

International Journal of Basic and Clinical Studies (IJBCS)
2018; 7(2): 34-42 Cecen S.

Characteristics of Obese People in Istanbul

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Abstract

Aim: The aim of this study was to determine the factors that are responsible for obesity by examining the eating habits, age and gender distribution of the persons who came to the Sports Physiology clinic.

Methods: We have made full body analysis of the outpatients who applied to our Sports Physiology clinic from November 2015 to October 2016 using a bio-impedance device. We have noted their eating habits, regularity of their food intake and daily activities.

Results: Of 2115 applicants 1514 were women and 601 were men. The numbers for the children and adolescents were 422 girls and 314 boys. There was a statistically significant difference between the numbers of girls and boys in below 7 year age group and between 11-17 age groups. In adults groups, however, other than 20-25 year age group, all other groups had significantly more women compared to men. Skipping a meal and not having breakfast were most important factors common to our outpatients. Fast eating, lack of physical activity and consumption of food to reduce stress (emotional eating) were the other common factors.

Conclusion: It is believed that the current findings will help generate public awareness in the fight against obesity.

Key words: Obesity, skipping a meal, fast eating, lack of physical activity, emotional eating

Introduction

Obesity has been described as a major world health problem that affected all countries and has reached epidemic levels. While mean body-mass index (BMI) for the entire world in 1975 was 21.7 kg/m² (95% confidence interval 21.3–22.1) for men and 22.1 kg/m² (95% confidence interval 21.7–22.5) in women, in 2014 this index has risen to 24.2 kg/m² (95% confidence interval 24.0–24.4) in men and 24.4 kg/m² (95% confidence interval 24.2–24.6) in women. By 2025, it is expected that the obesity prevalence will be 18% for men and 21% for women (1).

It has been reported that the obesity prevalence has increased in the last 30 years in children and teenagers in countries with high as well as middle and low standards of living (2). According to TURDEP-II investigation

that took place between January 2010 and June, obesity prevalence in Turkey has been found to be 32% (3). According to this study, the incidence of obesity has increased by 44% and diabetes by 90% in the last 12 years. Furthermore, 68.7% of our population has been classified as obese or heavy weight (3).

Although there are many causes of obesity, unhealthy eating habits such as missing a meal, high fat diet and nibbles are shown to be important factors (4). This study aims to determine the factors that are responsible for obesity by examining the eating habits, age and gender distribution of the persons who came to the Sports Physiology clinic.

Material and Methods

**International Journal of Basic and Clinical Studies (IJBCS)
2018; 7(2): 34-42 Cecen S.**

We have included all the data obtained from the outpatients who applied to our Sports Physiology clinic from November 2015 to October 2016 in this study. We have started the study after obtaining approval from the Human Ethics Committee of Marmara University. After measuring the height of our patients on a flat surface, we have determined their bodily parameters (weight, body mass index, fat percentage, fat weight and fat free weight) using a Bio-impedance device (Tanita BC-418MA). We have also noted their regularity of food intake, speed of eating, emotional eating habits and daily activities. We have performed statistical analysis on these data. We have divided the young age group into pre- and post-adolescent groups, and divided pre-adolescent group into pre- and post-primary school groups. We have also divided the adult group into five yearly blocks.

Statistical analysis

Chi-square test is used to determine the importance of gender between the age groups. Skipping a meal, speed of eating, emotional eating habits and daily activities are tested using Fisher's exact test. Significance level

was fixed to $p < 0.05$ in all test.

Results

Of 2115 individuals who applied to our clinic between November 2015 and October 2016, 1514 were women and 601 were men. The numbers for the children and adolescents were 422 girls and 314 boys. There was a statistically significant difference between the numbers of girls and boys in below 7 year age group and between 11-17 age groups but not 7-10 years group. In adults groups, however, other than 20-25 year age group, all other groups had significantly more women compared to men (Table 1).

Late breakfast, skipping lunch and eating a heavy dinner; or skipping breakfast and starting the day with lunch (skipping a meal; Table 2), making a habit of eating fast (Table 3), consumption of food to reduce stress (emotional eating) (Table 4), and lack of physical activity (Table 5) were found to be the important factors common to our outpatients. Degree of importance of these factors is shown in Table 6.

Table 1. Distribution of our in-patients according to their gender and age

Age/Gender	Female		Male		p
	N	%	n	%	
Below 7 years	47	71.2	19	28.8	0.001*
7-10 Years	159	52.8	142	47.2	0.327
11-17 Years	216	58.5	153	41.5	0.001*
17-20 Years	31	73.8	11	26.2	0.002*
20-25 Years	53	58.2	38	41.8	0.116
25-30 Years	114	83.2	23	16.8	0.001*
30-35 Years	156	83.0	32	17.0	0.001*
35-40 Years	207	89.2	25	10.8	0.001*
40-45 Years	189	79.7	48	20.3	0.001*
45-50 Years	131	74.9	44	25.1	0.001*
50-55 Years	108	72.5	41	27.5	0.001*
55-60 Years	58	85.3	10	14.7	0.001*
Over 60 years	45	75.0	15	25.0	0.001*
TOTAL	1514	71.6	601	28.4	

Table 2. Skipping a meal in accordance with age and gender

Age group	Gender	Total	p
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**International Journal of Basic and Clinical Studies (IJBCS)
2018; 7(2): 34-42 Cecen S.**

				Female	Male		
7-10 age group	Skipping a meal	Yes	n %	14 53.8%	12 46.2%	26 100.0%	0.840
		No	n %	192 56.3%	149 43.7%	341 100.0%	
	Total	n %	206 56.1%	161 43.9%	367 100.0%		
11-17 age group	Skipping a meal	Yes	n %	37 47.4%	41 52.6%	78 100.0%	0.028*
		No	n %	179 61.5%	112 38.5%	291 100.0%	
	Total	n %	216 58.5%	153 41.5%	369 100.0%		
18 years and above	Skipping a meal	Yes	n %	160 83.3%	32 16.7%	192 100.0%	0.150
		No	n %	932 78.5%	255 21.5%	1187 100.0%	
	Total	n %	1092 79.2%	287 20.8%	1379 100.0%		

There was a statistically significant gender difference in the 11-17 age group but not in any other groups.

Table 3. Age and gender difference in fast eating of our out-patients

Age group				Gender		Total	p
				Female	Male		
7-10 age group	Fast eating	Yes	n %	10 41.7%	14 58.3%	24 100.0%	0.201
		No	n %	196 57.1%	147 42.9%	343 100.0%	
	Total	n %	206 56.1%	161 43.9%	367 100.0%		
11-17 age group	Fast eating	Yes	n %	17 35.4%	31 64.6%	48 100.0%	0.001*
		No	n %	199 62.0%	122 38.0%	321 100.0%	
	Total	n %	216 58.5%	153 41.5%	369 100.0%		
18 years and over	Fast eating	Yes	n %	38 66.7%	19 33.3%	57 100.0%	0.029*
		No	n %	1054 79.7%	268 20.3%	1322 100.0%	
	Total	n %	1092 79.2%	287 20.8%	1379 100.0%		

*p<0.05

There were statistically significant differences in the 11-17 age group and in the 18 years and over group.

Table 4. Age and gender differences in emotional eating

International Journal of Basic and Clinical Studies (IJBCS)
2018; 7(2): 34-42 Cecen S.

Age groups				Gender		Total	p
				Female	Male		
7-10 age group	Emotional eating	Yes	n	5	7	12	0.380
			%	41.7%	58.3%	100.0%	
	No	n	201	154	355		
		%	56.6%	43.4%	100.0%		
Total		n	206	161	367		
		%	56.1%	43.9%	100.0%		
11-17 age group	Emotional eating	Yes	n	26	16	42	0.740
			%	61.9%	38.1%	100.0%	
	No	n	190	137	327		
		%	58.1%	41.9%	100.0%		
Total		n	216	153	369		
		%	58.5%	41.5%	100.0%		
18 years and over	Emotional eating	Yes	n	51	4	55	0.010*
			%	92.7%	7.3%	100.0%	
	No	n	1041	283	1324		
		%	78.6%	21.4%	100.0%		
Total		n	1092	287	1379		
		%	79.2%	20.8%	100.0%		

*p<0.05

There was a statistically significant gender difference in emotional eating in the 18 year and over group.

Table 5. Age and gender differences in lack of physical activity

Age groups				Gender		Total	p
				Female	Male		
7-10 age groups	Lack of physical activity	Yes	n	8	6	14	1.000
			%	57.1%	42.9%	100.0%	
	No	n	198	155	353		
		%	56.1%	43.9%	100.0%		
Total		n	206	161	367		
		%	56.1%	43.9%	100.0%		
11-17 age groups	Lack of physical activity	Yes	n	21	24	45	0.106
			%	46.7%	53.3%	100.0%	
	No	n	195	129	324		
		%	60.2%	39.8%	100.0%		
Total		n	216	153	369		
		%	58.5%	41.5%	100.0%		
18 years and over	Lack of physical activity	Yes	n	65	12	77	0.311
			%	84.4%	15.6%	100.0%	
	No	n	1027	275	1302		
		%	78.9%	21.1%	100.0%		
Total		n	1092	287	1379		
		%	79.2%	20.8%	100.0%		

Table 6. Factors that affect obesity: Age and gender differences in our out-patient

	7-10 Years group		11-17 Years group		18 years and over		Toplam
	Kız	Erkek	Kız	Erkek	Kız	Erkek	

**International Journal of Basic and Clinical Studies (IJBCS)
2018; 7(2): 34-42 Cecen S.**

Skipping meal ^a	14 (%53.8)	12 (%46.2)	37 (%47.4)	41 (%52.6)	160 (%83.3)	32 (%16.7)	296 (%14.0)
Lack of physical activity	8 (%57.1)	6 (%42.9)	21 (%46.7)	24 (%53.3)	65 (%84.4)	12 (%15.6)	136 (%6.4)
Fast eating	10 (%41.7)	14 (%58.3)	17 (%35.4)	31 (%64.6)	38 (%66.7)	19 (%33.3)	129 (%6.1)
Emotional eating	5 (%41.7)	7 (%58.3)	26 (%61.9)	16 (%38.1)	51 (%92.7)	4 (%7.3)	109 (%5.2)

Discussion

We have noted a significant increase in the number of out-patients with the advancement in age in the childhood and teenage period and girls outnumber boys in all age groups (Table 1). It is thought that the importance of physical appearance and hence loss of weight to girls in the adolescent period may be one of the reasons for the increase in the number of female outpatients. A study in Turkey has shown a regional difference in the prevalence of obesity in girls and boys (5).

In the adult group, there were significant numbers of female outpatients compared with males except in the 20-25 year group (Table 1). It is possible that the large number of outpatients between ages of 30 and 50 may be due to an increase in the type II diabetes as a secondary disease in these individuals and hence wanting to lose weight to control the disease. In our previous study, we have shown that the incidence of metabolic syndrome in our outpatients was 43% (6).

Work in different regions of Turkey has shown that the incidence of obesity was higher in females compared with males (7). According to TURDEP-I (Turkish Diabetes Epidemiology Study) investigation that took place between 1997-1998 obesity prevalence in Turkey has been found to be 29.9% in females and 12.9% in males, in total 22.3% (8). The next TURDEP-II investigation that took place between January 2010 and June, obesity prevalence in Turkey has been found to be 32% (3). According to this study, the incidence of

obesity has increased by 44% and diabetes by 90% in the last 12 years. Furthermore, 68.7% of our population has been classified as obese or heavy weight (3). Another Turkish study TOHTA (Turkish obesity and hypertension search) found that obesity incidence was 36.17% in females and 21.56% in males, in total 25.2% (9).

Characteristics of obese individuals

Irregular eating habit (skipping a meal) is the most common characteristic of obese individuals (Table 6) and it showed statistically significant gender difference in the 11-17 age group (Table 2). Skipping a meal is observed in the form of: going to school without having breakfast (for reasons such as: not having time, not feeling hungry and feeling sick after breakfast), at school, eating fast food rather than proper breakfast, having late breakfast during school holidays, and skipping lunch and having dinner. In adults, this is observed in the form of having late breakfast and skipping lunch, fasting until dinner time and eating a large dinner, eating high calorie snacks for lunch such as fruit, biscuits and cakes. Studies on primary school children in Turkey has established that obese and heavy children do not have a habit of having breakfast (10), teenagers skipping breakfast in high numbers (11), females skipping breakfast more than males (12). Studies in the USA and Europe also show high incidence of skipping breakfast (13). In Australia, it has been shown that the individuals who skip breakfast have larger

International Journal of Basic and Clinical Studies (IJBCS)

2018; 7(2): 34-42 Cecen S.

waist circumference and higher risk of cardio-metabolic risk factors (14), also, children with normal weight who skip breakfast put on weight (15). Studies in the USA and Australia also indicate that the children who have regular breakfast have lower BMI ratio compared with the children who skip breakfast (16,17).

Fast eating habit showed gender difference in the 11-17 year age group and 18 year and over age group in our study (Table 3). Other studies also showed that speed of eating and BMI is related in a positive way (10,18,19). Number of functioning teeth has also been related to the BMI ratio where individuals with low number of teeth eat less amount of fiber containing food, fruit and vegetables, have higher BMI ratio (20,21), stimulate less number of intraoral receptors during chewing, not feeling full after meals and therefore eating much more to feel full, which may then trigger obesity (20). It is thought that stimulation of intraoral receptors during chewing may be used in the fight against obesity since an increase in the number of chewing strokes reduces Ghrelin concentration in the blood (23), increases GLP-1 (glucagon like peptid-1) and CCK levels (24).

Emotional eating problems have been observed in groups over the age of 18 and especially in women. While metabolic and physiological hunger are regulated via internal mechanisms, emotional hunger is regulated via stimulations coming from the external environment (25) and observed more often in obese individuals (26). Studies in Turkey has shown that emotional eating is widespread in obese children and teenagers (27), they increase their eating levels depending on stressful conditions (28), and they prefer fast food with high calorie due to the hormonal rewards they receive (29).

We found that a reduced level of physical activity was common in both genders

and in all ages. Studies elsewhere have also shown that reduction in physical activity during work (30) and during daily life (31) have a strong relationship to the incidence of obesity. A longitudinal study from Finland has shown that physical activity three or more times per week can help lose weight and reduced physical activity help gain weight (32). As the physical activity is reduced after the age of 30 and going towards 50s and 60s, incidence of obesity also increases (33). It has also been shown that regular physical activity prevents weight gain (34) and prevents putting on weight after losing weight (35). Length of time spent in activities that are done without much movement such as watching TV and internet usage has been shown to increase obesity both in children and in adults (36-38). It has been suggested that at least 150 minutes of medium strength regular physical activity is necessary to keep healthy body (39).

In conclusion, obesity is a serious major health problem for the world which is increasing from day to day and is not discriminating age and gender. There are large numbers of studies on the cause/s of this problem. In the sports physiology outpatient clinic at Marmara University Pendik Education and Research Hospital we observed that skipping breakfast is the most common factor in the obese individuals who apply to our clinic. Our patients often tell us that the reason for not having breakfast is due to their unfounded belief that skipping breakfast will help them lose weight. Fast eating, eating to overcome stressful situations and lack of physical activity are other common factors in our outpatients. It is believed that the current findings will help generate public awareness in the fight against obesity.

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International Journal of Basic and Clinical Studies (IJBCS)

2018; 7(2): 34-42 Cecen S.

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