ORIGINAL ARTICLE

A Survey of Factors Affecting the Prevalence of Obesity, Overweight, and Central Obesity among Urban adults Referred to Birjand Health Centers in 2017

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Abstract

Background: Obesity is one of the most public health challenges in the 21st century, which has increased in most countries during the last decade. This study aimed to determine factors affecting the prevalence of obesity, overweight, and central obesity among urban adults referred to Birjand health centers in 2017.

Methods: In this cross-sectional study, we investigated the data of all individuals who were registered in the Integrated health application system of Birjand (SIB) from April 2016 until March 2017 by census method. A checklist was designed to include the participants' demographic characteristics, weight, height, and waist circumference.

After coordinating with the health department of Birjand University of Medical Sciences, the authors logged in to the SIB system, collected and entered the data into the checklist. Then, the authors analyzed data using chi-square, independent sample T-test, and ANOVA tests by SPSS-22 software.

Results: In the present study, 10,000 people participated. Their average age was of 44.3±11.8 years. The majority were females 7190 (71.9%) out of which 4827 (48.3%)were in the age group of 30 to 40 years old. The prevalence of overweight, obesity, and central obesity in urban adults who registered in the SIB system in Birjand was 3539 (35.4%), 1968 (19.7%), and 4847 (48.5%), respectively. These features for women were significantly higher than men in all age groups.

Conclusion: These findings revealed that obesity and abdominal obesity were high in urban adults in Birjand, which requires immediate intervention to improve the obesity status.

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Introduction

Obesity is one of the most public health challenges in the 21st century in most countries, which has increased during the last decade.[1, 2]

Obesity and overweight are physiologically defined as fat accumulation in an abnormal or excessive pattern in adipose tissue.[3,4] Body mass index (BMI) is the most common, feasible, and applicable indicator for estimating obesity and overweight.[3, 5] According to the Index, individuals with BMI 25–30 kg/m^2 and >30 are defined as overweight and obese, respectively,[3, 6] and abdominal obesity is defined as waist circumference ≥102 cm for men and ≥88 cm for women.[7]

There are over 1.2 billion people who are

overweight or obese globally.[8] The obesity trend in the United States has increased significantly from 1999 to 2000 until 2015 to 2016. The prevalence of adults obesity in the United States was 39.8% in 2015-2016.[9]

In other studies, the prevalence of overweight and obesity was 28.1% and 5.2% in China,[10] 55.1%, 16.6% in Swedish adults,[11] and 26.8%, and 32.2% among adults in Eastern Sudan.[12]

In Iran, the prevalence of overweight and obesity were reported 27.1%-38.5%, 12.69%, and 25.9%, respectively, by various studies.[3]

In a study in Southeastern Iran, the prevalence was 35.8% for overweight, 22.3% for obesity, and 31.1% for central obesity.[13]

According to findings of the national survey STEPs 2016, the prevalence of overweight, obesity, and severe obesity were 55.1%, 16.6%, and 4.2%, respectively.[14]

Obesity results from a complex interaction among multiple factors such as genetic, socioeconomic, and culture,[15] which is associated with a significant increase in mortality and causes a 5 to 10 years reduction in life expectancy.[6] Obesity and overweight are the fifth most cause of death, resulting in about 3.4 million deaths annually.[8] Obesity and abdominal obesity are also associated with many complications such as cardiovascular disease, gastrointestinal disorders, type 2 diabetes, cancer, musculoskeletal/ orthopedic, respiratory problems, and psychological issues that may significantly affect their daily lives and thereby increase the mortality risks.[6]

One of the most important health system executive plans is the Integrated Health System (SIB). All information about households and health care services is registered in this system from the health centers and health houses. The data available in the health system is one of the most common ways of collecting information in research. This study aimed to determine factors affecting the prevalence of obesity, overweight, and central obesity among urban adults referred to Birjand health centers in 2017.

Methods

In this Cross-sectional study, we evaluated the data for all people (10000 subjects) who were registered in the SIB system from April 2016 until March 2017 by census method.

A checklist was designed based on the study objectives, including the demographic characteristics (age, sex) and their weight, height, and waist circumference information.

After coordinating with the health department of Birjand University of Medical Sciences, the authors logged into the SIB system, collected the data, and recorded in the checklist.

In the present study, the authors evaluated all individuals over 30 years old who registered in the SIB system in Birjand city. They were visited and examined at least once, and their information was available in the system.

After entering the data in SPSS-22 software, the authors analyzed data using chi-square, independent sample T-test, and ANOVA tests. α=0.05 was considered the significance level.

This study was conducted in the Birjand University of Medical Sciences, with ethics code Ir.bums.REC.1396.326.

Results

In this study, the information of 10,000 people with an average age of 44.3±11.8 years old from 30 years to 94 years was used. The majority (7190 participants) were females (71.9%), out of which 4827 (48.3%) were in the age group of 30 to 40 years old (Table 1).

The mean BMI for the participants was 26.47±4.92 kg/m^2 and the mean waist circumference was 91.19±11.95 cm. Mean BMI for women was significantly higher than that for men, and there was no significant difference in the mean waist circumference between men and women (Table 2).

Table 1: Demographic characteristics of the individuals registered in the SIB System in Birjand

Characteristics		N (%)
Age group	30-40yr	4827 (48.3)
	40-50yr	2572 (25.7)
	50-60yr	1460 (14.6)
	>60yr	1141 (11.4)
Sex	Male	2810 (28.1)
	Female	7190 (71.9)

Table 2: Mean anthropometric measures of the participants by gender

	Total	Men	Women	P value
Weight (kg)	67.63±13.56	73.03±13.81	65.52±12.85	<0.001
Height (cm)	159.60±9.26	169.63±7.65	155.68±6.46	<0.001
BMI (kg/m2)	26.47±4.92	25.19±4.22	26.97±5.08	<0.001
Waist circumference	91.19±11.95	91.25±11.95	91.17±12.41	0.76

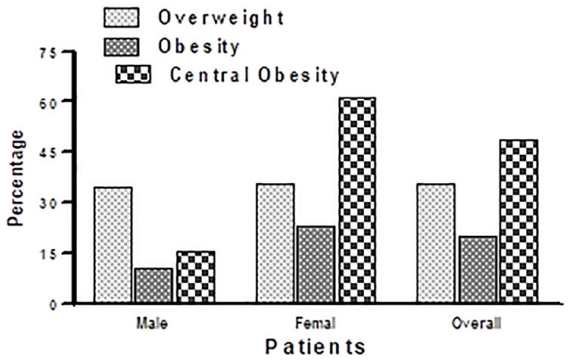

Figure 1: Percentage of people with overweight, obesity, and Central obesity in terms of sex

The highest means for BMI and WS were from the age group of 50 - 60 years old.

The obesity prevalence and overweight in all subjects were 19.7% and 35.4%, respectively. The prevalence of overweight and obesity for men was 34.5% and 10. 4%, respectively (Figure 1).

These figures for women were respectively 35.7% and 23.2%. When comparing the prevalence of overweight and obesity, these values were significantly higher for women than men in all age groups (Table 3) and (Figure 2).

The highest rates of obesity and overweight were found in the age group of 50 to 60 years old, whereas the lowest rates were found in the age group of 30-40 years old in both women and men.

The prevalence of abdominal obesity was 48.5% in all subjects, 15.5% in men, and 61.3% in women, which was 8.6 times higher than in men. OR=8.6 (CI:7.7-9.6). The prevalence of abdominal obesity in all age groups for women was significantly higher than that of men (Table 4), with the highest rates (82.2%) in the age group of 50 - 60 years old in women.

Discussion

The prevalence of obesity and overweight in the urban adults registered in the SIB system in Birjand was 35.4%. and 19.7%, respectively. A Systematic Review and Meta-Analysis consisting of 144 articles indicated that the obesity prevalence for the populations above 18 years old in Iran was estimated at 21.7%.[16]

Table 3: Distribution of overweight and obesity status by gender, age groups

Age group	Male (n=2726)			Female (n=7085)			P value
	Normal	Overweight	Obesity	Normal	Overweight	Obesity	
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
30-40yr	765 (60)	413 (32.4)	98 (7.7)	1746 (49.8)	1189 (33.6)	587 (16.6)	<0.001
40-50yr	309 (47.4)	256 (39.3)	87 (13.3)	618 (32.5)	744 (39.1)	542 (28.5)	<0.001
50-60yr	187 (47.2)	153 (38.6)	56 (14.1)	291 (28.1)	410 (39.6)	335 (32.3)	<0.001
>60yr	240 (59.7)	119 (29.6)	43 (10.7)	239 (39.5)	185 (30.6)	181 (29.9)	<0.001
Total	1501 (55.1)	941 (34.5)	284 (10.4)	2912 (41.1)	2528 (35.7)	1645 (23.2)	<0.001
P value	<0.001			<0.001			

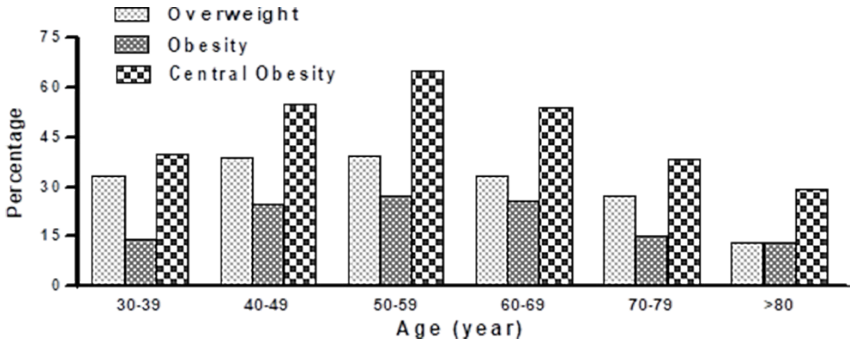

Figure 2: Percentage of people with overweight, obesity, and abdominal obesity in terms of age

Table 4: Distribution of central obesity status by gender, age groups

Age	Male (n=2761)		Female (n=7124)		P value
	Normal	Central obesity	Normal	Central obesity	
	N (%)	N (%)	N (%)	N (%)	
30-40yr	1119 (87.6)	159 (12.4)	1769 (50)	1771 (50)	<0.001
40-50yr	538 (81.4)	123 (18.6)	621 (32.5)	1287 (67.5)	<0.001
50-60yr	322 (78.5)	88 (21.5)	186 (17.8)	857 (82.2)	<0.001
>60yr	354 (85.9)	5814.1)	183 (28.9)	450 (71.1)	<0.001
Total	2333 (84.5)	428 (15.5)	2759 (38.7)	4365 (61.3)	<0.001
P value	<0.001		<0.001		

In a Systematic Review by Jafari-Adli et al., the prevalence of overweight in various studies was reported from 27.1% to 38.5%, and this figure for the obesity prevalence was between 12.69% to 25.9%.[3]

The prevalence of obesity in the United States adults was calculated at 39.8% (9). However, in southern China, the prevalence of overweight and obesity were outlined at 25.8% and 7.9%, respectively.[17]

In this context, the prevalence of overweight among adults inArgentina was documented at 32.7%, the prevalence of obesity was 23.5%[18] and these figures in Malaysia were reported at 29.4% and 15.1%[19] and 28.1% and 5.2% in China[10] and 55.1%, 16.6% in Swedish adults, respectively.[11] In the Gallus study in 16 European countries, 47.5% of the interviewed European adults were overweight or obese and 12.8% were obese.[20]

In another study in Iran, the prevalence of obesity was reported as follows: 22.3% in Tehran,[1] 58.9% in Ardabil,[21] and 28.4% among the adults of Mazandaran province.[22]

The prevalence of overweight and obesity in urban adults registered in the SIB system in Birjand was high, consistent with other studies done in Iran. One of the reasons for the difference in the results of various studies could be partly due to the variation in the sampling method and age groups in different studies. It is noteworthy that the prevalence of obesity can be influenced by consumption patterns, urban development, and lifestyle habits.[15]

In current study, the overweight and obesity prevalence in women was higher than men in all age groups. The prevalence of overweight and obesity in southern China was higher in females than in males above 55 years of age; however, these numbers in males younger than 55 years old were higher when compared with the females.[17] In the United States, no significant difference was found in the prevalence of obesity between men and women and in terms of the age groups.[9] A study conducted in 16 European countries showed that the prevalence of obesity and overweight was higher in men than women.[20]

In various studies conducted in Iran, it was evident that the prevalence of obesity for women was higher than men in Mazandaran Province,[22] Shiraz,[23] and Southeastern Iran.[13] Moreover, a study in the north of Iran also determined that the rate of obesity in women was higher than in men,[24] which is consistent with the results of current study.

The higher rate of obesity in women can be due to sedentary life or the presence of some psychological disorders such as depression.

In this study, the prevalence of obesity and overweight steadily increased until 60 for both women and men. In The United States, the rate of obesity was higher for adults aged 40-59 (42.8%) than younger adults (35.7%).[9] In the 16 European countries, the prevalence of obesity also significantly increased with age.[20]

In currentstudy, the prevalence of abdominal obesity was 48.5% in all subjects, 15.5% in men, and 61.3% in women. The prevalence of abdominal obesity was significantly higher in women than men in all age groups. In this context, the prevalence of abdominal obesity was 32.2% for men and 45.7% for women in Poland,[25] and overall 10.2% in southern China.[17]

The prevalence of abdominal obesity was 31.1% in Southeastern Iran[13] and 32.01% in the northern part of Iran which was significantly higher in women (57.2%) than men (15.8%).[26] In addition, the prevalence of abdominal obesity for adolescents in Birjand was 16.3% (20% for boys and 13.2% for girls).[27]

In Ecuador, the prevalence of abdominal obesity in men and women was 65.9% and 16.3%, respectively.[28]

In the present study, the prevalence of abdominal obesity in women was 8.6 times higher than men. On the other hand, in Hajian study, the prevalence of central obesity in women was 8 times higher than in men in urban Mazandaran,[22] which is in line with the current study.

The prevalence of abdominal obesity for the individuals registered in the SIB system in Birjand was higher than in other studies, especially for women. The of housewives lifestyle is a potential risk factor for gaining weight. The higher prevalence of abdominal obesity in women may be due to lower physical activity, higher marriage rates, especially at an early age, the number of pregnancies and childbirth, and hormonal factors.

Limitations

We have selected the participants from people registered in the SIB system, which may not include all people in the city; therefore, the results cannot represent all adult populations of the city. This issue is one of the limitations of the study. n addition, iOther factors affecting obesity were not investigated in this study, which is another limitation of our study.

Conclusion

The present study revealed that obesity and abdominal obesity were high in urban adults in Birjand and were different in terms of gender and age. Therefore, there is an immediate need for interventions to improve obesity status. Educational programs and more interventional studies are recommended to manage this risk factor appropriately. Considering the effects of obesity on public health and the increasing rate of obesity in Iran, the health authorities should revise the obesity preventive programs through public health interventions to reduce the rate of obesity in the country.

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Conflicts of interest: None declared.

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