Obesity prevalence among adults in east black sea region of Turkey.

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Abstract

Aim: We aimed to evaluate the prevalence of obesity among the adults who visited to family medicine clinic.

Methods: The volunteer individuals aged 18 and over who admitted to family medicine outpatient clinic were included in the study. Demographic characteristics and height, weight and body mass index (BMI) of the participants were recorded.

Results: Of the participants, 26.4% (n=505) were male and 73.6% (n=1406) were female. Median age of the participants was 34.0 (18.0-84.0) years. Median BMI value of the participants was 28 (14.4-64.6) kg/m^2. Of the participants 31.0% (n=593) were pre-obese and 38.5% (n=736) obese. Obesity prevalence was 30.7% in males and 41.3% in females (p<0.001). Of the obese patients, 21.1% had class III obesity.

Conclusion: The prevalence of obesity continues to increase and is higher in women. Class II and class III obesity prevalence is higher in women than in men.

Introduction

Obesity is a global public health problem because of their effect on individuals, families and communities and its rate has increased all over the world [1]. It is associated with quality of life, risk of premature death and serious chronic diseases such as cancer, cardiovascular disease, hypertension, diabetes mellitus and dyslipidemia [2-4]. Thus, obesity and obesity related diseases seriously affect countries' economies [5]. Eventually, it is a serious health problem in the world.

Over the past 35 years, the prevalence of obesity has almost doubled worldwide. In 2014, global obesity rate among adults aged 18 years or older were 11% of men and 15% of women [6].

The prevalence of obesity in adults aged 20-79 was 10.4% in the United States in 1984 [7]. This prevalence has increased to 36.5% among adults aged 20 and older in 2014 [8]. In Europe, the prevalence of obesity ranges from 4.0% to 28.3% in men and from 6.2% to 36.5% in women [9].

In Turkey, the overall prevalence of obesity in adults was 18.6% in 1990 and 21.9% in 2000 [10]. In 2010, the prevalence of obesity among adults in Turkey is 36% and of overweight is 37% [11].

The increase of obesity has caused to common calls for regular monitoring of changes in overweight and obesity prevalence in all populations [12]. In this study, we aimed to evaluate the prevalence of obesity among the individuals who visited to family medicine outpatient clinic.

Methods

Study design

This research was conducted as a descriptive cross sectional study between January 2015 and November 2016 at the Department of Family Medicine Clinic of Karadeniz Technical University Medical Faculty in Trabzon, in East Black Sea Region of Turkey.

Participants

The volunteer individuals aged 18 and over who admitted to family medicine outpatient clinic were included in the study. Pregnant women were excluded. Demographic characteristics and height, weight and body mass index (BMI) of the participants were recorded. A total of 1911 participants enrolled in this study.

Definition of obesity

The World Health Organization defines obesity based on BMI (Table 1). It is calculated by the formula "BMI=Weight (kg)/ Height^2 (m)". Obesity was defined as BMI $\geq$ 30 kg/m^2 [13,14].

Table 1. International classification of adults according to body mass index [6,13].

Classification	BMI (kg/m^2)
Underweight	<18.50
Severe thinness	<16.00

Moderate thinness	16.00-16.99
Mild thinness	17.00-18.49
Normal	18.50-24.99
Overweight	≥ 25.00
Pre-obese	25.00-29.99
Obese	≥ 30
Obese Class I	30.00-34.99
Obese Class II	35.00-39.99
Obese Class III	≥ 40.00
Source: World Health Organization, BMI classification, 2016.	

Sample size

The prevalence of obesity among adults in Turkey is 36% in 2010 [11]. According to this result, sample size is calculated as 1699 with 99% confidence, 3% deviation and 0.05 type 1 error. The sample size was calculated by OpenEpi Version 3 [15].

Statistical analysis

The data were analyzed using a statistical software package. Normal distribution was assessed by Kolmogorov-Smirnov one sample test. Numerical variables are expressed as mean ± SD and median (minimum-maximum). Mann Whitney U test and Chi square test were used in comparisons. Spearman correlation analysis was used to assess the relationship between age and BMI. Statistical significance level was set at $p<0.05$.
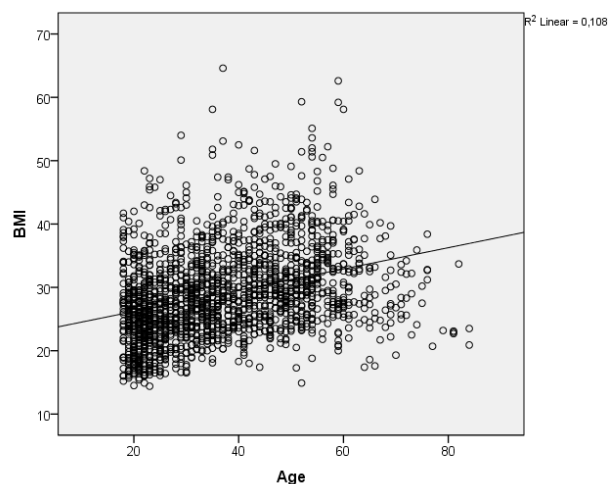

Figure 1. *Correlation between age and BMI.*

Results

Of the 1911 participants, 26.4% (n=505) were male and 73.6% (n=1406) were female. Median age of the participants was 34.0 (18.0-84.0) years.

Table 2. *Classification of participants according to BMI.*

BMI (kg/m^2)	Classification	Male (n%)	Female (n%)	P value	Total (n%)
<18.50	Underweight	6.3 (32)	3.9 (55)	0.025	4.6 (87)
<16.00	Severe thinness	0.4 (2)	0.4 (6)	0.337	0.4 (8)
16.00-16.99	Moderate thinness	1.6 (8)	1.4 (20)		1.5 (28)
17.00-18.49	Mild thinness	4.4 (22)	2.1 (29)		2.7 (51)
18.50-24.99	Normal	27.7 (140)	25.2 (355)	0.276	25.9 (495)
≥ 25.00	Overweight	65.9 (333)	70.8 (996)	0.04	69.5 (1329)
25.00-29.99	Preobese	35.2 (178)	29.5 (415)	0.017	31.0 (593)
≥ 30	Obese	30.7 (155)	41.3 (581)	<0.001	38.5 (736)
30.00-34.99	Class I	20.6 (104)	19.6 (275)	<0.001	19.8 (379)
35.00-39.99	Class II	6.5 (33)	12.0 (169)		10.6 (202)
≥ 40.00	Class III	3.6 (18)	9.7 (137)		8.1 (155)
	Total	100 (505)	100 (1406)		100 (1911)

The median age was 33 (18-84) years in men and 35 (18-82) years in women (p=0.938). Median BMI value of the participants was 28 (14.4-64.6) kg/m^2. The mean BMI of the men was 27.5 ± 6.1 kg/m^2 and the median BMI of the women was 28.4 (14.4-64.6) kg/m^2 (p<0.001). Of the participants, 31.0% (n=593) were preobese and 38.5% (n=736) obese. Obesity prevalence was 30.7% in males and 41.3% in females (p<0.001, Table 2). Of the 736 obese patients, 21.1% had class III obesity. This rate was 11.6% for males and 23.6% for females (p=0.001, Table 3). Spearman correlation analysis showed a significant positive correlation between age and BMI (r=0.372, p<0.001, Figure 1).

Table 3. *Obesity distribution according to gender of the obese participants.*

Gender (n%)	Obese (BMI ≥ 30 kg/m^2)			Total
	Class I	Class II	Class III	
Male	67.1 (104)	21.3 (33)	11.6 (18)	100 (155)
Female	47.3 (275)	29.1 (169)	23.6 (137)	100 (581)
P	<0.001	0.053	0.001	
Total	51.5 (379)	27.4 (202)	21.1 (155)	100 (736)

Discussion

Our study showed that the prevalence of obesity is 38.5%. The prevalence of obesity was significantly higher in women than in men. Approximately one-third of the participants were pre-obese. The obesity prevalence continues to increase in many developed and developing countries [16]. For example; the prevalence of obesity increased from 19.1% to 27.2% in Australian adults between 1995 and 2012 [17]. In the TURDEP II study in 2010, obesity prevalence among adults in Turkey was 35% in community, 44% in females and 27% in males [11]. When we compare with the TURDEP II study, our results indicate that these ratios increased in the general population and in males and decreased in females. This finding indicates a positive change in women's attitudes and behaviours related to obesity.

In a study conducted in 2011-2012, the prevalence of class I, II and III obesity was 19.4, 5.9 and 2.0 percent respectively in men, and 16.1, 6.9 and 4.2 percent respectively in women. [17]. In our study, similarly, the prevalence of class I obesity was higher in men than in women while the prevalence of class II and class III obesity was higher in women than in men. This finding may be due to women's giving birth and hormonal differences. The prevalence of class III obesity has increased in several countries [18]. Class III obesity is associated with substantially elevated rates of total mortality, with most of the excess deaths due to heart disease, cancer, and diabetes, and major reductions in life expectancy compared with normal weight [18]. In our study, approximately one fourth obese women had class III obesity, twice as high as men (Table 3). This result supports that to provide weight control in women, there is a need to assess more thorough the risk factors and make counselling individualized.

There was a positive correlation between age and BMI. This finding may be attributed to factors such as slowing of metabolism with aging and physical inactivity. Therefore, the change in behaviour for maintaining and providing of weight control should be gain at the earliest possible age. Atherosclerotic cardiovascular diseases and diabetes are major contributors to the burden of disease in worldwide [19]. Type 2 diabetes, hypertension and cardiovascular disease risk are associated with the degree of overweight [20]. A meta-analysis indicates that pre-obesity and obesity were associated with significantly reduced risks of all-cause mortality in patients with type 2 diabetes mellitus by 19% and 28%, respectively [21]. In this respect, initiatives at the community level should be increased.

Primary care physicians have an important role in the fight against obesity. Unfortunately, in spite of increased rates of overweight, rates of weight control counselling in primary care have significantly declined [22]. It may be useful to motivate primary care physicians in this regard. In conclusion, the majority of the population is overweight. The prevalence of obesity continues to increase and is higher in women. Class II and class III obesity prevalence is higher in women than in men. To fight overweight, interventions at the community level should be increased.

Acknowledgements

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