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Does employment status influence obesity prevalence among females? A comparative study from Ankara, Turkey

Aim: In this study, we aimed to compare the nutritional habits and obesity status of employed and not-employed (i.e. homemakers) women from an urban population in Ankara between April 2 and 17, 2007.

Materials and methods: Employed females (107) were amongst Keçiören (a district of Ankara) municipal employees, and homemakers were selected among the residents of the catchment area of a primary health care unit (PHCU) within the same district. The 2 groups (employed and homemakers) were high school and university graduates and were similar to each other in terms of education and age. The World Health Organization defines "overweight" as a BMI equal to or more than 25kg/m^2, and "obesity" as a BMI equal to or more than 30 kg/m^2.

Results: When backward logistic regression model was performed for some selected factors (age, marital status, fast food consumption, smoking status, employment status, and regular breakfast consumption) related to overweight and obesity, there was a positive relationship between age [(P = 0.002; OR(95%CI) 1.112 (1.039-1,190)] and employment status [(P = 0.037; OR(95%CI) 1.873 (1.039-3.379)].

Conclusion: Employment status and age were found to be risk factors for overweight and obesity. Healthy life skills programs are recommended to be promoted giving priority to the influencing factors, such as age and employment status in order to prevent overweight and obesity among women.

Key words: Obesity, female, occupational status, homemaker, urban

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Çalışma yaşamı kadınlar arasında şişmanlık sıklığını etkilemekte midir? Ankara'dan karşılaştırmalı bir çalışma

Amaç: Bu çalışmada 2-17 Nisan 2007 tarihinde Ankara'nın kent merkezinde yaşayan ve çalışan kadınlarla aynı bölgede yaşayan ve çalışmayan kadınların beslenme alışkanlıkları ve şişmanlık durumlarının karşılaştırılması amaçlanmıştır.

Yöntem ve gereçler: Araştırmaya katılan çalışan kadınlar Ankara Keçiören Belediyesinde çalışan 107 kadın; çalışmayan kadınlar ise aynı yerleşkede yer alan Sağlık Ocağı bölgesinden seçilen, çalışan kadınlara öğrenim durumu ve yaş açısından benzer 107 kadındır. Araştırmaya katılan bütün kadınlar lise ve yüksek okul mezunu olup tamamı 30-45 yaş grubu arasındadır. Dünya Sağlık Örgütü fazla kilolu olmayı Beden Kitle İndeksi (BKİ) değerini 25 kg/m^2'nin ve şişmanlığı da 30 kg/m^2'nin üzerindeki değer olarak tanımlamaktadır.

Bulgular: Fazla kilolu olma ve şişmanlık ile seçilmiş bazı değişkenler için (yaş, medeni durum, ayaküstü beslenme tüketim durumu, sigara içme durumu, çalışma durumu ve düzenli olarak kahvaltı yapma durumu) lojistik regresyon modeli uygulanmıştır. Yaş [(P = 0,002; OR(% 95 CI) 1,112 (1,039-1,190)] ve çalışma durumu [(P = 0,037; OR(% 95 CI) 1,873 (1,039-3,379)] etkileyen faktör olarak belirlenmiştir.

Sonuç: Çalışma durumu ve yaş fazla kilololuluk ve şişmanlık için risk faktörüdür. Bu nedenle yaş ve çalışma durumu gibi etkileyen faktörleri de önceleyerek sağlıklı yaşam davranışlarının özendirilmesi şişmanlık ve fazla kilolulukla mücadelede önerilmektedir.

Anahtar sözcükler: Şişmanlık, kadın, çalışma durumu, evkadını, kent

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Introduction

Obesity kills about 220,000 men and women a year in the United States of America and Canada alone, and about 320,000 men and women in 20 Western European countries (1). However, it does not relate simply to economic development; it appears compounded by other factors (2). Several reports have indicated that obesity and associated chronic diseases presented a huge increase in low-income women living in less developed countries (3). The existing evidence of the relationship between marital status, smoking, alcohol consumption, dietary habits, physical exercise, reproductive history, and body weight has been determined in previous studies (4).

In parallel with the global trend of obesity, several studies in Turkey have shown the importance of the problem in the community. In one of the studies conducted by Ersoy et al. in 2006, the obesity prevalence was found to be 29.9% among women and 12.9% among men (5). In another nationwide survey carried out in 2003, it was found that the obesity prevalence among 15-49 years of age married women was 33.5%, which was influenced by educational status (19.4% among illiterate females and 14.2% among high school and university graduate females) (6).

Occupational status is a major determinant for participation of females in work life. Employed women are expected to have a higher educational level and socio-economic status, which are known to affect their lifestyles and habits, as was the situation in our study population (5).

In this study we aimed to compare the nutritional habits and obesity status of employed and not-employed (homemakers) women from the urban population settled in a district of Ankara.

Materials and methods

Study population

This study was conducted in 2 female groups (employed females and homemakers). Employed females were selected from the Keçiören municipal employees. There were a total of 627 employees in the municipality and 125 out of the total were 30-45 years of age females. No sample selection was done for the municipality workers and 107 women (85.6%) participated in the study and all of them were included in the employed group.

The homemakers were selected among the residents of the catchment area of a Primary Health Care Unit (PHCU) localized in the neighborhood of Keçiören.

For the homemaker group, 107 females were selected by random sampling method among the 2650 female residents between the age of 30 and 45 residing in the catchment area of the PHCU. The registration list of the PHCU was used to create the homemaker study group who were minimum high school graduates.

The 2 groups (employed and homemakers) were similar to each other in terms of education and age.

Type of the study

This is a descriptive study with comparative characteristics.

Dependent variables of the study

Overweight and obesity status of the participants were dependent variables. Groups were similar in terms of age and educational status.

Anthropometric measurements and categorization of the independent variables

Body Mass Index (BMI) correlates with body fat and was calculated as weight in kilograms divided by the square of height in meters. BMI values between 18.5 and 24.9 (in kg/m^2) were recorded as normal. The World Health Organization defines "overweight" as a BMI equal to or more than $25kg/m^2$, and "obesity" as a BMI equal to or more than 30 kg/m^2 (7).

Data collection

The questionnaire was filled in by the participants between April 2 and 17, 2007. Questionnaire included socio-demographic characteristics, occupational details, general health status, nutritional characteristics, and BMI measurement details.

For calculating the BMI values, body weight and height were measured by one of the researchers in the research team. The measurement tool (bascule) was calibrated by the same researcher after measuring the body weight of every 10 women. Measurements of the employed females were completed in the municipality

building, and measurements of the homemakers were completed after administering the questionnaire in their home settings.

Data analysis

Statistical Package for Social Sciences (SPSS) program, version 11.0 was used for data entry and analysis. Analyses included frequency and percent distributions, means, standard deviations, medians, and percentiles. In group comparisons for categorical variables, chi square test was used; if required Fisher's exact test was performed ($P < 0.01$ was considered statistically significant). For consistency, Kappa test was used.

Backward logistic regression model was performed for some selected factors (age, marital status, fast food consumption, smoking status, employed status, and regular breakfast consumption) related to overweight and obesity (BMI ≥ 25.0 kg/m^2). Odds ratios (OR) and 95 percent confidence intervals (95%CI) were calculated in the logistic modeling.

Results

The 2 groups were significantly similar with each other in terms of age groups ($P = 0.18$) and education status (all of the employed participants and homemakers were minimum high school graduates). These 2 characteristics were prerequisites for participation in the study (Table 1).

Employed women and homemakers were asked about chronic disease and medicine history. Majority of the 2 groups did not report any chronic disease (65.4% employed; 66.4% homemakers) ($P = 0.13$). The 2 groups were also similar in terms of medicine

Table 1. Socio-demographic characteristics of the participants.

Characteristics	Employed		Homemakers		
	Number	%	Number	%	P
Age group					0.18
30-34	45	42.1	45	42.1	
35-39	33	30.8	33	30.8	
40-45	29	27.1	29	27.1	
Mean ± SD	36.1±4.6	36.8±4.5			
Social insurance					n/a
Retirement fund	107	100.0	47	43.9	
Social Insurance System	-	-	30	28.0	
Bağ-Kur*	-	-	23	21.5	
Green Card**	-	-	4	3.7	
Private	-	-	3	2.9	
Nuclear family					0.07
Yes	94	87.9	86	80.4	
No	13	12.1	21	19.6	
Marital status					<0.01
Single	34	31.8	2	1.8	
Married	64	59.8	99	92.5	
Widowed-	9	8.4	6	5.7	
Total	107	100.0	107	100.0	

*Social security system for tradesmen.
** State health insurance system for poor individuals.
n/a: could not be calculated

use (P = 0.18). Employed females had less sedentary time at home both during weekdays and weekends compared to the homemakers. Everyday consumption of the milk/milk products and carbohydrates were significantly higher among homemakers compared to the employed ones. Employed females skipped breakfast more frequently than homemakers (Table 2).

The prevalence of overweight was 27.1% (29 persons) and obesity was 6.6% (7 persons) among the employed women. The prevalence of overweight was 35.5% and obesity was 17.8% among homemakers. The difference between the 2 groups was statistically non-significant (P = 0.60). Measurement values of the employed women and homemakers were also statistically non-significant (Table 3).

When backward logistic regression model was performed for some selected factors (age, marital status, fast food consumption, smoking status, employment status, and regular breakfast consumption) in relation to overweight and obesity, there was a positive relationship between age [(P = 0.002; OR(95%CI) 1.112 (1.039-1.190)] and employment status [(P = 0.037; OR(95%CI) 1.873 (1.039-3.379)] (Table 4).

The consistency of self-reported and measured BMI values was also investigated. The consistency was 97% among the homemakers and it was 95% among the employed group (Table 5).

Table 2. Comparison of the participants according to selected characteristics.

Characteristics	Employed		Homemakers		P-value
	Number	%	Number	%	
Chronic disease					0.13
No	70	65.4	71	66.4	
Yes	37	34.6	36	33.6	
Take medicine					0.13
No	80	74.8	65	60.7	
Yes	27	25.2	42	39.3	
Sedentary time at home during weekdays (h)					0.01
1-2	62	57.1	25	23.4	
>2	45	42.9	82	76.6	
Mean ±sd	3.1±2.3	4.2±2.3			
Sedentary time at home during weekends (h)					0.02
1-4	73	67.6	58	54.2	
>4	34	32.4	49	45.8	
Mean ±sd	3.9±2.4	4.6±2.2			
Nutrient consumption (daily)**					
Milk and milk products	62	57.9	75	70.1	0.04
Meat and meat products	23	21.5	19	17.8	0.30
Fruit and vegetables	59	55.1	59	55.1	0.55
Carbohydrate based nutrients	58	54.2	87	81.3	<0.0001
Breakfast	78	72.9	99	92.7	<0.0001
Lunch	92	86.0	82	76.6	0.21
Dinner	97	90.7	103	95.6	0.38

*Three employed women did not respond.
** Percentage calculation was carried out over the number of the participants (107 persons) for each group.

Table 3. BMI values of the participants.

BMI (kg/m^2)	Employed		Homemakers		P-value
	Number	%	Number	%	
Reported					0.60
Underweight (<18.5)	4	3.7	2	1.8	
Normal (18.5-24.9)	67	62.6	48	44.9	
Overweight (25.0-29.9)	29	27.1	38	35.5	
Obese (1st grade) (30.0-34.9)	5	4.7	11	10.3	
Obese (2nd grade) ≥35	2	1.9	8	7.5	
Mean ± SD	23.9 ± 3.4		25.5 ± 4.2		
Measured					
Underweight (<18.5)	3	2.8	1	0.9	0.59
Normal (18.5-24.9)	65	60.7	49	45.8	
Overweight (25.0-29.9)	31	29.0	39	36.4	
Obese (1st grade) (30.0-34.9)	5	4.7	15	14.0	
Obese (2nd grade) ≥35	3	2.8	3	2.9	
Mean ± SD	24.1 ± 3.4		25.6 ± 4.1		
Total	107	100.0	107	100.0	

Table 4. Logistic regression model of the associations of possible selected risk factors with overweight and obesity (BMI ≥ 25.0).

Variable	P-value	Odds Ratio (95% CI)
Age	0.002	1.112 (1.039-1.190)
Marital status (married/non-married)	0.840	1.086 (0.488-2.410)
Fast food (frequent/not-frequent)	0.272	0.586 (0.224-1.530)
Smoking status (smoker/non-smoker)	0.052	0.552 (0.303-1.00)
Employement status (no/yes)	0.037	1.873 (1.039-3.379)
Breakfast (everyday) (no/yes)	0.90	1.736 (0.760-3.960)

Table 5. Consistency of the self-report and measured BMI values between the 2 groups.

								Measurement
Self report	Employed				Homemakers			
	Underweight (<18.5)	Normal (18.5-24.9)	Overweight-obese (≥25.0)	Total	Underweight (<18.5)	Normal (18.5-24.9)	Overweight-obese (≥25.0)	Total
Underweight (<18.5)	3	1	-	4	1	1	-	2
Normal (18.5-24.9)	-	59	3	62	-	42	1	43
Overweight-obese (≥25.0)	-	-	33	33	-	-	52	52
Total	3	60	36	99	1	43	53	97
Consistency (%)	95	97						
P				<0.01				<0.01

Discussion

Obesity has an upward trend both in high and low income countries (8). Dietary adjustments may not only influence individuals' present health, but may determine whether or not he/she will develop chronic diseases much later in life (9). Various studies highlighted the more frequent presence of obesity among females compared to males (10). More than one factor, such as eating habits, regular physical exercise, having a chronic disease, and genetic characteristics, plays crucial role in determining this difference (11). Further studies focusing on obesity problems of employed women might contribute to the solutions in this regard. In our study, 2 groups of women (employed women and homemakers) living in an urban setting were investigated. The prevalence of overweight was 27.1% (29 persons) and obesity was 6.6% (7 persons) among the employed women. The prevalence of overweight was 35.5% and obesity was 17.8% among the homemakers (Table 3). Both groups had lower obesity prevalence rates compared to the Turkish Demographic and Health Survey (33.5% obesity; 22.3% overweight). In the same study, as educational status increases, obesity prevalence decreases (6). As our study population consisted of minimum high school graduates, lower prevalence rate of obesity was an expected result.

In the logistic regression modeling, employment status and age were found to be risk factors (Table 4). Previous studies have shown no relationship between occupational status and obesity among women (5,12).

Employed females had less sedentary time at home both during the weekdays and weekends compared to the homemakers. Eating habits also differed among the two groups. Everyday consumption of the milk/milk products and carbohydrate nutrients were statistically significantly more frequent among homemakers compared to the employed ones. Employed females skipped breakfast more frequently than homemakers (Table 2).

The results of our study stressed the relation between occupational status and obesity (Table 4). Work life contributes to women's health status in a broad manner including social, economic, and cultural issues. We recommend further studies to investigate all these relations as the present study naturally did not examine all of them.

Our results indicated that self reported measurements of females living in an urban setting who are 30-45 years of age and with a minimum high school education could be used to measure BMI values (the consistency was 97% among the homemakers, and 95% among the employed ones) (Table 5). However, in a systematic review conducted by Gorber et al., self-reported measures were reported as a limiting factor in measuring BMI compared to collecting data based on height and weight measurements. This report showed a trend of under-reporting for weight and BMI and over-reporting for height, and the degree of the trend varied between genders. Besides, self-reports of unemployed, retired, or disabled women were more likely to be less than their actual BMIs compared to employed women (13,14). The unemployed and employed difference was not very distinct in our study. Although we have no comprehensive explanation for this result, the educational status and age might have contributed to the participants' truthful reports regarding their height and weight.

Our study involved only 214 participants, which is a significant limitation for examining many obesity risk factors in a logistic modeling. For example, recent studies showed a positive correlation between physical strenuousness of work and an upward trend in the BMI (15). We could only perform logistic modeling for a limited number of variables because of the fact that we had a small number of participants. Therefore, larger study populations have been suggested for further studies.

As we found high overweight and obesity prevalence rates, we recommend promoting active lifestyle behaviors for both employed and homemaker groups. Physical exercise practices as well as healthy eating programs are the 2 major key solutions to combat the obesity epidemic (16-18). At the end of the study, the researches prepared and handed out brochures to the study population regarding prevention strategies. We expect this effort to be helpful for the women in our study population in achieving a positive change in eating habits and other risky behaviors.

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