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DIETARY, HEALTH AND SOCIAL FACTORS RELATED TO OBESITY IN TRIPOLI-LIBYA

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ÖZET

Tripoli, Libya'da Obezite Üzerine Diyet, Sağlık ve Sosyal Faktörlerin Etkisi

Bu araştırma Tripoli, Libya'da 2006 yazında yaşları 20-60 olan 600 kadın üzerinde gerçekleştirilmiştir. Araştırmaya alınan kadınlar Tripoli'nin Ghot-Alshal, Tajura ve Alhadba Alkadra denilen üç bölgesinden rasgele örneklemle seçilmişlerdir. Obezite üzerine diyet, sağlık ve sosyal faktörlerin etkisini araştırmak amacı ile yürütülen bu araştırmada kadınların boy ve ağırlık ölçümleri alınmış ve Beden Kütle İndekslerine (BKI) göre sınıflandırılmaları yapılmıştır. Kadınlara ilişkin bilgiler geliştirilen bir anket ile toplanmıştır. Araştırma sonuçları, araştırma bölgelerinden özellikle Alhadba-Alkadra da yüksek oranda şişmanlık (BKI 30-39.9 kg/m²) ve kilo fazlalığı (BKI 25-25.9 kg/m²) olan kadınlar olduğunu ve 30-39 yaş grubunda bu değerlerin sırasıyla %60 ve %57.9 olduğunu göstermektedir. Kadınların eğitim düzeyleri azaldıkça kilo fazlalığı ve şişmanlığı olanların oranı artmaktadır. Kadınların evlilik ve çalışma durumları ile yapılan değerlendirmelerde, işsiz olanlarda ve evli olanlarda bu oranların daha yüksek olduğu görülmüştür. BKI'sı 30-39.9 olan grupta diyabet, yüksek kan basıncı, kalp hastalığı, artirit ve sırt ağrısı daha yüksek bulunmuştur. Beslenme alışkanlıkları ve obezite prevalansı değerlendirme sonuçlarına göre obez kadınların normal ağırlıkta olanlara kıyasla daha çok kalori aldıkları, nişastalı besinleri, kırmızı eti, tam süt ve süt ürünlerini, tatlıları ve tatlı içecekleri daha sıklıkla tükettikleri buna karşın daha az sebze ve meyva tükettikleri bulunmuştur.

Anahtar Kelimeler: *Beden Kütle İndeksi, obezite.*

ABSTRACT

This study was carried out in Tripoli, Libya in the summer of 2006 on a sample of 600 women aged between 20-60 years. The subjects were randomly selected from three suburban districts of Tripoli: Ghot-Alshal, Tajura and Alhadba Alkadra. The aim of this study was to investigate the effect of social, health and dietary factors on the distribution of obesity, which was measured by using Body Mass Index (BMI). All subjects, were weighed and measured for height. Data was collected by using a prepared questionnaire for all subjects. The result of the study showed a higher rates of overweight and obesity (also expressed as first and 2nd degree obesity which was presented in (BMI) values as 25-29.9 kg/m² and 30-39.9 kg/m² respectively in the district of Alhadba- ALkadra. Distribution of subjects according to age groups and BMI values indicated that among age groups 30-39.9 years old, 57.9% were overweight and 60.0% were obese. As the educational level of the subjects decreased, prevalence of overweight and obesity increased. As for the occupational status, the unemployed subjects had a higher level for both overweight and obesity and so did the married subjects. High prevalence of chronic disease such as diabetes, high blood pressure, heart diseases arthritis and back pain was higher among obese subjects BMI 30-39.9 kg/m² The relationship between food habits and prevalence of obesity shows that obese subjects tend to consume high calorie foods such as starches, red meat, whole milk and milk products, sweets and soft drinks more frequently, they also consume less vegetables and fruits as compared to none obese subjects.

Key Words: *body mass index, obesity, first degree obesity and second degree obesity.*

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INTRODUCTION

Obesity is a public health problem worldwide with significant adverse health outcome; it is considered one of the primary risk factors related to a number of chronic diseases especially, diabetes mellitus, coronary heart diseases, hypertension and arthritis (1-4). Obesity has been proposed as the most frequent cause of preventable deaths after smoking (5). The prevalence of obesity has doubled over the last decades in several developing countries as well as in most western countries and USA (6). The increasing prevalence of obesity has compelled the WHO to include it on the list of the essential health problems in the world (4).

Economic development in Libya during the last 40 years has changed nutritional and lifestyle habits. Even though these changes have influenced the quality and the quantity of food intake and predisposed people to a sedentary life, studies of overweight and obesity in Libya are far from adequate. Studies of prevalence of overweight and obesity overtime are lacking (7).

In 1995, among women aged 25-65 years living in Tripoli, the mean body mass index (BMI) was 28.5 kg/m2 Najah, 1995. Two years later, in the same town, the mean BMI among women aged 30-65 years was 26.7 kg/m2 Al-Amary, 1998. In 1999, a large-scale study was carried out in six provinces. Overall, among women 15-50 years 15% had chronic energy deficiency (BMI<18.5 kg/m2). Prevalence reached 17% in the province of Brak. Overweight and obesity affected a large proportion of the women. More than one out of five women were overweight (BMI 25.0-29.9) and 7% were obese (BMI≥30.0). The prevalence of overweight was higher in the province of Zentan (26%) while obesity was most common in the province of Musrata (12%) (Swedan, 2000).

The objective of the study was to investigate the effect of social, health and dietary factors on the distribution of obesity.

MATERIAL AND METHODS

This study was carried out in Tripoli, Libya on a randomly selected 600 samples of women from three distracts of Tripoli (Ghot alshael (154), Tajura (224) and Alhadba Alkadra (222). Ages of subjects ranged between 20 -60 years. Weight was recorded by using regular scale to the nearest 500 gram with subject wearing light clothing. Height was measured without shoes to the nearest centimeter.

The Body Mass Index (BMI) was used to determine over weight and obesity for individual subjects. A value of BMI was obtained by dividing body weight in kilograms by height square in meter, by using the 1985 Garrow, Webster values.

Body Mass Index	Degree of Obesity
Less than 20	Under weight
20-24.9	Normal weight
25-29.9	Over weight (first-degree obesity)
30-39.9	Obesity (second degree)
More then 40	Third degree obesity

Data concerning health status was gathered from the questionnaire used which also provided social, educational and occupational status information. The questionnaire also included data on pattern of food consumption for commonly consumed foods and meals, by using the method of repeated food items intakes for one week.

RESULTS AND DISCUSSION

Table 1 shows the distribution of subjects according to their BMI and degree of obesity which indicated that 8.3% of women in the study were under weight their BMI was under 19.9 kg/m^2 Subjects with normal weight accounted for 26.67%. Prevalence of overweight (first degree obesity) and obesity (second degree obesity) was recorded among 31.6 and 33.3 percent of the women in the study respectively. These finding agrees with those of Sweden 2000, Al-Amary 1998, Najah 1996, and Hodge etal 1994.

Table 1: Distribution of subjects according to BMI (kg/m^2).

BMI (kg/m^2)	number	Percentage %
<20	50	8.4
20-24.9	160	26.6
25-29.9	190	31.6
30-39.9	200	33.4
TOTAL	**600**	**100.0**

Table 2: Distribution of subjects according to the study area and BMI.

BMI (kg/m^2)	GHOT AL-SAAL		TAJURA		ALHADBAIKADRA		TOTAL	
	number	%	number	%	number	%	number	%
< 20	20	13.0	10	4.5	20	10.3	50	8.3
20-24.9	50	32.5	80	35.7	30	15.5	160	26.6
25-29.9	40	26.0	50	22.3	100	51.5	190	31.6
30-39.9	44	28.6	84	37.5	72	39.5	200	33.5
TOTAL %	**154**	**25.7**	**224**	**37.3**	**222**	**37**	**600**	**100**

In comparing the prevalence of obesity between subjects from three districts of the study, (Table 2), the results showed that samples from Alhadba-Alkadra recorded the highest percentage of 51.5 and 39.5 percent for overweight and obesity respectively, which agrees with the finding of AL-amary 1998.

Table 3 showed the distribution of subjects according to age in which a low rate of overweight, 7.4 % and 3.0 % obesity was noticed among age groups of 20-29.9 years. While women between the ages of 30-39.9 years recorded the highest percentage of 57.9 overweight and 60.0 for obesity these rates did decrease as age increased. These results were similar with Najah's 1996. The age of 30-39.9 years is the period of childbirth and breast feeding results in the increase in weight and body fat during this maternal stage in the women's life. And of course with repeated child birth more body fat will be accumulated and body weight will increase especially with new aspects of infant feeding practice in Libya in which mothers use the mixed feeding (the breast and the bottle) which eventually leads to decreased duration of breast feeding. Table 4 shows the relationship between the educational statues level of the women in the study and their body mass index values which indicates that the lower the educational level of the subjects, the higher their BMI values. Especially for second degree obesity in which the percentages were 53.0, 32.0 and 15.5 % for educational levels of elementary, middle, high school and over respectively. This

Table 3: Distribution of subjects according to age and BMI.

BMI (kg/m^2)	AGE (Years)								TOTAL	
	20-29.9		30-39.9		40-49.9		50-59.5			
	number	%	number	%	number	%	number	%	number	%
<20	24	48	12	24	10	20	4	8	50	8.3
20-24.9	26	22.5	66	41.3	32	20	26	16.2	160	26.6
25-29.9	14	7.4	110	57.9	48	25.3	18	9.5	190	31.6
30-39.9	6	3.0	120	60.0	48	24	26	13	200	33.5
TOTAL%	**70**	**13.3**	**308**	**57.3**	**138**	**23**	**74**	**12**	**600**	**100**

BMI (kg/m^2)	Educational statues						TOTAL	
	elementary		middle		high school and over			
	number	%	number	%	number	%	number	%
< 20	14	28	10	24	24	48	50	8.3
20-24.9	62	38.8	38	23.8	62	37.5	160	26.6
25-29.9	74	39	60	31.6	56	29.5	190	31.6
30-39.9	106	53	64	32	30	15.5	200	33.5
TOTAL %	256	42.7	172	28.7	172	28.6	600	100

Table 5: The relationship between the social statues and BMI.

BMI (kg/m^2)	Social statues				Total	
	married		single			
	Number	%	Number	%	Number	%
< 20	30	60	20	40	50	8.3
20-24.9	110	68.7	50	31.3	160	26.6
25-29.9	154	81.1	36	18.9	190	31.6
30-39.9	172	86	28	14	200	33.5
TOTAL/PERCENT	466	77.7	134	22.3	600	100

Table 6: The relationship between the occupational statues and BMI.

BMI (kg/m^2)	Employment statues				TOTAL	
	Employed		Unemployed			
	Number	%	Number	%	Number	%
<20	16	32	34	68	50	8.3
20-24.9	58	36	102	63.8	160	26.6
25-29.9	50	26.3	140	73.7	190	31.6
30-39.9	24	12	176	88	200	33.5
TOTAL/PERCENT	148	24.7	452	22.3	600	100

finding agreed with the results of Al-Amary 1998, Tavani Negri 94, Pruitt Mack, 1994. But disagrees with Hodge etal 1994, who concluded that increased level of educational will increase the values of body mass index. The decrease of BMI in the more educated sample of women is an indication to the awareness of health risks related to obesity which in turn reflects their choice of food consumption. As for women at elementary level of education, they lack the knowledge of the health risks related to obesity for the importance of consuming a good daily balanced diet.

The relationship of social status to the distribution of obesity showed higher BMI values of 81.1% and 86.0% for married women for first and second degree obesity as compared to 18.9% and 14.0% for single women respectively. Data also revealed that married women made up to 60% of subjects with BMI values of <19.9 kg/m^2, and 68.7% had a BMI values of 20-24.9 kg/m^2, as compared to 40% and 31.3% which was recorded for single women respectively (Table 5). Similar finding were reported by Al-Amary 1998, Baecke etal 1983, while Sabal etal 1992 conformed no relationship between marital status and BMI.

In regard to the occupational status, it is indicated from the result of this study in Table(6), that unemployed women had a higher percenta-

Table 7: The relationship between health statues (chronic disease) and BMI and obesity.

Presence of diseases	None obese (BMI<19.9-24.9 kg/m²)				Obese (BMI<25-39.9 kg/m²)			
	Yes		No		Yes		No	
	Number	%	Number	%	Number	%	Number	%
Arthritis	28	13.3	182	86.7	100	25.6	290	74.4
Back pain	58	27.6	152	72.4	130	33.3	260	66.7
Diabetes	26	12.4	184	87.6	70	18.1	320	82
Hypertension	28	13.3	182	86.7	92	23.6	298	76.2
Heart disease	10	4.8	200	95.7	26	6.7	364	93.3

Table 8: The relationship between percentage of frequencies of consuming popular foods, drinks and obesity.

Type of food	Obesity	Every day	4 - 6 times weekly	1 -3 times weekly	Seldom or never
Bread	Obese	98.0	0.8	0.6	0.6
	Non obese	92.0	4.1	3.4	0.5
Macaroni	Obese	18.0	50.2	27.0	1.3
	Non obese	15.3	30.7	50.7	3.3
Rice	Obese	35.2	40.0	20.4	4.6
	Non obese	28.4	30.6	39.9	2.1
Couscous	Obese	10.3	20.5	60.5	8.7
	Non obese	6.1	18.7	70.3	4.9
Vegetables	Obese	69.2	13.8	15.9	1.1
	Non obese	89.9	7.1	2.1	0.9
Fruits	Obese	82.6	10.9	6.4	0.1
	Non obese	74.8	12.4	12.4	0.4
White-meat	Obese	30.3	30.2	20.4	19.1
	Non obese	39.2	14.8	40.3	5.7
Red-meat	Obese	15.0	18.1	64.9	6.0
	Non obese	3.8	4.8	89.2	3.2
Milk &it's products	Obese	45.1	30.9	14.6	9.4
	Non obese	30.4	20.6	33.3	15.7
Sweets	Obese	45.9	34.1	14.2	4.8
	Non obese	35.1	25.9	37.6	1.4
Soft drinks	Obese	40.9	30.1	23.4	5.6
	Non obese	25.2	15.8	48.1	10.9

ge of first degree obesity 73.7 percent, and also for the 2nd degree obesity which was 88.0%, as compared to the employed women values of 26.3 and 12.0% for the 1st and 2nd degree obesity respectively. This might explain that the working women are more concern with their appearance and physical fitness, as opposed to the nonworking women and their time input in food preparing.

The relation-ship between health status and BMI audobesity were shown in Table (7), which categorizes the subjects of the study to none obese (BMI<120-24.9 kg/m²) and obese (BMI 25-39.9 kg/m²) to determine the relationship of prevalence of some chronic disease to obesity. The result indicated that women categorized as obese had a higher percentage of chronic diseases such as; Arthritis, Back pain, Diabetes, Hypertension and Heart diseases as compared to none obese subjects of the study. These findings agree with the finding of Al-Amary 1994 as shown in Table (7)

In regard to the relation of BMI to food habits, referred to as the frequencies of consuming popular foods and drinks, by using the method of repeated consumption throughout a whole week. The study group was categorizing as obese and non obese, the results indicated an increase in the daily and repeated consumption of starchy foods For example, bread, rice, macaroni and couscous. In addition to that, consumption of sweets, soft drinks and with the decreased consumption of vegetables and white meats among women categorized as obese as compared to non obese subject of the study Table (8).

CONCLUSION

The result of this study indicates that BMI is affected by several factors, such as age, educational level, social and employment status, as well as factors related to the choice of food consumed and frequency of consumption. The study also indicates that obesity is related to the prevalence of chronic disease among the subjects of the study. The need of a public health intervention is crucial to prevent or reduce overweight and obesity among women. This intervention should be comprehensive, targeting women, men and children with special emphasis on the importance of diet and healthy lifestyle. Such programs should be evaluated to ensure their efficacy in reducing the prevalence of overweight and obesity in this population. Future surveys of overweight and obesity among women in Libya should allow testing for linear trends of the associated factors and prevalence of obesity.

KAYNAKLAR

1. Kuczmarski RJ et al. Increasing prevalence of overweight among US adults. 1994 Journal of the American Medical Association, 272:205- 11.
2. Blair SN et al. Body weight change, all-cause mortality and cause-specific mortality in multiple Risk Factors. 1993. Intervention Trial. Annals of Internal Medicine, 119:749-57.
3. Van Itallie TB. Health implications of overweight and obesity in the United States. 1985. Annals of Internal Medicine, 103:983-8.
4. Obesity; Preventing and managing the global epidemic. Report of a WHO consultation on obesity. Geneva, World Health Organization. 1997. (Technical Report Series WHO/NUT/NCD/98.1).
5. The American National Heart Lung and Blood Institute. The executive summary of the clinical guidelines on the identification, evaluation and treatment of overweight and obesity in adults. 1980. Review. Archives of internal medicine, 158:1844-67.
6. Heitman BL. Ten-year trends in overweight and obesity among Danish men and women aged 30-60 years 2000. International journal of obesity. 24:1347-52.
7. Nutrition Country Profile. Libyan Arab Jamahiriya. Food and agriculture organization of the United Nations - Food and Nutrition Division, FAO. 2005.
8. Garrows, J.S and Webster, Y. 1985. Quetelet index (w/h2) as a measure of fatness. Int.J. Obesity; 9:147-53. Swedan, A. 2000. Nutritional indices in some provinces in Libya. Master Degree. University of Al-Fateh faculty of Agriculture, Libya.
9. Al-Amary, A. 1998 lifestyle and obesity in Alhadba Alkhadra (Tripoli). Master Degree. University of Al-Fateh faculty of Agriculture, Libya.
10. Najah, A. 1995. Effect of nutritional and other factors on heart disease. Master Degree. University of Al-Fateh faculty of Agriculture, Libya.
11. Hodge, A.M; G.K, Dowse, P.J,Tolevpe, V.R,Collins; andP.Z. Zimmet, 1994. Dramatic Increase in the prevalence of obesity in Western Samoa over the 13 year period 1978-1991. Int. J. obese. Related. Metabolic Disorders; 18(6): 419. (Abstr.)
12. Tavani, A. and E, Negri, , 1994 Determinants of body mass index : a study from Northern Italy, Int, J, Relat. Metab. Disord. 18(7) 497-502 (Abstr.)
13. Pruitt, J.L and N, Mack, 1994. Patterns of sedentary Lifestyle in Missouri . Mo.Med. 91(11) 675-9.(Abstr.)
14. Baecke, J;A,J Burema, and J,E,Eritjers, 1983. Obesity in young Dutch adults; L, Socio-demographic variables and body mass index. Int. J. obes. 7(1)1-12.
15. Sobal,J.j .B.S,Rauschenbach, and E.A, Frongillo, 1992. Marital Status, Fatness and Obesity. Soc. Sci.Med. 35 (7) 915-923.(abstr.)