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Correlation Between Body Mass Index (BMI), Body Appreciation Score and Emotional Intelligence in Undergraduate Medical Students

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Abstract

Introduction: Body appreciation score (BAS) is used to assess the positive attitude towards body image. Individuals with positive image were found to have higher emotional intelligence (EI). Body perception is influenced by the body weight. In this study we proposed to correlate the relationship between BMI, BAS and EI.

Materials and Method: It is an observational study. The study population comprised of undergraduate medical students aged between 18 – 24 years. Subjects on chronic medication for medical illness were excluded. We recruited 100 subjects (male 44, female 56, age 18 – 21).

A stadiometer was used to measure the height. We measured weight using digital weighing machine. BMI was calculated using Quetelet formula. The BAS2 questionnaire and The Schutte Self Report Emotional Intelligence Test (SSEIT) were administered to the participants. They were asked to score each questions on the Likert scale from 1 to 5.

Results: The means of the various parameters between males and females were compared using Student's t-test. There were no statistically significant differences between male and female students in terms of age, BMI, BAS2 and EI. The BAS2 score of different BMI categories were not different. The SSEIQ scores were not statistically different between each BMI categories. Pearson correlation coefficients were calculated between BMI and BAS 2 score (r = - 0.002), BMI and SSEIQ (r = 0.051) and BAS 2 score and SSEIQ (r = 0.19). There was no correlation between the two variables in any of the above cases.

Conclusion: BAS2 score was similar in both males and females of varying BMI. The SSEIQ scores were less for underweight students when compared with students with normal weight. The SSEIQ scores are relatively more in females than males. The BMI, BAS score and EI were not related.

Key words: *BMI, body appreciation, body image, emotional intelligence*

Introduction

Body image is a complex, multidimensional construct which includes self-perception and attitude towards body. Body appreciation considers positive components of the body image[1,2]. Body appreciation is defined as accepting, holding favorable opinions toward and respecting the body, while also rejecting media promoted appearance ideals as the only form of beauty[3]. Positive body image is associated with favorable health outcome, wellbeing, and high self-esteem[1]. Earlier reports have suggested that higher BMI is negatively associated with well-being and quality of life [4–7].

Emotional intelligence (EI) is a type of intelligence which enables an individual to observe the emotions of self and of other's, to discriminate them and to use the

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information to modulate the thinking and action. EI is used as tool for the prediction of leadership abilities, which in turn governs the performance and attitude [8]. It is also found to be a predictor of academic and professional success[9,10]. Reports have shown that individual with positive body perception were found to have higher EI[11] and higher EI is associated with health and well-being[12].

In this study we proposed to study the correlation between BMI, body appreciation score 2 (BAS2) and Schutte Self Report Emotional Intelligence Test (SSEIT) score among the first year medical undergraduate students as the data for the same is not available for Indian setting.

We hypothesized that individuals with extremes of BMI will be associated with lesser BAS2 score in both gender and individuals with normal BMI will have higher BAS2 score. Individuals with higher BAS2 score will have higher EI. We also propose to study the relationship between BMI and EI.

Materials and Method

It is an observational study, conducted in the Dept. of Physiology, ESIC Medical College, Gulbarga. The study was approved by the institutional ethical committee for human studies. The study population comprised of medical students aged between 18 – 24 years. Subjects on chronic medication for medical illness were excluded.

We recruited 100 subjects (male 44, female 56, age 18 – 21) with above inclusion and exclusion criteria. Written informed consent was obtained after detailed explanation of the study.

A wall mounted stadiometer, accurate to the nearest 0.1 cm is used to measure the height. We measured weight using digital weighing machine accurate to the nearest 0.1 kg. BMI was calculated by using Quetelet formula i.e. BMI = body weight (kg) ÷ Height (m^2). All the measurements were taken by the same investigator.

The BAS2 questionnaire was given to all the participants and were asked to score each of the questions on the Likert scale from 5 to 1 [13] (Table 1).

The Schutte Self Report Emotional Intelligence Test (SSEIT) comprising of 33 questionnaire were administered to the participants [14] (Table 2). The questions were to be scored based on the Likert's scale from 1 to 5. The total score is given on a scale from 33 to 165. Score less than 111 will be considered to be low and scores above 137 will be considered to be high[15].

Body Appreciation Scale-2

Directions for participants: For each statement below, using the Likert scale please indicate the best response that represents how you feel about your body

1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 = Always

Table 1: Body appreciation scale2

I respect my body.
I feel good about my body.
I feel that my body has at least some good qualities.
I take a positive attitude towards my body.
I am attentive to my body's needs.
I feel love for my body.
I appreciate the different and unique characteristics of my body.
My behavior reveals my positive attitude toward my body; for example, I hold my head high and smile.
I am comfortable in my body.
I feel like I am beautiful even if I am different from media images of attractive people (e.g, models, actresses/actors)

Instructions: For each question below, using the Likert scale please indicate how much you agree or disagree with it.

Scale: 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, 5 = strongly agree

Table 2: The Schutte Self Report Emotional Intelligence Test (SSEIT)

I know when to speak about my personal problems to others
When I am faced with obstacles, I remember times I faced similar obstacles and overcame them
I expect that I will do well on most things I try
Other people find it easy to confide in me
I find it hard to understand the non-verbal messages of other people*
Some of the major events of my life have led me to re-evaluate what is important and not important
When my mood changes, I see new possibilities
Emotions are one of the things that make my life worth living
I am aware of my emotions as I experience them
I expect good things to happen
I like to share my emotions with others
When I experience a positive emotion, I know how to make it last
I arrange events others enjoy
I seek out activities that make me happy
I am aware of the non-verbal messages I send to others
I present myself in a way that makes a good impression on others
When I am in a positive mood, solving problems is easy for me
By looking at their facial expressions, I recognize the emotions people are experiencing
I know why my emotions change
When I am in a positive mood, I am able to come up with new ideas
I have control over my emotions
I easily recognize my emotions as I experience them
I motivate myself by imagining a good outcome to tasks I take on
I compliment others when they have done something well
I am aware of the non-verbal messages other people send
When another person tells me about an important event in his or her life, I almost feel as though I have experienced this event myself
When I feel a change in emotions, I tend to come up with new ideas
When I am faced with a challenge, I give up because I believe I will fail*
I know what other people are feeling just by looking at them
I help other people feel better when they are down
I use good moods to help myself keep trying in the face of obstacles
I can tell how people are feeling by listening to the tone of their voice
It is difficult for me to understand why people feel the way they do*

Results

The descriptive statistics of the various parameters are summarized in Table 3. The means of the various parameters between males and females were compared using Student's t-test. There were no statistically significant differences between male and female students in any of the parameters studied.

Table 3: Descriptive statistics of Age, BMI, BAS2 & SSEIQ

Participants	Age (mean and SD)	BMI	BAS2 (mean and SD)	SSEIQ
Male = 44	19.045 ± 0.94	19.89 ± 2.71	43.5 ± 5.35	125.16 ± 16.40
Female = 56	18.92 ± 0.91	19.44 ± 2.73	43.05 ± 4.47	129.39 ± 13.34
p value	0.53	0.41	0.65	0.15

The relative percentage of underweight, normal weight, overweight and obese individuals in males and females is shown in Table 4. Percentage of overweight and underweight was relatively more in females than in males. Male were found to have higher percentage of normal weight.

Table 4: BMI Characteristics of study population

BMI	Male	Percentage	Female	Percentage
Underweight	16	36	23	41
Normal	27	62	29	52
Overweight	1	2	4	7
Obese	0	0	0	0

The mean and SD of BAS2 scores of male and female students in the different BMI categories are summarized in Table 4. The BAS 2 scores for each BMI category in both males and females. There was no significant difference in BAS 2 scores in both gender for different BMI categories. The BAS 2 score was relatively less in overweight individuals than normal and underweight category in both gender although not statistically significant as shown in Table 5.

The mean BAS 2 scores of the different BMI categories of the male students and female students were compared amongst themselves using ANOVA. There were no statistically significant differences seen in both the cases ($p = 0.42$ in case of males and $p = 0.48$ in case of females).

Table 5: Mean BAS 2 scores for each BMI category

BMI	Female	Male	p value
Underweight	43.65 ± 3.71	42.75 ± 6.31	0.57
Normal	42.89 ± 4.59	44.18 ± 4.74	0.32
Overweight	40.75 ± 7.68	38 ± 0.0	0.77
Obese	0	0	0

The mean and SD of SSEIQ scores of male and female students belonging to the different BMI categories are summarized in Table 6. The mean SSEIQ scores for each category of BMI were compared between the female and the male students using the Student's t-test. There were no statistically significant differences in any of the categories. Also the means of the SSEIQ scores of the male and females in the different BMI categories were compared using ANOVA. There was no statistically significant difference in the both the comparisons ($p = 0.58$ in male students and $p = 0.85$ in female students). The SSEIQ score is found to be higher in females of all BMI category than males though not statistically significant.

Table 6: Mean SSEIQ score for each BMI category

BMI	Female	Male	p value
Underweight	130.61 ± 14.03	122.19 ± 23.79	0.17
Normal	128.59 ± 12.84	127.19 ± 10.33	0.65
Overweight	128.25 ± 16.21	118.00 ± 0.00	0.61
Obese	0	0	0

Pearson correlation coefficients were calculated to assess the relation between BMI and BAS 2 score (r = -0.002), BMI and SSEIQ (r = 0.051) and BAS 2 score and SSEIQ (r = 0.19). There was no correlation between the two variables in any of the above cases.

Discussion

In our study population we found that over 36% of males and 41% of female students were underweight and 2% of males and 7% of females were overweight and none were obese based on BMI. The BAS2 is a positive measure of body image and is associated with appreciation evaluation, body-esteem, and mental well-being [13]. Our results have shown that there is no significant difference in BAS 2 scores between males and females. We observed that BAS2 score was comparatively less in both males and females who were overweight based on BMI. Individuals who are overweight have tendency to have lower body appreciation as evidenced by relatively low BAS2 scores compared to normal and underweight individuals. It is well established that individuals who have high body appreciation were found to have eating behavior in accordance with physiological hunger and satiety cues [16].

In our study we observed that there was no significant difference between SSEIT scores in both males and females of study population. There are many studies which emphasize the role of EI in health and well-being [12]. Higher EI is associated with higher empathy, which is considered to be an important trait in medical students [17]. Though it is said that there is a difference in emotional intelligence between males and females [18,19], we could not find any difference statistically in our study population.

The SSEIT scores were relatively higher in females of all BMI when compared with that of males of BMI category though not statistically significant. The role of empathy has been emphasized as a critical element for effective communication between doctors and the patient. [17,18,20–22] Females tend to be emotionally more emphatic than males and were found to have higher EQ than males. They also tend to express emotions more skillfully than males. The observed difference in EQ with respect to gender may be due to differential cortical processing in females.

Conclusion

BAS2 score was similar in both males and females of varying BMI. In our study, we observed that there is NO relationship between BAS2 score, SSEIT score and the BMI. The BMI, BAS score and EI were not related.

Limitations

The sample size in our study is 100. We have considered BMI as a measure to differentiate the groups.

Conflicts of Interest: None

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