

Full length research paper

Frequency of overweight & obesity and associated risk factors in Hamadan City, Iran

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The prevalence over weight and obesity increase in the world especially in developing countries. The purpose of study was to prevalence of overweight & obesity and risk factors of women in Hamadan city, Iran. In a descriptive-cross sectional study a number of 400 women referred to health clinics selected based on cluster random multistage sampling. Data was gathered thorough questionnaire. Data processing and statistical analysis were performed using SPSS / 16. The results showed that individual's characteristic, the majority of samples(34.3%) were 26-30 years old. 51.7% of women had under diploma education and house wife (85.5%). The majority of husband's educations were under diploma and their job is free business according to BMI 33.7% of the subjects had over weight and 15.8% obesity. The risk factors were non physical activity, watching TV, eating fast food, respectively. The finding of this research show that there were statistical difference between overweight & obesity with kind of nutrition and methods of cooking and number of pregnancy (P<0.05). Also affective variables of overweight & obesity were computer work (CI; 8.881) and using fast food (CI; 3.824) based of Regression model. Conclusion: 33.7% of the subjects had over weight and 15.8% obesity. According to Regression model risk factors of overweight & obesity were computer work and using fast food. Therefore educational planning to promote level of behaviors healthy and lifestyle is recommended.

Keywords: Obesity; Overweight; Women; Iran

Introduction

Overweight and obesity are the most important public health problems in the world. Changing in the life style and nutritional habits specially eating high fat reserve food and low physical activities, causes the increase in the obesity and overweight prevalence in both developing and developed countries. Obesity is the one of the very important nutritional disorders in the developed countries (Groves, 2006; Popkin, 2004) . Overweight and obese are labels for weight ranges. According to the Centers for Disease Control and Prevention, weights in these ranges are higher than what is generally considered healthy for a

given height. BMI = 25.0-29.9 kg/m² as overweight, BMI =30.0 kg/m² and above as obese, BMI = 30.0- 34.9 kg/m² as obesity class 1, BMI=35.0- 39.9 kg/m² as obesity class 2 and BMI = 40 kg/m² and above as obesity class 3(WHO, 2008).

In the past two decades obesity has a higher prevalence and also can be seen in any age, race, and socioeconomic groups. Iran, like other developing countries experiencing the obesity and its complications. The recent studies shows that prevalence of obesity and overweight is similar to that in Europe and Us. Study that conducted in 28 provinces of Iran in 2005 witch studied prevalence of obesity in people over 15 years old showed that 28.6% of women were overweight and also 0.8% was obese (Nagaf, 2007). Determination of obesity and gaining weight are the 2 important aspects of medicine and public health. Obesity is the limitation for physical,

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mental, and public health (Kelsey *et al.*, 2011). The increase in the general or local body fat reserve causes the obesity (Guyton, 2006). Fat can be accumulating in whole body, but in men it mostly concentrates in abdomen and in women it disseminates peripherally around hip. Probably this fat reserve in women supports them during pregnancy and lactation (Mahan *et al.*, 2004; Levy & Stanton 2006). 31% of Americans in range of 20 to 74 years old are obese which is more common among American women (Kathleen & Karuse, 2008). Most of the obesity's complications such as diabetes, insulin resistance, hypertension, hyper lipidemia and hyper androgenism are associated to the intra-abdominal and upper parts fat tissue (Kathleen & Karuse, 2008; Harrison, 2001). The risk of gestational diabetes and hypertension initiates during pregnancy and also need to caesarean in obese women are higher. The fetuses of these women are at risk of intrauterine death. Newborns with heart disorders, neural tube defect and macrosomia are more common among obese mothers (Shade & Kholdy, 2005). Mental illnesses, cultural and social factors such as economic status, education, life style and its associations as machinery life, exhaustion of 2 shift works, having sedentary life and desiring fast food are the basis of incidence of acquired obesity (Grossniklaus *et al.*, 2012; Mortazavi & Shaharaki pour, 2002). Study on obesity in women because of its importance and an irreparable complication it causes is necessary. So, this study is performed to determine the prevalence of obesity and overweight and their risk factors in women who admitted to the health center clinics of Hamadan city.

Methods

This descriptive cross sectional study performed on women admitted to health center clinics of Hamadan city. The study population was women in range of 15 to 49 years old. The number of 400 women at the reproductive age had been chosen by random sampling method using

these statistical formula: $N = \frac{z^2 p(1-p)}{d^2}$, ($p=0.4$,

$d=0.05$, $z=1.96$) (Abdollahi *et al.*, 2010). Randomly we had chosen 5 health centers out of 30 centers, from north, south, west and eastern of Hamadan city, Iran. For gathering data, we used questionnaires that were prepared by researchers. First section of questionnaires was about personal information (as: age, education, occupation, marital status, number of pregnancies and etc.). For calculation of body mass index (BMI) and waist hip ratio (WHR) and measured the height, weight, waist-line, hip circumference and etc. The second part including the questions about the facts that relates to obesity. We used the scientific references (Block's standard questionnaire or fast screener) for preparing the questionnaires (Elisabet Wirfält *et al.*, 1998). To proving

its validity we used content validity. We used comments of 15 faculty members of nursing and midwifery school for correction. For evaluation of the validity and reliability of questions a pilot study was done on 10 people 2 times with ten days off. By using the Pearson correlation test the validity of questions have been evaluated. The validity of questions in all steps was 95%. The conditions in which people could involve in study were; not to being pregnant and having no metabolic disorders. In this study the participants convinced to stand steadily without shoes in a way that heel, hip, shoulders and head were in contact with wall. We used meter for measuring height and waist of participants. For measuring the weight we used digital balance made by Germany (sensitivity: 0.1 Kg). The participant who we want to measure her weight asked for wearing thin clothing and took her shoes off. Waist measured in lower part of last rib and hip circumference measured in wide diameter part that located between the waist and thigh. All this measurements performed on the very thin clothing. All tools that used tested for their sensitivity and validity. Data was analyzed by Spss v.16 software. Statistical analysis such as; analysis of variation and regression analysis performed.

Results

The majority of participants (54.8%) were in age range of 26 to 30 years old, 51.5% had the under diploma education and 85.5% were house wife. 48% of research units had 1 experience of pregnancy (table 1). The contraceptive methods of study units are available in table 2. As the table shows the 44.4% used condom and contraceptive pills and 9.3% used the surgical methods. Body Mass Index (BMI) of study units shows that the 46% of women had the normal weight, 33.75% had overweight and 15.75% were obese (table 3). 20% of women had the waist measurement higher than normal and were obese (table 4). 20% of women had physical activity and 38% had no physical activity. Walking was the 50% of women's activity and only 7.5% exercise and just 2.7% had gym exercises. Most of them were watching TV for 90-120 minutes daily. The majority of participants had low tendency to eat fast food and less than 84% used to eat fast food less than 1 time a week. 69.3% of research units used to have dairy 3 times weekly and also 2.7% used to have no dairy. 40.25 of women used to have cake, ice cream and cookies less than 1 time a week. Most of women had at least 2 or 3 times consumption of white and red meat weekly (63.6%, 59% respectively). The majority of participants (82.7%) used to have at least 2 times of vegetables weekly and 50% been using at least 2 times of fruits daily. Most of them used to consume cereal 2 times weekly (78.3%) also their everyday bread was without bran (46%). 65.2

Table 1: Baseline characteristics of study subjects

Characteristics	Number (%)	Total (%)
Age (years):	115(28.8)	
15-25	219(54.8)	400(100)
26-35	66(16.4)	
36-49		
Education:		
School education	222(55.5)	
Diploma and higher	117(29.3)	400(100)
BA and higher	61(15.2)	
Occupation:		
Housewife	342(85.5)	400(100)
Working	58(14.5)	
Number of pregnancies		
0	30(7.5)	
1	192(48.0)	400(100)
2	111(27.7)	
≥3	67(16.8)	

Table 2: Frequency of contraceptive methods in study subjects

Contraceptive method	Frequency (%)
Condom	93(24.3)
Natural birth control	116(27.2)
Contraceptive pills	84(21.0))
DMPA	28(7.0)
Tubectomy	35(8.8)
Vasectomy	2(0.5)
Intra uterine devices	42(10.5)
total	400(100.0)

Table 3: Frequency of body mass index (BMI) in study subjects

BMI (kg/m ²)	Frequency (%)
<18.5	18(4.5)
18.5-24.9	184(46)
25-29.9	135(33.75)
30-34.9	53(13.25)
35-39.5	9(2.25)
≥40	1(0.25)
total	400(100.0)

Table 4: Frequency of WHR in study subjects

WHR	Frequency (%)
< 0.85	320(80)
≥ 0.85	80(20)
Total	400(100.0)

Table 5: Risk rate of obesity and overweight (odds ratio resulted from logistic regression) in study subjects

Variables(V)	Regression coefficient (RC)	Standard error (SE)	Possibility (P)	Odds ratio (OR)	Confidence interval (CI) %95	
					Upper limit	Lower limit
Physical activity	0.384	0.289	0.185	0.681	0.386	1.201
Watching TV	0.365	0.404	0.337	1.428	0.647	3.149
Working with computer	1.268	0.467	0.007	3.554	1.423	8.881
Fast food	0.274	0.299	0.358	1.31	0.423	8.881
Consumption of milk	-0.352	0.385	0.360	0.703	0.331	1.495
Cookies and sweets	0.294	0.397	0.459	1.45	0.342	1.623
Bread without bran	0.323	0.294	0.272	1.381	0.776	2.457
Refreshments	0.738	0.308	0.017	2.091	1.144	3.824
Cooking method	0.223	0.389	0.566	1.250	0.583	2.680
Woman's job	-0.625	0.530	0.238	0.535	0.189	1.512
Birth control method	0.176	0.81	0.029	1.192	1.018	1.396
Husband's education	0.139	0.164	0.398	1.149	0.833	1.584
WHR	1.095	0.308	0	2.988	1.635	5.460
Age	0.953	0.230	0	2.594	1.635	4.073
Income	0.364	0.185	0.049	1.439	1.001	0.070
Contraceptive pill	-0.419	0.336	0.211	0.657	0.341	1.269

of research units have used the combination of several cooking methods such as boiled, steamed, fried and barbecuing method. The majority of studied women had the blood pressure in the normal range (94.7%). The chi square test showed significant relationship between BMI and age, number of pregnancies, number of family members, cooking method, using fruits and vegetables, contraceptive method, using bread with bran and their husband's job ($p < 0.05$). Based on logistic regression model, working with computer (3.5 times), and consumption of refreshments (2.1 times), contraceptive method, age, income, and the ratio of waist to hip (WHR) are the risk factors for obesity (Table 5).

Discussion

The results showed that there is significant relationship between BMI and number of pregnancies, family members, contraceptive method, method of cooking food, consumption of fruits and vegetables, consume bread with bran, and husband's job. The result of another study matches our result that showed there was significant relationship between obesity and the age, sex, contraceptive method and also the income (Mazloom Zadeh, 2006). The study showed that the higher prevalence of obesity is more common in women with higher income (Nagaf, 2007; Ortiz-Moncada, 2010). A study showed that 29.7% of women were overweight and 13.9% were obese. Also the prevalence of obesity was similar in women who were living in rural area and those

who were living urban area (Nagaf, 2007). A study conducted in Shiraz city the prevalence of obesity was 22.4% and the prevalence of overweight was 41.2% (Ghoraishi Zahdeh, 2005). Also in the study that conducted in 28 provinces of Iran showed that the prevalence of obesity and overweight in population over 15 years old were 28.6% and 10.8%, respectively (Nassiri & Salar Kia, 2007). A study on American women showed about 30% of American women in late 3rd decades of their life is overweight. The prevalence of overweight among these women around 39 years old was about 48% and women around 49 years old were 60% (Fraser *et al.*, 2013). In this study the risk factors of obesity were; to having not enough physical activities, watching TV for 90-120 minutes daily, using fast food, using full fat milk, not to have bran in everyday bread, using fruits and vegetable in low quantities, using red meat, cooking mostly on frying method and using the solid oil. Based on logistic regression method, working with computer 3.5 times raises the risk of obesity and eating refreshments 2.1 times raises the risk of obesity. These results align the results of other researches (Abdollahi *et al.*, 2010). A study showed that there are relationship between obesity and watching TV, smoking, gender, education and occupation. Evaluation revealed that the intake of fat and sweets in Tehran (district-13) is higher than the food pyramid (Kaluski *et al.*, 2007; Mirmiran *et al.*, 2010). Technological advancements and machinery life causes reducing of physical activities in the society while 70% of diseases caused by lack of physical activity. Regular exercise is one of the

predominant ways to being healthy. Physical activity keeps the desirable weight and also it lowers the risk of diseases especially cardiovascular diseases. Studies show women who exercise 30 minutes daily the risk of developing such diseases is 50% lower. Based on WHO estimation, lack of physical activity causes the 1.9 million deaths in 2002 (WHO, 2008; Madimenos *et al.*, 2011). The finding of this research show that there was no significant difference between overweight & obesity and physical activity. It is probably caused by other factors. Results revealed that there is significant statistical relationship between obesity and kind of food they eat and the number of pregnancies (Fraser *et al.*, 2013). Results of other researches show the correlation of BMI and the number of pregnancies. According to this study increasing of women about the preparing safe food and cooking them in a healthy way, suitable life style (having regular exercises, reducing the duration of watching TV, using fruits and vegetables more frequently, limiting the fast foods and caring about BMI) is suggested.

Conclusion

Because of the rise in prevalence of obesity and overweight and also the problems they cause, the improvement of nutritional habits and physical activities are necessary. Educational programs as a basic role in improvement of healthy habits and life style are necessary to be performed.

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