Obesity and Body Image of Women and Men in Iran-Tabriz†

Leila SHAHVIRDI[1], Timur Gültekin[2*] ,
Mohammed Bagher ALIZADEH AGHDAM[3] ,
Şükrü ACITAŞ[4] , Birdal ŞENOĞLU[5]

[1] Dr., Independent Researcher
[2] Prof. Dr., Ankara University, Department of Anthropology, Ankara/TURKEY
[3] Prof. Dr., Tabriz University, Department of Social Sciences, Tabriz/IRAN
[4] Asst. Dr., Anadolu University, Department of Statistics, Eskişehir/TURKEY
[5] Prof. Dr., Ankara University, Department of Statistics, Ankara/TURKEY

* Sorumlu Yazar / *Corresponding Author*:
Timur Gültekin
Ankara Üniversitesi, Dil ve Tarih - Coğrafya Fakültesi
Antropoloji Bölümü, Kütüphane Binası, Kat 5
06100 Sıhhiye, Ankara - TÜRKİYE
E-posta: tgultekin@ankara.edu.tr

Abstract

The aim of this research is to determine the rates of obesity in men and women in Iran Tabriz and to reveal the relationship between obesity and body sensation. Within the scope of this aim, height, weight and Body Mass Index values were collected from individuals on a total of 1000 individuals, 562 women, 438 men, who live in Iran-Tabriz. In addition, a questionnaire was applied to reveal the body perception of these individuals. According to the findings of this research, the average value of BMI was 26,27 for men and 26,59 for women. In our study, Turkish men and women in Iran were found to be overweight compared to men and women in other studies. In general, it has been observed that goiter, blood pressure, sugar, brain-arteries and calcification are more common in women and only cardiovascular diseases are seen in men. Obese people have lower self-esteem and body sensation than those who have normal weight. In this study, the average value of body sensation is 144,10 for males and 136,86 for females. Positive trends were determined in our sample according to the scale. It was determined that between the ages of 12-29 and 40-49, there was a significant difference in body perception between male and female individuals.

Key Words: Anthropometric measure, obesity, body sense, general health situation, Iran

İran'ın Tebriz Kentinde Kadın ve Erkek Bireylerde Obezite ve Vücut Algısı

Öz

Bu araştırmanın amacı, İran'ın Tebriz kentinde kadın ve erkeklerde obezite oranlarını belirlemek ve obezite ile beden algısı arasındaki ilişkiyi ortaya koymaktır. Bu amaç doğrultusunda, İran-Tebriz'de yaşayan 562 kadın, 438 erkek olmak üzere toplam 1000 bireyden boy ve ağırlık antropometrik ölçüleri alınarak bireylerin Beden Kitle Endisi (BKİ) değerleri hesaplanmıştır. Bu araştırmanın bulgularına göre, BKİ ortalama değeri erkeklerde 26,27, kadınlarda 26,59 olarak tespit edilmiştir. Bu çalışmada, İran'daki Türk erkek ve kadınların, diğer çalışmalardaki kadın ve erkeklerle karşılaştırıldığında aşırı kilolu olduğu tespit edilmiştir. Genel olarak, guatr, tansiyon, şeker, beyin atardamarları ve kireçlenme gibi sağlık sorunlar, kadınlarda daha yaygın olduğu, erkeklerde ise sadece kalp-damar hastalıkların daha fazla görüldüğü tespit edilmiştir. Obez insanlar, normal kilolu olanlardan daha düşük özgüvene ve beden algısına sahip oldukları bulunmuştur. Bu çalışmada, vücut algısı ortalaması, erkeklerde 144,10, kadınlar için 136,86 olarak hesaplanmıştır. Araştırmamızda, beden algısı ölçeğine göre olumlu eğilimler belirlenmiştir. 12-29 ve 40-49 yaşları arasında, kadın ve erkek bireyler arasında vücut algısında önemli bir fark olduğu tespit edilmiştir.

Anahtar Kelimeler: Antropometri, şişmanlık, vücut algısı, genel sağlık durumu, İran

Introduction

Anthropometry is a simple, non-invasive, and inexpensive, universally applicable method that can demonstrate the composition, proportions, and type of human body (World Health Organization [WHO], 1995, 2000). Anthropometry is an easy technique that can be easily applied in indirect techniques to assess public health (Cameron *et al.*, 1981; Özgün Başıbüyük & Akın, 2007). Today, this technique is widely used. Weight, height, circumference, subcutaneous fat

thickness and bone length and width measurements are variables used in field studies. The fact that anthropometric instruments are cheap and easy to transport provides a great advantage (Gültekin, 2004). Ideas about nutrition and health status of people in anthropometric measurements are important. The information gathered with the anthropometric measurements keeps the light from gathering. In the study, we will try to emphasize the importance of these values by determining the weight, height, BMI values of people aged 18 years and older living in Iran-Tabriz with anthropometric measurements and by conducting

† This article is based on Leila Shahvirdi's PhD thesis data

a questionnaire. This research aimed to investigate the relationship between self-esteem, body image and obesity in obese people. Obesity is manifested in the body as the amount of fat tissue increases in excess. The presence of excess fat in the body is an indication of the presence of a disease. In general, it is very important to know the origin of the disease in a fight against disease. It appears that the effects of environmental factors are more dominant in obesity when genetic and environmental factors are combined (Gültekin *et al.*, 2009).

When the previous researches are examined, it is emphasized that the findings of obesity prevalence in general are important on the basis of findings. If we do not ignore the efforts made for the treatment of obesity and the serious dimensions of this treatment, the value and importance of such studies can be grasped better in order to determine the environmental factors that cause obesity. For these reasons, it is our primary goal to make the necessary information and announcements regarding the examination of obesity, which is an important problem for all countries and people, and for taking preventive measures for obesity. Obesity is an important health problem in Iran as well as in all countries (Amiri *et al.*, 2014).

The body sensation expresses how our bodies are rendered in our minds and is closely related to self-esteem (Mikolajzcyk *et al.*, 2012). As such, the individual accepts his own abilities and talents as they are and respects himself (Tezcan, 2009). There are also studies in the literature that show that there is no such connection (Sarwer, *et al.*, 1998; Deveci *et al.*, 2005; Degirmenci, 2006; Mikolajczyk *et al.*, 2012), although many of the researches show that there is an inverse link between BMI and self-esteem in adults. Many of the investigations show that body dissatisfaction is higher in obese people (Tezcan, 2009; Mikolajczyk *et al.*, 2012). It is these dissatisfacts that cause the majority of obese to lose weight and want to lose weight (Karakaya *et al.*, 2012). In fat people, body dissatisfaction is related to the perceived body weight rather than the current body weight (Cutting *et al.*, 1999). In some studies investigating the relationship between self-esteem and obesity in adults, it has been described that there is an inverse relationship between obesity and self-esteem with BMI (Gortmaker, 1993), while in a study it is stated that there is no link between body image and BMI (Telch *et al.*, 1994). Studies in the literature have shown that there is a linear relationship between obesity and ego value reduction (Bryan *et al.*, 2001; Pınar, 2002). In a survey of 87 obese women conducted to determine the levels of

depression and self-esteem in obese people, 42,5% of obese people were depressed and 85,6% had less self-esteem (Ogden *et al.*, 1996). In Ogden and Evans' study, it was also stated that obese people are more depressed and self-esteem is less (Ogden *et al.*, 1996). In Kartal's study, it was also stated that self-esteem is less in fat individuals (Kartal, 1996). Galletly and her colleagues (1996) conducted a study of 64 women in which a decrease in the value of weight-loss depression and an increase in self-esteem were determined. In a study conducted on women in Kerej, it was observed that there was a positive link between the increase in BMI and depression (Feizi *et al.*, 2012), and a similar result was obtained in female students of Erdebil University (Ghorbani *et al.*, 2012). In other studies, it has been found that women who are obese are poorer in quality of life when compared to non-obese women, ie those with normal weight (Ghorbani *et al.*, 2012; Ogden *et al.*, 1996).

This study aims to investigate the relationship between body sensation and self-esteem in obese people and to examine the relationship between the psychological status of obese and non-obese individuals in adulthood, and to reveal the relationship between individual health problems and anthropometric measurements.

Materials and Methods
Height, weight and BMI values are used to determine the height, weight and BMI values of individuals in order to establish user profiles in sports halls, airports, parks, shopping malls, national libraries, schools and university students and normal clinical and nutrition clinics in order to get access to the work done on adult individuals living in Iran- Tabriz. It was obtained. 562 women, and 438 male subjects were surveyed. A questionnaire was applied to determine the socioeconomic levels of the individuals participating in the survey, and questions were asked regarding the place of birth, number of siblings, educational status of the parents, and the occupation of the parents. On the other hand, in the questionnaire of our research, a questionnaire reflecting the health histories and health problems of the individuals was applied to reveal the health status of the participants. These questions have been applied to highlight the link between the individual's health status and anthropometric measures. Questions were asked about whether participants made special diets or not, the frequency of sports, goiter, blood pressure, sugar, cerebrovascular, arthritis and cardiovascular diseases. The weight and height anthropometric measurements

of the subjects participating in this study were taken and Body Mass Index (BMI) values were calculated with these measurements. Anthropometric measures were taken from the methods administered by the International Biological Program (IBP) (Weiner & Lourie, 1969, Tanner *et al.*, 1969). Body measurements were taken with a 1 mm precision Martin-type anthropometer, and body weight measurements were taken with a precision digital weighing machine of 100 gr. Care has been taken to ensure that as little as possible clothing is available to individuals involved in the intake of anthropometric measurements. This scale, which is used for the measurement of body sensation in the research, was developed by Dr. I. Selim Hovardaoğlu from the Department of Psychology, at the Faculty of Language and History-Geography, Ankara University. There are 40 items on this scale, all items scored between 1-5. Subjects were asked to respond on the questionnaire as follows: I do not like it at all, I do not like it very much, I have no idea, I like it quite a lot and I like it very much. It seems possible to obtain one score on this scale. As a result, the lowest score that can be taken from the scale is 40 and the highest score is 200. The increase in points also means a positive increase. Interested researchers extracted the score of any item from the total score and compared the item average and total score average (Hovardaoğlu, 1993).

Results

Weight, height anthropometric measurements were taken from the subjects participating in this study and Body Mass Index (BMI) values were calculated with these measurements. Anthropometric measurements were taken using the method proposed by the International Biological Program (IBP) (Tanner *et al.*, 1969; Weiner & Lourie, 1969). The height measurement was taken with a 1 mm precision Martin type anthropometer, the body weight measurement was taken with a digital weighing machine with a precision of 100 gr. Care has been taken that subjects involved in the study of anthropometric measurements should be as little as possible to wear. Anthropometric measurements were evaluated with the SPSS 23.0 program.

In this research, a total of 1000 individuals, 562 women and 438 men, were surveyed. The age distribution of adult individuals living in Iran-Tabriz is shown in Table 1. Gender distribution of the participants is given in Table 2.

Health status of the individuals

In this research conducted in Iran-Tabriz, a questionnaire was applied to participants to get information about the health status of the individuals. The aim of this questionnaire is to assess the differences in anthropometric measures in Iran-Tabriz individuals and to show the general health status of the individuals and their relationship to their age and sex. Table 3 shows the prevalence of diseases in individuals. Exercise habits are common in both men and women (Table 3). But with exercise it seems that the diet is not as powerful as its practice. When we evaluate the health problems present in the participants, the tension problem is seen more frequently in female individuals and it is observed that the rate of calcification is higher in women as well. Cardiovascular disease was found to be more common in male subjects.

Table 1. Age distribution of the individuals

Age	n	Frequency (%)
18-29	352	35,2
30-39	300	30,0
40-49	206	20,6
50-64	113	11,3
65 and over	29	2,9
Total	**1000**	**100**

Table 2. Sex distribution of the individuals

Sex	n	Frequency (%)
Male	438	43,8
Female	562	56,2
Total	**1000**	**100**

Anthropometric data evaluation and analysis

Height, which is a sign of growth and development in the body, is accepted as the most used measure together with weight. BMI is calculated by length and weight measurements and is generally used to determine participants' body shape, lifestyle and nutrition style. The Mann-Whitney U test is one of the non-parametric tests that allow us to use it to assess whether two independent samples are on average equal. It is non-parametric version of the independent t-test. In the SPSS package program, data were analyzed by using the Mann-Whitney U test to determine whether the height, weight and BMI were the same according to sex. The reason for using the Mann-Whitney U test in this study is that the height, weight and BMI variables generally do not follow a normal distribution Table 5. Percentage values of individuals in anthropometric measurements are given in Table 4. The assumption of normality in height, weight and BMI of the normality tests conducted was rejected at $\alpha = 0,05$ significance

level. In other words, individuals do not follow a normal distribution of height, weight, and BMI (Table 6). In addition, Q-Q plot drawings show that the normality assumption is not satisfied (Figures 1, 2 and 3).

Table 3. Health status of subject according to age and sex

	Male		Female	
	n	Freq. (%)	n	Freq. (%)
Sports habit	264	60.3	286	50.9
Special diet	147	33.6	199	35.4
Arthritis	29	6.6	84	14.9
Hypertension	75	17.1	99	17.7
Goiter	29	6.6	47	8.4
Diabetes mellitus	44	10.0	70	12.5
Cardiovascular disease	40	9.1	47	8.4
Brain-vessel disease	9	2.1	12	2.1

Table 4. Percentage value of anthropometric measurements

	Percentile						
	5	10	25	50	75	90	95
BMI	19,25	20,45	22,87	26,10	28,99	31,95	34,32
Height	153,00	157,00	162,00	169,00	178,00	183,00	187,00
Weight	53,00	58,00	65,00	75,00	85,00	92,90	99,00

Table 5. Normality test to determine whether anthropometric measurements show normal distribution

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
BMI	,123	1000	,000	,627	1000	,000
Height	,045	1000	,000	,953	1000	,000
Weight	,040	1000	,001	,978	1000	,000

According to the results given in Table 6, (1) the null hypothesis, "distribution of height variable is the same according to sex categories", was rejected according to the Mann-Whitney U test. In other words, the height of men and women is statistically significant; (2) the null hypothesis expressed as "The distribution of the weight variable is the same according to the sex categories" was rejected according to the Mann-Whitney U test. In other words, the weights of men and women are statistically significant; and (3) the null hypothesis, "Distribution of BMI variable is the same as sex categories", can not be rejected according to the Mann-Whitney U test. In other words, the BMI values of men and women are not statistically significant.

Kruskal Wallis test
In the Kruskal-Wallis test, used to test whether the mean

of three or more independent samples are the same. It is non-parametric version of one-way ANOVA. In the SPSS package program, Kruskal Wallis test was used to analyze whether height, weight and BMI were the same according to age, father education, maternal education and obesity status. The reason for using the Kruskal Wallis test in this study is that the height, weight and BMI variables generally do not have normal distribution.
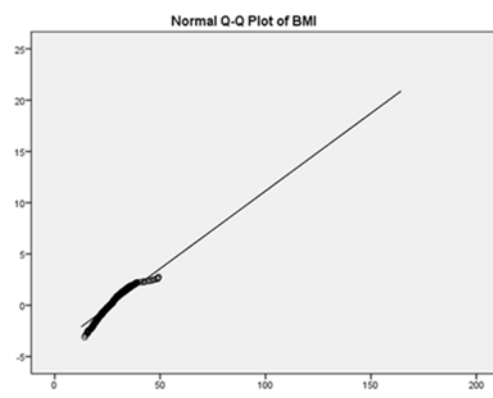

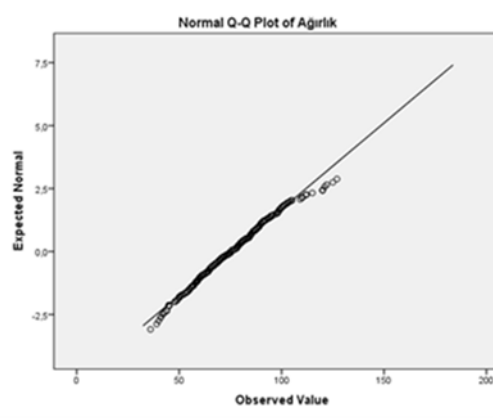**Figure 1.** Individual Size distribution with Normal QQ Plot

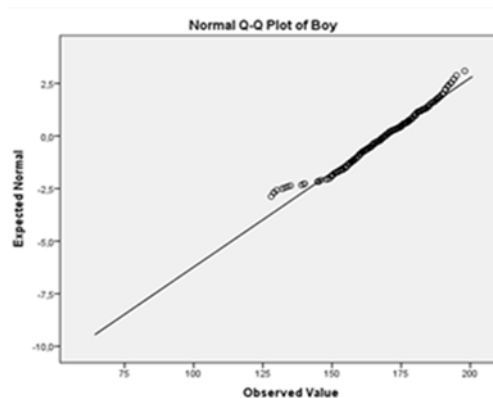**Figure 2.** Individual Weight distribution with Normal QQ Plot

Figure 3. Individual BMI distribution with Normal QQ Plot

According to the results given in Table 7, (1) the null hypothesis, "distribution of height variable is the same according to age categories", was rejected according to the Kruskal Wallis test. In other words, the height

Table 6. Comparison of height, weight and BMI variables according to sex: Mann-Whitney U test results

Null Hypothesis	Test	Sig.	Result
1. The height distribution is the same in the gender category	Independent Samples, Mann-Whitney U Test was applied.	,000	**The null hypothesis was rejected.**
2. The distribution of weight is the same in the sex category	Independent Samples, Mann-Whitney U Test was applied.	,000	**The null hypothesis was rejected.**
3. The distribution of BMI in the gender category is the same.	Independent Samples, Mann-Whitney U Test was applied.	,246	The null hypothesis is preserved

Table 7. Comparison of age, height, weight and BMI variables according to age: Kruskal Wallis test results

Null Hypothesis	Test	Sig.	Result
1. The distribution of height in the age category is the same.	Independent Samples, Kruskal Wallis Test was applied.	,000	**The null hypothesis was rejected.**
2. In the age category, weight distribution is the same.	Independent Samples, Kruskal Wallis Test was applied.	,000	**The null hypothesis was rejected.**
3. The distribution of BMI in the age category is the same.	Independent Samples, Kruskal Wallis Test was applied.	,000	**The null hypothesis was rejected.**

Table 8. Comparison of height, weight and BMI variables according to paternal education: Kruskal Wallis test results

Null Hypothesis	Test	Sig.	Result
1. In the father education category, height distribution is the same.	Independent Samples, Kruskal Wallis Test was applied.	,093	The null hypothesis is preserved.
2. In the father education category, weight distribution is the same.	Independent Samples, Kruskal Wallis Test was applied.	,315	The null hypothesis is preserved.
3. In the father education category, BMI distribution is the same.	Independent Samples, Kruskal Wallis Test was applied.	,073	The null hypothesis is preserved.

of age groups are statistically significant, (2) the null hypothesis, "distribution of weight variable is the same according to age categories", was rejected according to the Kruskal Wallis test. In other words, the weights of age groups are statistically significant, and (3) the null hypothesis, "Distribution of BMI variable is the same according to age categories", was rejected according to the Kruskal Wallis test. In other words, the BMI values of age groups are statistically significant.

According to the results given in Table 8, (1) the null hypothesis, "distribution of height variable is the same according to father's education categories" cannot be rejected according to the Kruskal Wallis test. In other

words, father education is not statistically significant in the distribution of height, (2) the null hypothesis, "distribution of weight variable is the same as in father education categories" cannot be rejected according to the Kruskal Wallis test. In other words, father education is not statistically significant in the distribution of weight, and (3) the null hypothesis that "distribution of BMI variable is the same as in father's education categories" cannot not be rejected according to the Kruskal Wallis test. In other words, father education is not statistically significant in the distribution of BMI.

According to the results given in Table 9, (1) the null hypothesis, "The distribution of height variable is

Table 9. Comparison of height, weight and BMI variables according to maternal education: Kruskal Wallis test results

Null Hypothesis	Test	Sig.	Result
1. In the mother education category, weight distribution is the same.	Independent Samples, Kruskal Wallis Test was applied.	,003	**The null hypothesis was rejected.**
2. In the mother education category, weight distribution is the same.	Independent Samples, Kruskal Wallis Test was applied.	,066	The null hypothesis is preserved.
3. In the mother education category, BMI distribution is the same.	Independent Samples, Kruskal Wallis Test was applied.	,048	**The null hypothesis was rejected.**.

Table 10. Comparison of size, weight and BMI variables according to obesity: Kruskal Wallis test results

Null Hypothesis	Test	Sig.	Result
1. Height distribution is the same in the obesity category.	Independent Samples, Kruskal Wallis Test was applied.	,000	**The null hypothesis was rejected.**
2. Weight distribution is the same in the obesity category.	Independent Samples, Kruskal Wallis Test was applied.	,000	**The null hypothesis was rejected.**
3. BMI distribution is the same in the obesity category.	Independent Samples, Kruskal Wallis Test was applied.	,000	**The null hypothesis was rejected.**.

the same according to the mother education categories" is rejected according to the Kruskal Wallis test. In other words, it was determined that father education is statistically significant in the distribution of height, (2) the null hypothesis that "the distribution of the weight variable is the same as in the mothers education categories" cannot be rejected according to the Kruskal Wallis test. In other words, education is not statistically significant in the distribution of weight, and (3) the null hypothesis, "Distribution of the BMI variable is the same as in the mother education categories" was rejected according to the Kruskal Wallis test. In other words, it was determined that father education is statistically significant in the distribution of BMI.

According to the results given in Table 10, (1) the null hypothesis, "distribution of height variable is the same as obesity categories" is rejected according to the Kruskal Wallis test. In other words, the height of age groups are statistically significant, (2) the null hypothesis, "distribution of weight variable is the same as obesity categories," is rejected according to the Kruskal Wallis test. In other words, the weights of age groups are statistically significant, and (3) the null hypothesis, "Distribution of the BMI variable is the same as for obesity categories," was rejected according to the Kruskal Wallis test. In other words, the BMI values of age groups are statistically significant.

Body perception in female and male individuals

Table 11 shows the questionnaire survey of the questionnaire about individuals' body senses. According to the score analysis all questions were scored between 1 and 5. This scale contains 40 items. Subjects were asked to respond in this way on the questionnaire; (I do not like it at all, I do not like it at all, I do not like it very much, I do not like it, I'm not sure, I like it at all, and I like it very much). The increase in points means positive and positive increases. In this study, the average value for men is 144,10 and for women it is 136,86. Positive and positive trends were determined in our sample according to the scale. The body sensory scores between male and female subjects are presented in Table 11. It was determined that between the ages of 12-29 and 40-49, there was a significant difference in body perception between male and female individuals.

Table 11. Scoring body algebra according to age groups of female and male individuals

	Male			Female		
Age	n	Mean	SD	n	Mean	SD
18-29	167	158,86	27,28	185	152,68	28,23
30-39	118	150,27	31,40	182	147,87	28,86
40-49	93	147,33	28,13	113	137,75	31,15
50-64	49	137,89	36,87	63	132,01	29,53
65 and over	11	126,18	39,34	19	114,00	30,18
Total	**438**	**144,10**		**562**	**136,86**	

Discussion and Conclusions

It is now known that obesity has become widespread and serious. According to the World Health Organization's estimates, in 2005, 400 million adult obese individuals worldwide were identified and by 2015, more than 700 million people worldwide are estimated to be obese (WHO, 2006). It is known that the prevalence of obesity in adolescents in America has increased by 10% between 2003 and 2007 (Singh *et al.*, 2010). The reason for this increase is the increase in the consumption of ready-made foods, the decrease in physical activity, the increase in the level of income, and the ease of finding food and food, according to the results of the studies. When the anthropometric measurements obtained in studies on obesity in developed countries compare height and weight values with those of developing countries, these variables are observed to reach higher values.

Along with a considerable improvement in environmental factors, different amounts of anthropometric values have been shown to improve over time in length, weight and BMI literature (Tobias, 1985). According to NCHS data, in a short time in 2010, about 17% of young people were obese (Ogden *et al.*, 2012). In Iran, the prevalence of obesity prevalence, especially in the elderly, is more pronounced in adult individuals (Heshmat *et al.*, 2010, Yarahmadi *et al.*, 2013). In our study, the prevalence of obesity was found to be 16.2% in men and 20.3% in women. It is concluded that obesity is more common in women. The increase in obesity as the age progresses is seen parallel to other studies (Table 12).

According to the results obtained in our research, the obesity rate was found to be 11,1% in 18-29 years, 16,3% in 30-39 years, 26,22% in 40-49 years, 31,3% in 50-64 years and 26,7% in 65 years and over. The prevalence of obesity in women was 20,3% and 16,2% in men.

The average weight values for for men were 77,8 kg in 18-29 years, 79,93 kg in 30-39 years, 82,50 kg in 40-49 years, 83,51 kg in 50-64 years and 80,36 kg in 65 years and over. As a result, weight rates increase in individuals aged 50 years and older. The average weight values for women were 67,42 kg in 18-29 years, 70,49 kg in 30-39 years, 75,85 kg in 40-49 years, 79,06 kg in 50-64 years and 77,55 kg in 65 years and over. In females, we can say that there is an increase in weight with age.

The average value of height seen in men was 175,53 cm and 164,48 cm in women. According to the BMI> 30 formula, our overall obese percentage is 26,27% for males and 26,58% for females. We can say that women

Table 12. Obesity prevalence by ag groups of Iran-Tabriz women and men

Age	Weight	Freq.	%
18-29	Weak (low weight)	20	5,7
	Normal weight	194	55,1
	Lightweight (overweight)	98	27,8
	Obese	39	11,1
	Total	**352**	**100,0**
30-39	Weak (low weight)	10	3,3
	Normal weight	119	39,7
	Lightweight (overweight)	122	40,7
	Obese	49	16,3
	Total	**300**	**100,0**
40-49	Weak (low weight)	2	1,0
	Normal weight	49	23,8
	Lightweight (overweight)	101	49,0
	Obese	54	26,2
	Total	**206**	**100,0**
50-64	Normal weight	14	12,5
	Lightweight (overweight)	63	56,3
	Obese	35	31,3
	Total	**112**	**100,0**
65 and over	Normal weight	5	16,7
	Lightweight (overweight)	17	56,7
	Obese	8	26,7
	Total	**30**	**100,0**

have higher BMI and that obesity is more common in women.

Diseases and relationships with BMI

In men (n: 44, mean: 10,0), the disease rates are as follows: cardiovascular disease (n: 29, mean: 6,6), blood pressure (n: 75, mean: 17,1), goitre n: 40, mean: 9,1) and brain-vascular disease (n: 9, mean: 2,1), whereas in women (n: 84, mean: 14,9), they follow as blood pressure (n: 99 mean: 17,7), goitre (n: 47, mean: 8,4), diabetes (n: 70, mean: 12,5), cardiovascular disease (n: 47, mean: 8,4) and brain-vascular disease (n: 12, mean: 2,1).

Relation to body perception and obesity

The results of this research show that there is a need for a more detailed and extensive research to study the factors that affect obesity more intensively. The results obtained in the research should be evaluated not only with an academic care, but also from the societal perspective. The publicity of this information is crucial to prevent obesity.

References

Amiri, H., Borjali, A., Sohrabi, F., & Pazouki, A. (2014). The comparison of depression and quality of life in the obese women with different body mass indices (BMI) with the normal women residing in Tehran. *Razi Journal of Medical Sciences, 21*(127), 102-112.

Bryan, J., & Tiggemann, M. (2001). The effect of weight-loss dieting on cognitive performance and psychological well-being in overweight women. *Appetite, 36*(2), 147-156. DOI: 10.1006/appe.2000.0389

Cameron, N., Hiernaux, J., Marshall, W. A., Tanner, J. M., & Whitehouse, R. H. (1981). Antropometry. In J. S. Weiner and J. A. Lourie (Eds.), *Practical Human Biology* (pp. 27-52). London: Academic Press.

Cutting, T. M., Fisher, J. O., Grimm-Thomas, K., & Birch, L. L. (1999). Like Mother, Like Daughter: Familial Patterns of Overweight are Mediated by Mothers' Dietary Disinhibition. *Am J Clinical Nutrition, 69*(4), 608-613. DOI: 10.1093/ajcn/69.4.608

Degirmenci, T., (2006). *Obez Erişkinlerde Benlik Saygısı, Yaşam Kalitesi, Yeme Tutumu, Depresyon ve Anksiyete* (Unpublished Specialization Thesis). Pamukkale University, Denizli, Turkey.

Deveci, A., Demet, M., Özmen, B., Özmen, E., & Hekimsoy, Z. (2005). Obez hastalarda psikopatoloji, aleksitimi ve benlik saygısı. *Anadolu Psikiyatri Dergisi, 6*(2), 84-91.

Feizi, I., Naghizadeh Baghi, A., Rahimi, A., & Nemati, S. (2012). The Relationship Between Body Mass Index and Depression in Female Students of Ardabil University Medical Sciences. *Journal of Ardabil University of Medical Sciences, 12*(2), 213-221.

Galletly, C. Clark, A. Tomlinson, L., (1996) A group program for obese, infertile women: weight loss and improved psychological health. *J Psychosom Obstet Gynecol, 17*(2), 125-128. DOI: 10.3109/01674829609025672

Ghorbani, A., Ziaei, A., Sadeghi, T., & Asefzadeh, S. (2012). Comparison of Living Quality of Obese Women with Normal Weight Women. *Medical Journal of Mashad University of Medical Sciences, 55*(3), 144-150.

Gortmaker, S. L. (1993). Social and Economic Concequences of Overweight in Adolescence and Young Adulthood. *N Engl J Med, 329*(14), 1008-1012. DOI: 10.1056/NEJM199309303291406

Gültekin, T. (2004). *Ankara'da yaşayan erişkin bireylerin vücut bileşimi değerleri* (Unpublished Doctoral Thesis). Ankara University, Ankara, Turkey.

Gültekin, T., Koca, B., Akın, G., Bektaş, Y., Sağır, M., & Güleç E. (2009). Prevalence of overweight and obesity in Turkish adults. *Anthropol Anz, 67*(2), 205-212. DOI: 10.1127/0003-5548/2009/0022

Heshmat, R., Khashayar, P., Meybodi, H., Homami, M. R., & Larijani, B. (2010). The Appropriate Waist Circumference Cut-off for Iranian Population. *Acta Med Indones, 42*(4), 209-215.

Hovardaoğlu, S. (1993). Vücut algısı ölçeği. In İ. Dağ (Ed.) Türkiye'de Kullanılan Psikolojik Ölçekler. *3P Psikiyatri Psikoloji Psikofarmakoloji Dergisi, 1*(Ek 2), 26.

Karakaya, K., Baran, E., Tüzün, H., Göçmen, L., Erata, M., Arıkan, İ., & Kökalan Yeşil, H. (2012). *Turkey Body Weight Perception Survey*. Ministry of Health General Directorate of Health Promotion (Issue No: 894). Retrieved from https://sbu.saglik.gov.tr/Ekutuphane/kitaplar/bedenagir_ing.pdf (Last Access: 10.12.19)

Kartal, Ş. (1996). *Obesity and Its Psychological Correlates: Appearance-esteem, Self-esteem and Loneliness* (Unpublished Master Dissertation). Middle East Technical University Ankara, Turkey.

Mikolajczyk, R. T., Maxwell, A. E., El Ansari, W., Stock, C., Petkeviciene, J., & Guillen-Grima, F. (2012). Relationship between perceived body weight and body mass index based on self-reported height and weight among university students: a cross-sectional study in seven European countries. *BMC Public Health, 10*, 40. DOI: 10.1186/1471-2458-10-40

Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2012). Prevalence of Obesity in the United States, 2009-2010. *NCHS Data Brief, 82*.

Ogden, J., & Evans, C. (1996). The problem with weighing: effects on mood, self-esteem and body image. *Int J Obes Relat Metab Disord, 20*(3), 272-277.

Özgün Başıbüyük, G., ve Akın, G. (2007). Sivas İl Merkezinde Yetişkin Kadın ve Erkeklerde Obezite Değerleri, *Turkish Studies, 2*(4),1239-1261. DOI: 10.7827/TurkishStudies.233

Pınar, R., (2002). Obezlerde Depresyon, Benlik Saygısı ve Beden İmajı: Karşılaştırmalı Bir Çalışma. *C. Ü. Hemşirelik Yüksekokulu Dergisi, 6*(1), 30-41.

Sarwer, D. B., Wadden, T. A., & Foster, G. D. (1998). Assesment of Body Image Dissatisfaction of Obese Women: Specificity, Severity, and Clinical Significance. *J Consult and Clin Psychol, 66*(4), 651-654. DOI: 10.1037//0022-006x.66.4.651

Singh, G. K., Kogan, M. D., & van Dyck, P. C. (2010). Changes in State-Specific Childhood Obesity and Overweight Prevalence in the United States from 2003 to 2007. *Arch Pediatr Adolesc Med, 164*(7), 598-607. DOI: 10.1001/archpediatrics.2010.84

Tanner, J. M., Hiernaux, J., & Jarman, S. (1969). Growth and Physique Studies. In J. S. Weiner, & J. A. Lourie (Eds.), *Human Biology: A Guide to Field Methods*, Oxford: Blackwell Scientific Publications.

Telch, C. F., & Agras, W. S. (1994). Obesity, binge eating and psychopathology: are they related? *Int J Eat Disord, 15*(1), 53-61. DOI: 10.1002/1098-108x(199401)15:1<53::aid-eat2260150107>3.0.co;2-0

Tezcan, B. (2009). *Obez Bireylerde Benlik Saygısı, Beden Algısı ve Travmatik Geçmiş Yaşantılar* (Unpublished Specialization Thesis). Bakırköy Prof. Dr. Mazhar Osman Ruh Sağlığı ve Sinir Hastalıkları Eğitim ve Araştırma Hastanesi, İstanbul, Turkey.

Tobias, P. V. (1985). The Negative Secular Trend. *Journal of Human Evolution, 14*(4), 347-356. DOI: 10.1016/S0047-2484(85)80041-5

Weiner, J. S., & Lourie, J. A. (1969). *Human Biology: A Guide to Field Methods.* Oxford: Blackwell Scientific Publications.

World Health Organization (WHO) (1995). *Physical status: the use and interpretation of anthropometry.* (Technical Report Series No. 854.) World Health Organization, Geneva. Retrieved from http://whqlibdoc.who.int/trs/WHO_TRS_854.pdf?ua=1 (Last Access: 10.12.19)

WHO (2000). *Obesity: preventing and managing the global epidemic.* (WHO Obesity Technical Report Series No. 894.) World Health Organization, Geneva. Retrieved from http://apps.who.int/iris/bitstream/10665/42330/1/WHO_TRS_894.pdf?ua=1&ua=1 (Last Access: 10.12.19)

WHO (2006). *Obesity and Overweight.* Retrieved 16 February 2018, from https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight (Last Access: 10.12.19)

Yarahmadi, S. H., Etemad, K., Hazaveh, A. M., & Azhang, N. (2013). Urbanization and non-communicable risk factors in the capital city of 6 big provinces of Iran. *Iran J Public Health, 42*(Supple1), 113-118.