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## The Effect of Subjective Body type Recognition in the Elderly on Body Weight Management Methods

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### Abstract

This study analysed weight management methods according to the subjective body type recognition of the elderly, and based on the results, this study was conducted to suggest the importance of correct body type recognition and provide basic data for developing nutrition education data and nursing intervention programs. For the sample, data from the “2019 National Health and Nutrition Examination Survey conducted by the Quality Control Administration” was used. 1,735 elderly people were selected, data were extracted, and the study subjects were set. The collected data were analyzed using the SPSS 21.0 program. A frequency analysis was performed on the demographic characteristics of the subject of this study. Moreover, correlation analysis was performed to confirm subjective body type recognition and weight control method. In addition, multiple response analysis was performed to confirm the subjective body type recognition and weight control method by age. Subjective body type recognition showed a positive correlation between meal reduction and skipping meals. Among the weight control methods, exercise showed a negative correlation between meal reduction and meal skipping. Among the weight control methods, fasting showed a positive correlation with skipping meals, voluntary weight loss medications, prescribed weight loss medications, herbal medicines, and one-food diets. According to the subjective body type recognition of the elderly, the weight management method for each group was analyzed by classifying them into “very thin group, thin group, normal group, obese group, and very obese group”. In the perception by body type group, it was found that "obese or very obese" use weight management methods through diet control more than exercise. Education on systematic body shape and weight control methods based on scientific knowledge is required so that the old adult can properly recognize their body shape.

**Keywords:** elderly; subjective body type; body weight; exercise; diet

### 1. INTRODUCTION

Korea's aging population is rapidly progressing, and the proportion of the elderly population, which is the proportion of the elderly population (population 65 years and older) to the total population, is predicted to increase from 15.7% in 2020 to 40% in 2050 [1]. In modern society, the general standard of living has improved due to the development of science, the improvement of national income due to economic growth, and the improvement of the living environment. The average life expectancy of the elderly has been extended due to the improvement of health status due to the development of medicine and improvement of health and hygiene [2]. Elderly means to decline biologically, physically, mentally, socially, and spiritually with age, it is defined in various ways depending on the social and cultural situation and the aging phenomenon showing individual differences [3].

Body type recognition refers to recognizing and feeling one's body, and it varies depending on various factors such as sociocultural influences such as an individual's family, peer group, and ethnicity and psychological factors [8]. As the number of elderly people aged 65 and over increases [1], elderly people who lead a new aging culture with values and behaviors completely different from the image of the elderly have started to appear [4]. The elderly tend to change their appearance for their own physical satisfaction, as interest in and investment in his own appearance increases[5], his external appearance is also changing a lot from that of the old man [4]. In particular, due to physical aging, body changes such as motor nerve deterioration, musculoskeletal system degeneration, hormonal changes, and increase in abdominal fat occur in the elderly [5], which affects subjectively perceived and felt body shape recognition [6-7]. Recently, as interest in appearance has gradually expanded from young people to middle-aged people [7], interest and investment in appearance of the elderly have increased, and their external appearance is changing a lot from those of the past older [4]. And unlike the old people in the past, the elderly of today's age are making great efforts to improve their appearance and make themselves look more

beautiful and healthy in order to instill a favorable image to friends and family members of the same sex and the same sex [5]. In addition, appearance management behavior affects the elderly's enjoyable life in old age and is recognized as an important part for establishing a positive self-concept of the elderly, which can be inferred to have an impact on society as a whole [5, 23-25].

In the past, Korean society placed the standard of beauty on the face, but recently, it attaches great importance to the beauty of the body as well as the face [9]. In the meantime, the ideal type for body type has been constantly changing [10]. The standards for this are not arbitrary, but have been continuously changed by the conditions of the society, economy, culture, and history of the time. Today's ideal body type has been culturally redefined by the mass media, focusing on a lean and thin body type. In modern society, individuals are making great efforts to meet the standards by internalizing a thin and thin body shape as their ideal body shape [11]. In fact, in an international comparative study on the ideal body type and preference for weight loss, Korean women were the skinniest, but the intensity of wanting to lose weight or the degree of using a slim body as the ideal body type was the highest, it was also found that the aesthetic standards for thinness were set higher than women in other countries [12]. Wrong body type recognition has been reported to have negative effects on physical health, such as anorexia, digestive disorders, decreased bone density, lowered immunity, and menstrual disorders, and to increase stress and depression, thereby detrimental to mental health [13].

Body type recognition is influenced by social environment and background. Modern society regards a skinny body type or an overly muscular body shape as the standard of beauty. Celebrities appearing in the mass media, video media, fashion culture, etc. create a social atmosphere that ideally views and prefers a lean body or an excessively muscular body with below average body fat [14].

Modern people live in an era in which weight control management for image improvement has become commonplace. It aims for a healthy and slim body, and manages it more effectively, rationally and systematically to achieve the goal, weight management is also a kind of project. The body shape is considered as an object that needs to be constantly reconstructed by investing time, economic aspects, and effort to improve health and image, and is emerging as a representative means of expressing the individual's self and positive image [15].

The main method of weight management is to combine exercise therapy with diet. For weight management, massage, aromatherapy using aromatherapy, psychotherapy, and device therapy using heat, light, and wavelengths are used on the body part or the whole where the service provider wants to manage weight [16]. In more detail, it is as follows. The purpose of exercise therapy is to decompose the triglycerides accumulated in adipose tissue and consume the free fatty acids produced during muscle contraction in the exercising muscles. In general, in order to lose weight, it is recommended to exercise at least 3 times a week, and exercise with sufficient intensity and time of 300Kcal or more at one time. Usually, low to moderate intensity (about 40-60% of VO<sub>2</sub>max) exercise is good for weight loss. Since epinephrine and nor epinephrine are increased during high-intensity exercise, Brobek reported that an increase in body temperature during exercise decreased appetite [15].

The basic principle of the diet therapy is very simple. In other words, if caloric consumption exceeds caloric absorption, weight is reduced, and the weight loss continues until a state of balance between caloric consumption and caloric absorption is reached. Diet therapy is a necessary weight management method in that it can be effective in a short period of time, is inexpensive, is easy to use, can be practiced in daily life, is simple, and is safe. However, the basal metabolic rate is lowered, and the YoYo phenomenon, which recovers to its original state soon after removing water and muscle, may occur, it is effective when it is properly performed in combination with exercise therapy [15] [26][27]. Pharmacotherapy is an adjunctive treatment method that can be used in cases where weight does not decrease despite diet and increased physical activity. The requirements for an effective anti-obesity treatment are: First, the abnormalities associated with obesity should improve while effectively reducing weight; second, it should be well tolerated and the side effects should be reversible; Fourth, long-term efficacy and safety must be proven; fifth, the mechanism of action can be known; and finally, the cost of drug treatment must be reasonable[15]. Oriental medicine treats obesity as an abnormal phenomenon that occurs when each element of the body fails to function properly, rather than as simply being overweight. The advantage of oriental medicine weight control method is that it achieves weight loss without straining the human body. If you go on a diet while taking herbal medicines, you supplement the functions of the body and normalize

the metabolism. In addition, properly administered herbal medicine can reduce the feeling of hunger, and when acupuncture is applied, appetite is reduced [15]. Surgical methods include liposuction and gastrectomy [15]. According to the behavior modification method, obesity is a disease caused by wrong eating habits and consuming too much, so it is necessary to modify the overall lifestyle including eating habits. The seven healthy lifestyle habits suggested by Dr. Breslow and Bello of the United States include “smoking, regular exercise, moderate drinking, adequate sleep, maintaining a normal weight, and eating breakfast with abstaining from snacks”. Health experts recommend a three-meal ratio of 3:4:3 for breakfast, lunch, and dinner [15].

In the existing research on body type recognition in Korea, most of the research topics were limited to teenagers and college students, and research on weight control according to body type recognition was insufficient. Awareness of one's own body type can affect the mental, physical and mental health of the elderly. In order to confirm the problems caused by distorted body type recognition and indiscriminate weight control, research on the weight control method of the elderly should be preceded.

In this study, analyzed the weight management methods for each group by classifying them into very thin, thin, normal, obese, and very obese according to the subjective body type recognition of the elderly in Korea. Based on the results, the importance of correct body shape recognition was evaluated. This study was conducted to provide basic data for developing nutrition education data and nursing intervention programs

## 2. RESEARCH METHOD

### 2-1 Study Design

This study was attempted to confirm the subjective body type recognition and weight control method by age of the elderly. The data used in this study were the data of the National Health and Nutrition Examination Survey conducted by the “Korea Centers for Disease Control and Prevention”, and the method of weight control according to body type recognition was confirmed using raw data. For subjective body type recognition, data designed as "very thin, slightly thin, average, slightly obese, and very obese" in a 5-point scale format were used. For weight control methods, data designed as yes or no for exercise, fasting, meal reduction, skipping meals, voluntary weight loss agents, prescribed weight loss agents, herbal medicines, health functional foods, and one-food diets were used [Table 1].

**Table 1:** Variable setting

<b>Classification</b>	<b>Category</b>
subjective body type recognition	very thin, slightly thin, average, slightly obese, and very obese
weight control methods	exercise, fasting, meal reduction, skipping meals, voluntary weight loss agents, prescribed weight loss agents, herbal medicines, health functional foods, and one-food diets

### 2-2 Study Subjects

The subjects of this study were limited to the elderly population aged 65 years or older among the raw data that were sampled using the probability sampling method with the population of the whole country as the population. For the sample, data from the “2019 National Health and Nutrition Examination Survey surveyed by the Quality Control Administration” was used. The gender composition of the sample selected in this study includes both men and women, and data collected based on each city and province across the country. When the study subjects were set, those who answered, “Don’t know” or did not respond were excluded from the analysis.

### 2-3 Research Tools

2.3.1 Subjective body type recognition. In order to investigate the subjective body type perception of the elderly, this study used data that asked a question about subjective body type recognition and answered it with 5 items. This questionnaire uses data designed such as “How do you feel about your current body shape?” and the responses are “very thin, slightly thin, average, slightly obese, and very obese”. (“Korea Centers for Disease Control and Prevention, 2020. Guidelines for the use of raw data from the National Health and Nutrition

Examination Survey”). This scale is a measurement item designed in a 5-point scale format, and the higher the score, the closer the subjective body type perceived by the elderly to obesity.

2.3.2 Weight control method. The weight control method of the elderly refers to a method of controlling one's own weight through exercise or diet. For the weight control method of the elderly used in this study, data set as exercise, fasting, meal reduction, skipping meals, voluntary weight loss agents, prescribed weight loss agents, herbal medicines, health functional foods, and one-food diets were used. The design of the questionnaire asks “Please indicate all methods you have used to lose or maintain weight in the past year”, the responses to this were “exercise, fasting (more than 24 hours), reducing the amount of food or adjusting the diet (reducing intake without skipping meals), skipping meals (skipping meals), voluntary weight loss agents, prescribed weight loss agents, herbal medicines, health functional foods, and one-food diets (a diet method that eats only one food, such as grapes, milk, potatoes, and sweet potatoes)”.

## 2-4 Data Collection Procedure

The data used in this study were acquired in accordance with the approval of the “Korea Centers for Disease Control and Prevention (KCDC)” in response to the researcher's request to use the raw data of the National Health Survey. This data was collected through case selection of 1,735 elderly people, the subject of this study, among a total of 8,110 valid samples. This data was collected through a survey from January to December 2019 under the supervision of the Korea Centers for Disease Control and Prevention.

## 2-5 Data Analysis Method

The data collected in this study were analyzed using the SPSS 21.0 program. In order to understand the sample characteristics of this study, frequency analysis was performed on the demographic characteristics. And correlation analysis was performed to confirm subjective body type recognition and weight control method. In addition, multiple response analysis was performed to confirm the subjective body type recognition and weight control method by age. In this process, the weight control method was used by redefining it as one variable.

## 3. RESULTS

### 3-1 Demographic Characteristics of the Sample

The demographic characteristics of the respondents sampled for the study are as follows. 1,735 respondents were the subjects of this study, and the gender composition was 42.9% male and 57.1% female. The respondents' residences were Seoul 17.0%, Busan 7.0%, Daegu 7.4%, Incheon 4.3%, Gwangju 2.8%, Daejeon 3.4%, Ulsan 1.0%, Sejong 1.0%, Gyeonggi 17.6%, Gangwon 3.3%, Chungbuk 4.8%, Chungnam 4.0 %, Jeonbuk 4.1%, Jeonnam 5.0%, Gyeongbuk 6.6%, Gyeongnam 8.5%, and Jeju 2.1%. The household income of the respondents was 40.2% lower, 28.0% lower middle, 14.8% middle class, 10.3% upper middle class, and 6.7% upper class income. The educational level of the respondents was 54.9% with elementary school or less, 16.4% middle school graduate, 18.9% high school graduate, and 9.8% with college graduate or higher. According to the marital status of the respondents, 66.2% of spouses living together, 1.1% separated by spouse, 28.0% widowed, 3.9% divorced, and 0.9% other. The age of the respondents was 65-69 years old, 31.1%, 70-79 years old 48.8%, and 80 years old or older 20.1%, etc. [Table 2].

**Table 2:** Demographic characteristics of the sample (N=1735)

classification	category	N	%	Classification	category	N	%
gender	mal	744	42.9	household income	lower	693	40.2
	female	991	57.1		lower middle	482	28.0
residences	Seoul	295	17.0		middle	255	14.8
	Busan	121	7.0		upper middle	178	10.3
	Daegu	129	7.4	upper	116	6.7	
	Incheon	75	4.3	educational	<elementary	839	54.9

				level	school graduate		
	Gwangju	48	2.8		middle school graduate	250	16.4
	Daejeon	59	3.4		high school graduate	288	18.9
	Ulsan	18	1.0		>university graduate	150	9.8
	Sejong	18	1.0	marital status	spouses living together	1148	66.2
	Gyeonggi	306	17.6		separated by spouse	19	1.1
	Gangwon	58	3.3		widowed	486	28.0
	Chungbuk	83	4.8		divorced	67	3.9
	Chungnam	69	4.0		other	15	.9
	Jeonbuk	72	4.1	age	65-69 years old	540	31.1
	Jeonnam	86	5.0		70-79 years old	846	48.8
	Gyeongbuk	114	6.6		>80 years old	349	20.1
	Gyeongnam	147	8.5				
	Jeju	37	2.1				

### 3-2 Correlation Between Subjective Body Type Recognition and Weight Control Method

Because of examining the correlation between the respondent's subjective body type recognition and weight control method, the results shown in [Table 3] were obtained. Subjective body type recognition and methods for weight control include exercise, fasting, reduction of food intake, skipping meals, use of voluntary weight loss agents, use of prescribed weight loss agents, taking herbal medicines, taking health functional foods, and one-food diets. As for the correlation between subjective body type recognition and weight control method, meal quantity control and skipping meals showed a correlation. Subjective body type recognition showed a positive correlation between meal quantity reduction and skipping meals. Among the weight control methods, exercise showed a negative correlation between meal reduction and skipping meals. Among the weight control methods, fasting showed a positive correlation with skipping meals, voluntary weight loss agents, prescribed weight loss agents, herbal medicines, and one-food diets. Among the weight control methods, a decrease in the amount of food showed a positive correlation with skipping meals. Among the weight control methods, skipping meals showed a positive correlation with the one food diet. Among the weight control methods, the use of herbal medicine showed a positive correlation with the intake of health functional foods. The older the elderly perceive their subjective body type as obesity, the more they control their weight by controlling the amount of food or skipping meals.

**Table 3:** Relationship between body type recognition and weight control method

Classification		1	2	3	4	5	6	7	8	9	10
1. subjective body type recognition	$r(n=681)$	1									
	$p$										
	$n$	1690									
2. exercise	$r(n=681)$	-.063	1								
	$p$	.098									

	<i>n</i>	681	681								
3. fasting	<i>r</i> ( <i>n</i> =681)	.046	.003	1							
	<i>p</i>	.234	.934								
	<i>n</i>	681	681	681							
4. meal reduction	<i>r</i> ( <i>n</i> =681)	.194**	-.366**	.040	1						
	<i>p</i>	.000	.000	.297							
	<i>n</i>	681	681	681	681						
5. skipping meals	<i>r</i> ( <i>n</i> =681)	.098*	-.118**	.233*	.094	1					
	<i>p</i>	.010	.002	.000	.015						
	<i>n</i>	681	681	681	681	681					
6. voluntary weight loss agents	<i>r</i> ( <i>n</i> =681)	.029	-.027	.150*	.075	.043	1				
	<i>p</i>	.453	.485	.000	.051	.267					
	<i>n</i>	681	681	681	681	681	681				
7. prescribed weight loss agents	<i>r</i> ( <i>n</i> =681)	.018	-.014	.084*	-.030	.003	-.012	1			
	<i>p</i>	.647	.711	.028	.433	.944	.755				
	<i>n</i>	681	681	681	681	681	681	681			
8. herbal medicines	<i>r</i> ( <i>n</i> =681)	-.056	-.038	.213*	.008	.060	.132*	-.017	1		
	<i>p</i>	.147	.322	.000	.839	.115	.001	.657			
	<i>n</i>	681	681	681	681	681	681	681	681		
9. health functional foods	<i>r</i> ( <i>n</i> =681)	.018	-.012	.036	-.052	.012	.058	-.032	.303*	1	
	<i>p</i>	.643	.753	.344	.173	.747	.131	.398	.000		
	<i>n</i>	681	681	681	681	681	681	681	681	681	
10. one-food diets	<i>r</i> ( <i>n</i> =681)	-.008	.069	.107*	-.003	.117*	-.010	-.016	-.014	.031	1
	<i>p</i>	.840	.072	.005	.938	.002	.795	.674	.713	.415	
	<i>n</i>	681	681	681	681	681	681	681	681	681	681
**. The correlation coefficient is significant at the 0.01 level (both sides) *. The correlation coefficient is significant at the 0.05 level (both sides).											

### 3-3 Weight Control Method by Body Type Recognition

Because of examining the weight control method by body type recognition by age, the same result as [Table 4] was obtained. First, as the weight control method of respondents who perceived their body type as very skinny, 12 people who exercised, 9 people who controlled the amount of food, 1 person who skipped meals, 3 people who took herbal medicine, and 3 people who took health functional foods. Second, the respondents who thought the subjective body type perception was a bit skinny were 33 people exercising, 13 people controlling the amount of food, 3 people skipping meals, 1 taking prescription weight loss medication, 1 taking herbal medicine, and 2 people taking health functional food. Third, the respondents who thought that subjective body type perception was average were 213 exercising, 2 fasting, 138 eating, skipping 11, taking voluntary weight loss

medication 2, 5 taking prescription weight loss medication, 1 taking herbal medicine. It was found that 11 people taking health functional food and 5 people on a one-food diet. Fourth, as a weight control method for respondents who perceived their body type as slightly obese, exercise 195 people, fasting 2 people, meal control 170 people, skipping 23 people, taking voluntary weight loss drugs 2 people, taking prescription weight loss drugs 5 people, taking herbal medicine It was found that 2 people, 10 people taking health functional food, and 4 people on a one-food diet. Fifth, as the weight control method of respondents who perceived their body type as obesity, 49 people exercised, 3 people fasted, 57 people who controlled the amount of food, 11 people who skipped a meal, 1 person who took voluntary weight loss medication, 2 people who took prescription weight loss drugs, 3 people who took herbal medicine, and 9 people taking health functional food.

**Table 4:** Weight control method by body type recognition (N)

Classification subjective body type recognition	category weight control methods	elderly age group			total
		65-69 years old	70-79 years old	> 80 years old	
very thin	exercise	3	8	1	12
	meal reduction	4	2	3	9
	skipping meals	0	0	1	1
	herbal medicines	0	1	2	3
	health functional foods	1	1	1	3
	sum	6	10	4	20
slightly thin	exercise	11	17	5	33
	fasting	0	1	0	1
	meal reduction	6	7	0	13
	skipping meals	0	3	0	3
	prescribed weight loss agents	0	1	0	1
	herbal medicines	1	0	0	1
	health functional foods	0	2	0	2
	sum	14	22	5	41
average	exercise	80	109	24	213
	fasting	0	2	0	2
	meal reduction	46	71	21	138
	skipping meals	3	6	2	11
	voluntary weight loss agents	2	0	0	2
	prescribed weight loss agents	3	1	1	5
	herbal medicines	1	0	0	1
	health functional foods	5	4	2	11
	one-food diets	3	2	0	5
	sum	103	136	38	277
slightly obese	exercise	92	87	16	195
	fasting	1	1	0	2
	meal reduction	78	78	14	170
	skipping meals	8	14	1	23
	voluntary weight loss agents	2	0	0	2
	prescribed weight loss agents	2	3	0	5

very obese	herbal medicines	2	0	0	2
	health functional foods	6	4	0	10
	one-food diets	2	2	0	4
	sum	121	121	20	262
	exercise	22	24	3	49
	fasting	2	1	0	3
	meal reduction	23	27	7	57
	skipping meals	7	3	1	11
	voluntary weight loss agents	1	0	0	1
	prescribed weight loss agents	2	0	0	2
	herbal medicines	2	1	0	3
	health functional foods	5	4	0	9
	sum	35	37	9	81

#### 4. DISCUSSION

This study analyzed the weight management methods for each group by classifying them into very thin group, thin group, normal group, obese group, and very obese group according to the subjective body type perception of the elderly in Korea. Based on the results, it was intended to suggest the importance of correct body type recognition, and this study was conducted to provide basic data for developing nutrition education data and nursing intervention programs.

The subjective body type perception of the elderly showed a positive correlation between the decrease for meals and the absence of meals. Among the weight control methods, exercise showed a negative correlation between meal reduction and skipping meals. Among the weight control methods, fasting showed a positive correlation with skipping meals, voluntary weight loss agents, prescribed weight loss agents, herbal medicines, and one-food diets. Among the weight control methods, a decrease for food showed a positive correlation with skipping meals. Among the weight control methods, skipping meals showed a positive correlation with the one-food diet. Among the weight control methods, the use of herbal medicines showed a positive correlation with the intake of health functional foods.

As the elderly perceive their subjective body type as being obese, it can be seen that they control their weight by reducing the amount of food or skipping meals. In addition, it was found that among the weight control methods, the elderly who exercised did not use the diet method of reducing the amount of food or skipping meals. The elderly who use extreme weight control methods such as fasting appear to use various weight control methods such as skipping meals, taking weight loss drugs, herbal medicines, and raw food diets, so education on weight management methods should be provided.

Subjective body type recognition and methods for weight control include exercise, fasting, reduction of food intake, skipping meals, use of voluntary weight loss agents, use of prescribed weight loss agents, taking herbal medicines, taking health functional foods, and one-food diets. Weight control methods according to subjective body type recognition are as follows. In the very thin group, there were 12 people who exercised, 9 people who reduction of food intake, 3 people who took herbal medicine, 3 people who took health functional food, and 1 who fasting. In the slightly thin group, 33 people exercised, 13 people reduction of food intake, 3 people skipped eating, 1 person took health functional food, 1 person fasted, 1 people took prescription weight loss medication, and 1 people took herbal medicine. In the average group, 213 people exercised, 138 people reduction of food intake, 11 people skipped eating, 11 people took health functional food, 4 people use of prescribed weight loss agents, 5 people took one-food diet, 2 people fasted, 2 people use of voluntary weight loss agents, and 1 people took herbal medicine. In the slightly obese group, 195 people exercised, 170 people reduction of food intake, 23 people skipping diet, 10 people took health functional food, 5 people took prescription weight loss medication, 4 people took one-food diet, 1 person fasted, 2 people took voluntary weight loss agents, and 2



people took herbal medicines. In the very obese group, 57 people reduction of food intake, 49 people exercised, 11 people skipping diet, 9 people took health functional food, 3 people fasted, 3 people took herbal medicine, 2 people took prescription weight loss drugs, and 2 people took voluntary weight loss drugs.

In the very obese group, 57 people controlled diet, 49 people exercised, 11 people missed a diet, 9 people took health functional food, 3 people fasted, 3 people took herbal medicine, 2 people took prescription weight loss drugs, 2 people took voluntary weight loss drugs. These two appeared.

The elderly generally seemed to prefer exercise and diet control as methods of weight control. This result is consistent with a study that showed that exercise and meal quantity control were high as a weight control method [17]. However, in the very obese group, diet control was more preferred than exercise. That is, in the case of exercise in the elderly, a lot of energy is required and the effect of weight loss appears gradually, whereas the method of controlling the amount of food is easy to apply and can have a weight loss effect in a short period. Therefore, it is considered the preferred method for obese people who need to lose weight quickly. However, in Kim's study, obesity showed the highest rate of exercise. This may be because the subjects of Kim's study were adults in their 20s, and the effect of physical activity was greater than that of the elderly [17].

Older adults in the lean group used fewer weight control measures than those in the obese group. The standard of modern society favors low weight, and thin body is the standard of beauty. However, even underweight people need weight control for correct body shape management, but they may have such an incorrect body type perception that they do not feel the need for weight control [17].

In addition, compared to the thin group, the obese group had higher rates of skipping meals, fasting, and taking weight-loss drugs. Abstaining from fasting, fasting, and taking weight-loss drugs can adversely affect the health of the elderly as an extreme weight control method. Therefore, it is necessary to provide education for proper awareness of diet control and drug use, and to select a weight control method through consultation with an expert.

Even in the thin elderly group, excessive weight control methods such as skipping meals, fasting, and taking weight loss drugs were being implemented. Modern people perceive their weight as overweight than they actually are, so they are more interested in weight control and use excessive weight control methods. This can be seen as a result of the wrong body type perception that people think they are obese despite their normal weight due to the social perception of modern society and the obsession to be thin according to one's own values [18]. Systematic and continuous education on correct body shape recognition and weight control methods of the elderly will be required. In addition, taking health functional food is also selected as a weight management method, so education and publicity about it need to be done.

Modern people not only maintain their health or improve their physical strength through weight control, but also pursue modern beauty and try to control their weight according to the standards, so there is also a tendency to excessive weight control [19]. The way to control weight is not through education, but through the media or acquaintances in many cases to obtain various information. As a result, there are many cases of weight control in a short period with unreasonable methods that are not good for health [20].

In general, weight control is done through healthy methods such as exercise and meal control. However, in case of excessive weight control, extreme weight control methods such as fasting, skipping meals, and vomiting are selected. In fact, according to the study of Kim [20], 29.4% of the study subjects showed extreme weight control.

According to a study by Kim, the reason for weight control is also found that 80.2% of people of normal weight want to look good, not for health. This shows that there are many cases of trying to control weight with inappropriate values and goals [21]. As such, weight control is an important part to try with a proper method for our health, but rather than learning and trying the right method, there are many cases of trying to control weight with wrong values and standards according to the social environment [17], [22].

It is not about setting a certain exact standard and recognizing the body type, but because it judges on a subjective basis and adjusts the weight in a distorted way, it can lead to an unhealthy state. Therefore, it is

necessary to educate the old adult on systematic body shape and weight control methods based on scientific knowledge so that they can properly recognize their body shape.

## 5. CONCLUSIONS

In this study, the weight control method according to the subjective body type recognition of the elderly was investigated. Subjective body type recognition showed a positive correlation between meal reduction and skipping meals. Among the weight control methods, exercise showed a negative correlation between meal reduction and meal skipping. Among the weight control methods, fasting showed a positive correlation with skipping meals, voluntary weight loss medications, prescribed weight loss medications, herbal medicines, and one-food diets. It was found that the more people perceived their body type as obese, the more they used the method to control the amount of food or skip meals. According to the subjective body type recognition of the elderly, the weight management method for each group was analyzed by classifying them into "very thin group, thin group, normal group, obese group, and very obese group". In the perception by body type group, it was found that "obese or very obese" use weight management methods through diet control more than exercise. Moreover, since skipping meals is selected as a weight control method, it can be seen that appropriate education on weight control methods for the elderly is necessary. In addition, taking health functional food is also selected as a weight control method, so it is necessary to educate and promote about it.

## 6. SUGGESTIONS

First, there is a need for continuous research and interest in factors affecting the subjective body type perception and weight management method of the elderly. Second, since this study is subjective body type recognition, a comparative study on weight management methods according to body type using objective indicators is needed. Third, it is proposed to develop a health education program for individualized elderly body shape management methods and to conduct research to identify the effects.

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