 2020, reached 56.9% in 2025, and is

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expected to increase to 70.9% in 2030[1].

The average life expectancy has been extending with better economic status and the development of medical technology. It was 82.7 in 2018, but healthy life expectancy was only 64.4, which shows a 17-year difference. Healthy life expectancy has been on a downward trend compared to what it was in 2016 while life expectancy has been on an upward curve since 2005[2]. This implies that the middle-aged needs health management to improve their quality of life, which eventually leads to a better quality of life in old age.

According to the Constitution of the World Health Organization (WHO), health is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity[3]. This statement not only defines health but also is a good description of the quality of life and happiness. As such, health is the most important determinant of human life and an essential element that helps humans do valuable work[4].

According to the search criteria by life cycle provided by the Ministry of Strategy and Finance, it is classified into middle-aged (30-49 years old), middle-aged (50-64 years old), and elderly (65 years old or older)[5]. The study of the Minimum European Health Module (MEHM) conducted a CUORE project health checkup survey (2008-2012) on 4,798 Italian residents (49.7% women, 35-79 years old)[6]. A high prevalence of negative perceptions of health status was associated with men (9%) and women (24%) aged 35 to 44 years, and men (46%) and women (61%) aged 75 to 79 years.

Negative perception among women reaches 50% in the 65-69 age group, which is 10 years earlier than men [6].

Subjective age perception of 1,459 Japanese people (20s to 80s) was investigated, and the participants were asked about their subjective psychological age. The subjective age felt younger than the actual age, and the middle-aged (50s, 60s, 70s, 80s) showed a larger gap than the younger adults (20s, 30s) surveyed previously[7].

According to the results of a study on the behavior of 196 Americans (55-87 years old), subjective age predictions were found to be personal, social, grooming, body-focused, and trend activities[8].

Subjective health is a general assessment of one's perceived physical, physiological, and psychosocial health. It is a positive norm that puts the focus on wellness than sickness and can be defined as an individual's perception of their own health status[9].

Subjective health can be a predictor of current health status[10] as well as morbidity and mortality[9]. As such, a subjective assessment of one's health has more meaning than a mere health measure. For example, an elderly person with severe arthritis may think of his/her health condition as significantly poor, but other elderly may give the same condition a more optimistic evaluation[11]. It is because subjective health not only includes perception of physical health, but also psychological and emotional factors.

KNHANES continues to measure on a variety of scales to validate the effectiveness of diet and exercise programs. The purpose of this study was to identify factors that affect individual satisfaction scales according to age on physical activity, subjective health status, and subjective body shape satisfaction.

2. Research Method

2.1 Research Design

The purpose of this study was to investigate the correlation between subjective health status, age, subjective body type perception, and weight change of middle-aged and elderly Koreans over 30 years of age. This study was a secondary data analysis study using data from the 7th Korea National Health and Nutrition Examination Survey, (KNHANES VIII-3), 2016-2018, Korea Centers for Disease Control and Prevention(IRB; 2018-01-03-P-A).

2.2 Research subjects and Data methods

The subjects of this study used raw data from the 2016-2018 National Health and Nutrition Examination Survey, which is the tertiary data of the 7th period. The health survey and examination survey of the National Health and Nutrition Survey were conducted at the mobile examination center, and the health survey was conducted through an interview method. Among the total 7,992 samples, 2,344 persons under the age of 30 were excluded. Among them, the main independent variables (education, income, subjective health status, subjective body type perception, weight gain) and dependent variables (age) were among the demographic and health-related characteristics. The final 5,648 people were selected as subjects of this study by excluding missing values. Since the National Health and Nutrition Examination Survey was extracted using a two-step stratified colony sample design, it was analyzed using a complex sample analysis method.

2.3 General characteristics

For general characteristics in this study, data on gender, age, education, and house income among health survey data from the seventh Korea National Health and Nutrition Examination Survey were used. As socioeconomic characteristics of the subjects, gender, age, income level, and education level were investigated. Age was based on age, '30-49', '50-64', and '65 years old or older classified as'. As for house income, house income was divided into 'low', 'lower-middle', 'middle', 'middle-high', and 'high' based on income quartiles. Education level was classified into 'middle school', 'middle school', 'high school', and 'university graduate or higher'

2.4 Perceived Health Status, Subjective Body Recognition and Weight change in 1 year

Perceived Health Status is divided into "How do you feel about your health in general?" The questions were divided into Very good, Good,

Normal, Bad, and Very bad. The classification of Subjective Body Recognition is "What do you think of your current body shape?" The questions were divided into very skinny, a little skinny, Commonly, slightly overweight, and very obese. As for the weight change in 1 year, was there any change in weight compared to the last year?" No change (including increase and decrease of less than 0~3 kg), Weight loss (reduction of 3~10 kg), weight gain (3~10 kg increase) was divided into responses.

2.5 Analysis Method

Data were analyzed using the SPSS 21.0 (IBM Corp., NY, USA) program. To find out whether general characteristics (gender, age, household income, education level, etc.) were related to subjective health, subjective body type recognition, and weight-related characteristics (whether or not weight has changed for one year), weights are applied and the chi-square test and t-test. Significance was determined to be significant when the significance level was less than 0.05.

3. Results

3.1 General characteristics of research subjects

The results regarding the general characteristics of the study subjects are as follows. The total number of participants was 5,648, and each item was the result of excluding missing values. Table 1 shows the results of the general characteristics of the subjects were expressed through frequency analysis. Education level according to age through frequency analysis as shown in in Table 2. Educational level was lower than middle school (17.5%) for those over 65 years old, middle school (1.6%), high school (10.2%) for the 50-64 age group, and college or higher (25.4%) for the 30-49 age group. House income according to age level was organized through frequency analysis as shown in in Table 3. House income was Middle (9.9%) and Middle & high (10.7%) for the 30-49 age group. House income was high (8.1%) for the 50-64 age

group, and low (15.3%) for those over 65 years old.

Table 1. General characteristics

Variable	N	%
Gender		
man	2,440	43.2
women	3,208	56.8
Age (y)		
30-49	2,316	41.0
50-64	1,668	29.5
65-99	1,630	28.9
House income		
Low	1,319	23.4
Low & middle	1,117	19.8
Middle	1,058	18.7
Middle & high	1,031	18.3
High	1,100	19.5
Education		
<Middle school	1,256	22.2
Middle school	588	10.4
High school	1,467	26.0
≥University	1,837	32.5
Perceived Health Status		
Very good	222	3.9
Good	1,195	21.2
Normal	2,677	47.4
Bad	838	14.8
Very bad	260	4.6
Subjective Body Recognition		
very skinny	226	4.0
a little skinny	589	10.4
Commonly	2,156	38.2
slightly overweight	1,885	33.4
very obese	482	8.5
Weight change in 1 year		
No change	3,490	61.8
Weight loss	654	11.6
Weight gain	1,185	21.0

Table 2. Education level according to age

Education	Age (year)		
	30-49 N(%)	50-64 N(%)	65≤ N(%)
<Middle school	28(5)	331(6.5)	894(17.5)
Middle school	81(1.6)	290(5.7)	213(4.2)
High school	697(13.6)	523(10.2)	233(4.6)
≥University	1,302(25.4)	384(7.5)	140(2.7)
$\chi^2(p)$	2292.650 ^a (.000) ***		

$p^* < .05$, $p^{**} < .01$, $p^{***} < .001$

Table 3. House income according to age level

House income	Age (year)		
	30-49 N(%)	50-64 N(%)	65≤ N(%)
Low	187(3.3)	273(4.9)	957(15.3)
Low & middle	445(8.0)	312(5.6)	352(6.3)
Middle	553(9.9)	316(5.7)	179(3.2)
Middle & high	596(10.7)	313(5.6)	113(2.0)
High	529(9.5)	451(8.1)	115(2.1)
$\chi^2(p)$	1238.622 ^a (.000) ***		

$p^* < .05$, $p^{**} < .01$, $p^{***} < .001$

3.2 Perceived health status

Perceived health status level was good(10.9%) and normal (21.7%) for 30-49 age group, good(6.2%) and normal (14.8%) for the 50-64 age group, and good(4.8%) and normal (12.8%) for those over 65 years old as shown in in Table 4.

Table 4. Perceived health status according to age level

Perceived Health Status	Age(year)		
	30-49 N(%)	50-64 N(%)	65≤ N(%)
Very good	79(1.5)	71(1.3)	66(1.2)
Good	591(10.9)	336(6.2)	258(4.8)
Normal	1,173(21.7)	801(14.8)	690(12.8)
Bad	245(4.5)	253(4.7)	337(6.2)
Very bad	26(0.5)	76(1.4)	158(2.9)
$\chi^2(p)$	277.790a (.000) ***		

$p^* < .05$, $p^{**} < .01$, $p^{***} < .001$

3.3 Subjective Body Recognition level

Subjective Body Recognition level was commonly (14.9%) and slightly overweight (16.2%) for 30-49 age group, commonly(12.2%) and slightly overweight (10.6%) for the 50-64 age group, and commonly (12.6%) and slightly overweight (7.9%) for those over 65 years old as shown in in Table 5.

Table 5. Subjective body recognition according to age level

Subjective Body Recognition	Age(year)		
	30-49 N(%)	50-64 N(%)	65≤ N(%)
very skinny	65(1.2)	46(0.9)	112(2.1)
a little skinny	215(4.0)	155(2.9)	213(3.9)
Commonly	804(14.9)	662(12.2)	679(12.6)
Slightly overweight	875(16.2)	576(10.6)	425(7.9)
very obese	232(4.3)	149(2.8)	98(1.8)
$\chi^2(p)$	152.952 ^a (.000) ***		

$p^* < .05$, $p^{**} < .01$, $p^{***} < .001$

3.4 Weight change

Weight change in 1 year was 'no change' (22.6%) and 'weight gain' (13.5%) for the 30-49 age group. Weight change in 1 year was 'no change' (20.7%) and 'weight gain' (5.3%) for the 50-64 age group, and 'no change' (21.6%) and 'weight gain' (3.0%) for those over 65 years old as shown in in Table 6.

Table 6. Weight change in 1 year according to age level

Weight change in 1 year	Age(year)		
	30-49	50-64	65≤
	N(%)	N(%)	N(%)
No change	1,222(22.6)	1,119(20.7)	1,139(21.1)
Weight loss	237(4.4)	184(3.4)	225(4.2)
Weight gain	731(13.5)	285(5.3)	163(3.0)
$\chi^2(p)$	311.5252 ^a (.000)***		

$p^* < .05, p^{**} < .01, p^{***} < .001$

3.5 Correlation between variables

The results of correlation between variables are shown in Table 7. There was a statistically significant negative relationship between gender and house income ($r = -0.448, p < .01$). Gender and Education showed a statistically significant negative relationship ($r = -0.148, p < .01$). House income and education showed a statistically significant positive relationship ($r = 0.484, p < .01$). House income and education showed a statistically significant negative relationship ($r = -0.391, p < .01$). Education and age showed a statistically significant negative relationship ($r = -0.637, p < .01$).

Table 7. Correlation between age and general characteristics

	Gender	House income	Education	Age(year)
Gender	1			
House income	-.048**	1		
Education	-.148**	.484**	1	
Age(year)	.000	-.391**	-.637**	1

$p^* < .05, p^{**} < .01$

Table 8. Correlation between age and perceived health status, subjective body recognition, and weight change in 1 year

	Perceived Health Status	Subjective Body Recognition	Weight change in 1 year	Age(year)
Perceived Health Status	1			
Subjective Body Recognition	.256**	1		
Weight change in 1 year	.303**	.591**	1	
Age(year)	.091**	-.075**	-.093**	1

$p^{**} < .01$

The results of correlation between variables are shown in Table 8. There was a statistically

significant positive relationship between perceived health status and subjective body recognition ($r = 0.256, p < .01$). There was a statistically significant positive relationship between perceived health status and weight change in 1 year ($r = 0.303, p < .01$). Perceived health status and age showed a statistically significant positive relationship ($r = 0.091, p < .01$). There was a statistically significant negative relationship between subjective body recognition and weight change in 1 year ($r = -0.075, p < .01$). There was a statistically significant negative relationship between weight change in 1 year and age ($r = -0.093, p < .01$).

4. Discussion

The study aims to examine the relationship between subjective health status, age, subjective body recognition, and weight change involving middle-aged Koreans aged 30 or above. Secondary data from the 2016-2018 7th Korea National Health and Nutrition Examination Survey (KNHANES) conducted by the Korea Disease Control and Prevention Agency (KDCA) and findings from preceding studies were used for the study.

It was reported that poor perceived health status heightens psychological instability and fear of loss, which worsens anxiety in older age[12].

According to a survey on the subjective health status of the elderly conducted by the Ministry of Health and Welfare in 2016, 23.2% of the respondents in their 60s and 21.4% of those in their 70s answered good[13]. Also, the Living Profiles of Older People Survey conducted in 2017 reported that 37.0% of the respondents replied I'm in a good health condition, while 39.7% said, I'm not in a good health condition [14]. While self-assessment of subjective health status can change the symptoms and conditions of chronic diseases, negative assessment affects one's health behaviors and leads to negative results on the development of the disease, whereas positive assessment motivates oneself to continue with health behaviors,

preventing diseases and lowering mortality rate [15,16]. Hence, it is reported that it is important to encourage elderly people with chronic diseases to perform health behaviors on a steady basis through positive assessment of their health status[17].

According to the research by Ma[18] on the physical attractiveness perception of Chinese women, subjects with better living standards and educational status, taller height, and slimmer bodies were identified to have a greater perception of their physical attractiveness. The level of physical attractiveness perception increased when the subjects were more satisfied with their body. Also, the research reported that women who feel less difficulty losing weight had better physical attractiveness perception.

According to the survey on the national perception of obesity conducted by the National Health Insurance Service (NHIS) in 2018, more than 60% of Koreans perceived their body to be very overweight or overweight[19]. Also, the COVID-19 pandemic that struck Korea in early 2020 caused people to spend more time at home, reducing the amount of daily life activities. According to the survey Weight Management and Obesity in the Era of COVID-19 in Korea announced by the Korean Society for the Study of Obesity[20] in 2021, 46% of the respondents replied that they gained more than 3kg as of March 2021 compared to January 2020.

Another research by Kang[21] stated that people with higher self-efficacy for weight control are more likely to reach the weight they want, contributing to subjective body recognition. Also, people with better ability to continue on with their diet were identified to be having lighter weight or categorized as normal. It can be considered that they perceived their body condition to be slim or normal based on their body weight.

We can confirm that there are differences between the SRH groups based on objective health measures. In particular, it was confirmed that it was related to the improvement of self-awareness about health[22].

A study examining the relationship between physical activity, physical performance, quality of life, and cognition in non-senile adults aged 65 years and older, reduced physical activity and preventable chronic diseases, reduced health care costs, improved cognition, improved muscle function, and fear of falls. It has been demonstrated that there is an overwhelmingly positive correlation between a decrease and, inevitably, an increase in the quality of life of self-awareness. There is research evidence of the effects of healthy aging and physical activity, which could be important from a public health perspective[23].

Studies have shown that pathological eating behaviors and eating disorders are common in elderly women with body image disorders. Older women appear to be more likely to have binge eating disorders and eating disorders not otherwise noted. In many indicators of eating disorders and body image, older women with eating disorders present certain unique challenges, such as coping with menopause and aging.

Clinicians also appear to be wary of women far beyond the young age range that has traditionally been described for eating and body image disorders [24]. As a result, the study confirmed that there was a significant positive relationship between subjective health status, perceived body recognition, and age. It is anticipated that the results of this study are used as basic data for the improvement of a healthy lifestyle, and serve as the basis for basic data on health promotion for the middle-aged and elderly so that they can live a quality healthy life without any disease, by reducing chronic illness and improving their health awareness and quality of life.

5. Conclusion & Suggestion

This study aims to investigate the status of perceived health status, subjective body recognition, and weight change according to age. In addition, the main factors of interest of middle-aged and

elderly people were analyzed. This is a secondary data analysis study using data from the 7th Korea National Health and Nutrition Examination Survey(KNHANES VIII-3 (2018), Korea Centers for Disease Control and Prevention. The data were analyzed the data using IBM SPSS 21.0 program. Frequency analysis and chi-square test method was conducted. The findings of the collected data are as follows.

First, Perceived health status was very good (1.5%), good (10.9%), normal (21.7%), bad (4.5%), and very bad (0.5%) for the 30-49 age group. Perceived health status was very good (1.3%), good (6.2%), normal (14.8%), bad (4.7%), and very bad (1.4%) for the 50-64 age group. Perceived health status was very good (1.2%), good (4.8%), normal (12.8%), bad (6.2%), and very bad (2.9%) for those over 65.

Second, Subjective body recognition was very skinny (1.2%), a little skinny (4.0%), commonly (14.9%), slightly overweight (16.2%), and very obese (4.3%) in the 30-49 age group. Subjective body recognition was very skinny (0.9%), a little skinny (2.9%), commonly (12.2%), slightly overweight (10.6%), and very obese (2.8%) in the 50-64 age group. Subjective body recognition was very skinny (2.1%), a little skinny (3.9%), commonly (12.6%), slightly overweight (7.9%), and very obese (1.8%) for those over 65.

third, Weight change in 1 year was no change (22.6%), weight loss (4.4%), and weight gain (13.5%) for those aged 30-49 years. Weight change in 1 year was no change (20.7%), weight loss (3.4%), and weight gain (5.3%) for those aged 50-64 years. Weight change in 1 year was no change (21.1%), weight loss (4.2%), and weight gain (3.0%) for those over 65 years old.

As this study is a quantitative mass sample survey based on the data from the KNHANES (VIII-3, 2016-2018), there are limitations in generalizing the findings. It is considered that active efforts should be made for the improvement of lifestyle and regular exercise for the middle-aged through

various studies in the future.

A growing elderly people has become a healthy aging and public health problem. Physical activity can help older people recover or maintain a healthy aging process. Accordingly, the fields of interest in health according to age were divided into Perceived Health Status, Subjective Body Recognition, and Weight change. In the future, based on this study, we intend to use the basic data to investigate the correlation between self-awareness and quality of life.

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