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ORIGINAL ARTICLE

Obesity Prevalence and its Nutritional Related Lifestyle Pattern in Jundi-Shapour University Female Staff, Ahvaz, Iran

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Iranians have recently showed a rapid nutritional transition toward a more sedentary lifestyle and unhealthy dietary practices, these changes being more obvious in younger adults. Limited information however exists on different sub-classes. The main objective of this study was to evaluate the obesity prevalence and its lifestyle related behaviors in all female personnel working in administrative positions at Ahvaz Jundi-Shahpour University, Iran.

Materials and Methods: In this cross-sectional study, all 101 female staff of the university, aged 20-45y, were interviewed and data on their food frequency, physical activity, drug and medical histories, was documented and anthropometric questionnaires were also completed and scored. Data collection was carried out during spring 2005. Percent of body fat was measured using the bioelectrical impedance analysis (BIA) method.

Results: Based on the BIA method, overweight and obesity rates were determined in 34.6 and 40.6 percent of women, respectively, and central obesity was prevalent in 27% of them. Women with bachelor degrees had less body fat percentage and body mass index (BMI) than those with lower degrees (31.8±5.6 vs 35.5±5.8 percent; p<0.002 and 25.5±3.9 vs 28.5±4.5 kg/m^2; p<0.003). About 30% of the subjects ate biscuits and dates during working hours as snacks. Moreover, except for breads, the score of consuming other food groups based on food guide pyramid was low. The higher vegetable oil intake, the higher the body fat percentage (p<0.05). There were no relationships between consumption of other food groups with anthropometric and clinical parameters. However, 83% of individuals did not engage in either daily of weekly physical activity programs. Repeated weight loss programs were associated with increase in body fat percentage (p<0.05).

Conclusion: Obesity and overweight rates are highly prevalent in female university staff, and the higher educational levels are associated with less body fat percentage. High-calorie snacks and sedentary lifestyle seem to be the main reasons of gaining weight in women working in administrative jobs; they need to control their snacks and to include more physical activity programs in their daily schedules.

Key Words: Obesity, Lifestyle, Ahvaz University, Female staff

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Introduction

According to WHO, the global prevalence of overweight and obesity has reached epidemic proportions. Recent data from WHO covering 84 countries around the world in 1999-2000, showed that the global prevalence of obesity (BMI>30 kg/m^2) was 8.7%, which translates to more than 300 million, with the developing countries contributing a big 39% share because of their large populations.[1]

Epidemiologic data show a close association between overweight and obesity and an

elevated risk for coronary heart disease.[2-3] The prevalence of type 2 diabetes in obese adults is 3-7 times that in normal- weight adults, and those with a BMI>35 are 20 times more likely to develop diabetes than those with a BMI between 18.5 and 24.9.[4,5] It has been emphasized that women's lifestyles play key role in this association.[6,7] Obesity is also an independent risk factor for dyslipidemia, hypertension, and cardiovascular disease.[8-11]

On the other hand, many countries in the Asian region, as well as Iran, have witnessed sustained economic growth, increasing high-energy foods availability, and changing patterns and composition of diets. Moreover, there are increasing trends toward changes in dietary behaviors, such as eating out, consumption of fried foods and additional snacking. Overeating is a concern among some people, especially women[12,13] and it has been indicated that women respond to risk factors differently than do men.[14] In Iran, there has been an increasing trend in prevalence of obesity and a nutritional transition to a more sedentary lifestyle pattern;[15,16] an updated database for health promotion strategies hence need to be established. At present, data regarding current lifestyle patterns and obesity prevalence in various social groups subgroups and positions are limited. This research was undertaken to determine obesity prevalence and related nutritional lifestyles in women working at administrative levels in Ahvaz University.

Materialsand Methods

This cross-sectional study included 101 healthy women, aged 20-45 years, working in administrative and educational positions at Jundi-shapour University of Medical Sciences, Ahvaz, south-west of Iran, located by the Persian gulf. The total number of female personnel was 105, of which 4 were excluded because of their illnesses. Data collection was carried out between March and June, 2005. Their anthropometric indices including body mass index (BMI), waist and hip circumferences (WC, HC), percent of body fat, physical activity pattern, semi-quantitative food frequency questionnaires, drug and medical histories were collected by trained senior students during interviews. Waist circumference was obtained by measuring the distance around the smallest area below the rib cage and above the umbilicus with the use of a nonstrechable tape measure.[17] Educational levels were categorized into four levels: high-school diploma, two years (technician), bachelor's (four years), and master's (six years) degrees.

Questionnaires were then scored using the Food Guide Pyramid. Percentage of the individual's body fat and blood pressure were measured using bioelectrical impedance analysis (BIA) method by Omron BF-302, Japan and Omron digital set, Japan, after 5 minutes resting, respectively. Subjects' physical activity levels were documented both on a habitual daily and/or weekly basis. Weights and heights were measured using Seca platform scale, Germany, and a non-stretchable wall meter, respectively. Data were analyzed by ANOVA and Tukey's post-hoc tests using SPSS soft ware, version # 11.5. Interpretation of BMI and body fat percentage values was done based on WHO guidelines[18] and a modified Gallagher et al. method,[19] respectively.

Results

Mean age for women was 33.5±7.3 y (range 20-45y) and 62% of them were married. Table 1 shows the basic criteria of the subjects. Table 2 represents the thin, normal, overweight and obese subjects based on both BMI and BIA methods. Both methods indicated that more than 60% of the women were overweight or obese 27% had WC above 88 cm and 5% were diagnosed as hypertensive. Table 3 compares the various criteria of individuals based on their educational levels.

Women with high school diploma had the highest amounts of ody weight (p=0.01), WC (p=0.001), BMI (p=0.003), and body fat percentage (p=0.002) compared with those with higher education. Food frequency data showed that except for breads and starchy foods, daily consumption of all main food groups was low in the majority of women. On the other hand, about 30% of women habitually ate biscuits and dates as daily snacks (Table 4). However, there was no significant association between women's anthropometric indices and their snacking pattern. Fish was consumed, 1-3 servings, by 23% of the subjects on a monthly basis. Increased daily vegetable oil intake was associated with higher percentage of body fat ($p< 0.05$).

Table 1. Basic characteristics of Ahvaz University women (n=101)

Criteria	Mean±SD
Age (years)	33.5 ± 7.3
Weight (kg)	66.8 ± 11
Height (cm)	157.9 ± 5.5
SBP (mmHg)	121.2 ± 13.5
DBP (mmHg)	81.3 ± 9.8
BMI (kg/m²)	26.8 ± 4.4
WC (cm)	81.5 ± 10.9
HC (cm)	102.5 ± 8.9
Body fat (%)	33.4 ± 6

SBP: Systolic blood pressure; DBP: Diastolic blood pressure; WC: Waist circumference; HC: Hip circumference; BF%: Percent body fat

Table 2. Anthropometric categorization - based on BMI and body fat percentage

BMI (kg/m^2)		Body fat (%)	
Thin (<18.5)	2	Thin (<20)	2
Normal (18.5-24.9)	32.7	Normal (20-29.9)	21.8
Overweight (25-29.9)	45.5	Overfat (30-34.9)	34.6
Obese (>30)	16.8	Obese (>35)	40.6

BMI and BIA Classifications are according to WHO (1998) and Gallagher et.al (2000), respectively.
Figures denote percent of subjects in each category.

Table 3. Comparison of anthropometric criteria and blood pressure of women based on their educational levels

Criteria	Educational levels 1				
	High school diploma	Technician	BSc/BA	MSc/MA	P value*
Weight (kg)	70.5 ± 11	60.8 ± 12	64 ± 9.7	63.6 ± 9.3	0.01
Height (cm)	157.5 ± 5.5	157.8 ±5.5	158.7 ± 5	155.8 ± 8.6	0.621
WC (cm)	86.2 ± 10.6	75.8 ± 7.2	77.1 ± 10	80.3 ± 9	0.001
BMI (kg/m²)	28.5 ± 4.5	24.3 ± 4	25.5 ± 3.9	26 ± 1.7	0.003
BF (%)	35.5 ± 5.8	28.7 ± 6.2	31.8 ± 5.6	33.8 ± 4	0.002
SBP (mmHg)	124 ± 16.8	120.5 ± 11	118 ± 7.6	119.2 ± 14	0.215
DBP (mmHg)	82.3 ± 12.3	82.5 ± 6.7	79.8 ± 6.4	79.6 ± 8.7	0.635

Values are Mean ± SD.; WC: Waist Circumference; BF (%) : Percent body fat; 1- Four educational levels are described in the text; * One-way ANOVA test was performed; Significant differences between diploma with technician and BSc. levels.

Table 4. Daily and weekly consumption of food groups of the female university staff based on semi-quantitative food frequency questionnaires

Food groups	Servings	Daily or weekly intake (%)*
Milk and dairy	1-2 cups	31
Fresh fruits	200-400g	60
Breads/Starches	> 4 pcs	72
Vegetables	100-300g	42
Red meats	30-45g	8
Chicken	60-90g	70
Sweets	20-40g	21
Oils	10-25g	53
Hydrogenated fats	10-25g	28
Biscuits	2-4 pcs	29
Dates	4-10 pcs	28
Salad dressings	1-3 tsp	47
Nuts	100-200 g	25
Potato Chips	30-65g	18
Sausages	30-90g	32
Butter	1-3 tsp	25
Carbonated drinks	2-5 cup	31

* Percent of persons who eat daily or weekly; tsp: tea spoon; pcs : pieces ; (Daily servings are based on the Food Guide Pyramid)

Women who went on frequent weight loss diets had higher percentages of body fat in comparison with those who did not (36.5±6 vs 32.7±5.9; $p<0.04$)

There were no significant differences between consumption of food groups and different educational and employment subclasses. Furthermore, no statistically significant association was seen between ingestion of oral contraceptive pills and women's nutritional / dietary status.

Eighty-three percent of the subjects did not have any regular daily or weekly physical activity programs.

Discussion

The dramatic changes in lifestyles of Asian communities, as well as Iran, and the food and nutrition issues faced by these countries, have been documented by some investigators.[12,15,16] Overeating and choosing high calorie foods, decreased physical activity and sedentary lifestyles are an increasing concern.[12] Hence, there is an urgent need to identify the subgroups that are more susceptible to obesity, to address the main causes, and to find the best solutions.

In the present study, there was a high prevalence of overweight and obesity in women who were working in administrative sections of the university, abdominal obesity being a major concern in 27%. Central obesity is an important indicator of having higher risk for metabolic syndrome in later life.[20] Moreover, it was observed that women with high school diploma have the highest amounts of body weight, waist circumference, body mass index, and percent body fat compared with the women holding higher educational levels. The inverse relationship between women's educational degree and obesity has been also indicated by others.[21]

Data obtained from semi-quantitative food frequency questionnaires revealed that except for bread, which is the main staple food in

Iranian dietary patterns, the other main food groups are inadequately consumed in daily meals. Red meat is consumed only in 8% of subjects on a daily basis; on the other hand, daily intake of hydrogenated fats, biscuits, and dates were reported by almost 30% of women; the two latter ones were consumed habitually as snacks during work hours. Furthermore, weekly intakes of carbonated drinks and sausages were observed in about one third of individuals; all of these dietary practices seem to be relevant to high energy intake during daily activities. Increased daily vegetable oil intake was seen associated with higher percentage of body fat ($p<0.05$). This trend is also indicated by other authors in similar communities.[12] It seems vital to make women aware that foods and their weight may be more important than their knowledge in altering food related health behavior.[22] Hence, by motivating women and changing their beliefs regarding good nutritional practices, using the appropriate nutrition education on calorie contents of foods consumed and healthy nutritional lifestyles, they can be made to control their energy intake and choose better snacks from among more nutrient dense options.

Another point that needs to be mentioned here, is that cut - ff points usually used for interpretation of anthropometric data are subject to change according to the population under study. It has been shown that classifications for both BMI and body fat percentage need to be modified for Asians[23] and Iranians,[24] making it worthwhile to conduct studies to define suitable criteria for determining the obesity prevalence.

Finally, another important finding of this study was the unwillingness of 83% of women to engage in regular physical activity programs, a relevant factor of obesity increase in sedentary subjects. However, this study did not investigate the main reasons for lack of regular physical activity programs, an issue that needs to be studied in the future.

In conclusion, a high prevalence of obesity and low levels of physical activity were documented in the administrative female personnel of Ahvaz Jundi-Shapour University; it is recommended that by correcting current dietary practices, and engaging in exercise programs, these women can have healthier lifestyles and better working performances.

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