Original Article

The Body Mass Index and Related Factors of Aged Living in a District of Istanbul, Turkey[☆],[☆☆]

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S U M M A R Y

Background: To determine the nutritional status of elderly by body mass index (BMI) and to investigate associated factors.
Methods: This is a cross-sectional, descriptive and analytic study done among 309 elderly, in the Besiktas district of Istanbul from January to December 2008. The interviews were performed face-to-face. Anthropometric measurements (height, weight) were taken and BMI was calculated and classified according to World Health Organization standards.
Results: According to BMI classification, 1.6% were underweight, 15.2% were normal, 32.4% were overweight, 46.3% were obese and 4.5% were morbidly obese. A gradually lower BMI was observed with the progression of age. According to the study, obesity rates tended to be higher in those with inferior educational background. The study also revealed that diabetes mellitus is more prevalent in those that are overweight, obese and morbidly obese than those that are underweight and normal. In addition, hypertension is a more common ailment along obese and morbidly obese elders. On the contrary, osteoporosis is more prevalent among underweight and normal elders than those that are classified as obese and morbidly obese.
Conclusion: BMI provides valuable insight in lieu of nutritional status and health state of the elderly in the primary health care unit.

1. Introduction

In the world, today, the population over the age of 65 years constitutes an important percentage of the total population[1].

Old age comprises several time-dependent anatomical and physiological changes occurring in the body which eventually causes alterations in an individual's social status. Biological changes deep at the cellular level later manifest in the form of tissue such as organ and systems changes. Aging is a progress, a result of the genetic code, but environmental factors also have profound effects on its duration. Some environmental factors are described as social foundations that influence health such as nutrition, social and economic conditions.

There are strong reciprocal associations between biological aging and economic, social and chronological aging[2].

During old age, fatty tissue and connective tissue increases, but muscle tissue and body water levels decrease[1,3]. Elders progressively become shorter in height and stature due to adverse changes in bones, cartilages and muscles. The sensation of thirst deteriorates in aged and water intake should be carefully monitored against dehydration[4]. Sense of taste, smell, saliva, gastric emptying function, bowel peristaltism degenerate with age and due to dental reduction, elders often have difficulty in swallowing which eventually causes malnutrition[5,6]. Absorption of minerals such as calcium, iron, vitamin B_{12} and folic acid decreases. Owing to the decrease in liver and bile function, fat-soluble vitamins are less often used[3,5]. These factors can lead to malnutrition in aged. Being under the ideal weight according to age and sex weakens the immune system and ultimately increases the risk of osteoporosis[7,8].

With age basal metabolic rate slows down and daily energy requirements of the individual diminish despite an increase in some vitamin and mineral requirements. Therefore, refined sugar and fat intake should be reduced: cereals, legumes, vegetables,

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fruit, low fat dairy products, fish and lean meat consumption should not be neglected[9]. If these principles are followed, during old age obesity and associated health problems may be encountered. Atherosclerosis, diabetes and osteoporosis are known as the inevitable consequences of aging, and are related to a nutritionally unbalanced diet[10,11].

The most practical method of assessing body weight is to calculate body mass index (BMI). BMI (kg/m^2) is used for evaluating protein energy malnutrition and obesity[12,13,14]. Anthropometric measurements are used to assess if individuals eat a balanced and healthy diet. These can be grouped as evaluating weight, height, body fat and lean body tissue. These methods can be used together or individually due to facilities available.

Generally, measuring weight is used alone to assess eating habits. However, body weight represents total fat, water and bones of the body, and if edema and ascites are present the reason would not be quite right. According to the World Health Organization (WHO) until the age of 74 years, calculating the BMI of aged ≥ 19 years gives more accurate results for assessing nutritional status of an individual. In particular, in the case of being fat or thin a detailed assessment should be made with dietitians by questioning the frequency of food consumption.

There is not enough research yet to assume that BMI limits for obesity in aged are identical in adults. Factors such as smoking, alcohol consumption, dietary habits, physical activity status, chronic diseases, physical changes in the body that occur in the aging process, psychological, social and economic status can affect nutritional status and body mass index in old age. For these reasons, this study aimed to investigate BMI and the onset of factors mentioned in contrast to BMI in elders.

2. Methods

The Project of +65 Active Aging of the Besiktas district of Istanbul is established for providing all elders living in the area with psychological support for active and healthy aging, nutritional therapy for chronic diseases, and nutritional counseling about healthy eating habits. In total, 11.5% of the population of Besiktas ($n = 191,000$) are elders. The project has been ongoing for 5 years, and was expected to include the whole population of the 23 counties of Besiktas. This study was conducted among 309 elders from January to December 2008 with regard to a 95% of reliability with a ± 5% margin of error, assuming 25% obesity prevalence among the tested. The participants were randomly selected by sending SMS text and/or by phone call from 23 counties. The messages of Besiktas Municipality invited elders to get free consulting about healthy eating and physiological improvement (SMS: 'Free psychological support and dietitian consultancy services have started for the citizens over aged 65. For appointment call 444 44 55'). Consultants were present in eight separate centers interviewing the elders by an appointment system (Levent Services Building, Ciragan Services Building, Dikilitas District House, Gayrettepe Parish, Ulus Life House, Ortaköy Life House, Etiler Life House, Ulus District House). The "Healthy Aging" interviews were conducted directly (face-to-face) with the participants. The questionnaires consisted of the following headings, such as demographic characteristics (age, gender, income level, education, marital status, living arrangements), physical activity status, smoking, alcohol, tea and coffee consumption and habits, presence of chronic diseases, sleep patterns and disorders. The presence of chronic diseases that were diagnosed and cured by doctors were investigated. The definitions are given below. Anthropometric measurements (height, weight) were taken and BMI (kg/m^2) was calculated. Height was measured with a measuring tape and weight was measured with a standardized electronic scale that is sensitive up to 100 g. BMI values were obtained by dividing

the body weight (in kg) to height squared (in meters). Values are classified according to the WHO classification: BMI: <18.5 kg/m^2 is underweight, $18.5-24.9$ kg/m^2 is normal range, $25.0-29.9$ kg/m^2 is overweight (pre-obese), $30.0-39.9$ kg/m^2 is obesity, ≥ 40.0 kg/m^2 is morbid obesity. The data obtained were evaluated with frequency, percentage, Chi-square test and Pearson correlation analysis, using the SPSS 12.0 (SPSS Inc, Chicago, IL, USA) package program. At 95% reliability level, a p value <0.05 was considered statistically significant.

Based on the WHO data we assessed BMI ≤ 18.5 kg/m^2 as malnutrition, $18.5-24.9$ kg/m^2 as normal range, and BMI ≥ 25 kg/m^2 as obese.

3. Results

In total, 77% of the aged ($n = 238$) were women and 23% ($n = 71$) were men. According to the BMI classification, 1.6% ($n = 5$) of the group were underweight, 15.2% ($n = 47$) were normal, 32.4% ($n = 100$) were overweight, 46.3% ($n = 143$) were obese and 4.5% ($n = 14$) were morbidly obese. BMI distribution by gender of aged is shown in Table 1. In this study, the BMI of 1.6% of elders was <18.5 kg/m^2.

The mean age of elders was 68.9 ± 6.2 years. According to their education levels, 41.4% ($n = 128$) were primary schooled or uneducated, 58.6% ($n = 181$) were educated through high school and university. Whereas 53.7% of aged ($n = 166$) were married, 46.3% ($n = 143$) were single. In total, 76.1% ($n = 235$) of elders live with their spouse, children or relatives and 23.9% ($n = 74$) are living alone. In Table 2, demographic characteristics of aged distribution are shown, according as their BMI classification.

Smoking rate was 9.7% ($n = 30$) among them, 33.0% ($n = 102$) had quit smoking and 57.3% of participants ($n = 177$) had never smoked. Drinking tea and Turkish coffee rates were very high among the elders, respectively, 86.4% ($n = 267$) and 41.4% ($n = 128$). Whereas 77.7% ($n = 240$) do not drink alcohol, 15.2% ($n = 47$) drink alcohol occasionally and 7.1% ($n = 22$) reported that they drink alcohol regularly. The data show that with aging (75 years old and over) BMI declines (Pearson r = -0.152, $p = 0.008$). Although being overweight or obese percentages are higher in women than men, there was no statistical significance between obesity and being female ($\chi^2 = 3.66$, $p = 0.06$). The range of obese and overweight group is wide and also the rates in normal range were 16.4% for women and 11.3% for men. We observed that combining two groups overweight and normal range for elders would be better. Two different groups are taken, the first group consists of obese and morbidly obese individuals and the second group contains all the other participants. Examined with the same grouping being obese or morbidly obese rates are higher in the group educated at primary school level or uneducated than the participants educated at high school and college ($\chi^2 = 5.30$, $p = 0.02$).

In total, 97.1% ($n = 300$) of aged have at least one chronic disease. The rates for hypertension were 60.2% ($n = 186$), for diabetes mellitus were 22.7% ($n = 70$), for osteoporosis were 21.7% ($n = 67$), for heart disease were 22.0% ($n = 68$), for depression were 15.9% ($n = 49$), for gastritis were 14.9% ($n = 46$), for gallbladder disease

Table 1
BMI distribution of elders in relation to gender.

BMI (kg/m^2)	Women ($n = 238$) n (%)	Men ($n = 71$) n (%)
<18.5	3 (1.2)	2 (2.8)
$18.5-24.9$	39 (16.4)	8 (11.3)
$25.0-29.9$	68 (28.6)	32 (45.1)
$30.0-39.9$	115 (48.3)	28 (39.4)
≥ 40.0	13 (5.5)	1 (1.4)

Table 2
The distribution of some demographic properties of elders according to BMI levels.

	Elders with BMI $\leq$ 24.9 kg/m^2 (n = 52) n (%)	Elders with BMI $\geq$ 25.0 kg/m^2 (n = 257) n (%)	
Sex			
Women	42 (17.6)	196 (82.4)	$\chi^2 = 0.50$, $p = 0.48$
Men	10 (14.1)	61 (85.9)	
Marital status			
Married	22 (13.3)	144 (86.7)	$\chi^2 = 3.28$, $p = 0.07$
Single, divorced, widow	30 (21.0)	113 (79.0)	
Educational status			
Primary school and lower	21 (16.4)	107 (83.6)	$\chi^2 = 0.03$, $p = 0.87$
High school and above	31 (17.1)	150 (82.9)	
Living arrangement			
Living at own house	35 (14.9)	200 (85.1)	$\chi^2 = 2.66$, $p = 0.11$
Alone at own house in union[a]	17 (23.0)	57 (77.0)	
Age (y)			
65−74	33 (12.8)	224 (87.2)	$\chi^2 = 21.91$, $p = 0.000$
75−84	14 (31.8)	30 (68.2)	
85 and above	5 (62.5)	3 (37.5)	
Income level (Turkish liras)			
Low ($\leq$1000.00 TL)	12 (41.4)	17 (58.6)	$\chi^2 = 2.92$, $p = 0.23$
Medium (1000.00−3000.00 TL)	128 (48.9)	134 (51.1)	
High (>3000.00 TL)	12 (66.7)	6 (33.3)	

[a] There was only one individual.

were 10.4% (n = 32), for allergy were 7.8% (n = 24) and for cancer were 3.9% (n = 12). The rate of elders who could not sleep well because of sleep disorders were 51.1% (n = 158). The BMI distribution of aged according to chronic diseases is shown in Table 3. There was no statistically significant association according to BMI and gastritis ($\chi^2 = 0.93$, $p = 0.34$), gallbladder disease ($\chi^2 = 0.48$, $p = 0.49$), allergy ($\chi^2 = 0.30$, $p = 0.59$) and cancer ($\chi^2 = 0.00$, $p = 0.99$). As shown in Table 3, the participants were grouped as BMI $\geq$ 25 and BMI $\leq$ 25, we observed a statistically significant difference between these two groups for only diabetes mellitus among other chronic diseases investigated ($p < 0.04$). Diabetes mellitus were more common in those with a BMI $\geq$ 25. Presence of diabetes mellitus rate was higher in those who were overweight, obese and morbidly obese than those who were normal and underweight ($\chi^2 = 4.41$, $p = 0.04$). It could be stated that obesity leads to diabetes mellitus to become manifest more among surveyed diseases. We then decided to combine the group of normal range into overweight and reassessed the relation between all chronic diseases and BMI groups. In this instance, we observed that the hypertension rate was higher and the physical activity capacity level and osteoporosis rates were lower in the group of obese and morbid obese.

Hypertension was higher in those who were obese and morbidly obese ($\chi^2 = 8.44$, $p = 0.004$). In contrast with other diseases, the osteoporosis rate was lower in the group who are obese and morbidly obese than those that are not ($\chi^2 = 6.23$, $p = 0.01$).

In total, 36.9% (n = 114) of elders have limited physical capability. Physical capability problems is higher in those who are obese and morbidly obese than others ($\chi^2 = 8.11$, $p = 0.004$).

4. Discussion

Similar to all over the world also in Turkey, obesity increases rapidly and it is considered as one of the major public health

Table 3
The distribution of chronic diseases and disorders of elders according to BMI levels.

	Elders with BMI $\leq$ 24.9 kg/m^2 (n = 52) n (%)	Elders with BMI $\geq$ 25.0 kg/m^2 (n = 257) n (%)	
Hypertension[a]			
Presence	28 (15.1)	158 (84.9)	$\chi^2 = 0.05$, $p = 0.31$
Absence	24 (19.5)	99 (80.5)	
Heart diseases[b]			
Presence	14 (20.6)	54 (79.4)	$\chi^2 = 0.88$, $p = 0.35$
Absence	38 (15.8)	203 (84.2)	
Diabetes mellitus[c]			
Presence	6 (8.6)	64 (91.4)	$\chi^2 = 4.41$, $p = 0.04$
Absence	46 (19.2)	193 (80.8)	
Osteoporosis[d]			
Presence	16 (23.9)	51 (76.1)	$\chi^2 = 3.04$, $p = 0.08$
Absence	36 (14.9)	206 (85.1)	
Depression[e]			
Presence	8 (16.3)	41 (83.7)	$\chi^2 = 0.01$, $p = 0.92$
Absence	44 (16.9)	216 (83.1)	
Sleep disorders[e]			
Presence	21 (13.3)	137 (86.7)	$\chi^2 = 2.89$, $p = 0.09$
Absence	31 (20.5)	120 (79.5)	
Physical activity limitations[f]			
Presence	14 (12.3)	100 (87.7)	$\chi^2 = 2.67$, $p = 0.10$
Absence	38 (19.5)	157 (80.5)	

[a] Hypertension is defined as either a systolic pressure consistently at 140 mmHg or higher, a diastolic pressure consistently at 90 mmHg or higher. (The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, The JNC 7 Report, http://www.nhlbi.nih.gov/guidelines/hypertension/jncintro.htm.)

[b] Heart diseases are defined as having ventricular hypertrophy, angina or myocardial infarction, diagnosed heart failure and also taking medication. (The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, The JNC 7 Report, http://www.nhlbi.nih.gov/guidelines/hypertension/jncintro.htm.)

[c] Diabetes mellitus is diagnosed in the case of higher HbA1c rates than 7% and higher fasting or preprandial plasma glucose levels than 130 mg/dL (5.2 mmol/L), higher 2 hours postprandial plasma glucose than 180 mg/dL (10 mmol/L). (American Diabetes Association, Diagnosis and Classification of Diabetes Mellitus. Diabetes Care 2008;31:S55−S60, http://care.diabetesjournals.org/cgi/content/full/31/Supplement_1/S55.)

[d] Osteoporosis can be diagnosed in the case of the t score of bone mineral density as <2.5 SD in the DEXA scan method based on the suggested WHO classification. (The Writing Group for the ISCD Position Development. Journal of Clinical Densitometry 2004;7:17−26, http://www.sciencedirect.com/science.)

[e] Those with complaints matched with the diagnosis criteria of DSM-IV and prescribed medication by a physician for depression were diagnosed as having depression and sleep disorders. (Diagnostic and Statistical Manual of Mental Disorders, 4th edition. DSM-IV, Washington, DC: American Psychiatric Association; 1994.)

[f] Physical activity limitations refer to the presence of any diseases that limits the physical activity in daily life. It is grouped as having physical activity limits or not. Those having physical activity limits were determined as having difficulties in maintaining daily life activities and those that had to get help. (Rubenstein LZ. Assessment instruments. In: Abrams WB, Berkow R, eds. The Merck Manual of Geriatrics. Rahway, NJ: Merk&Co. Inc.; 1990: 1189−1200.)

problems. Overweight and obesity prevalence in the aged population is on the rise, especially in developed and developing countries.

4.1. Obesity

In this study, women are overweight, obese and morbidly obese with the rates of 28.6%, 48.3% and 5.5%, respectively; in men, the rates are 45.1%, 39.4% and 1.4%, respectively.

In the USA, 69% of Americans aged 65 years and older are overweight, and 30% are obese. Whereas the prevalence of obesity for aged 65−74 years was 18% during the years 1976 and 1980, it has increased to 36% from 1999 to 2002, and whereas the rate of overweight was 57%, it has increased to 73%[15]. Similarly, it is

known that whereas 44.8% of Australians aged 65−74 years are overweight, 25.1% are obese, and 42.4% of Australians aged 75+ are overweight, 14.4% are obese[16]. According to the Australian Bureau of Statistics, 48% of older persons were overweight (34%) or obese (14%), whereas 39% were normal in 2001[17]. The rates of overweight are similar with other developed and developing countries such as Chile (42%) and Colombia (47%)[14]. Studies are listing factors such as changes in taste sensation, increased food consumption, decreased energy expenditure, cartilage deterioration and shrinkage depending on osteoporosis, and also the changes occurring in body composition as the main factors of altering weight and BMI in old age.

The overweight rates are lower in our study region than in the USA and Australia, whereas the obese rates are higher. Also, as in Australia and the USA, in another study representing Turkey including elders the overweight rates are higher than obese rates. This is why we could state that in our study region we determined that obese rates are significantly higher. Contrary to the idea that these high rates are related to osteoporosis, we established that the rates of osteoporosis are lower in those obese and overweight. In addition, the WHO suggested using the BMI standardization method until the age of 75 years, and because of this we thought that the high obesity rates determined by the BMI standardization method may depend on some other reasons. For example, especially in our study region high socioeconomic status may lead people to unbalanced eating habits and inactive lifestyles after retirement.

According to the 2004 survey reports of the "Eat Healthy, Protect your Heart Project", maintained by the Turkish Republic (TR), Ministry of Health, in male adults the rates of being overweight were 51.7%, obese 20.7%, morbidly obese 0.5%, and in adult females 38.6%, 38.0% and 3.5%, respectively[18].

In this study, we observed that after 75 years BMI significantly reduces.

Generally, after the age of 60 years the gaining weight rate becomes slower[1]. After 70−80 years weight reduction is significant[19]. In Turkey, between the ages of 60 and 69 years the average BMI rates among men is 27.02 ± 4.02 kg/m^2, and for women it is 29.57 ± 5.09 kg/m^2, in the 90s and above this rates becomes 24.04 ± 2.88 kg/m^2 in men and $26.52 \pm 4.$ kg/m^2 in women. In the same study, between the ages of 40 and 69 years there is a linear increase in BMI and after 70 years it starts to decline[18].

In this study, no statistical significance was found between being overweight or obese and women, but the percentages of this case are higher in women than in men.

The obesity rates in elders are generally higher in women than in men, similar to adults. In a study conducted in Sivas, the average BMI rate among men was 28.52 ± 4.27 kg/m^2 and for women it was 33.97 ± 5.58 kg/m^2[20]. Being overweight and obese is common among elders, especially elder women. However, according to the health statistics of Canada the obesity rates in women aged 65 years and above is 52.7% and for men it is 61.7%[21]. This study states that the obesity rates among males are just as prevalent in contrast to females.

In this study, the BMI rates <18.5 kg/m^2 among women and men are 1.2% and 2.8%, respectively, and the BMI rate for 1.6% of elders was <18.5 kg/m^2. However, we assessed them as the malnutrition state group, we did not separate them as underweight $3 < 16.0$, underweight $2 \geq 16.0-<17.0$ and underweight $1 \geq 17.0-<18.5$ because the number of individuals are inadequate[14].

In the United Kingdom, the prevalence of underweight people is 1.5%[3]. The underweight group have similar rates and higher in non-developing countries such as India (49%), Ethiopia (39%), Senegal (34%), Haiti and Ghana (22%)[14]. According to a study by Swami et al[22], in India the ratio of underweight elders is 14.36%. In contrary

to developed and developing countries, in non-developing countries, owing to socioeconomic factors, being underweight is more common. The results in the Besiktas study are similar to studies in developed countries due to the income levels in Besiktas being almost at the same income level of developed countries.

In this study, a statistically significant value was found between obesity and education level of demographic characteristics. Among those with lower educational status the morbid obesity rate is higher similar to other studies[20,23]. Our study also emphasizes that those with poor academic backgrounds tend to be more obese compared with individuals with good academically backgrounds.

4.2. Chronic diseases

Obesity in old age is accepted as a major factor for increasing chronic diseases, morbidity, mortality and decreasing life quality. Obesity is not a chronic disease itself, but it is a major risk factor that leads to chronic diseases such as coronary heart disease, hypertension, stroke, type 2 diabetes, osteoarthritis, sleep apnea, respiratory problems, gallbladder disease and various cancers[23,24].

In this study, a statistically significant relationship between diabetes mellitus and obesity were identified. Also, the hypertension rate is higher in those that are obese and morbidly obese than non-cases.

The project of "Eat Healthy, Protect Your Heart" identified that having higher BMI levels than 28.9 kg/m^2 is an important risk factor for hypertension[18].

When the groups are specified as normal, underweight and others, the most significant difference according to BMI among weight groups is osteoporosis as for those obese and morbidly obese, osteoporosis levels were significantly lower rates than those with a lower BMI value.

The bone mass is largely associated with genetic factors, diet and physical activity[25]. However, Turhanoğlu et al[26] could not find any significant difference between the groups regarding BMI and bone mineral density. In our study, it was determined that those with physical activity problems, the rates were higher in the group who are obese and morbidly obese than other weight groups. Many studies pointed out that BMI and fat mass is directly related to the decline of daily physical activities[27,28]. According to a study by Leveille et al[29], doing physical activity during the period of aging plays an important role in reducing mortality rates depending on weakness and disability.

In this study, a significant relation was determined between BMI, depression and sleep disorders. Bahat et al[30] established that reduced weight in old age is directly related to depression and sleep disorders. In contrast, depression was lower in obese aged.

In this study, gastritis, gallbladder disease, allergy and cancer proved to have no relation with BMI values, but the results could be imprecise due to the slighter occurrences of these ailments or the results could be influenced by other etiological factors.

The measurement of waist−hip circumference is one of the methods used to determine body fat (such as measuring the skin fold thickness and upper arm fat area detection). The waist circumference and the waist−hip ratio are significant in evaluating chronic diseases such as metabolic syndrome in elders, but it was not one of the aims in this study and also there were not enough participants and thus the waist was not measured.

Those who have physical activity limitation could have limited participation in this study, because the target population of this study included those invited by phone calls and SMS. Food consumption frequency, anthropometric measurements, biochemical and biophysical tests, clinical symptoms and disease history and also psychosocial characteristics are important factors in assessing nutritional status. Owing to some impossibilities we could not apply

the biochemical and biophysical tests among these. In addition, among anthropometric measurements we could not determine body fat and lean body mass because of inadequate factors and laboratory conditions. We applied the food consumption frequency only with those underweight, obese and morbidly obese. These impossibilities inhibit in generalizing our study results.

In this study, we were surprised with the high obesity rates in elders such as 43.3% for women and 39.4% for men. Except for the high obesity rates, other rates such as being underweight were surprisingly close to developed country levels than non-developed or developing countries. In addition, it was surprising that the normal group was too small than expected (16.4% in women, 11.3% in men).

This study proved that obesity is a rampant problem in the Besiktas district in both the male and the female elder population. This experiment suggests that as there is a precise relationship with BMI and health problems, the diet and nutritional behavior of the elders should be investigated and pursued just as vigilantly as the medical help in first step care. We believe that this study will enhance the treatment practices of the aged population, underlining the importance of doctor, dietitian and physiologist partnership, and will offer a valuable resource into the medical literature.

In conclusion, in this study, it is established that obesity is a pervasive situation among elders living in the Besiktas district of Istanbul. Being overweight and obesity rates increase in the group with lower education level and income. Whereas the diabetes and hypertension rates are determined to be higher in the obese group, the osteoporosis rate is lower. Moreover, the obese elders were less physically capable. It can be specified that obesity is directly related to socioeconomic status and physical health. BMI provides a valuable insight into the nutritional status of aged. In the case of obesity or being underweight, factors such as eating habits, physical, mental, social and economic aspects of the individual are just as vital and should be investigated as they can dramatically influence the situation.

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