SOCIAL APPEARANCE ANXIETY AND SELF-ESTEEM IN WOMEN: COULD BODY MASS INDEX HAVE A MEDIATING ROLE?

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Abstract

Social appearance anxiety has been associated with many concepts, especially body image and self-esteem, and has a very high level of comorbidity. We aimed to examine the relationship between body mass index (BMI), body perception, social appearance anxiety and self-esteem among women, with a particular focus on the possible mediating effect of BMI regarding the relationship between social appearance anxiety and self-esteem. We included 1344 volunteer women in this study. The self-esteem scale scores of women differed significantly according to body image, BMI, and weighing frequency. Social appearance anxiety was found to be inversely associated with self-esteem, and this relationship remained significant when adjusted for BMI as a mediating parameter. As a result, it is expected that improving women's body perception and reducing social appearance anxiety are the foremost interventions to increase the self-esteem of these women.
KEY WORDS: *body image, social appearance anxiety, body mass index, self-esteem, physical appearance*

Resumen

La ansiedad por la apariencia social se ha asociado con muchos conceptos, especialmente con la imagen corporal y la autoestima, y tienen un nivel de comorbilidad muy alto. Nuestro objetivo fue evaluar la relación entre el índice de masa corporal (IMC), la percepción corporal, la ansiedad por la apariencia social y la autoestima entre las mujeres, con especial interés en el posible efecto mediador del IMC entre la ansiedad por la apariencia social y la autoestima. Participaron voluntariamente 1344 mujeres. Las puntuaciones de la escala de autoestima diferían significativamente según la imagen corporal, el IMC y la frecuencia de pesaje. Se encontró que la ansiedad por la apariencia social estaba inversamente relacionada con la autoestima y esta relación siguió siendo significativa cuando se ajustó por el IMC como parámetro mediador. En consecuencia, pensamos que mejorar la percepción corporal de las mujeres y reducir la ansiedad por la apariencia social son las principales intervenciones que pueden aumentar la autoestima de estas mujeres.
PALABRAS CLAVE: *imagen corporal, ansiedad por apariencia social, índice de masa corporal, autoestima, apariencia física*.

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Introduction

Body image has three dimensions: cognitive, subjective and behavioral. The cognitive aspect is associated with the perception of physical appearance (body weight, shape, size), the subjective dimension with satisfaction, concern or anxiety about appearance, while the behavioral aspect is related with anxiety and depression (Ferreira et al., 2013). Body image is an important component of the concept of self-esteem in women (Siegel et al., 2020). Various studies have shown that the difference between individuals' current image and their perception of ideal body image can lead to significant dissatisfaction (Ferreira et al., 2011; Heider et al., 2015). This dissatisfaction increases the likelihood of eating disorders in people with negative body images (McLean, & Paxton, 2019). Comorbid conditions, such as depression, loss of self-esteem, weight loss obsession and self-isolation behavior, are also common among individuals with body image disorders (Alizade et al., 2016). Body perception disorder in obese individuals is due to the negative evaluation of perceived body weight, and the decreases in self-esteem and negative body image perception may lead to depression which can cause overeating and increased risk of obesity, thereby completing the vicious cycle. It has not been clarified whether low self-esteem and negative body image in obese individuals are problems caused by obesity or whether they are causes of obesity, but it is established that low body image can lead to eating disorders (Boğaz et al., 2019).

Social appearance anxiety is defined as the anxiety experienced by individuals when their physical appearance is evaluated by other people (Hart et al., 2016). Social appearance anxiety has been associated with many concepts in the literature, especially body image and self-esteem (also referred to as self-concept) (Osman, & Bozgeyikli, 2015), and has a very high level of comorbidity (Levinson et al., 2013). Of note, severe levels of anxiety about social appearance can cause obesity due to overeating, and, on the other end of the spectrum, eating disorders such as anorexia and bulimia nervosa may develop (Brosof, & Levinson, 2017; Dakanalis et al., 2016; Koskina et al., 2011; Levinson, & Rodebaugh, 2012; Levinson et al., 2013). Many studies show that there is an inverse relationship between self-esteem and body mass index (BMI) in adults (Ahadzadeh et al., 2018; Cella et al., 2020; ALAhmari et al., 2019). However, the strength of the relationships shown by these studies are often low, suggesting possible confounders or mediating effects which necessitate adjusted assessments in this context.

Taking into account available data on this topic which associate self-esteem and BMI, and considering that different BMI values could alter self-interpretation of social appearance (Şanlıer et al., 2018; Asthana, 2012), it may be valuable to evaluate the relationship between social appearance anxiety and self-esteem with respect to the possible influence of BMI as a mediating factor. Therefore, this study was conducted with an aim to examine the relationships between social appearance anxiety, body image, self-esteem and BMI among women, with particular focus on the possible mediating effect of BMI between social appearance anxiety and self-esteem.

Method

Participants

This study was conducted on 1344 voluntary adult women between the ages of 19-65, from September 1 to October 1, 2020. It was found that 39.7% of the women were overweight and 24.7% were obese. The main socio-demographic characteristics of these women are show in Table 1.

Table 1
Socio-demographic characteristics of the study group

Variables		*n*	%
Marital status	Single	302	22.5
	Married	1042	77.5
	Total	1344	100.0
Occupation	Student	69	5.3
	Civil servant	470	35.9
	Worker	113	8.6
	Housewife	657	50.2
	Total	1309	100.0
Having children	No	367	27.3
	Yes	977	72.7
	Total	1344	97.4
Education level	Primary school	67	5.0
	Secondary school	90	6.7
	High school	343	25.5
	University	735	54.7
	Postgraduate education	109	8.1
	Total	1344	100.0
Body mass index	Underweight	16	1.2
	Normal	463	34.4
	Overweight	533	39.7
	Obese	332	24.7
	Total	1344	100.0

Instruments

a) *Social Appearance Anxiety Scale* (SAAS; Hart et al., 2008). The scale was developed to measure social appearance anxiety in individuals, and the validity and reliability study of the Turkish-language form of the scale has been conducted (Doğan, 2010). The SAAS is a self-report scale consisting of 16 five-point Likert-type items. The items consist of various expressions (cognitive, emotional and behavioral) related to individuals' appearance-related anxiety. The higher the score obtained from the scale, the lower the self-esteem (worse anxiety). The Cronbach's alpha reliability coefficient of the scale was 0.95.

b) *Rosenberg Self-Esteem Scale* (RSES; Rosenberg, 1965), Turkish version by Çuhadaroğlu (Çuhadaroğlu, 1986). This scale and has 12 subscales consisting of 63 items. The self-esteem subscale is a 4-point Likert-type scale consisting of 10 questions, 5 of which are inversely scored. In research, the subscales can be used separately. The higher the score obtained from the scale, the higher the level of self-esteem (Turker et al., 2018).

c) *Stunkard Figure Rating Scale* (Stunkard et al., 1983). It includes a pictogram with nine male and female figures that go from slim to obese to evaluate body measurements (Stunkard et al., 1983). Participants were asked to examine the figures and first indicate which silhouette most resembles their body size, then specify which silhouette they want to look like. Zero values indicate individuals that are satisfied with their bodies. Of note, there are also pre-determined BMI values corresponding to each of the silhouettes. The BMI compliance of the participants was determined by evaluating the relationship between individuals' actual BMI and, the BMI values corresponding to the silhouette they likened themselves. BMI compliance was divided into three categories: those who observed themselves to be overweight, those who observed themselves to be underweight, and those whose perception was compatible with the chosen silhouette (Stunkard et al., 1983).

d) The body mass index. The BMI of all individuals participating in the study was calculated by dividing the body weight (kg) reported by the participants by the square of the height (m) ($BMI = kg/m^2$). According to the World Health Organization (WHO), BMI classification is as follows: below 18.5 kg/m^2 is underweight, between 18.5-24.9 kg/m^2 is normal, between 25-29.9 kg/m^2 is overweight, and 30 kg/m^2 and above is obese (Consultation, 2004).

Procedure

Research data were collected using the online questionnaire technique. After the prepared questionnaire was uploaded to the system online, individuals filled in the questionnaire form in about 15 minutes using their computers or mobile phones. Informed consent was obtained from the participants before they started the survey. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Approval for the study was obtained from the Non-Interventional Ethics Committee of Ankara Medipol University (Date: 26/08/2020, No: 0035).

Data Analysis

Statistical analysis of the data was performed by Statistical Package for Social Sciences (SPSS) software version 22.0 (SPSS Inc., Chicago, IL, USA), with a statistical significance threshold of $p < .05$. For variables demonstrating normal distribution, the independent samples *t*-test was applied for the comparison of two groups, and the one-way analysis of variance (ANOVA) was applied for the evaluation of more than two subgroups. In the analysis of non-normally distributed variables, the Mann-Whitney U test was used for two-group comparisons, and the Kruskal Wallis test was applied for the evaluation of more than two groups. Simple linear regression analysis was utilized to determine whether social appearance anxiety was a significant determinant of self-esteem. Mediating variable analysis was performed to assess whether BMI was a mediator in the relationship between social appearance anxiety (independent) and self-esteem (dependent). The bootstrap analysis was utilized with 5000 resampling options, and values were reported with 95% confidence intervals (CIs) (Baron & Kenny, 1986; Hayes, 2017). Finally, due to the limitations in Baron and Kenny's causal steps approach in quantifying the level of indirect effect, the Sobel test was employed with use of unstandardized coefficients.

Results

Participants scored between 12-40 on the RSES (*M*= 31.7, *SD*= 5.58), and between 16-77 on the SAAS (*M*= 36.9, *SD*= 15.30).

The SAAS scores of women significantly differed according to the frequency of weighing (χ^2= 16.34, *p*< .05), body image (χ^2= 180.53, *p*< .05) and body mass index (χ^2= 146.64, *p*< .05). The SAAS rank averages were higher in the obese and severe obese subjects compared to the underweight group; in the overweight, obese and severe obese subjects compared to those with normal weight; in the obese and severe obese subjects compared to overweight subjects; and finally, in severe obese subjects compared to obese subjects. It was observed that the SAAS rank averages were higher in those who were obese compared to those who were underweight, normal and overweight, and in those who were overweight compared to those who had normal weight (Table 2).

Comparisons of self-esteem scores with respect to various variables are given in Table 3.

When the mediating variable model was examined with the path diagram and results in Table 4 and Figure 1, it was seen that social appearance anxiety had a direct inverse relationship with self-esteem.

Table 2
Social appearance anxiety scale scores and some parameters and test results

Variables	Status	n	M/AR	SD	df	Analysis	p	η²	Sig. dif.*
Marital status	Married	302	40.04	15.73	1342	4.09	0.000	0.02	
	Single	1042	35.98	15.07					
Having children	No	367	40.18	15.80	1342	4.86	0.000	0.02	
	Yes	977	35.66	15.94					
Working status	Employed	602	638.34			202777.0	0.004		
	Unemployed	742	700.22						
Weighing Frequency	1+per day	118	716.93		6	16.34	0.012		(1-5), (2-5), (3-5), (4-5), (6-5), (7-5)
	1 per day	300	668.47						
	1-6 per week	418	670.11						
	1-3 per month	275	671.94						
	1 per month	93	529.54						
	Less than once per month	79	724.19						
	Never	55	714.64						
Body Image	Underweight	38	529.62		4	180.053	0.000		(4-1), (5-1), (3-2), (4-2), (5-2), (4-3), (5-3), (5-4)
	Normal	381	505.47						
	Overweight	412	642.01						
	Obese	433	802.65						
	Severe obese	80	988.41						
Body Mass Index	Underweight	16	583.00		3	146.64	0.000		(4-1), (4-2), (3-2), (4-3)
	Normal	456	522.59						
	Overweight	533	678.91						
	Obese	332	858.34						

*Note*: AR= average rank; U-Mann-Whitney U test; χ² Kruskall Walls test.

Table 3
Self-esteem scale scores concerning the frequency of weighing, body image and body mass index

Variables	Status	n	M	SD	df	Analysis	p	η²	Sig. dif.*
Marital status	Married	597	32.76	5.26	1323	5.46	0.000	0.02	
	Single	728	31.18	5.24					
Having children	No	366	31.11	5.52	1324	3.23	0.001	0.01	
	Yes	960	32.17	5.21					
Working status	Employed	598	32.74	5.28	1337	6.09	0.000	0.03	
	Unemployed	741	30.93	5.51					
Weighing frequency	1+ per day(1)	116	31.64	5.28	6,1332	2.76	0.012	0.02	7-3, 5-3
	1 per day(2)	298	31.24	5.44					
	1-6 per week(3)	418	30.73	5.32					
	1-3 per month(4)	275	31.49	5.54					
	1 per month(5)	98	32.92	5.10					
	Less than once per month(6)	79	31.37	5.85					
	Never(7)	55	32.29	6.75					
	Total	1339	31.73	5.49					
Body image	Underweight(1)	38	31.92	6.47	4,1333	16.25	0.000	0.05	1-5, 2-4, 2-5, 3-4, 3-5
	Normal(2)	381	32.71	5.11					
	Overweight(3)	407	32.59	5.11					
	Obese(4)	432	30.58	5.51					
	Severe obese(5)	80	28.90	6.54					
	Total	1338	31.74	5.50					
Body mass index	Underweight(1)	15	29.87	5.24	3,1336	9.81	0.000	0.02	2-4, 3-4
	Normal(2)	462	32.55	5.14					
	Overweight(3)	533	31.82	5.38					
	Obese(4)	330	30.49	5.99					
	Total	1340	31.72	5.51					

Note: Weighing frequency: 3= 1-6 times per week, 5= 1 time per month, 7= Never; Body Image: 1= Underweight, 2= Normal, 3= Overweight, 4= Obese, 5= Severe obese; Body mass index: 2= Normal, 3= Overweight, 4= Obese.

Figure 1

Path diagram of the mediator model with residual variances for self-esteem and BMI
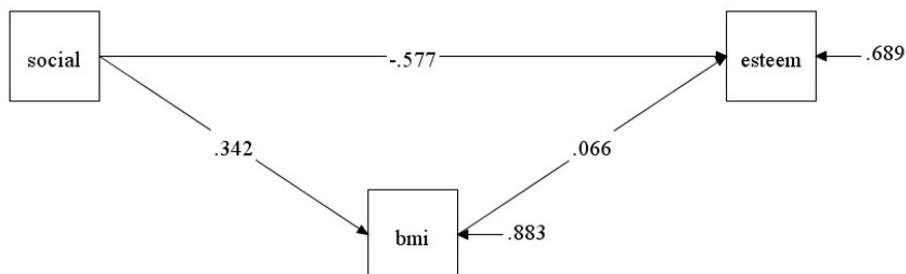
When the indirect route was examined, we found that social appearance anxiety was positively associated with BMI value, and that BMI was again positively associated with self-esteem score. It was revealed that the mediation coefficient of BMI was weak but significant with regard to the effect of social appearance anxiety on self-esteem. According to Bootstrap results performed to assess indirect effects, it was determined that the indirect effect between the variables was significant (95% CI: 0.002-0.046). The Sobel test, calculated with use of unstandardized coefficients and error values, also revealed a significant relationship between BMI and self-esteem, demonstrating that BMI had a weak but significant mediating effect on the relationship between social appearance anxiety and self-esteem (Sobel: 2.47, *p*< .05). Taken together, these findings showed that a 1-point increase in SAAS score was associated with a 0.554 decrease in self-esteem score, after adjusting for BMI value (Table 4).

Table 4

Direct and indirect effects on the model

Independent variables	Dependent variable					
	Body mass index			Self-esteem		
	Direct	Indirect	Total	Direct	Indirect	Total
Social appearance anxiety	.342*		.342*	-.577*	.023*	-.554*
Body mass index				.066*		
Residual variance	.883			.689		
R^2	.117			.311		

Note: *p*< .05.

Discussion

Obesity is one of the most important public health problems in the world (Abdelaal et al., 2017). Disruptions in the way individuals perceive their body may cause eating disorders and/or obesity (Harrison et al., 2016; Pellizzer et al., 2018). Elevated BMI negatively affects the quality of life and the emotional well-being of individuals either directly (Herhaus et al., 2020; Williams et al., 2015), or by way of

causing various health problems (Böckerman et al., 2014). Among women especially, higher BMI has been associated with lower self-esteem (Kiviruusu et al., 2016). In this study, it was determined that the self-esteem of normal weight and overweight women were higher compared to obese women, which is in parallel with the literature. More importantly, our results also showed that BMI value had a partial mediator effect on the relationship between levels of social appearance anxiety and self-esteem; however, the mediating effect appeared to lower the absolute value of correlation between SAAS score and self-esteem score.

It has been determined that dissatisfaction with body image can affect the daily behavior of individuals. Many women are unhappy with the appearance of their faces (Frederick et al., 2016), their weight (Swami et al., 2010), and the general appearance of their bodies (Fiske et al., 2014; Frederick et al., 2016). It is emphasized that, compared to normal-weight women, the majority of obese women attempt to camouflage their physical figure with clothes, or postural or movement-related changes, and they may avoid looking at their bodies, and might feel upset when thinking about their appearance. These behaviors are associated with low self-esteem and depressive mood caused by body image dissatisfaction (Sarwer, & Polonsky, 2016). There is a positive relationship between body image perception and excessive weight control behaviors, especially in women (Silva et al., 2018). It is noteworthy that obese individuals live with a fear of being fat and an obsession with being thin, similar to anorexic patients, regardless of their body weight. Those who say that they are not disturbed by their obesity are often in extreme denial and can appear to be rationalizing their obesity and also its mental impact (Puhl, & Heuer, 2010). This dissatisfaction is associated with a number of negative psychological and physical health outcomes, including social anxiety (Cash et al., 2004). Many studies have reported that positive body image is associated with higher self-esteem (Gillen, 2015; Swami et al., 2016; Tylka et al., 2015). However, women with high self-esteem also tend to evaluate their bodies positively. In addition, feelings of guilt and being labeled (in various manners) cause the individual to focus on the negative aspects of self-perception. Obese individuals' desire to lose weight and often utilize strict and limited eating behaviors in order to reach social norms can also lead to negative self-perception. In this study, it was found that body image perception and self-esteem were significantly associated, similar to the majority of literature.

Individuals' negative body image perceptions related to their body and their physical appearance can be defined as social appearance anxiety (Hart et al., 2016). While people who are not concerned with how their body shape is evaluated by others experience a low level of social appearance anxiety, people who have negative thoughts about their physical appearance and who are sensitive to others' evaluations of their appearance have greater levels of social appearance anxiety. It has been established that obese individuals feel more anxious in society (Şanlıer et al., 2018; Turel et al., 2018). In the present study, it was found that SAAS score was associated with self-esteem, and, perhaps more importantly, that BMI had a partial mediating role on this relationship. It is crucial to note that an increase in social appearance anxiety was associated with higher BMI and lower self-esteem; however, interestingly, higher BMI was found to be weakly associated with higher self-esteem level when SAAS score was controlled (through the indirect route evaluating

mediating effect), suggesting potential confounders or variations in body image perception according to BMI category. Nonetheless, overall assessment with adjustment for BMI values demonstrated that the significant inverse relationship between social appearance anxiety and self-esteem remained at a moderate level.

In conventional and social media, patterns about the perfect appearance of the female body are often imposed upon individuals (Martins et al., 2018). Sociocultural pressure to have a slim body paves the way for young people and women to dislike their bodies and to utilize unhealthy weight loss methods (Tiggemann, 2004). One of the methods applied in this regard is frequent self-weighing. Although it has been stated that self-weighing can be an important criterion for body weight control, various studies suggest that self-weighing can negatively affect many psychological variables, especially among women (Neumark-Sztainer et al., 2006). In a meta-analysis, most studies emphasized that self-weighing had negative effects on body weight and psychological status (Pacanowski et al., 2015). A study conducted on women reported that 48.6% of women weighed themselves once a week (Mintz et al., 2013), and frequent self-weighing in adolescents increased binge eating and led to unhealthy eating behaviors (Neumark-Sztainer et al., 2006). Similarly, it was found that self-esteem decreased and anxiety and depression increased with higher frequency of weighing in young adults (Quick et al., 2012). In this study, it was found that those who were weighing themselves 1-6 times a week had lower self-esteem than those who weighed themselves once a month and those who reported no weighing.

In conclusion, our data supports available literature in demonstrating that social appearance anxiety and body perception are among the most important factors affecting self-esteem among women. Decreased self-esteem levels were found to be primarily associated with increased levels of social appearance anxiety, and the relationship between these parameters sustained its moderate level of relationship when controlled for BMI. Therefore, it is evident that improving body perception among women can decrease social appearance anxiety and increase self-esteem, apparently regardless of BMI. However, it is crucial to note that the use of medical interventions that can improve eating behaviors and overall health must not be compromised in this process. With such meticulous approaches, the adverse effects of social appearance anxiety can be limited among women, thereby increasing self-esteem and enabling improvement of their health without resorting to unhealthy weight management methods caused by sociocultural pressure. Although this study revealed that social appearance anxiety has a strong influence on self-esteem, different studies are needed on women from different cultures, especially with the inclusion of women with a more heterogeneous distribution of profession.

The limitations of the study are that the research was conducted online and the information was obtained in line with the participants' own statements. Also, the individuals included in this study may have had various health concerns affecting various characteristics due to the fact that the study was conducted during the COVID-19 quarantine period. Of note, although the Stunkard Figure Rating Scales has been translated into Turkish, it has not been subject to a validity and reliability study. This may have affected results obtained from the scale; however, the focus of this study was to assess relationships between social appearance anxiety, BMI and

self-esteem; thus, the primary outcomes of our research would not have been influenced by this problem. The strengths of the study include the number of participants and the fact that the participants were from different socio-economic and age groups.

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