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 overweight [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 youngsters 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 confidence 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 (m²). 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 college 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.
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 metabolic syndrome it was. 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 were more in riches (16.4%) and less among poor and average level people (13.2%).

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. 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].

Table 1: Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>sub variable</th>
<th>Total</th>
<th>No fat &amp; no overweight</th>
<th>Overweight</th>
<th>Obese</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>&lt;20</td>
<td>149(13.3)</td>
<td>123(81.9)</td>
<td>18(12.1)</td>
<td>9(6.0)</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>20-29</td>
<td>317(14.1)</td>
<td>362(70.0)</td>
<td>82(16.8)</td>
<td>20(3.7)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30-39</td>
<td>391(34.9)</td>
<td>230(58.3)</td>
<td>60(15.3)</td>
<td>31(8.1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40-49</td>
<td>84(5.7)</td>
<td>32(50.0)</td>
<td>24(36.6)</td>
<td>3(4.6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>149(13.3)</td>
<td>746(66.5)</td>
<td>243(21.7)</td>
<td>132(11.8)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Illiterate</td>
<td>169(14.2)</td>
<td>100(59.2)</td>
<td>42(24.9)</td>
<td>27(16.0)</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>Under diploma</td>
<td>439(36.9)</td>
<td>2828(64.2)</td>
<td>999(22.6)</td>
<td>58(13.2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diploma&amp; college</td>
<td>322(27)</td>
<td>216(67.1)</td>
<td>74(23)</td>
<td>32(9.9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bachelor</td>
<td>231(19.4)</td>
<td>163(70.6)</td>
<td>46(19.9)</td>
<td>22(9.5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Master</td>
<td>30(2.5)</td>
<td>21(70)</td>
<td>6(20)</td>
<td>3(10)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1191(100)</td>
<td>782(65.7)</td>
<td>267(22.4)</td>
<td>142(11.9)</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>High</td>
<td>61(5.2)</td>
<td>37(60.7)</td>
<td>14(23.0)</td>
<td>10(16.4)</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>901(76.3)</td>
<td>603(66.9)</td>
<td>196(21.8)</td>
<td>102(11.3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>219(18.6)</td>
<td>135(61.6)</td>
<td>55(25.6)</td>
<td>29(13.2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>1181(100)</td>
<td>775(65.6)</td>
<td>265(22.4)</td>
<td>141(11.9)</td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td>East</td>
<td>275(23.3)</td>
<td>173(62.2)</td>
<td>64(23.0)</td>
<td>41(14.7)</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>West</td>
<td>295(24.7)</td>
<td>201(68.1)</td>
<td>69(23.4)</td>
<td>25(8.5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>North</td>
<td>417(34.9)</td>
<td>279(66.9)</td>
<td>84(20.1)</td>
<td>54(12.9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>South</td>
<td>204(17.1)</td>
<td>132(64.7)</td>
<td>50(24.5)</td>
<td>22(10.8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>1194(100)</td>
<td>875(65.7)</td>
<td>267(22.4)</td>
<td>142(11.9)</td>
<td></td>
</tr>
<tr>
<td>Marital state</td>
<td>Married</td>
<td>24(2.0)</td>
<td>177(70.8)</td>
<td>5(20.8)</td>
<td>2(8.3)</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>1159(98.0)</td>
<td>760(65.6)</td>
<td>260(22.4)</td>
<td>139(12.0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>1183(100)</td>
<td>777(67)</td>
<td>265(22.4)</td>
<td>141(11.9)</td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>Landlord</td>
<td>515(43.5)</td>
<td>335(66.9)</td>
<td>112(21.7)</td>
<td>48(9.3)</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>tenanted</td>
<td>668(56.5)</td>
<td>419(62.7)</td>
<td>155(23.2)</td>
<td>94(14.1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>1183(100)</td>
<td>774(65.4)</td>
<td>267(22.4)</td>
<td>142(12)</td>
<td></td>
</tr>
</tbody>
</table>
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 fitness 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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