Prevalence and Psychosocial Determinants of Body Mass Index in Adult Population within a National Community Sample

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ABSTRACT: Objective: Studies conducted by the World Health Organization (WHO) and Economic Development and Cooperation Organization (OECD) has shown that the prevalence of obesity is increasing worldwide and has become a serious health problem. The Body Mass Index (BMI), which is a commonly used height-weight index to classify overweight and obesity, is calculated by dividing body weight by the square of height (kg/m²). Psychological factors and sociodemographic characteristics are supposed to affect BMI under current living conditions. The aim of the study was to investigate the relationship between BMI, used in the classification of obesity, sociodemographic characteristics, and various psychological factors in adult. A total of 5,902 individuals (aged 39 and over) completed Sociodemographic Information Form, Body Mass Index Evaluation Form, and Experiences in Close Relationships Scale-Revised, Brief Symptom Inventory, Toronto Alexithymia Scale, Positive and Negative Affect Scale, Personal Well-Being Index-Adult Form. Utilizing hierarchical regression analysis, obesity and overweight were associated with educational status, number of cigarettes, number of children, negative self in both genders. Obesity and overweight were also associated withpsychiatric distress, alexithymia, and avoidant attachment scores in men. Obesity and overweight were associatedalso with alcohol use, somatization, and positive affect score in women. The results of the study reveal the importance of understanding the factors affecting obesity and addresses the problems in a multidimensional way. However, more studies are needed to better understand the factors associated with obesity in Turkey.

KEYWORDS: BMI, obesity, psychological symptoms, socio-demographic characteristics.

INTRODUCTION

Obesity, which is accepted as a complex and multifactorial disease, is the second leading cause of preventable deaths after smoking (Obesity Diagnosis and Treatment Manual, 2018). According to estimates made by the NCD-RisC Group (NCD-RisC Risk Factor Collaboration), the prevalence of age-standardized obesity in the adult population aged 18 years and over is 3.2% in men 1975 and 6.4% in women; In 2014, it increased to 10.8% and 14.8%, respectively (Obesity Diagnosis and Treatment Manual, 2018). The OECD report states that women are more obese than men, but that BMI increases more rapidly in men (OECD, 2017). The prevalence of obesity growth rate in Turkey has similarities with Western countries. The prevalence of obesity among adults has exceeded the critical rate of 30%. In the study Turkey Diabetes Epidemiology (TURDEP) TURDEP-II according to BMI the prevalence of obesity is designated as 44.0% in women, 27.0% in men and 31.2% in total (Obesity Diagnosis and Treatment Manual, 2018).

Excessive and improper nutrition and lack of physical activity are considered to be important factors causing obesity. As well as these factors, genetic, environmental, psychological, socio-cultural, hormonal and metabolic factors, frequent intervals associated too many factors, such as low-energy diet is causing obesity formation (Kopelman, 2000; Collins and Bentz, 2009; Turkey Obesity Challenge Program, 2010; Xu and Xue, 2015). The OECD report states that one in two adults and one in six children are overweight or obese (OECD, 2017). Obesity is defined as abnormal and excessive fat accumulation that poses a health risk. It develops by accumulation of fat in the body secondary to body weight, and since it is not easy to determine body fat percentage, obesity is defined as overweight rather than excess fat (WHO, Obesity, Obesity Diagnostic and Treatment Manual, 2018). In the World Health Organization's classification, it is evaluated as BMI;25-29,99 is overweight, 30-34.99 class I obesity, 35-39.99 class II obesity (high health risk), and 40 and above class III obesity (very serious health risk) (Bender and Krznaric, 2012).

Obesity is an important source of morbidity and mortality that adversely affects quality of life and expectation. Cardiovascular diseases and cancer (colon, breast, kidney and esophageal cancers) are diseases with a high mortality risk associated

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with obesity. In addition, obesity, diabetes, high blood pressure, coronary vessel diseases, metabolic syndrome, liver diseases, gastroesophageal reflux, gallbladder stones, cerebrovascular diseases, increased coagulation level and infertility, obstructive sleep apnea syndrome and osteoarthritis are also seen (Abdelaal*et* al., 2017; Obesity Diagnosis and Treatment Manual, 2018, Frank, 2015).

In the literature, there are many studies examining the relationship between obesity, psychopathology and psychological structure. It has been shown in many studies that obese individuals have higher rates of depression and anxiety disorders than non-obese individuals (Magallares*et* al., 2014; Mannan *et* al., 2016). BMI> 30 kg / m² was found to be associated with depression, anxiety disorders (social phobia, panic, agoraphobia) (Scott *et* al., 2008; Avila *et* al., 2015). Increased risk of depression in obese patients with BMI> 40; depression was more severe and had a poor prognosis. Obesity has been associated with a range of psychological and psychiatric disorders, including anxiety, mood disorders, personality disorders, and schizophrenia (Avila *et* al., 2015). It has been reported that obesity is more common in schizophrenia patients and negative symptoms such as paranoia, apathy and social isolation may lead to irregular nutrition and sedentary life in these patients (Balcıoğlu and Başer, 2008; Subramaniam *et* al., 2014).

Alexithymia is characterized by lack of imagination, speech focused on real events and physical senses, inadequacy of words used to express emotions, and action to avoid intrapsychic conflicts (De Chouly De Lenclave*et* al., 2001). Alexithymia can be evaluated as an independent variable rather than the cause of a chronic disease such as obesity (Adami*et* al., 2010). Obese people have difficulty in defining and expressing their feelings in situations that stimulate their emotions; they have a concrete way of thinking, symbols and phantasies, they can't use to solve emotional conflicts, they are prone to action for these reasons, and excessive eating behavior, it can be a means of reducing undifferentiated emotional tensions (Legorreta*et* al., 1988). In the literature, there are studies showing the effect of attachment on disinhibited eating, psychological symptoms and BMI. It was supported by evidence that disinhibited eating was determined by social interactions in the early stages of life and that this behavior could be genetically transmitted (Wilkinson *et* al., 2010). In obese patients, anxious attachment is positively associated with psychological symptoms. The relationship was particularly associated with depression, major depression and borderline. There was no relationship between avoidant attachment style and psychological symptoms (March,2005).

Personal well-being is a long-term life satisfaction that includes cognitive satisfaction about one's own life (Diener *et* al., 1999; Deci *et* al., 2008). High BMI has negative effects on a person's health, and this provides a serious motivation to reduce obesity rates (Wootton *et* al., 2018). Personal well-being of women with high BMI was low but different BMI did not make a significant difference in men's well-being levels (Bookwala and Boyar, 2008). Traditionally, increasing weight decreases psychological well-being; in another study, it was determined that increased weight had a protective effect on mental health in line with the evidence obtained from genetic information and investigations (Archangelidi and Menyzakis, 2017). The low level of personal well-being was not the main determinant of BMI in obese patients; it has been shown to be mainly influenced by social support and social skills (Dierk*et* al., 2006). Positive emotion reflects a person's degree of feeling enthusiastic, active and alert, high positive emotion, energy, full concentration and pleasurable interaction, and low positive emotion are characterized by sadness and lethargy. Negative emotions are distressing and intolerable and disturbing feelings of guilt, fear and tension, including anger (Watson *et* al., 1998). The effect of obesity on positive and negative emotions was investigated. It was determined that high BMI had an effect on negative emotion level and this situation caused many physical diseases. In addition to causing negative emotions, this negative interaction was also associated with neurobiological, psychological and psychopathological disorders (Pasco *et* al., 2013; Carr*et* al., 2007). Emotional status affects nutrition, normal or low-weight people eat less food in negative emotional situations, and overweight people eat more (Geliebter and Aversa, 2003).

It has been shown that the self-value of obese subjects is associated with BMI and as the BMI increases; there is a decrease in self-value. Low self-esteem was found to be higher in women, non-working and less educated, obese and morbidly obese. Low body perception is higher in low-income, rural areas and morbidly obese (Yücel, 2008; Hamurcu et al., 2015). There is a negative relationship between the frequency of encountering stigmatizing situations and self-esteem level, and the perception of self-esteem is lower among participants who are more likely to encounter such situations (Miller and Downey, 1999; Cihan, 2019).

In the cohort study conducted between the years of 1985-2004 with 6484 participants in the UK on hostility, the relationship between the measured hostility and BMI was evaluated. Both sexes showed an upward trend in BMI over time. At the beginning of the follow-up, high hostility levels were associated with high BMI for both men and women. In men, the level of hostility was higher in the increases in BMI, whereas in females, the relationship between hostility and BMI remained constant. These results showed that the effect of hostility on BMI was related to the biological characteristics of men and women. (Nabi *et* al. 2008).

Adulthood is a stage in which one usually reaches the highest point in his / her work, takes on leadership and rearing roles, and helps his / her children to establish an independent life and the individual becomes aware of his / her life cycle (Santrock, 2012).

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In Turkey, on 9largeconducted sample from different geographical regions in terms of the nature, this study is a first representation of the national population of adult.

The aim of this study is to investigate the factors affecting obesity in our country and to provide a scientific framework for the relationship between BMI and sociodemographic and psychological variables in individuals middle-aged and over.

METHOD
Participants and Procedure

The sample was planned based on the NUTS (nomenclature of territorial units for statistics). NUTS is a hierarchical system used to divide up the economic territory of the European Union. Depending on the population of the cities, data between 200 and 2000 were collected from each territory so that the sample could be as representative as possible. Between July 2018 and October 2018, a total of 125 clinical psychology graduate students worked as interviewers in 79 different cities in 26 regions of Turkey. The inclusion criteria were being over 18 years of age and lack of mental illness that prevented the completion of the questionnaires. More samples were selected from regions with high population density. The study sample comprised 24,830 Turkish participants (12,249 men and 12,131 women; M_{age}=31.79 years, SD_{age}=10.86; range=18 to 81 years).

The obesity prevalence was 40.0% among aged 20 to 39 years, 44.8% among aged 40 to 59 years, and 42.8% among adults aged 60 and older(NCHS Data Brief, 2020).Our study was conducted with 5,902 people in this group, as the rates of obesity at the age of 39 and above are higher.

Measures

Sociodemographic Information Form (SIF): SIF included age, gender, education status, cigarette use and alcohol use.

Body Mass Index (BMI)

The dependent variable of this study BMI was evaluated as:

17 underweight,

17-24.99 normal,

25-29.99 overweight,

30-35 Class I Obesity,

Above 35 Class II Obesity.

Experiences in Close Relationship Revised (ECR-R): Anxious and avoidant attachment were assessed using the Turkish form (Selcuk*et al.*, 2005) of the 36- item ECR-R(Fraley *et* al., 2000). ECR-R item using a Likertscale (1= strongly disagree, 7=strongly agree) were averaged to create indices of anxious (α = .83)avoidant attachment(α = .85).

Brief Symptom Inventory (BSI): General psychiatric distress was assessed using the Turkish form (Şahin and Durak, 1994) of the 53-item BSI(Derogatis and Spencer, 1993).The scale has five sub-dimensions, "*Anxiety*" (13 items), "*Depression*" (12 items), "*Negative SelfConcept*" (12 items), "*Somatization*" (9 items) and "*Hostility*" (7 items).BSI item using a Likertscale (1= almost never, 5=almost always) were averaged to create an index of general psychiatric distress (α = .95).

Toronto Alexithymia Scale (TAS-20): Alexithymia was assessed using the Turkish form (Güleç*et* al., 2009)of the 20-item TAS-20 (Bagby*et* al., 1994). It consists of 3 subscales: difficulty in defining feelings (*TAS-1*), difficulty in expressing feelings (*TAS-2*) and externally oriented thinking (*TAS-3*). High scores indicate high alexithymia. TAS-20 item using a Likertscale (1=strongly disagree, 5= strongly agree) were averaged to create an index of alexithymia(α = .83).

Positive and Negative Affect Scale (PANAS-SF): Positive and negative affect at a given point in time were assessed using the Turkish form (Gençöz 2000) of the 20-item PANAS (Watson *et* al., 1988). PANAS item using a Likert scale (1= very slightly, 5= extremely) were averaged to create indices of positive affect (α = .85)and negative affect(α = .83).

Personal Well-Being Index-Adult Form (PWBI-AF): General well-being of the participants was assessed using the Turkish form (Meral, 2014) of eight-item PWBI-AF (International Wellbeing Group 2006). The International Wellbeing Group covers these eight areas as standard of living, personal health, achieving in life, personal relationships, personal safety, community-connectedness, future security, and spirituality. PWBI-AF item using Likert scale (0= not satisfaction at all, 10= completely satisfied) were averaged to create an index of personal well-being (α = .87).

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Statistical Analysis

The data-analytic strategy addressed the following steps:(1) Evaluation of the BMI; and (2) Investigationof socio-demographic and psychological correlatesof obesity and overweight. (3) Pearson's correlation tests were utilized toexplore correlation coefficients among study variables andhierarchical regression analyses were utilized to predict obesity and overweight based on socio-demographical factors and psychologicalvariables. Before the correlation analysis, data met theassumption of normality based on the skewness and kurtosisvalues. In the regression analysis, it was confirmed that therewere no multicollinearity via examining variance inflationfactor (VIF) and tolerance values. Statistical analyses werecarried out using SPSS 21.0 statistical package program and a p-value of 5% or lower is statistically significant.

RESULTS

The sample of the study was selected among the individuals aged 39 years and over.52.5% of the sample was male (n = 3,100) and 47.5% was female (n = 2,802).

Table-1. Distributions related to Body Mass Index

		Male	%	Female	%
BMI	Underweight <17	9	0,3	36	1,3
	Normal weight 17-24.99	910	29,4	1239	44,3
	Overweight 25-29.99	1642	53,0	1010	36,0
	Obesity class I 30-35	477	15,3	416	14,8
	Obesity class II > 35	62	2,0	101	3,6
	Total	3100	100,0	2802	100,0

53.0% of men and 36.0% of women were found to be overweight. The rate of class I and class II obese patient's was17.3% for males and 18.4% for females (Table-1).

Table-2. Mean scores, standard deviations, and Pearson's correlations coefficients of the study variables
    $p<0,05$ **$p<0,01$; ***$p<0,001$

	1	2	3	4	5	6	7	8
1.BMI	-							
2.Psychiatric distress	0,045***							
3.Negative self	0,039**							
4.Somatization	0,070***							
5.Avoidant attachment	-0,008							
6.Positive affect	-0,023							
7.Negative affect	0,034**							
8.Alexithymia	0,055***							
M	26,65382	21,19549	19,94258	14,6764	3,246377	30,44439	17,8371	13,05261
SD	4,030617	6,769099	6,329699	4,661611	1,065778	7,851625	6,19651	4,849234

Table 2 demonstrates mean scores, standard deviations, and correlation coefficients of the study variables. BMI was positively correlated with psychiatric distress (r=.045, p<.001), negative self (r=.039, p<.01), somatization (r=.070, p<.001), negative affect (r=.034, p<.01), and alexithymia (r=.055, p<.001). BMI did not correlate with avoidant attachment (r = -.008, p>.05) and positive affect (r= -.0023, p>.05).

Table-3. Hierarchical regression analysis of predicting of BMI of men

Model	B	SE	β	t
Education	-.177	0.06	-.055	-2,962**
Number of children	0,360	0,057	0.117	6,333***
Number of cigarette	-.369	0,060	-.116	-6,122***

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Psychiatric distress	-.044	0,021	0.780	-2,114**
Negative Self	0,044	0,020	0.078	22,213*
Alexithymia	0,027	0,013	0.045	1,999*
Avoidant Attachment	-0,138	0,070	-.040	-1,980*

B, unstandardized regression coefficient; SE, standard error; β, standardized regression coefficient [a] Primary school = 1, Graduate school = 5; [b] No child= 1, 8 child = 8; [c] 0 cigarette= 1, 5=> 41cigarettes.
***p<0,05 **p<0,01; ***p<0,001*

Table 3 shows the result of hierarchical regression analysis of men. BMI was positively associated with number of children(β = 0.117, $p < .001$), negative self (β = 0.078, $p < .05$),alexithymia(β = 0.045, $p < .05$). BMI was negatively associated with education level (β = -.55, $p < .01$), number of cigarette (β = -.116, $p < .001$), psychiatric distress(β = 0.780, $p < .01$),and avoidant attachment (β = -.40, $p < .05$). They accounted for % 4 of the variance in BMI (F= 7.5440, $p < .001$).

Table-4. Hierarchical regression analysis of predicting BMI of women

Model	B	SE	β	t
Education	-0,712	0,072	-.197	-9,825***
Number of children	0,549	0,079	0.134	6,945***
Number of cigarette	-0,246	0,094	-.049	-2,62**
Alcohol Use	-0,518	0,163	-.060	-3,172*
Negative self	-0,049	0,024	0.68	-1,99**
Somatization	0,086	0,025	0.93	3,379***
Positive affact	-0,032	0,011	0.55	-2,759**

B, unstandardized regression coefficient; SE, standard error; β, standardized regression coefficient[a]Primary school = 1, Graduate school = 5;[b]No child = 1, 8child= 8; [c]0cigarette= 1, 5=> 41 cigarettes, [d]No alcohol= 1, Everyday= 4.
***p<0,05 **p<0,01; ***p<0,001*

Table 4 shows the result of hierarchical regression analysis of women. BMI was positively associated with number of children (β = 0.134, $p < .001$), and somatization (β= 0.93, $p < .001$). BMI was negatively associated with education level (β = -.197, $p < .001$), number of cigarette (β = -.49, $p < .01$),alcohol use (β = -.60, $p < .05$), negative self (β = 0.68, $p < .01$), and positive affact (β = 0.55, $p < .01$). They accounted for %11,5 of the variance in BMI (F= 20.976, $p < .001$).

DISCUSSION

Having a lower education level, having so many children, smoking few cigarettes, and negative self were associated with obesity and overweight in both genders.Psychiatric distress, alexithymia, and avoidant attachment were associated with obesity and overweight in men. Somatization, positive affect, and alcohol use were associated with obesity and overweight in women. It has been seen that our findings are consistent with some research results in the literature, but not compatible with others.

The proportion of overweight men is higher than that of women, while the proportion of obese women is higher than that of obese men(17.3% of men were obese, 56.0% were overweight, 18.4% of women were obese and 36.0% were overweight). In the literature, obesity is more common in women and is consistent with our study. Turkey is the country with the highest incidence of adult obesity in Europe. In Turkey Obesity Challenge program(2010) report, according to various studies conducted on adults in Europe, it is stated that the prevalence of obesity ranged from 5-23% in men, 7-36% in women. In a study by Peixoto *et* al. (2007) with Brazilian adult population, 10.7% of men were obese, 31.2% were overweight, 13.9% of women were obese and 29.2% were overweight. Yumuk*et* al. (2005) found that the rate of obesity was 23.7% (32.4% for women and 14.1% for men) in 12,866 people in Konya. In a study by Doğan*et* al. (2011), the prevalence of obesity in Afyonkarahisar was found to be 31.7% (39.8% for women, 20.7% for men), and it was reported that obesity prevalence of women in all age groups was higher than men. The fact that women's body structures are more prone to obesity and the proportion of body fat is higher than men, that women live a more sedentary life than men, and that they cannot allocate time to regular sports, that processes such as birth and menopause change the hormonal balances suggest that obesity rates are higher in women than men.

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As the education level of men and women decreased, it was seen that BMI increased; there was a negative relationship between education level and obesity, and it is consistent with the studies in the literature. High level of education stands out as a protective factor for the risk of obesity. Aslan (2018) found that the education level was found to be lower in the obese group and higher education level in the normal weight group. In the study of Maddi *et* al. (1997), it is stated that as the education level increases, the knowledge accumulation increases and the ability to cope effectively with life problems develops and this decreases the BMI level. In a study conducted by Çayır*et* al. (2011) with people who applied to nutrition and diet clinic, obesity rate was 64.0% in illiterate; 17.2% of university and university graduates. In our study, university graduates are the most populous group, and because of the higher socioeconomic conditions and living standards of individuals, the risk of obesity decreases(University graduates had the largest share with 40.4% in male participants and 35.3% in female participants).

It was observed that as the number of smoking increased, the BMI of men and women decreased. It is thought that smoking increases the metabolic rate and reduces appetite. Bakshi*et* al. (2008), as in most studies, reported that non-smokers BMI was higher than smokers in their own studies. The study of Fouad *et* al. (2006) showed that smokers were more obese than non-smokers, and it was stated that smoking caused a change in appetite, food preferences and basal metabolism rates. Tendency to high-calorie foods may increase BMI as the taste and odor sensation returns to normal in people who quit smoking and people enjoy more food than they eat.

It was determined that BMI increased as the number of children increased in men and women. Çayır*et* al. (2011), Fouad *et* al. (2006) showed that there is a relationship between obesity and number of births in women. In the study conducted by Aslan (2018), the majority of the sample group had children; those with 3 or more children are in the highest obesity group and those with single children are in the normal weight group. Overweight participants have 2 children. In our study, BMI values increased as the number of children increased, indicating that the number of children was a predictor of BMI. It is suggested that having many children in women is an important factor leading to an increase in BMI due to the inability to lose weight during pregnancy and lactation.

An important finding of our study is that the relationship between negative self-score and BMI varies according to gender. It was observed that BMI increased with negative self-score increased in men and BMI increased with negative self-score decreased in women. Obese people feel disgusted and humiliated by other people. Negative social attitudes towards obesity cause these feelings to be reinforced in obese people. Mental occupations related to obesity lead to a decrease in self-esteem and development of a negative self-concept. This result regarding the negative self-perception for men is consistent with the findings of Değirmenci, Karagöl*et* al. In study of Değirmenci (2006) it is found that the self-value of obese individuals was associated with BMI and as the BMI increased, the self-value decreased. Negative self-perception is not only a disturbing emotion but also leads to different psychopathologies. Karagöl*et* al. (2014) conducted studies on the relationship between depression and obesity. It has been suggested that stigmatization of obese people and the devaluation of obese people from the perspective of the reflected self-assessment lead to lower self-esteem, to create more negative self-images, to think that others do not like themselves and to experience higher levels of depression. The more rare, abnormal, and unacceptable it is to have overweight in a group or community, the more severe its mental impact is. However, as the negative self-score decreased in women, BMI increased. Our results for women are not consistent with the literature. In the study of Yücel (2008), low self-concept continuity was found to be significantly higher in overweight-obese (61.5%). Low self-esteem is one of the important factors that initiate eating problems and eating behavior and eating problems are manifestations of low self-esteem. Pesa (1999) reported that self-esteem is increasing in case of gaining weight and control over the body by dieting in girls and adolescents especially in developed countries, but the failure in this subject ends with low self-esteem. In our study, when women's negative self-score decreases, the increase in BMI can be explained by the presence of thoughts that support women's gaining weight in the Turkish folk culture, symbolizing the productivity, health and power of full-bodied women. Continuous diet in our society to lose weight in this regard and the failures they see in their fellow people, other women think that they are like themselves, may result in a decrease in negative self-score for women.

According to the research findings, BMI decreases when psychiatric distressincreases in men. However, many studies in the literature have associated obesity with depression and anxiety. Oyekcin*et* al. (2011) study on anxiety and depression levels in obesity patients, the most common psychiatric disorder in obesity was found to be major depressive disorder. Most of the obese patients without any psychiatric diagnosis had some anxiety and depression symptoms. Pahalı*et* al. (2018), Ozturk *et* al. (2018) showed that while combating obesity, eating disorders, metabolic factors as well as focusing on depression and anxiety symptoms are important. Jorm*et* al. (2003), Chen *et* al. (2009), Keddie (2011) showed that obese women had more symptoms of depression and anxiety than normal-weighted women, but there was no difference between obese men and normal-weight men. In our study, the absence of a relationship between BMI and depression and anxiety in women may be due to the high self-esteem, self-esteem and social support of the sample women.

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Present findings regarding avoidant attachment are consistent with a study in the literature showing that obese patients have a lower level of avoidant attachment. The aim of Nancarrow*et* al. (2017) study is to explain the role of attachment styles in obesity. The study group consisted of patients waiting for bariatric operation and the control group consisted of non-obese individuals. The group waiting for bariatric operation reported a higher level of anxious attachment (experimental group average 4.13 control group average 2.81) and lower avoidant attachment level (experimental group average 2.81, control group average 3.27) compared to the non-obese control group. In another study in the literature, it was found that high avoidant attachment was associated with emotional eating habits. The relationship between emotional and insecure attachment in individuals evaluated for bariatric surgery was investigated in the study conducted by Taube-Sciff*et* al. (2015). In this study, it was demonstrated that insecure attachment styles (anxious and avoidant attachment), which are associated with emotional eating simultaneously with depression and anxiety, are an important mechanism in individuals who will undergo bariatric surgery; It has been shown that insecure attachment styles may increase the difficulties of emotional regulation and the risk of subsequent emotional eating habits .High avoidant attachment was found to be directly related to emotional eating habits.It is known that men who have avoidant attachment style tend to avoid and suppress their feelings in order to experience emotional relationships. When the avoidant attachment score decreased, it was thought that men could enter emotional relationships and express their feelings clearly, which explains the increase in BMI.

Present study, alexithymia score as the increased in men, BMI increased. This result is consistent with the results of Fukunishi and Kaji's (1997) study. This study was conducted on externally oriented thinking in obese men and women. The results of the study showed that obese individuals are prone to alexithymia and especially think outward. Because alexithymic people are busy with the outside world because of the lack of emotion and imagination, they are unaware of the emotional elements in their inner world, and they live their lives like robots. Since they are not successful in passing their emotions through cognitive processes, they try to relieve the tension caused by emotional states by eating too much, which may lead to an increase in BMI.

In the literature, consistent with our findings, Lahti-Koski *et* al. (2002) found that the risk of obesity was higher in individuals who did not use alcohol. There are different studies in the literature showing the relationship between alcohol use and BMI. French *et* al. (2010) stated in their study that alcohol is not only an addictive substance but a calorie drink that is effective on metabolic functions and cognitive processes. They stated that alcohol use for women and older adults is not a risk factor for weight gain. In a two-prospective cohort study by Hart *et* al. (2010), alcohol consumption was found to be associated with liver disease and increased BMI. In our study, the decrease in the frequency of alcohol use in women was reflected as an increase in BMI, which may be due to the fact that women try to close their emotional gaps by eating excess food because of their low tolerance to alcohol.

According to the result of the study, as the positive affect score of women decreased, BMI increased. This result is consistent with the study of Pasco *et* al. (2013) in the literature. It was found that the negative affect scores of obese women are more likely to have negative effects. It was also determined that negative affect scores of obese women were higher than normal weight and this relationship affects individual physical illnesses. He supported the idea that obese women cannot have positive affect and may have negative emotions such as distress, anger, disgust, fear and shame. When obese women have negative emotions, they may lose control of eating and consume excessive food. Mental restraint efforts to control their weight can be an important source of negative emotions because they are constantly on a diet. More negative emotions in this cycle trigger more food intake and are thought to cause an increase in BMI.

Present study, a positive correlation was found between somatization and BMI in women. in the study of Maddi *et* al. (1997), Minnesota Multiphasic Personality Inventory- Second Edition (MMPI-2). Scale 3 individuals prefer to avoid responsibility instead of dealing with stress factors and they develop psychosomatic symptoms and headache, abdominal disorders, weak tachycardia and suffer from chest pains. It is stated that obese people do not know that these disorders are based on psychological reasons, they cannot perceive their emotions and they generally act childish, egocentric and impulsive. Individuals in MMPI-2, scale 2 are generally desperate, self-denouncing and disdainful, low-energy, often crying and exhibiting motor retardations. It is stated that obese people at this level are socially shy and tend to avoid responsibility. In the MMPI-2 scale, it was emphasized that chronic weakness, lack of energy and sleep disturbance were seen in the first level individuals, and they were selfish and had narcissistic personality traits. Our study is consistent with the study of Papelbaum*et* al. (2010). It is stated that somatization disorders are more common in women and symptoms are more serious and triggered by stress in general. BMI levels of obese individuals in Brazil; stated that they were higher than individuals who were dismissed from their jobs and in mourning and divorce. Obesity is thought to be a factor affecting somatization. High somatization in obese women; biological factors may result from their reproductive roles, hormonal changes, disadvantaged social status, difficult and severe living conditions.

The findings of the present study should be interpreted while taking several limitations into account. First, the sample was made with the findings of 5,902 people and this study is not nationally representative of the Turkish community. The second limitation is that the research data were collected through face-to-face interviews and self-report scales were used. Thirdly,

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interviews were conducted in city centers and rural areas were not included in the study. The education level of research sample is above the average of Turkey. In addition, the findings obtained within the scope of the research were limited to the qualities measured by the data collection tools used. Further longitudinal studies should be conducted because the present study was cross-sectional.

CONCLUSION

Despite the limitations, this is the first examination investigating the psychological correlates of obesity and overweight among a Turkish community sample.

As a result of the research, it is seen that 52.5% of the participants were male, 47.5% were female, 36.9% were university graduates, 82.8% were married and 45.6% had 2 children. In this respect, it was concluded that the participants represented women and men equally, the level of education of the participants was high and most of them had children. Since the study was conducted with participants aged 39 and over, the number of married and having children is high.

The results obtained from the study showed that the obesity rate of women is higher than that of men (the rate of class I and class II obese patients was 17.3% for males and 18.4% for females). The number of overweight men is higher than that of overweight women (53.0% of men and 36.0% of women were found to be overweight).

In our study, it was concluded that there was a negative linear relationship between educational level and number of cigarettes and BMI in men and women. It was concluded that there was a negative linear relationship between psychiatric distressand avoidant attachment scores in men, alcohol use, negative self, positive affect score and BMI in women; BMI increased while values of these factors decreased.

According to our study, a positive linear relationship was found between the number of children and BMI in both genders. A positive linear relationship was found between negative self, and alexithymia in males while this relationship was between somatization scores and BMI in females; BMI increased while the values of these factors increased.

The aim of this study is to determine the sociodemographic and psychological factors affecting the BMI of adult individuals who have an important role and responsibility in the development and development of the country, and to guide the causes of obesity which is an important public health problem. The risk of obesity and overweight, which is an important problem not only for adults but also for children and young people, needs to be analyzed. Even though this study provides some contribution, further studies are warranted in order to develop effective prevention and intervention strategies for obesity and overweight.

Compliance in Ethical Standards

Ethical approval for the study was received from the university's ethics committee, and complied with the Declaration of Helsinki.

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