Research Article

The Prevalence of Obesity and Overweight in Iranian Women: A Study in Zahedan (Southeast of Iran)

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Abstract: Obesity and overweight are most important public health problem and major risk factor for many diseases especially in women. This study aimed to determine prevalence of obesity and overweight in Iranian women (southeast of Iran). In this cross-sectional study, 1250 women 15 to 50 years in Zahedan at 2014 were examined by multistage sampling. Data collect by questionnaires and measured height and weight according to standard protocols and BMI was calculated. Data analyzed by descriptive statistics and chi-square tests in SPSS 16 software. The mean age of the subjects was 28.19±6.71. Based on the results, the prevalence of overweight and obesity respectively was 22.4 and 11.9 percent. Between obesity and age, a significant association was observed and prevalence of obesity was greater in the older age group (p=0.001). The highest prevalence of obesity was observed among people with low education and married. Based on our results, the prevalence of overweight and obesity in reproductive age women in the South East Iran is at a high level, so planning to implement nutritional interventions and education to reduce the incidence of overweight and obesity among women is recommended.

Keywords: Obesity, Body mass index, Iran, Prevalence.

INTRODUCTION

Today, Obesity and overweight are most important public health problem and major risk factor for many diseases, which its prevalence is increasing and sixth cause of burden of disease (DALY) in the world [1]. The body mass index is used for evaluating overweighting [2]. According to this formula, if the body mass index is more than 30, it means obese and more than 25 means overweight [3, 4].

Overweight brings the risk of heart and capillary sickness, hypertension [5], Diabetes, heart-failure, insulin resistance, dyslipidemia, sleep apnea, gallbladder disease, coronary artery disease, gout, cancer [6, 7] , asthma [8] and even mental disorders and depression [9] , Therefore, it leads to low chance of surviving and reduced life expectancy in people [6, 10].

Overweight is so prevalent in the word that around 1.1 billion of adults and 10 percent of youngers affected it now [1]. In America, obesity prevalence among older is in high level and 35.5 percent of men and 35.8 percent of women are on obesity [11, 12]. It is a major public health problem in other countries that has been reported between 25 to 81.9 percent in eastern Mediterranean [13]. 75 to 88 percent of women in around Persian Gulf country are obese [14]. Also in Iran obesity and overweight is increasing and on the basis of a study, 63.9 percent of Iranian women (in Shiraz) are on overweight and they are in danger of obesity more than men which in women is 22.5 and in men 10.5 percent [15].

Women at the age of fertility are in high danger of overweight [16, 17]. Obesity in women has many problems such as disorder in fertility [7], cancer [18] especially colon cancer, breast cancer and endometriosis [19].

On the other hand, by getting older, they'll become fatter. The important point here is that overweighting and above results is preventable [19]. It is necessary to study for etymology overweight prevalence because lack of knowledge about prevalence and epidemiological statues a disease is an important bar for planning. So it is necessary to understand the

overweight prevalence especially in women. Therefore, with due attention to overweight prevalence's importance in women at the age of fertility, this study conducted to determine the prevalence of overweight and obesity among Iranian women.

METHODOLOGY

This cross sectional study has been done on 1250 women at 15 to 50 in 2015 in Zahedan (Southeast Iran). In this study, Informed consent, age between 15 to 50 years old, having no mental problem, Iranian nationality, having no sickness such as diabetes, and heart disease are conditions were considered as Inclusion criteria in the study.

For calculating the sample size, sampling formula was used and to gain the maximum sample size, the 0.5 amount of prevalence is intended. The c confidences limit is 95% and volume of z is almost 2 and the accuracy equals 0.04. Hence, sample's size is 625 and according to design effect, the obtained sample amount multiplies with 2(design effect) and finally, sample amount equals 1250.

For choosing samples, the multiple stage sampling was applied. First, division had been done on the basis of regions and from each region, municipality was as cluster. In every cluster some blocks had been chosen by chance and in each of them the amount of sample was specified to that block, women who have been chosen were between 15 to 50 years old. Chosen blocks were according to divisions of municipality in every region and any region that had been chosen as raceme, put numbers to their blocks by chance. Choosing family was by chance and their home's number and Excel office; if in a home there had been woman between age 15 to 50, study would have started, if not, its neighbour would have chosen as a sample.

A checking form which contains information about population and anthropometric measures was applied for gathering data thus women's weights were measured on the basis of kilogram with Sonel1 scale with 100 grams accuracy on straight and solid ground with no shoes and light cloths and their heights were measured by accuracy of 0.1 cm in standing state.

To calculate body mass index, we used this formula: weight (kg) ÷ square of height (m^2). according to this formula, if the body mass index is more than 30 , it means obese and more than 25 means overweight [3,

4]. After collecting data, they had been put in Spss 16 software and they were analyzed by descriptive statistics and statistical tests of chi2 and in less significant level than 0.05.

RESULTS

The mean age of studying women were 28.19 6.71 and they were around 15 to 49 years old. From educational point, 14.2 percent were illiterate, 36.9 percent were under diploma, 27.0 percent had diploma, 19.4 diploma collage and bachelor, and 2.5 percent had master degree and upper.

According to results, 11.9 percent (142 women) were obese and 22.4 percent (267) were in overweight. Totally 43.3 percent (409 women) were overweight and obese and 65.7 percent (785 women) were not. According to results, there is a significant relationship between age and overweight, as the overweight in older is more than younger and least percent of obesity observed in less than 20 years old women (6%). Table 1 shows the overweighting and obesity at the basis of surveying variables.

According to finding, the highest prevalence of overweighting were more in riches (16.4%) and less among poor and average level people (13.2%) and indeed, the minimum level of overweight is related to people who are in middle level. Of course this relation isn't significant from statistical point.

According to results the maximum overweighting level is for illiterate and under diploma holder people and it is less among people with high educational degree. Obesity conditions have been shown in table 1 and at the basis of education. Also, the least level of overweighting was in south city (8.5 percent) compare to other parts of city and the maximum level of obesity were on the east of Zahedan (16.4 %)

According to results, there was a significant relationship between housing conditions and overweight and its prevalent among tenants were more than landlords (14.1 against 9.3%).

Prevalence of overweight in married was higher rather than singles (14.1% compare to 9.3%). This situation was seen in two groups and overweight percentage was more in married. Also this relation wasn't significant.

Table 1: Variables

Variable	sub variable	Total	No fat & no overweight	Overweight	Obese	p value
Age	<20	149(13.3)	122(81.9)	18(12.1)	9(6.0)	0.001
	20-29	517(46.1)	362(70.0)	104(20.1)	51(9.9)	
	30-39	391(34.9)	230(58.8)	102(26.1)	59(15.1)	
	40-49	64(5.7)	32(50.0)	19(29.7)	13(20.3)	
	total	149(13.3)	746(66.5)	243(21.7)	132(11.8)	
Education	Illiterate	169(14.2)	100(59.2)	42(24.9)	27(16.0)	0.37
	Under diploma	439(36.9)	2828(64.2)	99(22.6)	58(13.2)	
	Diploma& college	322(27)	216(67.1)	74(23)	32(9.9)	
	Bachelor	231(19.4)	163(70.6)	46(19.9)	22(9.5)	
	Master	30(2.5)	21(70)	6(20)	3(10)	
	Total	1191(100)	782(65.7)	267(22.4)	142(11.9)	
Income	High	61(5.2)	37(60.7)	14(23.0)	10(16.4)	0.47
	Middle	901(76.3)	603(66.9)	196(21.8)	102(11.3)	
	Low	219(18.6)	135(61.6)	55(25.6)	29(13.2)	
	total	1181(100)	775(65.6)	265(22.4)	141(11.9)	
Region	East	275(23.3)	173(62.2)	64(23.0)	41(14.7)	0.25
	West	295(24.7)	201(68.1)	69(23.4)	25(8.5)	
	North	417(34.9)	279(66.9)	84(20.1)	54(12.9)	
	South	204(17.1)	132(64.7)	50(24.5)	22(10.8)	
	total	1194(100)	875(65.7)	267(22.4)	142(11.9)	
Marital state	Married	24(2.0)	17(70.8)	5(20.8)	2(8.3)	0.82
	Single	1159(98.0)	760(65.6)	260(22.4)	139(12.0)	
	total	1183(100)	777(65.7)	265(22.4)	141(11.9)	
Home	Landlord	515(43.5)	335(68.9)	112(21.7)	48(9.3)	0.02
	tenanted	668(56.5)	419(62.7)	155(23.2)	94(14.1)	
	total	1183(100)	774(65.4)	267(22.6)	142(12)	

DISCUSSION

The aim of this study was surveying the prevalence of obesity among women 15-50 years old in Zahedan city. According to our results, 22.4 percent women had overweight and 11.9 percent was obese. In Basagoudar *et al.*'s study (2012) 11.9 % women had overweighting and 9.9 % were obese [16] that it is less in this study. But in Kaur *et al.* (2012) searched about prevalence of obesity , that showed 23.5 % women had overweight and 40 % were obese [20]. In Iran, in study of Hakim *et al.* (2010) 42.8% of women had overweight and 12 % of them were obese [21]. In Azizi *et al.* (2013) study about metabolic syndrome, it was indicated that prevalence of metabolic syndrome in women with higher BMI than 25, was 2.3 times more than of women with normal BMI [22].

According to ways of life changing and speedy increasing prevalence of overweighting and obesity in many countries and follow it cusses of diabetes, hypertension, cancer and dyslipidemia [7, 19], the necessity of prevention planning in this subject is needed. Overweighting causes problem for mothers in pregnancy and childbirth and can be starting point for their children's fatness.

According to finding, there was a significant relationship between age and obesity. As people get older, the Prevalence of obesity increased. In Basagoudar *et al.*'s study the highest prevalence obesity

observed among women between 36-45 years [16], also our results similar to Hakim study *et al.* [21], that can be because of hormonal changes by getting older [23].

In present study, the highest prevalence of overweighting were more in riches (16.4%) and less among poor and average level people (13.2%). In Basagoudar *et al.*'s study the most overweighting (28.6%0 was in middle economical lives [16]. In Hakim *et al.*'s study, 47.3 % of women with good economic life were in overweight and 42 % of them had middle and poor life [21]. Others studies emphasize this [24]. More salary can prepare more facilities like home, food and etc.

According to research's findings, the prevalence of obesity is at least in south of city compare to other parts of city and it had most prevalence in east of Zahedan. South of city was in high level economically and east was in middle level. The highest prevalence of obesity observed in the middle Economic class, which Similar to other studies [21, 24].

The results of this study showed, there was a significant relationship between education level and overweighting. The maximum overweighting level is for illiterate and under diploma holder people and it is less among people with high educational degree.

In Najib *et al.*'s study, the relationship between education and obesity was statistically significant. Low literacy individuals can reduce their level of nutritional knowledge and influence on the process of buying and preparing food [25], but in Basagoudar's study fatness and overweight in educated people is more than illiterates [16]. Also in Katie's research, people who had more educations had high overweighting compare to illiterates [24] and in Hakim *et al.*'s view there wasn't any statistical meaningful relation between obesity and education [21].

CONCLUSION

According to the results, the prevalence of obesity and overweighting was a high level in women. The prevalence of obesity and overweight in reproductive age women were more in older, rich, illiterate women in Zahedan. Hence, the more attention and suitable planning are necessary for these people. Also health planning for their life's style and having good diet and physical activities are necessary.

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REFERENCES:

1. Haslam DW, James WPT; Obesity. The Lancet, 366(9492): 1197-209.
2. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH; Establishing a standard definition for child overweight and obesity worldwide: international survey. BMJ, 2000; 320(7244): 1240.
3. Reilly JJ, Methven E, McDowell ZC, Hacking B, Alexander D, Stewart L, Kelnar CJ; Health consequences of obesity. Archives of Disease in Childhood, 2003; 88(9): 748-52.
4. Kopelman PG; Obesity as a medical problem. Nature, 2000; 404(6778): 635-43.
5. Sharma A; Obesity and cardiovascular risk. Growth Hormone & IGF Research, 2003; 13: 10-7.
6. Guh DP, Zhang W, Bansback N, Amarsi Z, Birmingham CL, Anis AH; The incidence of co-morbidities related to obesity and overweight: a systematic review and meta-analysis. BMC Public Health, 2009; 9(1): 88.
7. Johnston L; Obesity and overweight. South African Pharmacist's Assistant, 2011; 12(2): 21-23.
8. Beuther DA, Sutherland ER; Overweight, obesity, and incident asthma: a meta-analysis of prospective epidemiologic studies. American Journal of Respiratory and Critical Care Medicine, 2007; 175(7): 661-666.
9. Atlantis E, Baker M; Obesity effects on depression: systematic review of epidemiological studies. International Journal of Obesity, 2008; 32(6): 881-891.
10. Olshansky SJ, Passaro DJ, Hershow RC, Layden J, Carnes BA, Brody J, Ludwig DS; A potential decline in life expectancy in the United States in the 21st century. New England Journal of Medicine, 2005; 352(11): 1138-1145.
11. Ogden CL, Carroll MD; Prevalence of overweight, obesity, and extreme obesity among adults: United States, trends 1960–1962 through 2007–2008. National Center for Health Statistics, 2010; 6: 1-6.
12. Flegal KM, Carroll MD, Kit BK, Ogden CL; Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. JAMA, 2012; 307(5): 491-497.
13. Musaiger AO; Overweight and obesity in eastern mediterranean region: prevalence and possible causes. Journal of Obesity, 2011.
14. Ng SW, Zaghloul S, Ali H, Harrison G, Popkin BM; The prevalence and trends of overweight, obesity and nutrition-related non-communicable diseases in the Arabian Gulf States. Obesity Reviews, 2011; 12(1): 1-13.
15. Ayatollahi S, Ghoreshizadeh Z; Prevalence of obesity and overweight among adults in Iran. Obesity Reviews, 2010; 11(5): 335-337.
16. Basagoudar S, Chandrashekhar R; Study of obesity and its risk factors among women of reproductive age group. International Journal of Current Research and Review, 2013; 5(3): 23-28.
17. Sidhu S, Kaur A; Prevalence of overweight and obesity among urban and rural adult females of Punjab. Anthropologischer Anzeiger, 2005: 341-345.
18. Martínez ME, Pond E, Wertheim BC, Nodora JN, Jacobs ET, Bondy M, Thompson P; Association between parity and obesity in Mexican and Mexican–American women: Findings from the Ella Binational Breast Cancer Study. Journal of Immigrant and Minority Health, 2013; 15(2): 234-243.
19. Bergström A, Pisani P, Tenet V, Wolk A, Adami HO; Overweight as an avoidable cause of cancer in Europe. International Journal of Cancer, 2001; 91(3): 421-430.
20. Kaur G, Singh S, Singh A; Prevalence of Overweight and Obesity in Urban and Rural Women of Punjab. Human Biology Review, 2013; 2(4): 306-313.
21. Hakim S, Dorosty AR, Eshraghian M; Association of food insecurity and household socio-economic status with the body mass index among urban women in Dezful. Journal of School of Public Health and Institute of Public Health Research, 2010; 8(2): 55-66.
22. Azizi S, SadrzadehYeganeh H, Hosseini M, Daneshimaskooni M; Relationship between food insecurity and metabolic syndrome in women. Iranian Journal of Diabetes and Lipid Disorders, 2014; 13(2): 144-152.
23. Maddah M, Jazayery A, Mirdamadi R, Eshraghiyan M; Central obesity in women and its association

with serum level of testosterone and estradiol. Journal of Reproduction & Infertility, 2002; 3(4): 14-21.

24. Martin KS, Ferris AM; Food insecurity and gender are risk factors for obesity. Journal of Nutrition Education and Behavior, 2007; 39(1): 31-36.

25. Najibi N, Dorosty Motlagh AR, Sadrzadeh Yeganeh H, Eshraghian M, Daneshi M, Azizi S; Food insecurity status and some associated socioeconomic factors among newly diagnosed patients with type 2 diabetes in Shiraz, 2012. Arak Medical University Journal, 2013; 16(1): 98-106.