Effect of Emotional State on Nutrition Behavior in Working and Non-Working Women Living in Manavgat District

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Abstract

Background/Objectives: The aim of this study is to evaluate whether there is the relationship between these cases by comparing moods like depression, stress, anxiety, nutrition behaviors, food preferences and anthropometric measurements of working and non-working women living in Manavgat district.

Materials/Methods:

This study is a cross-sectional analytical study. G* Power 3.1.3 package program was used to determine the number of working and non-working women to participate in the study. The interviews were conducted with working and non-working women between 25-45 years of age living in Manavgat. The study was conducted with a total of 210 women, 105 working and 105 non-working. It was completed within 6 months after the approval of the Ethics Committee dated 31/03/2017 and numbered KA17 / 76 by Baskent University Clinical Research Ethics Committee. Demographic characteristics, anthropometric measurements, 24-hour retrospective food consumption records, depression, anxiety, stress levels (Depression-Anxiety-Stress Scale (DASÖ) and feeding behaviors (Revised Three Factor Eating Questionnaire (TFEQ-R18) were evaluated. Body weight (kg), height (cm), waist and hip circumference (cm) measurements of the subjects were taken by the researcher and waist / hip ratio, body mass index (BMI) (kg / m²) were calculated. In order to assess the nutritional status of the participants, the nutrient consumption recording form (ANNEX-4) was completed by using the food and food photo catalog by asking individuals the type and amount of all food and beverages they had consumed in the last 24 hours using the reminder method. SPSS 21 (Statistical Package for Social Sciences) program was used for statistical analysis. while evaluating the data obtained in the research, Qualitative variables were expressed as number (S) and percentage (%), and quantitative variables were expressed as mean, standard deviation (SD), lower and upper values. The suitability of the variables to normal distribution was examined using Kolmogorov-Smirnov / Shapiro-Wilk Tests.. Ear Spearman Correlation Test "was used to examine the statistical relationships between the variables that were not found to fit the normal distribution.

Results: The difference between stress, anxiety and cognitive restriction scores of working and non-working women was statistically significant (p <0.05). A statistically significant difference was found between BMI and uncontrolled eating and cognitive restriction scores in both working and non-working women. Uncontrolled eating, cognitive restriction and emotional eating were found to be correlated with energy, protein, carbohydrate and fat (p <0.05). It also differs in working and non-working women.

Conclusions: These findings showed that negative moods of working and non-working women have been found to have adverse effects on their nutrition behaviors.

Keywords: Dietary habits, eating behavior, feeding patterns, working women,

Introduction

There are basic responsibilities for women and men from past to recent. Particularly, in patriarchal societies, the men deal with out-of-home affairs. While men work to ensure the needs of the family, women have responsibilities in the home. Regardless of whether women are married or not, responsibilities such as household responsibilities, cleaning, care and ordering are expected from women (1). The reasons such as age, presence of young children, family income, education level and disability status are among the most important factors affecting the frequency of female labor force participation globally (2). However, the tasks undertaken by both women and men are changing rapidly due to events such as modernization and globalization. In traditional family order, only women are engaged in housework and looking after children. After women taking role of earning money, gender roles based on sharing displaced separated male-female roles (3).

In business life, women exposure many problems such as not paying the wages for their labor, being in low status, being exposed to various types of harassment and sex discrimination and these problems pave the way for the formation of many mental illnesses, especially depression (4). Women's failure to comply with the work they are doing, fear of not being able to accomplish the work, ordinary and monotonic works, customer demands and employer pressure, heavy responsibilities, environmental conditions and physical condition of the environment, lack of job safety are other important factors that increase work stress (5). In a study of depression and risk factors in Korean women, the data of the 5th Korea National Health and Nutrition Examination Survey (KNHANES-V) were used. In the study, it was reported that the prevalence of depression in working women was 15.5% and that the factors leading to depression were marital status, working conditions and stress (6). Non-working

women have a great deal of housework and childcare obligations (7). The disadvantages of financial constraints in low-income women cause stress. The low level of financial income is one of the most important stress factors especially in mothers who raise children alone. Richardson et al, reported that low-income women were more stressful in a study in which women examined stress and unhealthy eating behaviors (8).

Depression; loss of positive emotions (loss of interest and pleasure in ordinary things and experiences) is known as mental health problem characterized by low emotional state in emotional, cognitive and physical behaviors (9). According to epidemiological studies, the prevalence of lifetime depression is 12% for men and 20% for women (4). In a study conducted in London, the social fragility factors of depression in women were examined, having three or more children under the age of 14, not having reliable relations with others, and the absence of paid employment outside the home were significant risks (9). One of the important factors triggering the risk of depression in women is the motherhood, which is charged as a primary duty, and it is known that 8-11% of women during pregnancy and 6-13% of women after birth have major depression (4).

Mood disorders and nutrition are closely related to each other. While depressive problems affect food intake and appetite, consumed foods also affect these problems. The nutritional program should be prepared to be individual; nutritional problems and nutritional needs of individuals such as mood disorders, obesity, constipation should be determined carefully. The energy of the diet should provide the ideal weight of the individuals (10). The decrease in brain serotonin concentration is considered to play an important role in the onset and the course of stress and depression in increasing emotional sensitivity. For the synthesis of serotonin, there is a need for tryptophan, the essential amino acid that we take with the diet. The transition of tryptophan to the brain and the formation of serotonin

depend on the concentration of large neutral amino acids (LNAAs) in which it passes through the blood-brain barrier rather than the total plasma tryptophan concentration. In a double-blind study by Firk et al., a tryptophan-rich hydrolyzed protein was found to reduce cortisol response to acute stress and significantly increase positive mood (11). Antiinflammatory features of Omega-3 fatty acids, promoting synaptic plasticity, enhancing nerve transmission and maintaining membrane integrity and fluidity are associated with feature of antidepressant effects (12). There is strong evidence that vitamin and mineral deficiencies lead to the development of depressive and / or anxiogenic behaviors. Vitamins and minerals that play a role in the pathophysiology of mood disorders have important effects on neural system, serotonergic, noradrenergic, dopaminergic, glutamatergic and GABAergic systems involved in emotional processes (13).

Human psychology and emotions are in a multiple interaction with nutrition. Emotions affect not only the food, quantity and quality of the foods but also the next food choices (14). Emotional eating; instead of reacting to the physiological signs of hunger, it is defined as the eating behavior that is assumed to occur in response to certain emotions (15). It is thought that emotional eating behavior is a learned answer and it occurs in adolescence as regard to depressive feelings. Frequent repetition of this behavior results in weight gain and obesity (16). However, it is observed that individuals are eating less food or have no appetite in extremely stressful situations (14).

In the second half of the twentieth century, various theories were developed to explain the negative emotions and over-eating development, and psychosomatic and external theories were observed to be effective (14). Although the relationship between eating behavior and anxiety is not clearly explained in the psychosomatic theory introduced by Kaplan and Kaplan, it has been suggested that protein and carbohydrate intake may be effective on serotonin synthesis in the brain (17). In particular, obese individuals are unable to distinguish between physiological starvation and anxiety, and also they tend to eating to reduce emotional distress (14). The external theory suggests that individuals are being tempted to eat against stimuli such as the appearance, smell, and taste of food, regardless

of hunger and satiety (18). In stress, gastric contractions are reduced and eating behavior may decrease in normal weight individuals at such times but this case is not seen in obese individuals. As obese individuals are less able to understand the intrinsic physiological stimuli, they are affected by exogenous stimuli in starting and stopping meals (17). Uncontrolled eating is an over-eating condition generated in response to negative emotions and ego-threatening stimuli. According to the theory, ego-related situations become a threat to the selfness and individuals tend to eat to avoid these negative effects (14, 19). In cognitive restriction behavior, it has been observed that individuals almost always try to limit their food intake (17) and this situation is briefly defined as almost "chronic diet". According to this behavior, individuals count calories, plan food in advance, and deprive themselves of the food they see as "forbidden" or "bad". Although this situation is seen as an advantage at first glance, the ability to continuously control eating can result in negative consequences. It has been suggested that individuals who constantly limit themselves tend to overeating, especially under stress (20). In a study conducted by Cappelleri et al. (21) with obese and non-obese participants, it was found that cognitive restriction was decreased as the BMI increased in obese individuals, but cognitive restriction was increased in non-obese individuals as the BMI increased.

The aim of this study is to evaluate whether there is a relationship between nutritional behaviors and moods such as; depression, stress, anxiety of working and non-working women living in Manavgat district, by comparing their tendencies with food preferences and anthropometric measurements.

Methods

Participants and procedures

The study was carried out with 25-45 (included) working and non-working women living in Manavgat district. The data of the study which was conducted with "Ethics Committee Approval" dated 31/03/2017 and numbered KA17 / 76 by the Başkent University Clinical Research Ethics Committee was completed

within 6 months. Before starting the study, "Voluntary Consent Form" was read to each individual and it was carried out with a total of 210 women, 105 of whom were working and 105 were non-working, who accepted to participate in the study voluntarily. Women who were pregnant, lactating and menopausal, having hyperthyroidism, hypothyroidism, cancer and neurological disease and taking hormone therapy were excluded from the study. Individual face-to-face interviews were completed. Nutritional habits form, 24-hour Food Consumption Record Form, Depression-Anxiety-Stress- Scale (DASÖ) Form, Revised Three-Factor Eating Questionnaire (TFEQ-R18) Form were used. Interviews with individuals took at least 30 minutes.

A questionnaire was applied to determine the individual characteristics of women. The questionnaire form includes related to demographic characteristics (age, gender, educational status, etc.), disease status, drugs used, number of meals consumed and skipped meals, type of food and drinks consumed in the event of stress, eating speed, number of diet, physical activity, emotional state of women in home, the reasons for the negative emotions, the profession and working year of the working women, the reasons for working, the emotional state in the work environment, the relationship between the mood in the workplace and the nutrition behavior. Body weight (kg), height (cm), waist and hip circumference (cm) measurements of the participants were taken by the researcher and waist / hip ratio and body mass index (BMI) (kg / m^2) were calculated.

Food consumption record

In order to evaluate the nutritional status of the participants, the food consumption registration form was completed by using the food and food photo catalog (22) by asking the individuals the type and amount of all the foods and beverages they consumed in the last 24 hours by using the reminder method. The food consumption registration data obtained from the form was analyzed with "Computer Aided Nutrition Program, Nutrition Information System (BEB)" developed for Turkey. Individual's energy and nutrient intake was assessed according to "Turkey Specific Food and Nutrition Guide (TÜBER) " (23) offering by basing on age and gender.

Depression–Anxiety–Stress Scale (DASS)

Depression-Anxiety-Stress Scale was used to measure depression, anxiety and stress scores of the participants. The scale, which was developed by Lovibond at al. to assess anxiety, stress and depression levels, consists of 42 items, 14 of which were depression, 14 of which were anxiety, and 14 of those with stress. The response options have a 4-point Likert-type rating. The total score for each depression, anxiety and stress dimension ranged from 0 to 42 for the scale that was not inverse item, and the high score obtained indicates that the individual has the problem. The scale was translated to Turkish by Çetin and Akın (24) in 2006 and it has been reported to have a high level of validity and reliability.

Revised Three–Factor Eating Questionnaire (TFEQ-R18)

Various questionnaires are used to evaluate the psychological eating behaviors of individuals. One of them is the Revised Three-Factor Eating Questionnaire used in the research. The scale (25) was developed by Stunkard and Messick, revised by Karlsson and at all. It was adapted by Kıraç and at all to Turkey, the validity and reliability has been proven. The scale is composed of 18 items with a 3-factor scale showing uncontrolled eating, cognitive restriction, and emotional eating and have a 4-point Likert-type rating (1, definitely false; 2, mostly true; 3, mostly false; 4, definetely true) (26). There are 9 (1st, 4th, 5th, 7th, 8th, 9th, 13th, 14th, and 17th questions) items questioning the behavior of uncontrolled eating, 6 (2nd, 11th, 12th, 15th, 16th and 18th questions) items questioning cognitive restriction behaviours and 3 (3rd, 6th, and 10th questions) items questioning about emotional eating behaviors in the scale. In order to ensure the standardization of unequal question distribution, the scoring is based on the following studies: [(answer score - the possible minimum score) / x 100] (raw score varies between 0-100). The high cognitive restriction in individuals shows that emotional eating and uncontrolled eating behavior is so strong (25).

Statistical analyses

G * Power 3.1.3 package program was used to determine the number of working and non-working women. While evaluating the data obtained in the study, SPSS 21 (Statistical Package for Social Sciences) program was used for statistical analysis. In evaluating the data, qualitative variables are expressed as number (N) and percentage (%), and quantitative variables are expressed as mean, standard deviation (SS), upper and lower values. The appropriateness of the variables to normal distribution was examined by using "the Kolmogorov-Smirnov / Shapiro-Wilk" tests. In the comparison of the averages of the two groups, "t Test-Student t Test in Independent Groups" was used for the parameters that showed normal distribution and "Mann Whitney U Test" was used for the parameters that did not show normal distribution. The cross-table was used in the evaluation of categorical variables, and "the Exact Chi-Square (X^2) Test" was used when the number of samples was insufficient and the assumption could not be achieved. If the scale scores of the participants differ according to the 2 grouped demographic variables, "the Mann Whitney U Test and the t Test-Student t Test in Independent Groups" was used, and "Kruskal-Wallis Test and One-Way Anova Test" was used in case of differences according to the demographic variables with 3 or more groups. "Pearson Correlation Analysis" was used to examine the relationships between parameters that are compatible with normal distribution. "Spearman Kors rho Correlation Analysis" was used to examine the relationships between parameters that aren't compatible with normal distribution. The level of statistical significance was accepted as p <0.05.

Results

General characteristics of individuals

In total 210 women, 105 (50%) working and 105 (50%) non-working, were included in the study. While the difference between family income level distributions according to working condition of working women was found to be statistically significant ($\chi2=10.986$; p<0.05), it was not determinated that statistically significant difference was found between age, marital status, education level and number of children (p> 0.05) (Table 1)

Anthropometric measurements

The mean height of the working and non-working women was determined respectively as 1.65 ± 0.06 m and 1.64 ± 0.05 m, and the mean body weight was 67.68 ± 11.44 kg and 68.79 ± 11.7 kg, the mean waist circumference was 83.50 ± 13.66 cm and 84.51 ± 13.86 cm, and the mean hip circumference was 102.65 ±7.73 cm and 104.20 ± 7.64 cm. Body Mass Index (BMI) average was calculated as 25.13 ± 4.39 kg / m2 (16.90-39.00) for working women and 25.57 ± 4.05 kg / m2 (17.57-35.87) for non-working women. Waist / hip ratio average was determined as 0.81 ± 0.09 (0.62-1.03) for working women and 0.80 ± 0.08 (0.65-0.99) for non-working women. There was no statistically significant difference in anthropometric measurements between working and non-working women (p> 0.05) (Table 2).

Daily energy, macro and micro nutrient intake according to working condition

The mean value of daily energy intake was calculated as 2029.58 ± 545.03 kcal in working women and 2243.66 ± 440.16 kcal in non-working women. It was respectively determined that the mean daily protein intake was 78.74 ± 25.30 g and 85.56 ± 25.69 g, and the total fat intake was 83.29 ± 29.01 g and 88.33 ± 22.16 g, and carbohydrate intake was 234.72 ± 81.54 g and 269.46 ± 68.48 g. In terms of daily energy, protein, fat and carbohydrate intake, the difference between working and and non-working women was statistically significant, (p<0.05).

When the average vitamin intake of working women in the daily diet was calculated; it was found that vitamin A was 1501.58 ± 3193.39 μg, vitamin E was 16.29 ± 8.30 mg, vitamin K was 413.47 ± 269.57 μg, thiamine was 0.96 ± 0.34 mg, riboflavin was 1.53 ± 0.74 mg, niacin was 26.98 ± 10.98 mg, B_{12} vitamin

Table 1. Distribution of individuals according to demographic characteristics

Characteristics		Working Women (n=105)		Non-working Women (n=105)		
		N	%	N	%	p
Age (year)	30 aged and below	38	36.2	35	33.3	
	31-40 aged	46	43.8	46	43.8	0.851
	41 aged and above	21	20.0	24	22.9	
Age (year) X̄±SS		34.36±5.81		34.56±6.34		
Marital status	Married	68	64.8	65	61.9	
	Single	27	25.7	28	26.7	0.875
	Divorced	10	9.5	12	11.4	
Educational status	Illiterate	-	-	1	1.0	
	Literate	1	1.0	-	-	
	Primary school graduate	2	1.9	-	-	
	Secondary school graduate	11	10.5	12	11.4	0.166
	High school graduate	32	30.5	45	42.8	
	Graduated	54	51.4	46	43.8	
	Master and above	5	4.7	1	1.0	
Number of children	Absent	42	40.0	48	45.7	
	1	27	25.7	19	18.1	
	2	26	24.8	26	24.8	0.593
	3	8	7.6	11	10.5	
	4	2	1.9	1	0.9	
Family income level	<1500 TL	3	2.9	5	4.8	
	1500-3000) TL	33	31.4	54	51.4	0.004*
	3001-6000 TL	52	49.5	38	36.2	
	>6000 TL	17	16.2	8	7.6	

*p<0.05

Table 2 Anthropometric measurements of working and non-working women

	Working women (n=105)			Non-working women (n=105)			
	X̄±SS	Max	Min	X̄±SS	Max	Min	p
Height (m)	1.65±0.06	1.77	1.50	1.64±0.05	1.77	1.55	0.619
Weight (kg)	67.68±11.44	98.00	44.00	68.79±11.7	97.00	45.00	0.474
BMI (kg/m^2)	25.13±4.39	39.90	16.90	25.57±4.05	35.87	17.57	0.458
Waist circumference (cm)	83.50±13.66	113.00	63.00	84.51±13.86	116.00	61.00	0.562
Hip circumference (cm)	102.65±7.73	129.00	86.00	104.20±7.64	123.00	88.00	0.119
Waist–hip ratio	0.81±0.09	1.03	0.62	0.80±0.08	0.99	0.65	0.803

BMI: Body Mass Index

was 4.40 ± 5.17 μg and vitamin C was 100.16 ± 65.56 mg. When the average vitamin intake of non-working women in daily diet was calculated; it was found that vitamin A was 2148.54 ± 4756.06 μg, vitamin E was 18.59 ± 8.08 mg, vitamin K was 446.27 ± 219.10 μg, thiamine was 1.09 ± 0.35 mg, riboflavin was 1.69 ± 0.95 mg, niacin was 28.60 ± 10.72 mg, vitamin B$_{12}$ was 4.75 ± 7.66 μg and vitamin C was 123.35 ± 75.32 mg. In terms of Vitamin A, E, C, thiamine and riboflavin, the difference between working and non-working women were statistically significant (p<0.05).

Looking at the average mineral intake of working women; in daily diets were seen intake of 2616.65 ± 789.87 mg potassium, 814.21 ± 284.65 mg calcium, 324.88 ± 116.55 mg magnesium, 13.53 ± 5.01 mg iron, and 11.86 ± 3.87 mg zinc. Looking at the average mineral intake of non-working women, according to the daily diet of them, was determined intake of 2946.36 ± 975.53 mg potassium, 793.85 ± 226.01 mg calcium, 353.99 ± 128.96 mg magnesium, 15.12 ± 4.89 mg iron, 12.62 ± 4.24 mg zinc. The difference between diet and daily intake of potassium and iron and working status was statistically significant (p<0.05).

Evaluation of Depression-Anxiety-Stress Scale and Revised Three-Factor Eating Questionnaire

The mean stress scores of working and non-working women were respectively 12.34 ± 6.49 and 8.51 ± 4.77, mean anxiety scores were 5.13 ± 4.81 and 3.22 ± 2.61; mean depression scores were 6.16 ± 6.06 and 6.19 ± 6.23. Stress and anxiety scores of working women

were found to be significantly higher than non-working women (p <0.05). The mean uncontrolled eating scores of women and non-working women were respectively 38.31 ± 21.02 and 40.32 ± 22.37; mean cognitive restriction scores were 43.28 ± 20.28 and 35.08 ± 22.81; the mean emotional eating scores were 40.42 ± 27.13 and 42.01 ± 29.44, respectively. The cognitive restriction score of working women was found to be significantly higher than the scores of non-working women (p<0.05) (Table 3).

Statistically significant difference was found in terms of the mean of uncontrolled eating and cognitive restriction score among working women with different BMI groups (p <0.05); A statistically significant difference was found in terms of anxiety, uncontrolled eating and cognitive restriction score among non-working women (p <0.05) (Table 4).

A statistically significant positive relationship was found between intake energy and uncontrolled eating score (p = 0.000, r = 0.390) of working women, however; a statistically significant positive poor relation was found between emotional eating score (p = 0.026, r = 0.218). A statistically significant positive strong correlation (p=0.000, r=0.692) was found between intake energy and uncontrolled eating score, of non-working women, and a statistically significant negative medium correlation (p=0.00, r=-0.466) was found between cognitive restriction score, and (p=0.003, r=0.289) a statistically significant positive poor correlation was found between emotional eating score. A statistically significant weak positive correlation between protein intake and cognitive restriction score (p = 0.03,

Table 3 Average of DASS and TFEQ-R18 scores of working and non-working women

	Working women (n=105)			Non-working women (n=105)			Total (n=210)	
	X̄±SS	Above	Below	X̄±SS	Above	Below	X̄±SS	p
Stress**	12.34±6.49	29.00	1.00	8.51±4.77	24.00	1.00	10.42±5.99	0.000*
Anxiety**	5.13±4.81	24.00	0.00	3.22±2.61	14.00	0.00	4.17±3.97	0.013*
Depressin**	6.16±6.06	32.00	0.00	6.19±6.23	31.00	0.00	6.17±6.13	0.970
UncontrolledEating**	38.31±21.02	92.59	0.00	40.32±22.37	92.59	0.00	39.31±21.67	0.680
Cognitive Restriction**	43.28±20.28	88.89	0.00	35.08±22.81	94.44	0.00	39.17±21.91	0.001*
Emotional* Eating**	40.42±27.13	100.00	0.00	42.01±29.44	100.00	0.00	41.21±28.25	0.737

*** Mann Whitney U test; ** t test; *p<0.05

Table 4. Average of DASS and TFEQ-R18 scores of working and non-working women according to BMI groups

	BMI (kg/m^2)			
	Normal	**A Little Fat**	**Fat**	
	$\bar{X}\pm SS$	$\bar{X}\pm SS$	$\bar{X}\pm SS$	**p**
Working women (n=105)				
Stress**	11.24±6.11	13.98±6.77	11.33±6.33	0.113
Anxiety**	4.33±4.27	5.86±5.52	6.00±4.09	0.189
Depression**	5.49±6.52	7.02±5.88	6.00±4.49	0.223
Uncontrolled** Eating**	29.41±20.02	42.95±18.40	59.88±11.69	0.000*
Cognitive Restriction**	47.71±17.57	42.99±21.36	25.46±18.57	0.006*
Emotional*** Eating	35.95±26.16	42.06±27.05	53.70±28.75	0.108
Non-working women (n=105)				
Stress**	8.52±4.21	8.80±5.41	7.73±4.92	0.776
Anxiety**	2.38±1.79	3.75±2.54	4.60±4.01	0.010*
Depression**	5.50±5.51	7.58±7.13	4.80±5.60	0.241
Uncontrolled** Eating	28.41±13.70	49.17±17.89	68.40±15.52	0.000*
Cognitive** Restriction	47.33±22.87	26.81±17.56	16.30±7.99	0.000*
Emotional*** Eating	37.33±27.01	41.67±30.38	58.52±30.71	0.060

***Kruskal Wallis testt; **Oneway ANOVA test; *p<0.05

r = 0.287); a statistically significant, negative, weak relationship between fat intake and uncontrolled eating score (p = 0.005, r = -0.272); A statistically significant positive poor correlation was found between carbohydrate intake and uncontrolled eating score (p = 0.015, r = 0.263) (Table 5).

There was a statistically significant correlation between uncontrolled eating score and stress, anxiety and depression score; between cognitive restriction and anxiety and depression score; between emotional eating and stress and depression score (Table 6).

Discussion

As a result of this study; Emotional states such as depression, stress, anxiety, emotional nutrition behaviors, tendency towards food preferences and anthropometric measurements of the working and non-working women were compared and the relationship between these cases was examined. In this study, no statistically

significant difference was found between depression scores according to the working status of the individuals (p> 0.05).

Stress and anxiety scores of working women were found to be statistically significantly higher than the scores of non-working women (p <0.05), (Table 3). In a survey with 180 women in Isparta city center (27), the stress status of the working and non-working women is compared with "Stress scale and susceptibility to stress scale" and it is found that the working women have a higher average than non-working women; that is, they are more susceptible to stress. In the study conducted by the University of Southern Mississippi, Martin et al (28), mean depression, anxiety and stress scores of the women were found respectively to be 8.46 ± 9.17, 7.04 ± 8.10, 12.86 ± 9.63. The mean score of stress was similar, besides depression and anxiety scores were high.

Statistically significant difference was found in terms of the average of uncontrolled eating score between working and non-working women with different

Table 5. Investigation of the relationship between nutritional values of individuals and DASS and TFEQ-R18 scores

		Stress**	Anxiety**	Depression**	Uncontrolled Eating**	Cognitive Restriction**	Emotional Eating***
Working women (n=105)							
Energy (kcal)	r	0.078	0.067	0.073	0.390	-0.183	0.218
	p	0.431	0.494	0.459	0.000*	0.062	0.026*
Protein (%)	r	-0.108	-0.140	-0.111	-0.183	0.117	-0.088
	p	0.274	0.153	0.261	0.062	0.235	0.374
Fat (%)	r	-0.007	0.047	0.013	-0.082	0.020	-0.082
	p	0.942	0.630	0.899	0.408	0.842	0.404
Carbohydrate (%)	r	0.043	0.024	0.040	0.175	-0.055	0.081
	p	0.660	0.809	0.682	0.073	0.575	0.412
Non-working women (n=105)							
Energy (kcal)	r	-0.099	0.127	-0.004	0.692	-0.466	0.289
	p	0.313	0.198	0.964	0.000*	0.000*	0.003*
Protein (%)	r	0.006	-0.003	-0.119	-0.004	0.287	-0.082
	p	0.950	0.979	0.225	0.968	0.003*	0.404
Fat (%)	r	0.014	0.004	-0.165	-0.272	0.052	-0.097
	p	0.884	0.966	0.093	0.005*	0.597	0.326
Carbohydrate (%)	r	-0.019	-0.040	0.179	0.236	-0.191	0.084
	p	0.849	0.686	0.068	0.015*	0.051	0.393

***Spearman's rho correlation test; ** Pearson correlation test * p<0.05

Tablo 6. Correlation of DASS and TFEQ-R18 scores

		Stress	Anxiety	Depression
Uncontrolled Eating	r	0.212	0.426	0.232
	p	0.002*	0.000*	0.001*
Cognitive Restriction	r	-0.007	-0.191	-0.265
	p	0.921	0.006*	0.000*
Emotional Eating	r	0.184	0.084	0.169
	p	0.008*	0.227	0.014*

* p<0.05

BMI groups (p <0.05). Therefore; uncontrolled eating behavior was highest in obese women (Table 4). In the study conducted by Elfhag et al. (29), the relationship between the BMI and uncontrolled eating behaviors of both mothers and daughters was examined and it was observed that uncontrolled eating behavior increased with the increase of BMI. In the study with TFEQ-R18 scale, conducted with 2997 Finlander women aged 17-20 years, while a statistically significant positive correlation was observed between BMI and cognitive restriction and emotional eating score (p <0.001), a significant correlation was not found with uncontrolled eating score (30). In this study, a statistically significant difference was found in terms of cognitive restriction score among employees with different BMI groups (p <0.05). Working, normal weight women had the highest symptom of cognitive restriction (Table 4). TFEQ-R21 was tested on obese and non-obese participants in a study conducted by Cappelleri et al. (21). It was found that cognitive restriction decreased significantly in obese individuals as BMI increased, but in non-obese individuals, it was found that cognitive restriction was significantly increased as BMI increased. It was determined that among non-working women, obese individuals were more prone to anxiety (p <0.05), (Table 4). Poorrezaeian et al. (31) used DASS to determine anxiety scores in their study with 360 females aged 20-49 in Tehran and looked at the

relationship between many parameters such as dietary diversity, anthropometric measurements, and demographic information. The results of the study showed that the BMI's of women with high anxiety scores were significantly high.

Psychological factors related to nutritional behavior are important determinants of food selection and affect weight management closely. In research conducted with adult, Keranen et al. (32) reported that cognitive restriction was associated with lower energy and fat, higher carbohydrate, sucrose, and fiber intake. In a study conducted by Cornelis et al. (33) in women; positive relationship between protein, pulp intake and cognitive restriction; negative relationship between total fat and saturated fat intake; It was determined that there was a negative relation between uncontrolled eating, emotional eating and carbohydrate intake; there is a possitive relation between protein, total fat and saturated fat intake and uncontrolled eating, emotional eating and these relations were considered statistically significant. In this study, it is concluded that there is a positive relationship between the energy and uncontrolled, emotional eating in working women. Moreover; It is found that a positive correlation between each energy and three eating behaviours, and a negative correlation between uncontrolled eating and intake fat, and a positive correlation between uncontrolled eating and intake carbohydrate; and these relationships were determined to be statistically significant (p <0.05), (Table 5).

In a population study examining the relationship between emotional eating, depressive symptoms and food consumption, Konttinen et al. (34) used "the Center for Epidemiological Studies Depression Scale (CES-D)" to assess TFEQ-R18 and depressive symptoms. When both scales and the relationship between their sub-factors were evaluated, it is observed that a statistically significant positive correlation between depressive symptom scores and emotional eating scores in women (p <0.001), but a negative and non-significant relationship was determined between cognitive restriction scores. In another study (35) using DASS and the Dutch Eating Behavior Questionnaire Scale (DEBQ), a weak but significant relationship was found between depression, anxiety and stress scores and emotional eating in both men and women

(p <0.01). There was also a strong relationship between depression, anxiety and stress scores. In this study, as stress, anxiety and depression scores increased, uncontrolled eating score was determined to increase statistically significantly (p <0.05). On the other hand, it was observed that emotional eating score decreased and cognitive restriction score increased with stress and decreasing of depression scores (p <0.05), (Table 6). Although the scales were different, the relationships between the sub-factors of the scale in all three studies showed similar results.

Conclusion

The aim of this study was to evaluate the relationship between emotional states such as depression, stress and anxiety, tendency to food preferences and anthropometric measurements of working and non-working women living in Manavgat. The study was conducted with a total of 210 women (105 employees and 105 non-workers) between the ages of 25-45 (inclusive) who voluntarily agreed to participate in the study. Demographic characteristics, anthropometric measurements, 24-hour retrospective food consumption records, depression, anxiety, stress levels (Depression-Anxiety-Stress Scale (DASÖ)) and feeding behaviors (Revised Three Factor Eating Questionnaire (TFEQ-R18)) were evaluated. There was a statistically significant difference between the number of snacks, skipped meals status, skipped meals, reasons for skipping meals and the frequency of eating out according to the work status (p <0.05). The mean activity duration in one week was 210.53 ± 61.52 min in working women and 186.84 ± 40.07 min in non-working women (p<0.05). According to BMI, 48.6% of working women were normal, 40% were slightly obese and 11.4% were obese; 47.6% of the women who were not working were normal, 38.1% were slightly obese and 14.3% were obese (p> 0.05). While the average energy intake of the individuals was 2029.58 ± 545,03 kcal in working women, it was found to be 2243,66 ± 440.16 kcal in non-working women (p<0.05). In both working and non-working women, it was found that the percentage of energy from total fat was higher than the recommended level and the percentage from

carbohydrate was lower. The average daily dietary intake of vitamins and minerals taken to Turkey for Food and Nutrition Specific compared with the recommendations of the Guide; It was determined that all individuals received less vitamin D, thiamine, calcium and iron than recommended levels. The mean stress of the working and non-working women was 12.34 ± 6.49 and 8.51 ± 4.77, the mean anxiety was 5.13 ± 4.81 and 3.22 ± 2.61, and the mean cognitive restriction was 43.28 ± 20, 28 respectively. and 35.08 ± 22.81 (p <0.05). The difference between the number of diets and cognitive restraint scores among working women, and the number of diets made between non-working women and depression, uncontrolled eating and cognitive restraint scores were statistically significant (p <0.05). There was no statistically significant correlation between stress, anxiety and depression and nutrients (p>0.05). When sub-factors of the scales were compared among themselves, it was found that uncontrolled eating correlated with stress, anxiety and depression, cognitive restriction associated with anxiety and depression, and emotional eating related with stress and depression (p <0.05).

Conflict of Interest

The authors have dclerated that there is no conflict of interest.

References

1. Uşen , Delen M. Eğitimli kadınların çalışma hayatına ilişkin tercihleri: İstanbul örneği. Kamu-İş, 2011;11(4): 127-182.
2. Cebula RJ, Coombs CK. Recent evidence on factors influencing the female labor force participation rate. J Labor Res, 2008;29: 272–284.
3. Bener Ö, Günay G. Kadınların toplumsal cinsiyet rolleri çerçevesinde aile içi yaşamı algılama biçimleri. Türkiye Sosyal Araştırmalar Dergisi 2011;15(3): 157-171.
4. Başterzi A. Tante Rosa'yı öldürmek, Tante Rosa'yı delirtmek. Türkiye Psikiyatri Derneği Bülteni, 2010;13(1): 31-35.
5. Karali R. Kadınların çalışması, Çorum'da imalat sektöründe çalışan kadınların çalışma hayatında yaşadığı sorunların verimliliğe etkisi. Yüksek lisans tezi, Hitit Üniversitesi Sosyal Bilimler Enstitüsü, Çorum, 2016.
6. Lee KJ, Kim JI. Relating factors for depression in korean working women: secondary analysis of the fifth Korean National Health and Nutrition Examination Survey (KNHANES V). Asian Nurs Res,2015;9: 265-270.
7. Ökten . Toplumsal cinsiyet ve iktidar: Güneydoğu Anadolu Bölgesi'nin toplumsal cinsiyet düzeni. Uluslararası Sosyal Araştırmalar Dergisi, 2009;2(8): 302-312.
8. Richardson AS, Arsenault JE, et al. Perceived stress, unhealthy eating behaviors, and severe obesity in low-income women. Nutrition J, 2015;14(122): 1-10.
9. Anderson I, Pilling S. et al. Depression the treatment and management of depression in adults (Updated Edıtıon). The British Psychological Society & The Royal College of Psychiatrists. 2010.
10. Mercanlıgil S, Yıldız E, Çiftçi H. Depresyon ve beslenme tedavisi. Türkiye Klinikleri (Journal of Medical Sciences), 2008;28: 369-377.
11. Firk C, Markus CR. Mood and cortisol responses following tryptophan-rich hydrolyzed protein and acute stress in healthy subjects with high and low cognitive reactivity to depression. Clin Nutr, 2009;28: 266–271.
12. Lopresti AL. A review of nutrient treatments for paediatric depression. J Affect Disord, 2015;181: 24-32.
13. Alpert JE, Mischoulon D, et al. Nutrition and depression: Focus on folate. Nutrition, 2000; 16: 544-581.
14. Konttinen H. Ditary habits and obesity: The role of emotional and cognitive factors. Department of Social Research University of Helsinki, Finland, Academic Dissertation, 2012.
15. Russ CR. Towards an explanation of overeating patterns among normal weight college women: Development and validation of a structural equation model. Blacksburg, Virginia, 1998.
16. Strien T, Herman CP, et al. Moderation of distress-induced eating by emotional eating scores. Appetite, 2012;58: 277-284.
17. Canetti L, Bachar E, Berry EM. Food and emotion. Behav Processes, 2002;60: 157-164.
18. Ouwens MA, Strien T, Leeuwe JFJ. Possible pathways between depression, emotional and external eating. A structural equation model. Appetite, 2009;53: 245-248.
19. Spoor STP, Bekker MHJ, et al. Relations between negative affect, coping, and emotional eating. Appetite, 2007; 48: 368-376.
20. Royal JD, Kurtz JL. I ate what? The effect of stress and dispositional eating style on food intake and behavioral awareness. Pers Individ Dif, 2010; 49: 565-569.
21. Cappelleri JC, Bushmakin AG, et al. Psychometric analysis of the Three-Factor Eating Questionnaire-R21: results from a large diverse sample of obese and non-obese participants. Int J Obes, 2009; 33: 611-620.
22. Rakıcıoğlu N, Acar N, Ayaz A, ve ark. Yemek ve Besin Fotoğraf Kataloğu, Ölçü ve Miktarlar. Ankara, Ata Yayınları, 2014.
23. Türkiye'ye Özgü Besin ve Beslenme Rehberi (TÜBER) 2015. Erişim: http://www.bdb.hacettepe.edu.tr/TOBR_kitap.pdf Erişim: 3.12.2017.

24. Akın A, Çetin B. Depresyon Anksiyete Stres Ölçeği (DASÖ): Geçerlik ve güvenirlik çalışması. Kuram ve Uygulamada Eğitim Bilimleri, 2007;7(1): 241-268.

25. Lauzon B, Romon M, Deschamps V, et al. The Three-Factor Eating Questionnaire-R18 is able to distinguish among different eating patterns in a general population. J Nutr, 2004;134: 2372-2380.

26. Kıraç D, Kaspar EÇ, Çakır ÖK, et al. Obeziteyle ilişkili beslenme alışkanlıklarının araştırılmasında yeni bir yöntem "Üç Faktörlü Beslenme Anketi". Marmara Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi, 2015;5(3): 162-169.

27. Bilgiç İ. Eğitim düzeyleri farklı çalışan ve çalışmayan kadınlarda stresin beslenme üzerine etkisi. Yüksek lisans tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara, 2004.

28. Martin RC, Dahlen ER. Cognitive emotion regulation in the prediction of depression, anxiety, stress, and anger. Pers Individ Dif, 2005;39: 1249-1260, 2005.

29. Elfhag K, Linne Y. Gender differences in associations of eating pathology between mothers and their adolescent offspring. Obes Res, 2005;13(6): 1070-1076.

30. Anglé S, Engblom J, et al. Three factor eating questionnaire-R18 as a measure of cognitive restraint, uncontrolled eating and emotional eating in a sample of young Finnish females. Int J Behav Nutr Phys Act, 2009; 6(41):1-7.

31. Poorrezaeian M, Siassi Fet al. Association of dietary diversity score with anxiety in women. Psychiatry Res, 2015;230: 622-627.

32. Keranen AM, Strengell K, et al. Effect of weight loss intervention on the association between eating behaviour measured by TFEQ-18 and dietary intake in adults. Appetite, 2011; 56: 156-162.

33. Cornelis MC, Rimm EB, et al. Obesity susceptibility loci and uncontrolled eating, emotional eating and cognitive restraint behaviors in men and women. Obesity, 2014;22(5): 135-141.

34. Konttinen H, Mannisto S, et al. Emotional eating, depressive symptoms and self-reported food consumption. A population-based study. Appetite, 2010; 54: 473-479.

35. Özdemir GS. Duygusal yemenin depresyon, anksiyete ve stres belirtileri ile olan ilişkisi. Yüksek lisans tezi, Hasan Kalyoncu Üniversitesi Sosyal Bilimler Enstitüsü, Gaziantep, 2015.

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