

PREVALENCE OF OBESITY AND DIETARY PRACTICES IN JONDI-SHAPOUR UNIVERSITY FEMALE PERSONNEL, AHVAZ, IRAN

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ABSTRACT

Objective: To evaluate the obesity prevalence and dietary practices in all female personnel working in administrative positions at Ahvaz Jondi-Shapour University, Iran.

Methodology: In this cross-sectional study, all 101 University female staff working in administrative and executive posts in the range of 20-45y were interviewed and semi-quantitative food frequency questionnaires, some features of lifestyle patterns and anthropometric indices were evaluated.

Results: Overweight and obesity were detected in 34.6 and 40.6 percent of women, respectively, and central obesity was prevalent in 27% of them. Women with bachelor degree had less percent body fat (%BF) and body mass index (BMI) than those with lower educational degrees (31.8±5.6 vs. 35.5±5.8 percent; $p<0.002$ and 25.5±3.9 vs. 28.5±4.5kg/m²; $p<0.003$). About 30% of the subjects used to eat biscuits and dates as snacks at the working time. Moreover, except breads, the score of consuming other food groups based on food guide pyramid was low. The higher vegetable oil was associated with the more %BF ($p<0.05$). On the other hand, 83% of individuals had engaged in nor daily neither weekly habitual physical activity programs. Repeated weight loss programs were reported with more %BF gain ($p<0.05$).

Conclusions: Obesity and overweight rates are highly prevalent in University female staff and the higher educational level is associated with less percent body fat (%BF). High-calorie snacks and sedentary lifestyle are among the main reasons of getting more fats in women working in administrative jobs and they need to control their snacks and to include more physical activity programs in their daily lifestyle 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. The recent data from WHO covering 84 countries around the world in 1999-2000, showed that the global prevalence of obesity (BMI>30kg/m²) was 8.7%. The global prevalence translates to more than 300 millions, with the developing countries contributing a big 39% share because of their large population size.¹

Present findings show a close association of overweight and obesity with an elevated risk for coronary heart disease.^{2,3} The prevalence of type 2 diabetes in obese adults is 3-7 times than in normal-weight adults, and those with a BMI >35 are 20 times as likely to develop diabetes as are those with a BMI between 18.5 and 24.9.^{4,5} It has been emphasized that women's lifestyle has a 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 the pattern and composition of diets. Moreover, there are increasing trends toward changes in dietary behavior, such as eating out, consumption of fried foods and additional use of snacks. Over-eating is a concern among some people, especially women^{12,13} and it has been indicated that women respond to risk factors in a different way than men.¹⁴ In Iran, there has been an increasing trend in prevalence of obesity and a nutritional transition to a more sedentary new lifestyle pattern.^{15,16} There is a need to have an updated database for health promotion strategies. On the other hand, there are little findings regarding current lifestyle patterns and obesity prevalence in various social groups and positions, so, this research was carried out to illustrate the obesity prevalence and some nutritional related lifestyles in women working in administrative posts at Ahwaz University.

METHODOLOGY

This cross-sectional study was performed on all one hundred one healthy women of 20-45 years who were working in administrative and managerial positions at Jondi-shapour University of Medical Sciences Central Building, Ahvaz, southwest of Iran located by the Persian Gulf. (Total number of female personnel was 105, but 4 women were excluded because of their illness). 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 body fat (%BF), exercise pattern, semi-quantitative food frequency questionnaires (FFQ), drug and medical histories were collected by the trained senior students via interview. 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 nonstretchable tape measure.¹⁷ Educational levels were categorized into four levels: high-school diploma, two years higher education (technician), bachelor (four years), and master (six years) University degrees.

FFQs consisted of 27 food items mainly consumed based on daily or weekly patterns. Food items consumed on monthly basis or on occasion were regarded as seldom. These questionnaires were then interpreted using Food Guide Pyramid. Individual's %BF and blood pressure were measured using bioelectrical impedance analysis (BIA) method by Omron BF-302, Japan and Omron digital set, Japan, after five minutes resting, respectively. Subjects' habitual physical activity levels were asked on both 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 software, version # 11.5. Interpretation of BMI and %BF values was done based on WHO¹⁸ and modified Gallagher et al. method,¹⁹ respectively.

RESULTS

Women's mean age was 33.5 ± 7.3 years (in the range of 20-45 years) and 62% of them were married. Table-I shows the basic criteria of the subjects. Table-II 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 and 27% had WC above 88 cm and 5% had hypertension. Table-III compares the various individual's anthropometric criteria and blood pressure levels based on their

Table-I: Basic characteristics of Ahwaz University female staff

Criteria	Mean ± SD
Age (y)	33.5 ± 7.3
Weight (kg)	66.8 ± 11
Height (Cm)	157.9 ± 5.5
SBP (mm)	121.2 ± 13.5
DBP (mm)	81.3 ± 9.8
BMI (kg/m ²)	26.8 ± 4.4
WC (cm)	81.5 ± 10.9
HC (cm)	102.5 ± 8.9
%BF	33.4 ± 6

SBP : Systolic blood pressure
DBP : Diastolic blood pressure
WC : Waist circumference;
HC : Hip circumference;
%BF: Percent body fat n = 101

educational levels. Women with high school diploma had the highest amounts of body weight (P= 0.01), WC (p=0.001), BMI (p=0.003) and %BF (p=0.002) compared with those of higher educational levels. FFQs showed that except breads and starchy foods, daily consumption of all main food groups was low in majority of women.

On the other hand, about 30% of women used to eat biscuits and dates as habitual daily snacks (Table-IV). However, there was no significant association between women’s anthropometric indices and their snack taking pattern. Twenty three percent of the subjects

Table-II: Anthropometric classification- based on BMI and body fat percent methods 1, 2

BMI		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

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

ate fish just on monthly basis. More daily vegetable oil intake was associated with higher %BF (P< 0.05). Women who used to take frequent weight loss diets had higher %BF in comparison with whom did not take any regimen (36.5 ± 6 vs 32.7 ± 5.9; p<0.04)

There were no significant differences between consumption of food groups and different educational subclasses. Furthermore, no statistically significant association was seen between ingestion of oral contraceptive pills and subject’s anthropometric indices. Eighty three percent of the subjects were not undertaking daily or weekly physical activity on regular basis.

DISCUSSION

The dramatic changes in the lifestyle of Asian communities, as well as Iran, and the resultant changes in the food and nutrition issues

Table-III: Comparison of anthropometric criteria and blood pressure of the women based on their educational levels

Criteria	Educational levels ¹				
	Diploma	Technician	BSc.	MSc.	P Value*
Weight (kg)	70.5 ± 11	60.8 ± 12	64 ± 9.7	63.9 ± 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) ²	86.2 ± 10.6	75.8 ± 7.2	77.1 ± 10	80.3 ± 9	0.001
BMI (kg/m ²) ³	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 (mm)	124 ± 16.8	120.5 ± 11	118 ± 7.6	119.2 ± 14	0.0215
DBP (mm)	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 SBP: Systolic blood pressure; DBP: Diastolic blood pressure

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-IV: Daily and weekly consumption of food groups based on semi-quantitative food frequency questionnaires of the University women staff. *

Food groups	Servings	Daily intake (%)	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	100-200g		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)

facing these countries, have been documented by some investigators.^{12,15,16} Overeating and choosing high calorie foods, decreased physical activity and new sedentary lifestyle 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 reasons, and to find the best solutions.

In present study, there was a high prevalence of overweight and obesity in women who used to work in administrative sections of the University based on two different methods and abdominal obesity was a considerable concern in 27% of them. Central obesity is an important indicator of having higher risk for chronic diseases known as metabolic syndrome in the later life.²⁰ Moreover, it was observed that women with high school diploma have the highest amounts of body weight, waist circum-

ference, body mass index and percent body fat compared with those holding higher educational levels (Table-III). 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 bread, which is the main staple food in Iranian dietary pattern) the main food groups were inadequately consumed in daily meals. Daily consumption of the red meat was only seen in 8% of subjects. On the other hand, daily intake of hydrogenated fats, biscuits, and dates were reported by almost 30% of the women, two latter foods were being consumed as habitual snacks during work times. Furthermore, habitual intake of all types carbonated drinks and fatty sausages was observed in about one third of individuals (Table-IV). All of these dietary practices seem to be relevant to high energy intake among these staff. However, women reported with more daily vegetable oils intake had higher %BF ($P < 0.05$). This trend is also indicated by other authors in similar communities.¹² This may arise in part, because of great emphasis on benefits of vegetable oils intake highlighted in mass media during recent years. It must be mentioned that women's beliefs about foods and their weight may be more important than their knowledge in altering food related health behavior.²² Hence, by motivating women and correcting their beliefs about good nutritional practices via continuing proper nutrition education on calorie contents of foods consumed and healthy nutritional lifestyle patterns they can control their energy intake and choose healthy low calorie snacks.

Another point which should be mentioned here is that the cut-off points usually used for interpretation of anthropometric data are subject to change according to the populations under study. It has been shown that both BMI and %BF classifications should be modified for Asians²³ and Iranians.²⁴ It is essential to conduct studies to define suitable criteria for determining the obesity prevalence in different subclasses.

Finally, another important finding of this study was the unwillingness of 83% of women to engage in regular physical activity programs which can be a relevant factor of getting more fats in such sedentary subjects. However, this study did not determine the main reasons of such abstaining and it deserves a separate work to find out the main reasons of the personnel's low physical activity levels.

In conclusion, it was shown that prevalence of obesity and low physical activity are considerably high in administrative female personnel in Ahwaz Jondi-Shapour University. It is suggested that by correcting current dietary practices concomitant with regular exercise programs women can have healthier lifestyle patterns for better working performance.

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REFERENCES

1. WHO. Nutrition Data Banks. Global Data Base on Obesity and Body Mass index (BMI) in Adults. (Accessed at http://www.who.int/nut/db_bmi.htm); August 30, 2002.
2. Aronne L. Treating obesity: A new target for prevention of coronary heart disease. *Progr Cardiovasc Nurs* 2001;16:98-106.
3. Ades PA, Savage PD, Toth MJ, Schneider DJ, Audelin MC, Bunn JY, et al. The influence of obesity and consequent insulin resistance on coronary risk factors in medically treated patients with coronary disease. *Int J Obes (Lond)*. 2008;[Epub ahead of print].
4. Mokdad AH, Ford ES, Bowman BA, Dietz WH, Vinicor F, Bales VS, et al. Prevalence of obesity, diabetes, and obesity – related health risk factors, 2001. *JAMA* 2003;289:76-9.
5. Field AE, Coakley EH, Must A, Spadano JL, Laird N, Dietz WH, et al. Impact of overweight on the risk of developing common chronic diseases during a 10-year period. *Arch Intern Med* 2001;161:1581-6.
6. Hu FB, Manson JE, Stampfer MJ. Diet, lifestyle, and the risk of type 2 diabetes mellitus in women. *N Engl J Med* 2001;345:790-7.
7. Carey VJ, Walters DD, Colditz GA, Solomon CG, Willett WC, Rosner BA, et al. Body fat distribution and risk of non- insulin- dependent diabetes mellitus in women. The Nurses, Health Study. *Am J Epidemiol* 1997;145: 614-9.
8. Pi- Sunyer FX. Comorbidities of overweight and obesity: current evidence and research issues. *Med Sci Sports Exerc* 1999;31:S602-8.
9. Pi – Sunyer FX. Medical hazards of obesity. *Ann Intern Med* 1993;119:655-60.
10. Wilson PW, D'Agostino RB, Sullivan L, Parise H, Kannel WB. Overweight and obesity as determinants of cardiovascular risk: the Framingham experience. *Arch Intern Med* 2002;162:1867-72.
11. Krauss RM, Winston M, Flecher RN, Grundy SM. Obesity: Impact of cardiovascular disease. *Circulation* 1998;98:1472-6.
12. Tee Es. Obesity in Asia: Prevalence and issues in assessment methodologies. *Asia Pacific J Clin Nutr* 2002;11(3):S694-S701.
13. Florentino RF. The burden of obesity in Asia: Challenges in assessment. Prevention and management. *Asia Pacific J Clin Nutr* 2002;11(Suppl):S767-S680.
14. Kannel WB, Wilson PW. Risk factors that attenuate the female coronary artery advantage. *Arch Intern Med* 1995;155:375-82.
15. Azizi F, Azadbakht L, Mirmiran P. Trends in overweight, Obesity and Central Fat Accumulation among Tehranian Adults between 1998-1999 and 2001-2002: Tehran Lipid and Glucose Study. *Annals Nutr Metabol* 2005;49:3-8.
16. Mirmiran P, Mohammadi F, Allahverdi S, Azizi F. Estimation of energy requirements for adults. Tehran Glucose and Lipid Study. *Int J Vit Nutr Res* 2003; 73(3):193-200.
17. Hammond KA. Dietary and clinical assessment. In: Mahan LK, Esott- Stump S. editors. *Krause's Food, Nutrition and Diet Therapy*. Philadelphia; WB Saunders; 2004.
18. WHO. Obesity: Preventing and management the global epidemic. WHO, Geneva; 1998.
19. Gallagher D, Heymsfield SB, Heo M, Jebb SA, Murgatroyd PR, Sakamoto Y. Healthy percentage body fat ranges: An approach for developing guidelines based on body mass index. *Am J Clin Nutr* 2000;72:694-701.
20. National Institute of Health, National Heart, Lung and Blood Institute and North American Association for the study of obesity the practical guide. Identification, evaluation, and treatment of overweight and obesity in adults. Bethesda, MD, NIH; 2000.
21. US Department of Heath and Human Service. The Surgeon General's call to action to prevent and decrease overweight and obesity. Rockville, Md; 2001.
22. Nowak M, Buttner P. Relationship between adolescents' food related beliefs and food intake behaviors. *Nutr Res* 2003;23:45-55.
23. WHO Expert Consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *Lancet* 2004;363;157-63.
24. Amani R. Comparison between bioelectrical impedance analysis and body mass index methods in determination of obesity prevalence in Ahvazi women. *Eur J Clin Nutr* 2007;61(4):478-82.