

Effects of Body Mass Index on Adolescents' Social Comparisons and Body Cathexis in Istanbul

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ABSTRACT

This descriptive-comparative study was carried out to examine the relationship between the distribution of body mass index (BMI) values and scores on the Social Comparison Scale (SCS) and the Body Cathexis Scale (BCS). The study was carried out among 373 randomly selected students who were currently studying at a government private high school (N=208) or a public high school (N=165) located in Istanbul, the largest city in Turkey. The students' BMI percentile ranges were compared with scores on the BCS and SCS. Data from the study were evaluated statistically by percentages, means, t-tests, tests of analysis of variance (ANOVA), and the Kruskal-Wallis test. The mean age (in years) of the participating adolescents was 16.1±0.8. In all, 61% of the participating students were male (N=227), 45% were attending 10th grade (N=169), and 56% (N=208) were attending a government private high school. The great majority (92.5%) of the adolescents had a BMI between the 5th and 95th percentiles (5th to <85th is normal; 85th to <95th is overweight or at risk for obesity). The Cronbach's alpha coefficient was 0.93 for the BCS and 0.83 for the SCS. Judging from this study, social comparison and satisfaction with one's body are not related to BMI among Turkish adolescents. Also according to this study, female Turkish adolescents are more satisfied with their body image than are their male counterparts.

Key words: adolescent, body mass index, Social Comparison Scale, Body Cathexis Scale, Istanbul

Introduction

According to the World Health Organization (WHO), adolescents are boys and girls aged 10-19 years engaged in a developmental period that begins in childhood and ends in adulthood. Near the end of the 20th century, adolescents comprised 20% of the world's population, and 85% of adolescents were living in developing countries¹. According to data from Turkey Population and Health Research (TPHR), in 2003, 19.7% of Turkey's population was comprised of adolescents². During the adolescent period, growth accelerates, and changes are experienced because of sexual development. Throughout this period, nutrition is one of the most important influences on physical development.

Recently, particularly in developed countries, the body mass index (BMI, calculated as the ratio of weight to the square of height, or kg/m²) has been used to diagnose disorders of nutrition (such as malnutrition and, particu-

larly, obesity). The BMI for age and gender is used to identify problems of obesity (excess body fat) among children aged 2-20 years whose height can be measured in a standing position^{3,4}. Reference values have been calculated by the U.S. National Center for Health Statistics (NCHS) and the Centers for Disease Control and Prevention (CDC), which is also in the U.S. WHO suggests that common BMI curves be used for all countries to provide an equal standard of evaluation. Children who are at or above the 95th percentile are identified as obese (excessively fat); those between the 85th and 95th percentiles are overweight and at risk for obesity; and those who are below the 5th percentile are underweight (thin)^{3,4}.

Self-concept, which involves the mental image that people have of themselves, is developed during the adolescent period. Physical appearance is very important during this period, and self-concept is affected by a vari-

ety of factors, including relations with the opposite gender, attractiveness, acceptance among friends, and being someone who is liked by others⁵. Adolescents obtain information and develop opinions about themselves by making comparisons with other people, and they attach importance to the opinions that others express. Social comparison develops involuntarily and is influenced by the activities of others⁶.

This descriptive-comparative study explores the relationship among Turkish adolescents between BMI percentile values and scores on the Social Comparison Scale (SCS) and Body Cathexis Scale (BCS).

Materials and Methods

Subjects

This descriptive-comparative study explores the relationship among Turkish adolescents between BMI percentile values and scores on the Social Comparison Scale (SCS) and Body Cathexis Scale (BCS).

Procedure

The study was carried out among randomly selected high school students attending either a government private high school (N=208), also called Anatolian high school, or a public high school (N=165) located in Istanbul (the largest city in Turkey). Only students who volunteered to participate were included. None of the students were refused to participate the study from each group. Anatolian high school and public high school students were similar socio-demographic characteristic speciality. Data was gathered between January and March of 2008 by the authors. After being informed about the survey, students were measured to obtain their height and weight, which allowed their BMI to be calculated. The students were asked to complete three forms, as described below.

Instruments

Socio demographic Information Form

This form, which was developed by the authors, included age, gender, grade, and height and weight. The calculated BMIs were evaluated by the BMI reference curves prepared by CDC and recorded for each child.

Body Cathexis Scale (BCS)

The Body Cathexis Scale, which was developed by Secord and Jourard⁷, has 40 questions designed to measure how content people are with various parts of their bodies and with various bodily features. A higher score indicates greater discontentment. The scale was found to be valid for use in Turkey by Hovardaoğlu⁸. The lowest total score possible is 40, and the highest is 200.

Social Comparison Scale (SCS)

The Social Comparison Scale, which was developed by P. Gilbert, S. Allon, and D. Trent⁹, measures the percep-

tions that people have about themselves when compared with other people. The scale is composed of 18 questions, with high scores indicating positive self-perception and lower scores indicating negative self-perception. Şahin, Durak, and Şahin found the scale to be valid for use in Turkey¹⁰. The lowest total score possible is 18, and the highest is 108¹¹.

Data analysis

Data were evaluated statistically using percentages, means, t-tests, analysis of variance (ANOVA), and the Kruskal-Wallis test.

Results

The mean age (in years) of the participating adolescents was 16.1±0.8; 61% were male (N=227), 45% (N=169) were in the 10th grade, and 56% (N=208) were attending a government private (Anatolian) high school (Table 1). In most cases (92.5%), the students were classified by BMI as either normal or overweight/at risk for obesity (i.e., they were between the 5th and 95th percentiles) (Figure 1). Mean height of the participants was 170±8.4 cm; mean weight was 62.2±10.4 kg. Mean BMI was 21.4±3.17, with a mean for females of 21.66±3.26 and a mean for males of 21.2±3.12. The Cronbach's alpha coefficient was 0.83 for the SCS and 0.93 for the BCS (Table 2).

In a comparison of total scores for the SCS and BCS by gender, the female students were found to have a significantly lower BCS score (p<0.001); there was no significant difference by gender for the SCS total score (p>0.05) (Table 3).

In comparisons by type of school, the mean SCS score was found to be significantly lower (t=-2.296; p<0.01)

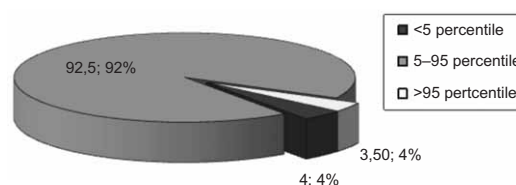


Fig. 1. Body mass index (BMI) reference values of adolescents.

TABLE 1
SOCIO DEMOGRAPHIC CHARACTERISTICS OF ADOLESCENTS

Characteristic	Number (N)	Percentage (%)
Gender		
Female	146	39
Male	227	61
Type of high school		
Government/private (Anatolian)	208	56
Public	165	44
Grade		
9 th	64	17.2
10 th	169	45.3
11 th	140	37.5

TABLE 2
MEAN, STANDARD DEVIATION, AND CRONBACH ALPHA
VALUES OBTAINED THROUGH THE SCALES

Scale	$\bar{X}\pm SD$	Cronbach Alpha
Social Comparison Scale (SCS)	84.61±11.39	0.83
Body Cathexis Scale (BCS)	161±20.69	0.93

among the government private high school students (83.16±11.74) than among the public high school students (86.45±10.69). In contrast, there was no significant difference by type of school in the BCS scores (Figure 2).

In terms of grade in school, a significant difference was found for total SCS score (Table 4), which decreased as the grade became higher, indicating a lower level of self-perception ($p < 0.05$). For the total BCS scores, differences by grade were not significant.

Contrary to expectations, no significant associations were found between BMI percentile and either the SCS or BCS total scores ($p > 0.05$) (Table 5).

Discussion and Conclusions

In this study, the mean BMI of participating students was 21.4±3.17. For male students, the mean BMI was 21.2±3.12, similar to the value of 21.05±3.15 found by Orsel and colleagues¹² and also similar to value of 21.7±3.8 found by Öksüz¹³. In a more recent study by Ivarsson and coworkers¹⁴ BMI values for female students aver-

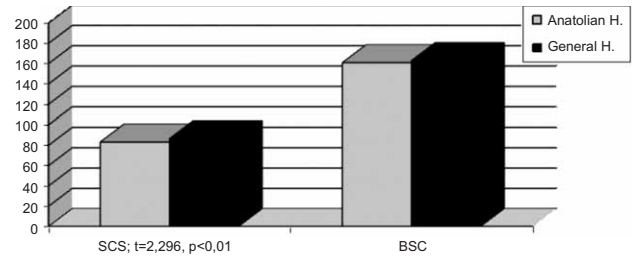


Fig. 2. Comparison of schools by SCS and BCS total scores.

aged 19.6±2.5, and those for male students averaged 20.4±2.74. Thus, both Orsel et al. and Ivarsson et al. obtained findings similar to those recorded for the present study. In a study by Aslan and colleagues¹⁵ 74.5% of the female students were within the normal percentile values for BMI, but in the current study, 95% of female students were within the normal range. The reason that a much higher percentage of female students were within normal BMI values in the present study is thought to be attributable to the higher socioeconomic level of students in our sample.

Our finding that the female students scored significantly lower on the BCS total score than their male counterparts accords with Aslan and colleagues¹⁵, who stated in their study that it is thought that females attach more importance to such considerations as personal fatness or thinness. The lower score for females in the present study indicates greater contentment with their bodies than that felt by their male counterparts. The study by

TABLE 3
COMPARISON OF GENDER WITH SCS AND BCS TOTAL SCORES

Gender	Female (N=146)	Male (N=227)	Test	Significance
Total Scores of Scales	$\bar{X}\pm SD$	$\bar{X}\pm SD$	t	p
SCS	83.35±12.24	85.43±10.76	-1.722	0.086
BCS	153.41±20.61	167.11±18.92	-6.592	0.000*

TABLE 4
COMPARISON OF SCS AND BCS TOTAL SCORES BY GRADE

Grade	9 th (N=64)	10 th (N=169)	11 th (N=140)	Test	Significance
Total Scores of Scales	$\bar{X}\pm SD$	$\bar{X}\pm SD$	$\bar{X}\pm SD$	F	p
SCS	87.59±10.66	84.52±9.99	83.37±13.01	3.051	0.049*
BCS	165.87±20.64	159.96±19.28	162.02±22.16	1.923	0.148

* $p < 0.05$

TABLE 5
SCS AND BCS TOTAL SCORES RELATIVE TO BMI REFERENCE VALUES

BMI reference value	<5th percentile (N=13)	5th–95th. percentile (N=345)	≥95th percentile (N=15)	Test	Significance
Total Scores of Scale	$\bar{X}\pm SD$	$\bar{X}\pm SD$	$\bar{X}\pm SD$	KW	p
SCS	89.0±9.30	84.29±11.47	88.26±10.32	3.74	0.154
BCS	171.69±14.52	161.57±20.61	157.26±25.30	3.28	0.194

Canpolat and coworkers¹⁶ also stated that body image is related to gender. Conversely, Orsel et al.¹² stated in their study that females are less content than males with their body images.

Our finding that students attending government private high schools (Anatolian high schools) had a significantly lower total score on the SCS was surprising, as adolescents attending these schools are chosen by examination and their education is more advanced than that offered in public high schools. No difference was found by type of school in terms of BCS. Thus, we conclude that gender is more important than type of school in perceptions about one's body (as noted, we found that female students had a better body image).

One would expect that older students would get higher SCS scores, but our findings do not support this expectation. The explanation may be that students in the 9th grade have a higher self-perception because they have an examination at the end of the 8th grade that makes them feel a certain success and acceptance; in contrast, students in higher grades are losing their self-confidence,

and their anxiety about the future is increasing because they are preparing to take university examinations that will determine their occupation in their adult lives.

Contrary to expectations, significant correlations were not found between the SCS or the BCS total scores and the BMI percentile values of the adolescents studied. However, consistent with our study's findings, Öksüz has stated that there is a statistically significant difference between the BMI and SCS¹³; Pýnar has stated that there is not a statistically significant difference between the body cathexis of obese and non-obese people¹⁷. On the other hand, Canpolat et al.¹⁶ have stated that body cathexis is affected by BMI, with the higher-weight group in their study getting a significantly lower BCS score.

In conclusion, this study found that the majority of Turkish adolescents have normal BMI values and that BMI does not have an effect on body perception or on social comparisons. Gender, however, was found to have an effect on body perception (female students scored higher); and school and grade were found to have an effect on social comparison.

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UTJECAJ INDEKSA TJELESNE MASE NA SOCIJALNU USPOREDBU I TJELESNO SAMOPOŠTOVANJE KOD ADOLESCENATA U ISTANBULU

SAŽETAK

Cilj ove deskriptivno-komparativne studije bio je istražiti odnos između distribucije vrijednosti indeksa tjelesne mase (BMI) i vrijednosti na skali socijalne usporedbe (SCS) i skali tjelesnog samopoštovanja (BCS). U studiji su sudjelovala 373 slučajno odabrana učenika koji pohađaju privatnu srednju školu (N=208) i državnu srednju školu (N=165) u Istanbulu, najvećem turskom gradu. Rangovi BMI percentila uspoređeni su sa rezultatima na skalama BCS i SCS. Podaci studije analizirani su statistički postocima, aritmetičkim sredinama, t-testom, analizom varijance (ANOVA) i Kruskal-Wallis testom. Aritmetička sredina dobi sudionika adolescenata je 16,1±0,8. Sveukupno, 61% sudionika su muškospolo (N=227), 45% su bili 10. razred (N=169) i 56% (N=227) su bili učenici privatne srednje škole. Značajna većina (92,5%) adolescenata imala je BMI između 5. i 9. percentila (5–85 je normalno, 85–95 je prekomjerna težina s rizikom za pretilost). Koeficijent Cronbachove alfe bio je 0,93 za BCS i 0,83 za SCS. Sudeći po ovoj studiji, socijalna usporedba i zadovoljstvo vlastitim tijelom nisu povezani s BMI među turskim adolescentima. Također, turske adolescentice su zadovoljnije sa svojim tijelom nego adolescenti.