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Investigation of the Relationship between Mindful Eating Behavior and Anthropometric Measurements of Individuals Applying to a Nutrition and Diet Policlinic

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Abstract

The calorie restriction used in obesity treatment cannot be sustainable in long-term treatments. For these reasons, different interventions are needed in addition to calorie restrictive applications.

This research, which was planned and applied in a descriptive and cross-sectional pattern, was conducted in individuals over the age of 18 who applied to the Nutrition and Diet Policlinic of a private hospital. In the research, Mindful Eating Questionnaire was applied to measure individuals' socio-demographic characteristics and anthropometric information and mindful eating. NCSS (Number Cruncher Statistical System) 2007 program was used for statistical analysis.The research was carried out on 200 individuals, 81.5% of whom were women and 18.5% were men. The ages of the cases ranged between 18 and 68, with an average of 30.52 ± 10.01 years. Mindful Eating Questionnaire total scores are 3.19 ± 0.52 on average; 66.0% of cases have a score of 3 or above. Thus, healthy weight loss is achieved by reducing total calorie content. Future studies should be done to provide a standardization in the teaching of mindful eating and to demonstrate the long-term effect between disease and mindful eating. A negative correlation was found between BMI measurements and total scores in women ($p < 0.05$). While there was a statistically significant relationship between waist circumference and hip circumference measurements and total scores in women ($p < 0.05$), This difference was not statistically significant in men ($p > 0.05$). In addition to calorie restriction, it can be seen that improving mindful eating behavior may decrease body weight in obesity treatment. Therefore, it is recommended to include mindful eating application in diet treatments.

Keywords: Mindful Eating, Anthropometric Measurement, Obesity

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1 | INTRODUCTION

Eating behavior is influenced by many factors such as emotional state, environmental factors, appetite changes and religious practices. The emotional states such as stress, sadness, tension, happiness, excitement, which individuals are frequently exposed to in their daily lives, are effective in eating attitude and behavior (Ozkan and Bilici, 2018). Many studies have highlighted the relationship between eating behavior, emotions, and increased energy intake.It is important to cope with emotional states in maintaining body weight control.It has been reported that eating behavior in obese individuals mostly results from emotional states. It has been observed that when individuals' mindfulness of eating is increased, their ability to cope with emotions also increases (Köse, 2017:120). Recently, the importance of developing mindful eating in gaining healthy eating behavior is emphasized and its success in using it as an intervention technique in the treatment of obesity is discussed. Especially on eating behavior, it develops the ability to recognize and cope with emotional states, and the efficiency of body weight control therapy can be increased by gaining mindfulness of eating. (Ozkan and Bilici, 2018). The concepts of mindfulness and mindful eating have become increasingly popular recently. Kabat-Zinn (2003**)** has expressed the concept of "Conscious mindfulness" as "an mindfulness that involves paying attention to the present unconditionally consciously". The term "mindfulness" means "conscious mindfulness". When evaluated in terms of eating behavior, "mindfulness eating" is called "Mindful eating" or "eating by realizing" (Kose et al., 2016). Obesity is an ongoing health problem and brings with it many chronic diseases. The relationship between eating behavior and weight gain and obesity has been known for a long time. The calorie restriction used in obesity treatment cannot be sustainable in long-term treatments. Classical strategies have often been proven ineffective in achieving long-term and sustainable weight loss (Warren et al., 2017) . The basis of nutrition programs applied in the treatment of obesity is based on calorie restriction. It was observed that approximately half of the weight lost after treatment was recovered in the first year. It has been observed that 80% of the individuals reached their old weight in 3-5 years and even exceeded it. For these reasons, different interventions are needed in addition to calorie restrictive applications. It is thought that it can provide a permanent solution in the treatment of obesity since mindful eating provides mindfulness of nutritional feelings and habits without being judged (Fuente et al., 2019). Mindful eating is a form of eating that focuses on food that will be consumed at the moment without being affected by environmental factors and judging food choices, by realizing how and why eating behavior occurs rather than what is eaten, by internalizing the concept of physical hunger-satiety, and aware of the effect of emotions and thoughts.The main focus in mindful eating is to gain full mindfulness of the taste and texture of the food. Mindful eating requires the elimination of all distracting environmental factors such as television viewing. This mindfulness reduces food craving, slows down the speed of eating and thus can help maintain weight control (Ozkan and Bilici, 2018).With this teaching, it is possible to change the eating behavior permanently. It helps to reduce the acceptance of emotions and to accept the emotions in order to avoid the emotions. When saturation is achieved through mindful eating behavior, it is expected to end eating behavior and to enjoy eating.Thus, it helps to realize healthy weight loss by reducing excess calorie food consumption (Colak and Aktac,2019).

In this study, it is aimed to evaluate the relationship between mindful eating behavior and anthropometric measurements. In the treatment of obesity, classical calorie restriction strategies have often been proven ineffective in achieving long-term and sustainable weight loss. It was observed that approximately half of the weight lost after diet therapy was recovered

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in the first year. For these reasons, different interventions are needed in addition to calorie restrictive applications. Calorie-restricted dietary interventions are not a permanent solution to body weight loss, behavioral interventions raise mindfulness about eating and saturation, and provide more permanent weight loss by directing them to healthy eating habits. For these reasons, different interventions are needed in addition to calorie restrictive applications. Mindful eating is thought to provide a permanent solution in the treatment of obesity as it provides mindfulness of nutritional feelings and habits without being judged.

2 | MATERIALS AND METHOD

For this study, Mindful Eating Questionnaire (MEQ) was chosen as a source since it is the most commonly used mindful eating assessment that measures the major constructs of mindful eating (disinhibition, awareness, external cues, distraction and emotional response) (Framson et al., 2009). . In this study, the Turkish version of the questionnaire was used (Köse et al., 2016). The sub-scales of this version are Eating without Thinking, Emotional Eating, Eating Control, Awareness, Eating Discipline, Conscious Nutrition, and Interference. Body mass index (BMI) and waist-hip ratio have been used to characterize the body phenotype. BMI is a calculated value which body weight (kg) divided by height (m^2) squared. BMI and waist-hip ratio is used in clinical and epidemiological practice to categorize underweight, normal weight, overweight and obesity, respectively (Gastelurrutia et al, 2015). .

The sample of the study consists of individuals between the ages of 18-68 who apply to the Nutrition and Diet Policlinic of a private hospital. The study examining the effect of mindful eating on anthropometric measurements is a descriptive and cross-sectional research. In this study, it was determined that the MEQ Cronbach's Alpha coefficient was 0.819. For this research, "Ethics Committee Approval" dated 04/12/2019 numbered 37068608-6100-15-1791 was received from Yeditepe University. The study has written entirely original and the used work of others has been appropriately cited. There is no potential conflict of interest between authors.

3 | RESULTS

In Table 1, the age of gender varies between 18 and 68, with an average of 30.52 ± 10.01 years. 81.5% of gender are women and gender with 3001-4000 TL income make up 37%.

Table 1. Evaluation of socio-demographic characteristics (n = 200) in gender

		n (%)
Age (years)	*Min-Max (Median)*	18-68 (26.5)
	Mean±Sd	30.52±10.01
Gender	**Women**	163 (81.5)
	Male	37 (18.5)
Income Level	**2000-3000 TL**	65 (32.5)
	3001-4000 TL	74 (37.0)
	4001-5000 TL	33 (16.5)
	>5000 TL	28 (14.0)

In Table 2, BMI measurements range from 16.6 to 47 kg/m^2, with Mean±Sd 29.30 ± 6.34 kg/m^2; 4.4% (n = 7) were underweight, 19.6% (n = 32) were normal, 29.4% (n = 48) were slightly obese and 46.6% (n = 76) were obese. The waist-hip ratios ranged from 0.7 to 1.0, with Mean±Sd 0.82± 0.08. BMI measurements range from 18.6 to 40.8 kg/m^2, with Mean±Sd 29.76 ± 5.10 kg/m^2; 16.2% (n = 6) of the cases were normal, 32.4% (n = 12) were slightly obese and 51.4% (n = 19) were obese. The waist-hip ratios ranged from 0.8 to 1.1, with Mean±Sd 0.94± 0.07 .

TABLE 2. Evaluation of anthropometric properties (n = 200) in gender

		Woman (n=163)	Male (n=37)
BMI (kg/m^2)	*Min-Max(Median)*	16.6-47 (2.2)	18.6-40.8 (3.7)
	Mean±Sd	29.30±6.34	29.76±5.10
	Underweight	7 (4.4)	0 (0)
	Normal	32 (19.6)	6 (16.2)
	Sightly obese	48 (29.4)	12 (32.4)
	Obese	76 (46.6)	19 (51.4)
Waist-Hip ratio	*Min-Max (Median)*	0.7-1.0 (0.8)	0.8-1.1 (0.9)
	Mean±Sd	0.82±0.08	0.94±0.07

In Table 3, there were significant differences between gender. Men's Emotional Eating scores were found to be significantly higher than the women (p : 0.036; p <0.05). Women's Eating Control scores were significantly higher than the men (p : 0.001; p <0.01). Men's Eating Disciplin scores were found to be significantly lower than the women (p : 0.015; p <0.05). Women's Total Mindful Eating scores were found to be significantly higher than the men (p: 0.048; p <0.05).

TABLE 3: Gender evaluation of subscales for mindful eating questionnaire

MEQ-30 sub-scales		Gender		Ap
		Woman (n=163)	Male (n=37)	
Eat without thinking	Min-Max (Median)	1-5 (3.2)	1.2-4.4 (2.8)	0.216
	Mean ± SD	3.15±0.89	2.95±0.87	
	<3 points	55 (33.7)	20 (5..1)	
	≥3 points	108 (66.3)	17 (45.9)	
Emotional eating	Min-Max (Median)	1-5 (3.4)	1.8-5 (3.4)	**0.036***
	Mean ± SD	3,14±1,11	3,50±0,86	
	<3 points	59 (36.2)	8 (21.6)	
	≥3 points	104 (63.8)	29 (78.4)	
Eating control	Min-Max (Median)	1-5 (3.8)	1.3-4.5 (3)	**0.001****
	Mean ± SD	3.59±0.93	2.89±0.88	
	<3 points	36 (22.1)	17 (4..9)	
	≥3 points	127 (7.9)	20 (54.1)	
Mindfulness	Min-Max (Median)	1.6-4.8 (3.2)	1.8-4.2 (3.2)	0.346
	Mean ± SD	3.27±0.51	3.18±0.53	
	<3 points	32 (19.6)	11 (29.7)	
	≥3 points	131 (80.4)	26 (70.3)	
Eating discipline	Min-Max (Median)	1.3-5 (3)	1-4.8 (2.5)	**0.015***
	Mean ± SD	2.89±0.81	2.53±0.89	
	<3 points	80 (49.1)	23 (62.2)	
	≥3 points	83 (50.9)	14 (37.8)	
Conscious nutrition	Min-Max (Median)	1.2-4.4 (3.2)	2-4.2 (2.8)	0.064
	Mean ± SD	3.09±0.61	2.89±0.57	
	<3 points	50 (30.7)	20 (54.1)	
	≥3 points	113 (69.3)	17 (45.9)	
Interference	Min-Max (Median)	1-5 (4)	1.5-5 (3.5)	0.717
	Mean ± SD	3,67±0,89	3,61±0,77	
	<3 points	24 (14.7)	5 (13.5)	
	≥3 points	139 (85.3)	32 (86.5)	
Total Mindful Eating	Min-Max (Median)	1.7-4.4 (3.2)	2.3-4 (3)	0.048*
	Mean ± SD	3.22±0.53	3.05±0.45	
	<3 points	51 (31.3)	17 (45.9)	
	≥3 points	112 (68.7)	20 (54.1)	

*Student t Test *p<0,05 **p<0,01

In Table 4, there are relations between the women and BMI. The distribution of these scores was as follows; In women; the scores between BMI and Eating without thinking, Eating control, Eating dis-cipline, and Consious nutrition were respectively%68.8, %89.6, %68.8 and %84.4. The statistically significant scores were respectively (p: 0.019; p < 0.05), (p: 0.041; p < 0.05), (p: 0.011; p < 0.05) and (p: 0.07; p < 0.01).

Table 4. Evaluation of sub-scales of mindful eating questionnaire for BMI in women

MEQ-30 sub-scales		BMI Level				cp
		Underweight (n=7)	Normal (n=32)	Slightly obese (n=48)	Obese (n=76)	
Eat without thinking	Min-Max (Median)	3.2-5 (4)	1.2-5 (3.1)	1-4.6 (3.4)	1-5 (3)	*0.019**
	Mean ± SD	3.97±0.59	3.21±1.01	3.19±0.98	3.03±0.75	
	<3 points	0 (0)	11 (34.4)	15 (31.3)	29 (38.2)	
	≥3 points	7 (100)	21 (65.6)	33 (68.8)	47 (61.8)	
Emotional eating	Min-Max (Median)	2-5 (4)	1-4,8 (3,1)	1-4,8 (3,6)	1-5 (3,3)	*0,364*
	Mean ± SD	3,71±1,17	3,01±0,98	3,17±1,19	3,13±1,10	
	<3 points	2 (28,6)	9 (28,1)	16 (33,3)	32 (42,1)	
	≥3 points	5 (71,4)	23 (71,9)	32 (66,7)	44 (57,9)	
Eating control	Min-Max (Median)	2,8-5 (4,3)	1,5-5 (3,9)	1,3-5 (3,8)	1-5 (3,5)	*0,041**
	Mean ± SD	4,25±0,76	3,74±0,88	3,69±0,80	3,39±1,00	
	<3 points	1 (14,3)	5 (15,6)	5 (10,4)	25 (32,9)	
	≥3 points	6 (85,7)	27 (84,4)	43 (89,6)	51 (67,1)	
Mindfulness	Min-Max (Median)	2,4-3,8 (3,4)	1,6-4,2 (3,2)	2,2-4,2 (3,2)	2,2-4,8 (3,4)	*0,061*
	Mean ± SD	3,23±0,48	3,14±0,51	3,15±0,40	3,39±0,54	

	<3 points	2 (28,6)	7 (21,9)	11 (22,9)	12 (15,8)	
	≥3 points	5 (71,4)	25 (78,1)	37 (77,1)	64 (84,2)	
Eating Discipline	Min-Max (Median)	1,5-5 (3)	1,8-4,5 (3,3)	1,3-5 (3)	1,3-4,5 (2,6)	***0,011****
	Mean ± SD	2,89±1,31	3,22±0,75	3,02±0,77	2,68±0,76	
	<3 points	3 (42,9)	10 (31,3)	20 (41,7)	47 (61,8)	
	≥3 points	4 (57,1)	22 (68,8)	28 (58,3)	29 (38,2)	
Conscious nutrition	Min-Max (Median)	2,6-4 (3,2)	2,2-4,2 (3,2)	1,4-4,4 (3,2)	1,2-4,4 (3)	***0,007****
	Mean ± SD	3,29±0,53	3,32±0,43	3,16±0,62	2,93±0,64	
	<3 points	2 (28,6)	5 (15,6)	10 (20,8)	33 (43,4)	
	≥3 points	5 (71,4)	27 (84,4)	38 (79,2)	43 (56,6)	
interference	Min-Max (Median)	3,5-5 (4)	2-5 (3,5)	1,5-5 (3,5)	1-5 (4)	*0,073*
	Mean ± SD	4,36±0,63	3,47±0,88	3,58±0,90	3,74±0,89	
	<3 points	0 (0)	9 (28,1)	7 (14,6)	8 (10,5)	
	≥3 points	7 (100)	23 (71,9)	41 (85,4)	68 (89,5)	
Total Mindful eating	Min-Max (Median)	3-4,4 (3,6)	2,2-4,2 (3,3)	2,1-4,1 (3,3)	1,7-4,2 (3,2)	*0,107*
	Mean ± SD	3,61±0,50	3,27±0,51	3,24±0,58	3,14±0,49	
	<3 points	0 (0)	8 (25,0)	15 (31,3)	28 (36,8)	
	≥3 points	7 (100)	24 (75,0)	33 (68,7)	48 (63,2)	

cpKruskal Wallis Test **p<0,05* ***p<0,01*

In Table 5, In men, Eating without thinking, emotional eating, eating control, mindfulness, eating dis-cipline, conscious nutrition, interference scores and total scores do not show statistically significant dif-ference according to BMl (p> 0.05).

Table 5. Evaluation of sub-scales of mindful eating questionnaire for BMI in men

MEQ-30 sub-scales		BMI			*Cp*
		Normal (n=6)	Slightly Obese (n=12)	Obese (n=19)	
Eat without thinking	Min-Max (Median)	2,2-4 (3,2)	2-4,4 (2,7)	1,2-4,4 (2,8)	*0,872*
	Mean ± SD	3,10±0,73	2,92±0,79	2,93±0,98	
	<3 points	3 (50,0)	7 (58,3)	10 (52,6)	
	≥3 points	3 (50,0)	5 (41,7)	9 (47,4)	
Emotional eating	Min-Max (Median)	2-4,2 (3,3)	3-4,8 (3,7)	1,8-5 (3,2)	*0,318*
	Mean ± SD	3,33±0,78	3,82±0,59	3,35±1,00	
	<3 points	1 (16,7)	0 (0)	7 (36,8)	
	≥3 points	5 (83,3)	12 (100)	12 (63,2)	
Eating control	Min-Max (Median)	1,5-4 (3,3)	1,8-4,3 (3,1)	1,3-4,5 (2,8)	*0,263*
	Mean ± SD	3,04±0,93	3,19±0,76	2,66±0,92	
	<3 points	2 (33,3)	4 (33,3)	11 (57,9)	
	≥3 points	4 (66,7)	8 (66,7)	8 (42,1)	
Mindfulness	Min-Max (Median)	2,6-4 (3)	2,6-4,2 (3,1)	1,8-4,2 (3,4)	*0,418*
	Mean ± SD	3,03±0,51	3,18±0,51	3,22±0,57	

	<3 points	2 (33,3)	4 (33,3)	5 (26,3)	
	≥3 points	4 (66,7)	8 (66,7)	14 (73,7)	
Eating discipline	Min-Max (Median)	1,5-3,8 (3,1)	1-4 (2,5)	1,3-4,8 (2,3)	*0,743*
	Mean ± SD	2,79±1,04	2,46±0,97	2,49±0,81	
	<3 points	2 (33,3)	8 (66,7)	13 (68,4)	
	≥3 points	4 (66,7)	4 (33,3)	6 (31,6)	
Conscious nutrition	Min-Max (Median)	2,6-3,8 (3)	2-3,8 (2,7)	2-4,2 (2,6)	*0,534*
	Mean ± SD	3,07±0,43	2,83±0,58	2,86±0,63	
	<3 points	3 (50,0)	7 (58,3)	10 (52,6)	
	≥3 points	3 (50,0)	5 (41,7)	9 (47,4)	
Interference	Min-Max (Median)	1,5-4,5 (3,5)	2,5-4,5 (3,5)	2-5 (4)	*0,573*
	Mean ± SD	3,33±1,03	3,54±0,62	3,74±0,79	
	<3 points	1 (16,7)	2 (16,7)	2 (10,5)	
	≥3 points	5 (83,3)	10 (83,3)	17 (89,5)	
Total mindful eating	Min-Max (Median)	2,5-3,6 (3,1)	2,4-3,8 (3,1)	2,3-4 (3)	*0,678*
	Mean ± SD	3,09±0,40	3,11±0,43	2,99±0,49	
	<3 points	3 (50,0)	3 (25,0)	11 (57,9)	
	≥3 points	3 (50,0)	9 (75,0)	8 (42,1)	

cpKruskal Wallis Test **p<0,05* ***p<0,01*

In Table 6, A statistically significant relationship was found between waist-hip ratios and mindfulness scores at the level of 0.202 (the point with increasing waist-hip ratio increased) (r: 0.202; p = 0.010; p <0.05). A statistically significant correlation was found between waisthip ratios and eating discipline scores at the level of 0.264 (negative score decreases as waist-hip ratio increases) (r: -0.264; p = 0.001; p <0.01). In men, there was not a statistically signif-icant relationship between the waist circumference measurements without thinking, eating, emotional eating, eating control, mindfulness, eating discipline, conscious nutrition, interference scores and total scores (p> 0.05).

Table 6. Evaluation of sub-scales of mindful eating questionnaire for Waist-Hip ratio in gender

MEQ-30 sub-scales	Waist-Hip ratio			
	Women (n = 163)		Men (n = 67)	
	r	p	r	p
Eat without thinking	-0,104	*0,184*	-0,077	*0,652*
Emotional eating	0,050	*0,528*	-0,066	*0,696*
Eating control	-0,085	*0,281*	-0,120	*0,478*
Mindfulness	0,202	***0,010****	0,225	*0,181*
Eating discipline	-0,264	***0,001****	-0,248	*0,139*
Conscious nutrition	-0,092	*0,244*	-0,020	*0,904*
İnterference	0,090	*0,252*	0,131	*0,441*
Total	-0,061	*0,438*	-0,088	*0,603*

Pearson Korelasyon Analizi *p < 0.05.

4 | DISCUSSION

The purpose of this study was to see the relationship of mindful eating and BMI. Mindful eating is related to making conscious food choices, and eating with attention and awareness. It is thought that mindful eating is important for gender because of increasing obesity and other food-related diseases in the world. Obesity has been associated with eating attitudes and mindful eating for many years. In cases where food is used to deal with emotions, emotional eating and obesity

associated with it, and binge eating disorder inevitably emerge. The concept of emotional eating, which emerged according to the results of research conducted in recent years, is an answer to negative emotions. It has been observed that emotional eating due to psychological stress has increased especially in binge eating disorder and the trainings given accordingly have been shown to be beneficial in body weight loss. In order to ensure long-term effective-ness in diet programs targeting body weight loss, coping with emotional states has gained importance in recent years (Köse, 2017).

In general, women had significantly higher scores eating control, eating disciplin, total mindful eating than men. In women, a statistically significant negative correlation (score decreases with in-creasing BMI) was found between BMI and eating without thinking, eating control, eating discipline, conscious nutrition sub-dimensions and total scale scores ($p<0.05$). A statistically significant positive correlation was found between BMI and mindful-ness scores ($p <0.01$). Mindfulness includes phys-ical hunger-satiety mindfulness, calorie and nutri-tional value information, healthy nutrition knowl-edge, and habit mindfulness.In women, a statistically significant positive correlation was found between waisthip ratios and mindfulness scores (the score increases as the waist-hip ratio increases) ($p <0.05$). A statistically significant negative correlation was found between waist-hip ratios and eating discipline scores (the score decreases as the waist-hip ratio increases) ($p <0.01$). Eating discipline includes plan-ning, preparing, balancing, keeping, order and time factors.

In this study, men have a significantly higher score for Emotional Eating than women in return women have a significantly higher score for eating disipline. Emotional eating includes eating in response to negative emotions, eating for emotional hunger, feeling good and satisfaction. In a chapter titled Emotional Eating, negative emotions can induce eating, because eating has the capacity to reduce their intensity. The-ories point to links between affect and food in early childhood, but cultural effects and certain biological factors (e.g., taste sensitivity) may also play a role (Macht and Simons, 2010:15). Unstable economic conditions in Turkey may have caused men who have the responsibility of subsistence in all generations to be depressed. Besides, women can be interpreted to be more conscious about eating because of the slim body sensation that is imposed by the media and social media. In this study for all gender among the sub-scales, the largest differences were between BMI and emotional eating, eating control, eating dis-cipline. That is, uncontrolled nutrition is one of the important factors for the increase of BMI but if mind-ful eating is provided, the BMI maybe lower. Miller et al. (2014) enhanced diabetes self-management education sessions with mindful eating constructs and reported significant increases in mindfulness and weight loss and less overeating compared with traditional diabetes self-management. In this study, a statistically significant difference was found be-tween emotional eating scores by gender ($p <0.05$); the scores of men were higher than women. Fram-son et al. (2009) investigated the emotional eating sub-dimensions of women and found lower scores than men ($p <0.01$). Based on this, they argued that women can respond differently than men in case of emotional stress.

In this study, the total scores of mindful eating questionnaire ranged between 1.7 and 4.4, and the average was 3.19 ± 0.52; The score of

34.0% (n =68) of the cases is less than 3, and the score of 66.0% (n = 132) is 3 or above. According to this, 66% of them have the mindful of eating can be commented.

In one study, it was found that in emotional eating, which is one of the sub-dimensions of MEQ-30, men had higher scores than women ($p <0.05$) and women in the “eating discipline” sub-

dimension had higher scores than men ($p < 0.05$)) (Ozkan and Bilici, 2018). In this study, ”emotional eating” scores ranged from 1 to 5, with an average of 3.21 ± 1.07; the score of 33.5% (n = 67) of the cases is less than 3, the score of 66.5% (n = 133) is 3 or above. Accordingly, it can be interpreted that 66.5%of them have mindful about emotional eating. Eating discipline scores range from 1 to 5, with an average of 2.83 ± 0.84; the score of 51.5% (n = 103) of the cases is less than 3, the score of 48.5% (n = 97) is 3 or above. Accordingly, it can be interpreted that 48.5%of them have mindful about eating discipline.

In this study, a negative statistically significant relation was found BMI and total mindful eating scores in women ($p <0.05$). In parallel with the results of this study, Kose (2017), while BMI of the students increase, the risk of eating disorder increases ($r = 0.112$, $p <0.05$ and $r = 0.139$, $p <0.05$). While BMI increased, mindful eating decreased but this relation-ship was found statistically insignificant ($p> 0.05$). Similar to the results of Kose’s (2017) study, as the BMI value increases, the MEQ score decreases in parallel with the research of Framson et al. (2009). In another study, Grinnell et al. (2011) reported that mindfulness increased as BMI value decreased. Beshara et al. (2013) found that MEQ scores were negatively correlated with body weight ($p <0.05$). In addition, it found negative relationship with emo-tional eating and disinhibition sub-dimension. Disinhibition literally means that an individual cannot stop eating even when full. It includes self-retention, quantity and time control as size content. In a study, the participants with high BMI were found to have a lower MEQ score as well as an emotional eating score (Mason et al., 2016). Moor et al. (2013) found a negative relationship between BMI and MEQ scores in their study. The importance of measuring mind-ful eating was emphasized in the research and it was proved that body weight management could be provided more effectively by increasing mindfulness.

In one study, statistically significant difference was found between mindful eating score and BMI (Akpınar, 2019:88). . In this study, in male ,eating, emotional eating, eating control, mindfulness, eating discipline, conscious nutrition, interference scores and total scores do not show statistically significant difference according to BMI level ($p> 0.05$). It is thought that the reason for this may be due to the small number of men in the study.

In this study, while women body weight increased while thinking, eating, eating control, eating disci-pline, conscious nutrition and total mindful eating score decreased and a statistically significant rela-tionship was found between them. In one study, when the relationship between students’ anthro-pometric information and MEQ-30 sub-dimension scores is increased, body weight and BMI increase, while emotional eating and eating discipline average scores increase (Kose, 2017). On the other hand, the mean scores of disinhibition, eating control, fo-cus, mindfulness and interference are decreasing. As body weight and BMI increased, eating control mean scores decreased and this relationship was found statistically significant ($r = -0.252$, $p <0.01$ and $r = -0.208$, $p <0.01$), and its relationship with other sub-dimensions was statistically insignificant ($p> 0.05$). BMI values and all sub-dimensions were found to be negatively related (Framson et al, 2009). In one study, it was found that there was a statistically significant relationship between mindful eating scale general average score, disinhibition and eating con-trol subscales mean scores and BMI classification. According to the BMI classification, the general eat-ing mean of mindful eating (2.95 ± 0.40) of the obese students was found to be statistically lower than the underweight students (3.39 ± 0.44) ($p <0.01$)(Kuseyri and Kızıltan, 2019). In present study, ac-cording to the BMI level in the assessment of the sub-dimension and total scores of the food mindfulness questionnaire according to BMI levels in women eating without thinking ($p = 0.019$; $p <0.05$), eating control ($p =$

0.041; p <0.05), eating discipline (p = 0.011; p <0.05), conscious nutrition (p = 0.007; p <0.01), there was a statistically significant difference between the scores. As a result of binary comparisons to determine which group the significant difference originated from; the scores of the normal were higher than the obese group. No statistically significant difference was found between total mindful eating scores according to BMI level (p> 0.05). In one study, the relationship between BMI and MEQ score was found to be significant. In patients with a BMI less than 25, the MEQ score was higher than those with a higher BMI (Ozmumcu, 2019:94). In this study, a statistically significant difference was found between eating scores without considering the BMI level in women (p = 0.019; p <0.05).

As a result of bilateral comparisons to determine which group the meaningful difference originated from, the scores of the underweight were higher than the obese group (p = 0.022; p <0.05). No statistically significant difference was found in other binary comparisons (p> 0.05). There was a statistically significant dif-ference between eating control scores according to BMI level (p = 0.041; p <0.05). As a result of bilateral comparisons to determine which group the significant difference originated from, the scores of underweight were higher than the obese group (p = 0.047; p <0.05). It is noteworthy that the scores of underweight and obese groups are high. There was a statistically significant difference between eating discipline scores according to BMI (p = 0.011; p <0.05). As a result of the binary comparisons made to determine which group the significant difference originated from, the scores of the normal group were higher than the obese group (p = 0.013; p <0.05). No statistically significant difference was found in other binary comparisons (p> 0.05). There was a statistically significant difference between conscious nutrition scores according to BMI (p = 0.007; p <0.01). As a result of the pairwise comparisons to determine which group the significant difference originated from, the scores of the normal group were higher than the obese group (p = 0.011; p <0.05).

No statistically significant difference was found in other binary comparisons (p> 0.05). While there was no statistically significant difference between the inter-ference scores according to the BMI (p = 0.073; p> 0.05); It is noteworthy that the scores of underweight group are high.There was no statistically significant difference between the total scores according to the BMI (p> 0.05). Eating, emotional eating, eating con-trol, mindfulness, eating discipline, conscious nutri-tion, interference scores and total scores do not differ statistically in men without thinking according to BMI level (p> 0.05).

In one study, the “eating control” score, which is one of the sub-dimensions of food mindfulness according to the BMI classification, was found to be statis-tically significantly higher than that of normal and obese individuals (p <0.05). In the sub-dimensions of “disinhibition” and “eating discipline”, it was found that normal group had higher scores than obese group (p <0.05) (Ozkan and Bilici, 2018). In this study, a statistically significant difference was found between the “eating control” scores, which is one of the sub-dimensions of food mindfulness according to the BMI classification (p = 0.041; p <0.05). As a result of binary comparisons to determine which group the significant difference originated from; the scores of underweight group were higher than the obese group (p = 0.047; p <0.05). A statistically significant difference was found between eating and disinhibition scores according to the BMI (p = 0.019; p <0.05). As a result of binary comparisons to de-termine which group the significant difference orig-inated from; the scores of underweight group were higher than the obese group (p = 0.022; p <0.05). There was a statistically significant difference be-tween eating discipline scores according to BMI (p = 0.011; p <0.05). As a result of binary com-parisons to determine which group the significant difference originated from; scores of normal group were higher than the obese group (p = 0.013; p <0.05). In a previous study, a significant negative relationship was determined between MEQ-30 score and BMI (p <0.05).

As individuals' MEQ-30 scores increase, their BMI decreases. Body weight, waist circumference and BMI decrease as the disinhibition and eating control scores of the MEQ-30 subscales increase (Ozkan and Bilici, 2019). In this study, a statistically significant relation was found between BMI measurements of women and MEQ-30 score (r: -0.159; p = 0.043; p <0.05). Body weight, waist circumference and BMI decrease as the disinhibition and eating control scores of MEQ-30 subdimensions of women increase. Obesity Research Association (TOAD), 13.878 individuals aged 20 and over participated in Turkey, it was determined that waist circumference in men aged 20-29, 30-39 and 40- 49 was 90.1 ± 10.4 cm, 96.2 ± 11.1 cm and 99.0± 10.7cm, respectively. In the same order, it was determined that women had 83.2 ± 11.9 cm, 94.6± 13.3 cm and 98.5 ± 12.9 cm. In a study on individuals living in the Eastern Anatolia region, according to waist circumference results, 4.9% of men are at metabolic risk and 2.2% are at high metabolic risk, while 10.5% of women are at metabolic risk and 2.5% are at high metabolic risk. In one study,

the evaluation of mindful eating, quality of life and nutritional habits of women in the premenopausal and postmenopausal period, the mean of mindful eating of premenopausal women was 101.9 ± 14.9 while the average of postmenopausal women was 105.1 ± 16.1. The average of the postmenopausal group was higher than the premenopausal group, but this difference was not statistically significant (p = 0.292). When the food mindfulness sub-components of individuals were analyzed according to their BMI values, it was found that the average scores of all subcomponents decreased as the BMI increased. However, the BMI values of the postmenopausal group are moderately negative in the sub-components between disinhibition (r = -0.313, p = 0.021), focus (r = -0.357, p = 0.009), eating discipline (r = -0.495, p = 0.000). a significant relationship was found. A negative relationship was found between BMI values and mindful eating and was found statistically significant (r = -0,276; p = 0.005). Similarly, a negative relationship was found between waist circumference and mindful eating and was found statistically significant (r = -0.212; p = 0.031). It has been reported that waist circumference measurements of individuals with mindful eating increase may decrease (Kital, 2019).

In this study, eating without considering the subdimensions of mindful eating (r: -0,213; p = 0,006), eating control (r: -0,182; p = 0,020), eating discipline (r: -0,235; p = 0,003) and conscious nutrition (r : -0,241; p = 0,002) and a negative statistically significant relationship was determined. In parallel with Kital (2019:149) a negative correlation was found between BMI values and mindful eating, and it was found statistically significant (r: -0.159; p = 0.043; p <0.05). In parallel, a negative correlation was found between waist circumference measurements and total mindful eating scores (r: -0,177; p = 0.024; p <0.05). Both men and women in this study have a significantly higher score for emotional eating subscale. This groups exposed to rapid changes and great diversities all over the world. In a chapter titled Emotional Eating, negative emotions can induce eating, because eating has the capacity to reduce their intensity. Theories point to links between affect and food in early childhood, but cultural effects and certain biological factors (e.g., taste sensitivity) may also play a role (Macht and Simons, 2011:11). This high conscious nutrition score is understandable for this groups. They are interested in care and healthy eating because they don't want to get old. Only if men and women compared, men's eating control, awareness and conscious nutrition scores were significantly lower than the women's. In this study, men have a significantly higher score for emotional eating than women in return women have a significantly higher score for conscious nutrition. Mindfulness is not important, they decide for the best for themselves. Unstable economic conditions in Turkey may have caused men who have the responsibility of subsistence in all generations to be depressed. Besides, women can be interpreted to be more conscious about eating because of the slim body sensation that is imposed by the media and social media.MEQ score, is inversely associated with BMI. That is, higher BMI is associated with lower scores on all MEQ sub-scales or vice versa. This suggests that mindful eating can play an important role in log-term weight maintenance (Framson et al., 2009). In this study for all gender among the subscales, the largest differences were between BMI and eating without thinking, eating control, eating discipline and consious nutrition.

5 | CONCLUSION

This cross sectional study provided knowledge for the relation of mindful eating with BMI. It can be said that mindful eating can play an important role in longterm weight maintenance. The mean value of Total Mindful Eating score appeared close to the upper limit in the specified range. This means, participants of the study were mindful eaters. Mindful eating is an emerging and alternative approach to address unhealthy eating behaviors, healthy weight regulation and weight loss.

Mindful eating is a nonjudgemental awareness of physical (hunger and satiety cues) and emotional (stress,boredom) feeling when eating or in situations that have environmental eating tiggers. This will help researchers with reproducibility and clinicians to interpret the results. Additionally, more randomized, clinical trials with larger participant populations and more diversity are needed to increase the generalizability of results/outcomes and reproducibility of the research.

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