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The Relationship between Body shape concern, Self-esteem, Social anxiety and Body mass index in College students

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Abstract

Background: Body shape concerns among adolescents are gradually increasing in India. What was initially thought of as a western concept is now being increasingly seen in India as well. Possibly the result of advent of media and globalization. Although research on this issue and factors influencing it are emerging in Asian countries including India,[1] the evidence is markedly deficient.

Methodology: The Study was conducted among engineering, degree and medical college first year students in Khammam. Study sample comprised of 260 students, out of which there were 99 engineering, 81 degree and 80 MBBS first year college students. Body shape concern was measured by Body Shape Questionnaire. Self-esteem by Revised Feelings of Self Inadequacy scale and social anxiety was measured by Interaction Anxiousness Scale.

Results: The main findings of the present study were that, there was a significant negative correlation of body shape concern and self-esteem and a significant negative correlation between self-esteem and social anxiety. There was a significant positive correlation between body shape concern and social anxiety. Body shape concern is more in females than in males (mean BSQ score in females=80.73 and in males=67.02). There was a significant difference of three variables when viewed in regard to different BMI levels namely under, normal and overweight.

Conclusion: Current study has demonstrated that there is a relationship between body image, feelings of self-esteem and social anxiety.

Keywords: social anxiety, self-esteem, body shape concern, BMI.

Introduction

Body image as a psychological concept was initially established in 1935, by the Austrian psychiatrist Paul Ferdinand Schilder.[2] He said that the mental images that individuals have of their own bodies explain the way their bodies are introduced to them. One's mental body image is established by senses, ideas and feelings that, most of the time, are unconscious. This representation is built and rebuilt throughout life.[3,4] Body image is a multidimensional dynamic construct that involves internal biological and psychological factors as well as external cultural and social determinants.[5,6]

Studies conducted among adolescents from Brazil,[7] Korea[8] and Malaysia[9] reported the prevalence of body image concerns to be 24.1%, 51.8%, 87.3% respectively. The latter study[9] also reported that 35.4% of the participants indulged in binge eating and 36% were using dietary restraints. The proportion of adolescents having body image concerns according to studies conducted in different cities of India are 54%,[10] 81%,[11] 27%[12] and 33%.[13]

It has been proposed that in an increasingly globalized world, body dissatisfaction is becoming more international.[14] Recent studies in India have found evidence that foreign concepts of beauty are modifying the way Indians define an attractive appearance.[15] While fairness has long been a cherished attribute in India,[16] slimness has also come to be associated with beauty. A study on Indian female college students in Karnataka found that 86% of the subjects desired to be slim.[17] Another study on children in South India found that participants were likely to attempt weight loss irrespective of their weight status, age and gender.[18]

In general, self-esteem is a judgement or an evaluation that is made about a person's own self-worth and the feelings associated with it .Future behaviour is affected by these attitudes that are closely related to personal beliefs and social relationships.[19] There are both negative and positive outcomes to either high or low self-esteem. Generally, having a positive view of the self is considered beneficial as those who have a high self-esteem seem to be psychologically happy and healthy. Low self-esteem is linked time and time again to a variety of health problems, not just eating disorders. It has been described as feelings that lie within a person; they are negative core beliefs about themselves that derive from "inborn temperamental factors and subsequent experience", for instance, neglect or abuse.[20]

Body dissatisfaction is characterized by negative affect and negative feelings about the self, for instance when women tend to describe themselves as fat and unhappy with their weight. These feelings are channelled into eating disorders but more specifically into negative feelings about the body itself or body dissatisfaction.[21]

The relationship between self-esteem and body dissatisfaction among adolescents is quite strong, and the emphasis on "appearance in making self-evaluations have been implicated in the low levels of self-esteem".[22]

Social anxiety is defined by the DSM as a "persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others".[23]

Body mass index (BMI) is the ratio of weight to height measures in kilograms/metre.[2] To be classed as Underweight, BMI must be 18.5 or under, normal weight - 18.5 to 24.9 and over weight - 25 and above. In the present study we propose to study whether there is any significant difference between the three variables (body image, self-esteem and social anxiety) in relation to three groups divided according to BMI as underweight, normal weight and overweight.

Overweight children, adolescents, and adults generally have lower body esteem than do their normal-weight peers and this is especially true for females.[25] Current study was conducted in college students of 18 to 25 years as adolescence is a confusing time as it is a period of transitioning into adulthood.

With this background, a cross-sectional descriptive study was planned which sought to determine body image disturbances and its relationship to other variables like self-esteem, social anxiety and BMI, a hitherto underexplored area in our setting.

There is a plethora of research on body shape and image, self-esteem and anxiety, which are dealt with separately or are investigated with other variables. However there are no studies, combining the three afore mentioned variables and investigating them in terms of BMI. Therefore, this current study is of great importance in order to demonstrate and document the way in which people view and feel about their body shape, and how it may be related to their levels of social anxiety and self-esteem among college students.

Aims and Objectives

1. To study relationship between body shape concern, self-esteem and social anxiety
2. To study body shape concern as a predictor of self-esteem and social anxiety.
3. To study if there is any gender difference in body shape concern
4. To study if there is any difference of body shape concern, self-esteem and social anxiety in relation to different BMI levels

Materials and Methods

Place of study: Undergraduate colleges of Degree, MBBS and Engineering respectively.

Study period: The study period is from September 2016 to March 2017.

Study sample: A total of 260 first year college students were included in the study. Sample was collected from undergraduates studying various branches in order to rule out bias and also for homogeneity of sample. Sample was collected by convenient sampling.

Study design: Cross sectional study.

Inclusion criteria: All college students who consented for the study

Exclusion criteria: College students who have not given consent for study and students who are not healthy are excluded.

Materials: Following questionnaires were administered to the subjects as described below. A semi-structured demographic data of age, weight, height, gender, education was collected from each student in study sample.

Body Shape Questionnaire:[24]

Scale was used to assess the participants concern for their body shape. It consisted of thirty four questions rated on a six point Likert scale (1 meaning "never" and 6 meaning "always") which assessed how the participant has felt about their appearance over the past four weeks. The scoring was done according to the study by Kuan, Ho et al,[25] 80 and below meant that the participants has no preoccupation with their body, 81-110 meant a slight preoccupation, 111-140 meant a moderate preoccupation and above 140 meant that they have severe body concern. This scale is standardized in Indian population by Nehra, Mohanty and Sharan et al.[26]

Interaction Anxiousness Scale:[27]

The IAS questionnaire is composed of fifteen items that measure social anxiety by providing statements that's are measured on a five point Likert scale ranging from 1 (not at all characteristic of me) to 2 (extremely characteristic of me). Respondents indicate the extent of their agreement with the statement by selecting a number. It contains both positive and negative statements. Scoring of the four positive questions, numbers, three, six, nine and fifteen meant they needed to be reversed scored. The scale scores range from fifteen, indicating low social anxiety to seventy five which indicates a high level of social anxiousness. IAS has demonstrated reliability and validity as a measure of tendency to experience social anxiety in conversational settings.[27] Many studies conducted in Indian population have used the interaction anxiousness scale to measure social anxiety.[28]

Revised Feelings of Inadequacy Scale:[29]

This twenty three question inventory is scored on a scale of 1 to 5 using the following terms; 1 meaning "very often" or "very confident" and 5 meaning "practically never" or "not at all confident". The majority of the questions are reversed scored, only questions five, six and thirteen were not. This scale measures self-esteem primarily by asking the participants to indicate how they feel in questions about social anxiety, self-consciousness and personal worthlessness. Low scores denote high feelings of self-

inadequacy which results in low self-esteem and high scores are indicative of high self-esteem.

Body Mass Index BMI was designed to give an approximate percentage of body fat based on a person's height and weight measurements. To calculate, weight in kilograms was divided by the square height in meters (kg/m^2). In accordance with international classification adapted by the World Health Organisation (WHO, 2004), scores below 18.5 are considered underweight, normal weight is between 18.5 and 24.99 and over weight is anything that exceeds 25. The study was approved by the research ethics committee of the institute. Subjects were briefed in detail about the nature and purpose of the study. Confidentiality was assured and informed consent was taken.

Statistical Analysis

Statistical analysis was done by using Statistical Package for the Social Sciences (SPSS) for Windows, Version 19. The necessary data was collected and appropriate statistical tests were applied. To find if there was any significant correlation between body shape concern, social anxiety and self-esteem, Pearson's correlation was used. To evaluate mediating role of body shape concern for self-esteem and social anxiety multiple regression analysis was done. Mann-Whitney U test was used to find gender difference in body shape concern. Kruskal Wallis test was used to see if there is any significant difference in values of body shape concern, self-esteem and social anxiety in terms of different BMI levels.

Results & Discussion

Out of 260 participants in present study there are 24.615% males (n=64) and 75.384% females (n=196). BMI was divided into three groups. The overweight category contained 38 people (14.61%); normal weight had 139 people (53.46%) and underweight with 83 people (31.92%).

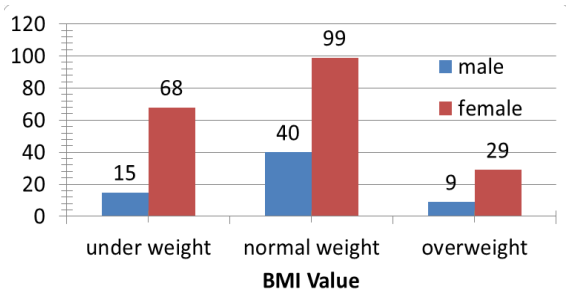

Fig. 1: Showing SAMPLE distribution of males and females in various BMI groups

Table 1: Socio demographic distribution of first year students from three colleges

		Engineering(n=99)	MBBS(n=80)	Degree(n=81)
Age	17yrs	18(18.18%)	21(26.25%)	13((16.04%)
	18yrs	65(65.65%)	44(55%)	51(62.96%)
	19yrs	16(16.16%)	15(18.75%)	17(20.98%)
Sex	Males	19(19.19%)	25(31.25%)	20(24.69%)
	Females	80(80.80%)	55(68.75%)	61(75.30%)
Religion	Hindu	65(65.65%)	48(60%)	50(61.72%)
	Muslim	23(23.23%)	24(30%)	22(27.16%)
	Christian	11(11.11%)	8(10%)	9((11.11%)

Table 2: Difference of body shape concern between students from three different colleges and their distribution based on BMI levels

	Under Weight	Normal Weight	Over Weight	Mean BSQ Score
Engineering (N=99)	30	51	18	75.89
MBBS (N=80)	10	55	15	80.16
Degree (N=81)	42	34	5	76.41

In order to calculate if there is any significant difference of body shape concern between three different college students Kruskal Wallis test was done. Kruskal Wallis test results shown that there is no significant difference of body shape concern between Engineering , MBBS ,Degree students (p=0.3, H=2.39)

Table 3: Correlation table for overweight group

Variable	Mean	Standard deviation
Body shape concern	127	19.29
Social anxiety	58.71	8.69
Self esteem	61.28	10.85

Variables between which correlation is calculated	r- value	P value
Body shape concern& self esteem	-0.125	0.456
Body shape concern &social anxiety	0.1394	0.403
Self-esteem& social anxiety	-0.1678	0.316

A Pearson Correlation Coefficient found that there was no significant relationship between body shape and social anxiety (r =0 .1394, p <0 .4038, 2-tailed). Similarly, it was found that there was no significant relationship between body shape and self-esteem (r =-0 .125, p=0 .4561, 2-tailed). In over weight group it was also found that there was no significant relationship between social anxiety and self-esteem(r = -0.1678, p=0.316, 2-tailed)

Table 4: Correlation table for normal weight group

Variable	Mean	Standard deviation
Body shape concern	74.30	22.83
Social anxiety	39.32	7.39
Self esteem	71.68	13.045

Variables between which correlation is calculated	r- value	P value
Body shape concern& self esteem	-0.166	0.05
Body shape concern &social anxiety	0.226	<0.005
Self-esteem& social anxiety	-0.0343	0.691

A Pearson Correlation Coefficient was used to determine the relationships and it found that there was significant relationship between body shape concern and social anxiety (r = 0.2263, p<0 .01, 2-tailed). It found no significant relationship between body shape concern and self-esteem (r = -0.166, p=0 .0508, 2-tailed). Finally no significant relationship was found between self-esteem and social anxiety (r = 0.0343, p=0.69, 2-tailed).

Table 5: Correlation table for underweight group

Variable	Mean	Standard deviation
Body shape concern	59.78	17.28
Social anxiety	39.38	6.34
Self esteem	72.59	12.30

Variables between which correlation is calculated	r- value	P value
Body shape concern& self esteem	0	1
Body shape concern &social anxiety	0.0387	0.7282
Self-esteem& social anxiety	-0.0258	0.822

In underweight group if Pearson correlation is calculated between all three variables there is no significant correlation is found.

Table 6. Pearson correlation for all three variables

Variable	Mean	Standard deviation
Body shape concern	77.31	29.82
Social anxiety	42.17	9.98
Self esteem	70.45	13.04

Variables between which correlation is calculated	r-value	P value
Body shape concern& self esteem	-0.285	<0.05
Body shape concern &social anxiety	0.557	<0.05
Self-esteem& social anxiety	-0.236	<0.05

If correlation is calculated for all three variables for overall data without dividing them into under, normal and overweight based on BMI levels, body shape and Self-esteem are negatively correlated and statistically significant relationship is present (r=-0.285,p<0.05). Self-esteem and social anxiety are negatively correlated and relationship is statistically significant (r=-0.236, p<0.05). Body shape and social anxiety are positively correlated and statistically significant (r=0.557, p<0.05).

Table 7: Multiple Regression Analysis for 3 Variables

	Self-esteem as independent variable (RFIS)	Social anxiety as independent variable (IAS)
Body shape concern as dependent variable (BSQ)	r= -0.08153	r= 0.3103
	F= 22.90	F= 116.1
	p< 0.001	p<0.001

Multiple Regression analysis Multiple regression was used to determine whether self-esteem and social anxiety were predictors of body shape concern. The results are self-esteem as predictor of body image is statistically significant with r=0.081, F=22.90, p<0.05.Social anxiety as predictor of body image is also statistically significant with r=0.3103, F=116.1, p<0.05. Body shape concern as a predictor for social anxiety and self-esteem is significant by above test results.

Table 8: Gender Difference in Body Shape Concern

	Males (n= 64)	Females (n= 194)
Mean BSQ score	67.062	80.73
Gender difference in Body shape concern (BSQ Score) by Mann-Whitney U Test	z= 3.5669	

Mann-Whitney U Test

Mann-Whitney U test was carried out to examine if there would be a gender difference in body shape concern. According to data 64 males and 194 females are present. After administering Mann Whitney U Test results there is significant difference between males and females in terms of body shape concern ($z=3.5669$, $p<0.05$) .Mean BSQ scores of females is greater than males.

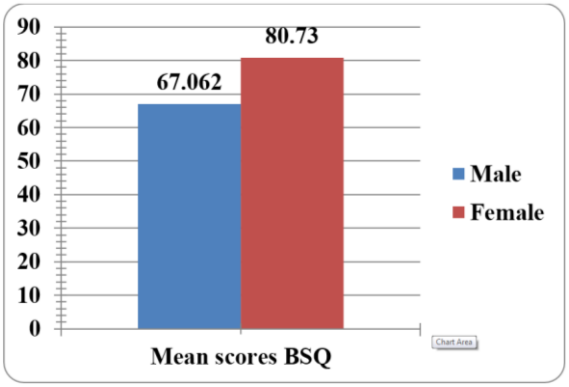

Fig. 2: Gender difference in the mean scores of the Body Shape Questionnaire

Table 9: Difference of each variable in relation to different BMI levels

	Under weight (n=83)	Normal weight (n=139)	Over weight (n=38)	P value
Body shape concern (mean scores)	59.78	74.30	127	<0.0001
Self esteem (mean scores)	72.59	71.68	61.26	<0.0001
Social anxiety (mean scores)	39.38	39.32	58.71	<0.0001

Kruskal Wallis test is done to find if there is any significant difference of body shape concern, self-esteem and social anxiety in relation to different BMI levels .Comparison of each variable between three groups underweight, normal weight and over weight is done. There is significant difference of body shape concern between underweight, normal weight and overweight students with $H=101.96$, $p<0.0001$.When Kruskal Wallis test is done there is significant difference of self-esteem between students from underweight, normal weight and overweight groups with $H=24.04$,$p<0.0001$.There is also a significant difference of social anxiety between students of three BMI groups with $H=75.58$,$p<0.0001$.

Discussion

The result for over all data suggests there is significant positive correlation between body shape concern and social anxiety which is in concordance with study conducted by Nunn.[30] There is significant negative correlation between body shape concern and self-esteem as seen in study conducted by Hudson.[19]) The relationship between three variables such as "Body image measures have been found to significantly correlate with self-esteem for student women" .[19] A study in adolescents reported that poor body image is associated with low self-esteem and elevated anxiety.[19]

There is no significant correlation between 3 variables in underweight individuals in the current study this may be due to no preoccupation with their bodies in underweight individuals. Among overweight individuals the correlation between three variables is not significant this may be due to small sample size. Among normal weight individuals there is significant correlation between body shape concern and social anxiety, body shape concern and self-esteem as shown in previous studies but there is no significant correlation between social anxiety and self-esteem.

Results in present study have shown body image as predictor for self-esteem and social anxiety and there is significant negative correlation of self-esteem and body image, social anxiety. The above results are supported by Nunn [30] that self-esteem is a predictor for those with low body dissatisfaction and that it is related to disturbed eating attitudes.

Low self-esteem has been found to predict increased vulnerability to body image dissatisfaction in a student.[19]

In present study there is significant gender difference between males and females with regard body image. This is supported by previous research by Barry, Grilo and Masheb.[31]hereby their study reported findings that females had a higher level of body dissatisfaction by using the Body Shape Questionnaire, along with their greater drive for thinness which may suggest why the current study's results have a similar outcome. According to Kuan et al.[25], in general, males tend to underestimate their body weight, but females overestimate their body weight. Di Pietro and Silveira[32] reported a statistically significant difference in the means of the BSQ; women showed higher dissatisfaction than men. Another twin study examined aspects of body dissatisfaction and drive for thinness and it showed lower heritability rates for males than females.[33]

There is significance between social anxiety, self-esteem and body shape concern in relation to different levels of body mass index. The results are supported by the study done by Yates, Edman and Aruguete[34] stated that Body Mass Index (BMI) is a common way to measure body size based on height and weight. BMI also correlated with body dissatisfaction and eating disorder risk in the majority and in different minority groups of females. In their study, slim females tend to like their body and heavier individuals tend to dislike their bodies.[34] However, females with eating disorders tend to dislike their bodies also.

Conclusion

- The main findings of this study include the significant relationship between social anxiety, body shape concern and self-esteem.
- There is no significant difference of body shape concern between first year students of Engineering, MBBS and Degree colleges.
- Females had more body shape concerns than males
- Social anxiety and self-esteem can be viewed as a predictor of body shape dissatisfaction.
- Finally, there was a significant difference of body shape concern, self-esteem and social anxiety when viewed in regard to different BMI levels.

Implications

- Less stigmatizing and more social approval of overweight individuals in our society along with media can be a measure to increase self-esteem of individuals with reduced body shape satisfaction and social anxiety.

Limitations

- The sample size is small and there are less number of males in the sample.
- A larger sample would have given more power to association found between different variables
- Limited age group has restricted the current study.
- Finally, the conclusions based on the correlation analysis need to be viewed with caution also as the relationship between the variables in terms of BMI can only be determined; they do not provide any information on the causal or predictor factors like physical disabilities, dermatological conditions which may independently effect self-esteem.

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