



Lifestyle and eating- related behaviors of overweight/ obese women compared with normal weight group

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Abstract: The prevalence of overweight and obesity is associated with numerous chronic diseases and it has particularly been increased in women. This study aimed to investigate the lifestyle and weight-related behaviors in obese women compared with normal people. A cross-sectional study conducted between 225 women aged 20 to 60, who referred to health centers of Bandar Abbas city. They were randomly selected, semi-quantitative food frequency questionnaire was used, and their weight, height, waist and hip circumference were recorded. Subjects were compared in two groups of obese and normal based on body mass index. Abdominal obesity was prevalent in studied subjects even with normal BMI, 51% had abdominal obesity and 44% of women were overweight/ obese based on BMI. The frequency of obesity in the higher education level was lower than low/ illiterate group and the frequency of abdominal obesity in women whose husbands were less educated was higher ($p < 0.05$ for both). The frequency of fried food consumption for women used to watch TV ≥ 3 hours/day and those who watched TV less than an hour were significantly different; 3.0 ± 0.7 vs. 2.3 ± 0.9 times/week ($p < 0.05$). Conversely, the frequency of fruit consumption per week was lower in first group 8.9 ± 2.1 and 10.9 ± 1.4 times/week, respectively but was not significantly different. There were a relationship between education level of studied subjects and their spouses with weight status. Hours of watching TV was associated with an unhealthy dietary pattern.

Keyword: weight-Related Behaviors, Women, Obesity, Eating Habits

INTRODUCTION

Obesity is a public health problem in developed and developing countries associated with chronic diseases' risk factors, and it can directly and indirectly imposes high costs to the health systems. Worldwide, the proportion of adults with BMI of 25 kg/m^2 or greater increased between 1980 and 2013 from 28.8% to 36.9% in men, and from 29.8% to 38.0% in women.¹ According to previous studies, the prevalence of overweight is higher in female groups than male counterparts. Overall, 18.5 percent of adults are obese in Iran.² In different areas of Iran, the reported prevalence of women's overweight and obesity is higher than men and has an increasing trend.

It has been reported in Hamedan 33.7% and 15.8%, Khorram Abad 36.8% and 14.9% and Shiraz 42.7% and 21.9% for overweight and obesity, respectively.³⁻⁵

In the TLGS study of Tehran from 1999 to 2002, the prevalence of obesity has significantly increased from 32.7 to 40.3 in women and 16.5 to 20.8 in men.⁶

Lifestyle and eating- related behaviors of overweight/ obese ...

Factors such as education level, marital status, lifestyle including nutrition and physical activities may play role in weight status.^{7,8} The strategies for weight loss programs are mainly based on lifestyle modification which are investigated in several studies by using restricted-calories diets or increase the intensity and duration of physical activity.⁹ Bearing in mind that following any useful weight management strategies need motivation and different factors can affect the attitude of people about weight, diet or exercise. A considerable number of overweight and obese people do not follow any plan for weight control or they fail in the weight loss programs. There is paucity in studies about the demographic factors which can affect weight and are potential factors to inhibit or pursue overweight and obese person to follow any weight loss program. This study aimed to compare the demographic characteristic, weight related behaviors and dietary habits of overweight/ obese women with normal weight counterparts.

MATERIAL AND METHODS

This study is a cross-sectional study among 225 women aged 20 to 60 who were referred to health centers of Bandar Abbas city. They were selected by a simple random method and inclusion criteria were age 20-60 years old without any history of metabolic, endocrine, heart and kidney diseases which can affect their weight. A signed consent was obtained for each participant. Two questionnaires of demographic data, daily physical activity and semi-quantitative food frequency questionnaire were completed for them and anthropometric measurements including weight, height, waist (WC) and hip circumference (HP) were recorded.

Waist-to-hip circumference ratio (WHR) and body mass index (BMI) were calculated. BMI was based on the formula of weight (kg) divided by height (m^2). The studied subjects were divided to two groups; normal as their BMI was 18.5-24.9 kg/m^2 , and overweight/obese when its value was 25 kg/m^2 or higher. Abdominal obesity was based on WC (waist circumference values more than 88 cm) and cut off point for WHR was more than 0.8.¹⁰ The data of food intakes were categorized into five main food groups by a nutritionist. The food groups were bread and grains, fruit, vegetable, meat and substitutes, and dairies. Duration of watching TV as a daily or weekly time, physical activity, daily sleep hours, methods of dealing with excess weight and control it in the first questionnaire were investigated by multiple choice and Likert (strongly agree to strongly disagree) questions. Values were reported as percentage of frequency and mean \pm standard deviation. Symmetry of variables was analyzed based on Kalmogorov– Smirnov Test. T-test, ANOVA analysis of variance and chi-square were used to compare groups. Mann-Whitney test was used for asymmetric variables, and logistic regression was used to investigate the impact of demographic variables on obesity. Values of $p < 0.05$ was considered as significant.

RESULTS

The average age of studied group was 31.5 ± 10.2 years. Thirteen percent of subjects were single, 80% of them were married, and 7% of them were widowed or divorced. In addition, 23.8 of them were illiterate or semi-literate and 32.4% of them had high school diploma or higher. In the married group, 12.4% of husbands were illiterate and 19% of them had high school diploma or higher education level.

Mean and standard deviation of anthropometric measurements were shown in Table 1. Based on BMI, 56% of women were in the normal range and 44% of them were overweight and obese. By using WC index, 49% of studied subjects had waist circumference lower than 88 cm, and 51% had abdominal obesity. Additionally, 23% of women with normal BMI had abdominal obesity.

Table 1. Mean± standard deviation of the anthropometric and demographic characteristics

	Normal BMI	Overweight /obese	P value
Age (year)	29.9±9.0	34.5±10.9	0.01
Weight (kg)	53.8±6.9	74.6±10.4	0.001
WC (cm)	79.1±8.9	96.9±9.3	0.001
HC (cm)	94.2±5.4	105.8±6.0	0.001
WHR	0.84±0.07	0.92±0.07	0.001
Education level (%)			0.08
Lower than diploma	64.4	71.7	
Diploma and higher	35.6	28.3	
Marital status (%)			0.11
married	81.4	78.3	
single	18.6	21.7	
Employment status (%)			0.25
employed	32.8	19.5	
unemployed	67.2	80.5	

WC: Waist circumference, HC: Hip circumference, WHR: waist to hip ratio. Chi-square and t-test were used

There were a relation between abdominal obesity and job, life satisfaction. Respondents to these questions of life and job satisfaction as unsatisfied had higher frequency of abdominal obesity than the group with higher levels of satisfaction in life and job; 88.9% vs. 48.4%, respectively.

The group that considered fitness important had less frequency of abdominal obesity than the group that responded negatively (53.3% vs. 81.3%). The difference was not significant in BMI.

In response to the question that whether your partner encourage you to weight gain, 13% of obese women responded positively in comparison to 41% of women in normal group ($p<0.01$). There was a correlation between weight and education level; the prevalence of obesity in women with higher education was significantly less than semi-literate and illiterate group and abdominal obesity was less frequent in women whose husbands were educated than those women whose husbands were less educated ($p<0.05$ for both). There was not any relationship between used contraceptives and obesity indexes. In the married group, there was a positive correlation between abdominal obesity and the number of parities ($r=0.47$, $p<0.01$). There were not any significant differences between two groups in routine habits like sleeping immediately after meals or hours of daily sleeping and the hours of watching TV. Those who watched television for more than three hours per day, consumed fried food more frequently than those who watched TV less than an hour/day; 3.0 ± 0.7 vs. 2.3 ± 0.9 times/week ($p<0.05$). Conversely, the frequency of fruit consumption per week was lower (8.9 ± 2.1 and 10.9 ± 1.4 times/ week, respectively) which was not significant.

The frequency of five food group consumption is shown in table 2. The pattern of bread and cereals, meat, fruit and dairy products consumption had not any significant difference between two groups based on BMI, while vegetable consumption of normal group was higher, but it was not significant (Table 2).

Lifestyle and eating- related behaviors of overweight/ obese ...

Table 2 .Frequency of five food group's consumption (Median and interquartile range) for women with normal BMI and overweight /obese group

	Normal BMI Median(Q3-Q1)	Overweight/obese Median(Q3-Q1)	P value
Bread and grains	14.3(10.9-24.1)	16.2(12.2-25.2)	0.33
Meat and substitutes	8(5.5-10)	7.1(5.2-10)	0.74
Vegetables	7(3-7)	3(1-7)	0.07
Fruits	7(4-14)	7(4-14)	0.54
Dairy products	9.5(6.5-14)	10(6-15.4)	0.74

Mann-Whitney test was used to compare two groups.

By considering waist circumference, in normal WC group, vegetable consumption was significantly higher than other group ($p < 0.01$), but after adjusting BMI there was not any significant difference (fig.1). In comparison of dietary habits of women with abdominal obesity versus normal waist circumference, The frequency of pasta, cream and high fat yogurt consumption was higher in the group with abdominal obesity than normal WC group ($p < 0.05$).

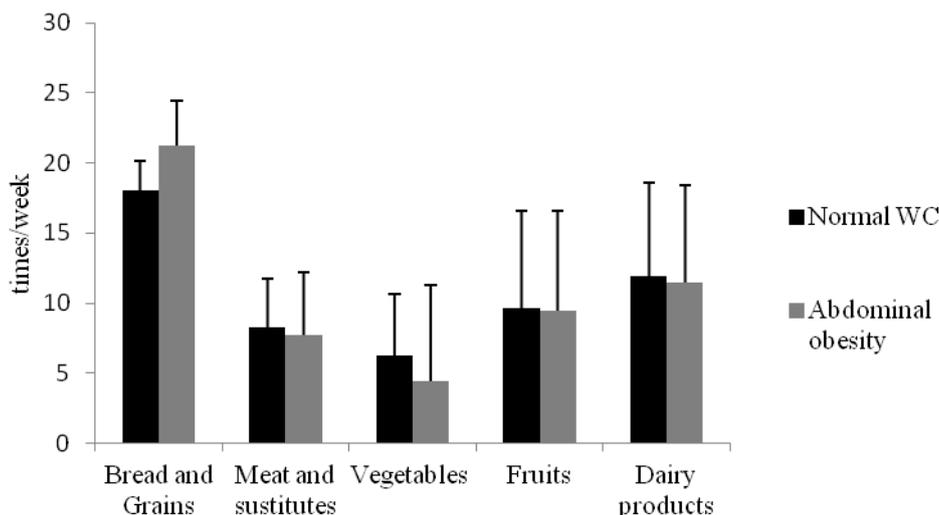


Figure1. Comparison of the consumption frequency for five groups of food in women with and without abdominal obesity based on waist circumference (WC).

In the regression model for abdominal obesity and overweight with five food groups (grain, fruit, dairy, meat and vegetable) only the frequency of vegetable consumption was significantly associated with abdominal obesity (Exp B = 1.09, 95% CI = 1.00-1.21 , $P < 0.05$). the odds ratio of being obese in married women based on their spouses' attitude toward weight status, there was a significant relation with adjusting age and the number of parities (Exp B= 4.72, 95% CI = 1.5-15.1, $P < 0.01$). The duration of sleep, physical activity, education level of studied subjects, and literacy of the spouses were not related.

DISSCUSSION

In this study, there were a positive relation between BMI and the number of parities, waist circumference and education level of the studied subjects and also their husbands'. Duration of

TV watching per day had a correlation with inappropriate dietary habits like higher frequency in consumption of fried food. Abdominal obesity was associated with lower consumption of vegetables.

Most studies have indicated weight gain after pregnancy which can be induced by an improper diet during postpartum period, lack of physical activity and exercise and using high fat containing food or large amounts of carbohydrates.^{11,12} Appropriate nutritional education and an emphasis on healthy diet of postpartum period, adopting individualized dietary plans and encourage of mothers to do physical activity may reduce the prevalence of obesity in mothers. The result of this study was in accordance to Mohammadi et al. in Hamadan, Iran.³

Overall, women can choose a healthier pattern in comparison to men. In a study carried out in Minnesota, it was revealed that married women had healthier eating habits such as eating breakfast than men, and also the odd ratio for obesity was higher in married men than women.¹³ Variables like age, dietary habits and the number of parities can make such a difference in results. The attitude of men toward weight status of their spouses is an issue that can be related to local culture. In a study conducted in Nigeria, it was found that overweight and obesity is a sign of richness and welfare.¹⁴ A study conducted by Klos et al., revealed that married women, compared with single or widowed subjects, mostly think that they are obese and they showed much interest in weight reduction.¹⁵

In this study the husbands of 41% of normal group encouraged them to gain weight. The impact of husbands' attitude toward weight gain of their spouses has less been studied and it needs further investigation. The regression model of current study indicates the importance of this point of view on women's obesity.

Numerous studies investigated the impact of watching television on weight and eating habits of children and adolescents. It is suggested that advertisements may convey messages for unhealthy food or snacks and would have a long term effect. It seems that television and weight have two-way interaction.¹⁶ In this study there was a relation between unhealthy eating habits and television watching; women consumed more fried food but less fruit in accordance to their TV watching time.

Television can play an important role in gaining excess weight by encouraging unhealthy habits and reducing the physical activity level. Howe et al., suggested that dietary patterns might be associated with abdominal obesity indices, after adjusting BMI.¹⁷ Reduced time for watching television and increased physical activity would improve lifestyle to control the weight.

The studies outcomes for relation between sleeping and weight are inconsistent. Parvaneh et al., suggested a relationship between sleep deprivation and weight in employed people (both genders).¹⁸ On the other hand, Tom et al., found there was no correlation between weight, sleeping and perceived stress in women of low socio-economic status.¹⁹ Differences in the results can be justified by physical activity level, age, metabolic status, smoking and nature of job.

The cross-sectional design of this study and the significant difference in the mean of age for two groups are some limitations. Weight related factors should be investigated in a long term study and matching the age in groups can be a solution for the confounding factor. But these findings can be used as a baseline for a cohort study about demographic factors besides nutrition and physical activity level which affect weight. Matching variables such as age, education level, job is recommended for further studies.

Conclusion

Women who were overweight and had abdominal obesity consumed vegetables less frequently than the other group, and the group who watched television ≥ 3 hours/ day had unhealthy eating habits in comparison to the women who watched TV less than 1 hours per day. Number of parities and the attitude of spouse toward weight status showed a significant relationship with obesity in studied subjects.

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