Effect of obesity on Covid-19 anxiety and role of self-esteem on women in Turkish population

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Abstract. *Background and aim:* In this prospective study, it was aimed to evaluate effects of obesity on Covid-19 anxiety and role of self-esteem on women in Turkish population. *Methods:* Obese (n = 184) and non-obese women (n = 219) who applied to our clinic in the first six months of 2020 were included in the study. The women included in the study were divided into two groups as having Body Mass Index (BMI) 30 or more obese according to the WHO criteria. Demographic information form, the Rosenberg Self-Esteem Scale and the Covid-19 Anxiety Scale was used for data collection. *Results:* Most of the obese participants were housewives, and the difference was statistically significant ($p < 0.05$). Family obesity history was more common at obese group with statistically significant difference ($p < 0.05$). Rosenberg self-esteem were lower and Covid-19 Anxiety levels were higher in obese patients with statistically significant differences ($p < 0.05$). obesity, working status and family history were significantly correlated with Covid-19 anxiety ($p < 0.01$). According to GLM model, only obesity had positive contribution to Covid-19 anxiety at multivariate level ($p < 0.05$). The level of Covid-19 anxiety is higher in obese women, and the increase in self-esteem levels decreases this anxiety level. *Conclusions:* In order to reduce this burden, the news and content that indicate obesity as a risk factor in publications about the pandemic should be planned considering the self-esteem of these individuals.

Key words: Covid-19, obesity, women, self-esteem

Introduction

Obesity is a health problem that reduces the quality of life of individuals, is suspicious the cause or risk factor of many diseases and is struggled globally (1-3). Although obesity does not directly cause mortality or morbidity, it is an important issue in all fields of medicine, including psychiatry, due to reasons such as the increase in the severity of comorbid diseases and the difficult treatment process (4-6).

Psychological factors related to body image and appearances are the main effects of obesity on the individual. In individuals whose body image perception changes, overweight image causes psychological burden (7-9). Self-esteem, which shows individuals'

self-confidence and is an important psychological indicator, has been found to be lower in obese individuals in many studies (10-12). Studies in the literature show that the individual's morale status affects his health status. Especially high levels of anxiety affect the immune systems of individuals and cause them to be more vulnerable to diseases (13-15). Although there have been studies on Covid-19 anxiety level in the literature, there have not been sufficient studies examining the Covid-19 anxiety level in obese individuals and associating it with self-esteem.

In this prospective study, it was aimed to evaluate effects of obesity on Covid-19 anxiety and role of self-esteem on women in Turkish population which have 41% obesity rate according to health ministry statistics.

Methods

Population

Obese (n = 184) and non-obese women (n = 219) who applied to our clinic in the first six months of 2020 were included in the study. The women included in the study were divided into two groups as having Body Mass Index (BMI) 30 or more obese according to the WHO criteria. Although BMI >25 was accepted as obesity in past studies, WHO and Centers for Disease Control (CDC) accepts BMI>30 as obesity criteria (16). Since all guidelines in health field accepts WHO and CDC as authority, BMI>30 was accepted as obesity criteria. The criteria for inclusion in the study were determined as volunteering, absence of additional illnesses that might affect the research results, not using psychiatric drugs, not receiving psychological support treatment, and not having Covid-19. Patient population includes housewives and worked women. The sample of the research was selected as voluntary application with having no other diseases causing obesity.

Ethical considerations

Ethics committee approval was obtained from Biruni University Scientific Researches Ethical Committee with 2015-KAEK-72-22-03. Researcher's also applied to Biruni University Ethical Committee. Voluntary consent form and institutional permissions were obtained for the implementation of the study.

In the selection of the sample size of the study, according to the source of Cohen, Manion and Morrison (17), the minimum total number of participants required in the studies in which social screening was performed was determined as 383 and 403 participants were reached in the study.

Data collection tools

A data form consisting of three parts: the demographic information form, the Rosenberg Self-Esteem Scale and the Covid-19 Anxiety Scale was used in the study. Participants' age, employment status, marital status, having children, family history of obesity and chronic disease were questioned in the demographic information form.

Coronavirus Anxiety Scale (CAS) is a measurement tool developed by Lee (18) that measures Covid-19-induced anxiety with five questions in five Likert type. The Turkish validity and reliability of the scale was made by Biçer et al. (19) and the internal consistency coefficient (Cronbach Alpha) value was found to be 0.832. In our research, we found the Cronbach Alpha value of the scale as 0.800. Items in the scale are coded from 1 to 5 according to their degree of participation. The high score indicates the high level of anxiety caused by Covid-19.

Rosenberg Self-Esteem Scale is a scale developed by Rosenberg that measures self-esteem among ten items in five-point likert type (20). In our study, we found the internal consistency Cronbach Alpha value of the scale as 0.698.

Statistical methods

Nominal and ordinal data were described with frequency analysis, and scale parameters were described with means and standard deviations. Chi-Square test was used for differences between categorical variables (Working status, Marital status, Having child, Family obesity, Chronic disease). Kolmogorov Smirnov Test was used for normality of scale parameters. Since scale parameters were distributed non-normally, Mann Whitney U test was used for differences of scale parameters. Spearman's rho correlation and Generalized Linear Model (GLM) analysis were used for relationship analysis. SPSS 17.0 for windows was used for analysis at 95% Confidence Interval with 0.05 significance level.

Results

Mean age of obese group was 47.18±5.54, and mean age of non-obese group was 47.10±5.45. 76.1% of obese groups were housewives, whereas 26.5% of non-obese group was housewives. Most of participants in obese group (63.0%) and non-obese group

(62.6%) were married. 48.9% of obese group and 52.5% of non-obese group had child. 2.3% of obese group and 6.5% of non-obese group had family obesity history. 8.2% of obese group and 5.0% of non-obese group had chronic disease. Most of the obese participants were housewives, and the difference was statistically significant (p<0.05). Family obesity history was more common at obese group with statistically significant difference (p<0.05). Age, marital status, having a child and chronic disease distributions were not significantly different between groups (p>0.05) (Table 1).

Rosenberg self-esteem were lower and Covid-19 Anxiety levels were higher in obese patients with statistically significant differences (p<0.05) (Table 2).

Spearman's rho correlation analysis results showed that obesity, working status and family history were significantly correlated with Covid-19 anxiety (p<0.01) (Table 3).

According to GLM model, only obesity had positive contribution to Covid-19 anxiety at multivariate level (p<0.05) (Table 4).

Discussion

In addition to the deaths caused by the disease during the Covid-19 pandemic process, the psychological effects on individuals have also been a matter of considerable debate today (21-22). Especially during the pandemic period, prolonged restrictions and daily given number of patients and deaths cause significant psychological burden on individuals (23-25). In addition, studies that show that obesity is associated with Covid-19 risk factors and increases the risk, more affect the psychological health of obese individuals.

Most of the studies on obesity and demographic characteristics in the literature suggest that the rate of obesity is lower in employees and family history is an important factor for obesity (26-28). In our study, obesity was higher in housewives compared to working women. Again, obesity levels were higher in those with a family history of obesity.

In studies that establish a relationship between obesity and psychology, it has been reported that obesity causes serious psychological problems, especially in

Table 1. Baseline characteristics of patient groups.

	BMI>30 (n=184)	BMI<30 (n=219)	p value
Age, mean ± SD	47.18±5.54	47.10±5.45	0.891[a]
Working status, n (%)			
Housewife	140 (76.1)	58 (26.5)	0.000[b]
Worker	44 (23.9)	161 (73.5)	
Marital status, n (%)			
Single	68 (37.0)	82 (37.4)	0.920[b]
Married	116 (63.0)	137 (62.6)	
Child, n (%)			
No	94 (51.1)	104 (47.5)	
Yes	90 (48.9)	115 (52.5)	0.472[b]
Family obesity history, n (%)			
No	214 (97.7)	172 (93.5)	0.035[b]
Yes	5 (2.3)	12 (6.5)	
Chronic disease, n (%)			
No	169 (91.8)	208 (95.0)	0.203[b]
Yes	15 (8.2)	11 (5.0)	

[a]. Mann Whitney U Test, b. Chi-square Test, SD: Standard Deviation.

Table 2. Rosenberg Self-Esteem and Covid-19 Anxiety mean differences between obesity groups.

	BMI>30 (n=184)	BMI<30 (n=219)	p value
Rosenberg Self-Esteem, mean ± SD	29.89±2.25	27.58±2.18	0.002ᵃ
Covid-19 Anxiety, mean ± SD	24.27±0.89	20.78±1.22	0.000ᵃ

ᵃ. Mann Whitney U Test, SD: Standard Deviation.

Table 3. Spearman's rho correlation for factors related with Covid-19 anxiety.

Covid-19 Anxiety Total	BMI>30 (n=184)	BMI<30 (n=219)
RSB total	-0.184*	-0.160*
Age	0.012	-0.014
Working status	0.000	-0.036
Marital status	-0.037	0.113
Child	-0.051	0.119
Family obesity history	0.173*	0.008
Chronic disease	-0.067	0.101

**p<0.01

Table 4. Generalized Linear Model for Covid-19 Anxiety levels.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test	
			Lower	Upper	Wald Chi-Square	p
(Intercept)	18,374	,7070	16,988	19,760	675,304	,000
[Working status=No]	,039	,1213	–,198	,277	,105	,746
[Working status=Yes]	0ᵃ	.	.	.	.	.
[Family history=No]	–,436	,2634	–,952	,080	2,738	,098
[Family history=Yes]	0ᵃ	.	.	.	.	.
[Group=BMI>30]	3,524	,1237	3,281	3,766	811,897	,000
[Group=BMI<30]	0ᵃ	.	.	.	.	.
RSB total	–,102	,0238	,056	,149	18,415	,000
(Scale)	1,117ᵇ	,0787	,973	1,282		

women, as it distorts body image (29-31). Amesberger et al (32) stated that changes in body image as aging related change causes self esteem problem in women. In another study, Dąbrowska-Galas and Dabrowska (33) stated that physical activity in women related with body weight, and affects self esteem. Kupcewicz et al (34) also stated that body image and self esteem is related with positive life quality among nursing students. In our study, anxiety levels were higher in obese individuals. However, self-esteem was higher in obese individuals. Although there may be many reasons for

this, it is possible to state that obese individuals are mostly housewives and that there are more factors affecting self-esteem in working individuals. It is possible to state that showing obesity as a risk factor has an important role in the level of anxiety that increases with obesity.

The results obtained from the correlation analysis showed that self-esteem was associated with Covid-19 anxiety level in both the obese and non-obese groups. Family history had a significant relationship in obese individuals, while there was no significant relationship

in the non-obese group. It is possible to state that the fact that other obese individuals in the family also share the Covid-19 risk factor has an effect on this result. The GLM model results showed that only self-esteem and obesity had a significant effect on Covid-19 anxiety level. It can be stated that obesity is reported as a risk factor and at the same time, psychological problems caused by obesity have an increasing effect on the anxiety level in these individuals. The anxiety-reducing effect of self-esteem can be used as an anxiety-reducing tool, especially in media posts.

Among the important limitations is the limited participation of the study due to the fact that patients are less likely to attend the clinic during elective procedures during the pandemic period, the study being single-centered, and therefore the demographic structure of the sample is close to each other. It is possible to put the subject in more detail in multi-center studies with larger samples and different demographic structures.

On the other hand, the research findings contribute to the literature both in terms of being the first study to examine Covid-19 anxiety in obese women and in terms of suggesting reducing the Cobid-19 anxiety levels of obese individuals in terms of its results. Especially arranging the contents of obesity as a risk factor in visual media and providing these individuals without harming their self-esteem can provide significant contributions.

Conclusion

According to the results of the research, the level of Covid-19 anxiety is higher in obese women, and the increase in self-esteem levels decreases this anxiety level. In addition to the restrictions and changes in daily life due to the pandemic, there is a psychological burden caused by the deterioration of body image in obese individuals. In order to reduce this burden, the news and content that indicate obesity as a risk factor in publications about the pandemic should be planned considering the self-esteem of these individuals.

Conflicts of Interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

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