

Body image dissatisfaction and its relation to Body Mass Index, Self-esteem and Big Five Personality traits in India

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Abstract

Background: Body Image is known to be influenced by Body Mass Index (BMI), self-esteem and personality. Body image dissatisfaction (BID) is associated with depression, anxiety, low self-esteem and maladaptive eating pattern. Therefore, it is important to identify factors that can contribute to BID. **Material and Methods:** This study is observational cross-sectional study on 200 medical doctors in India. Data collection was by self-reported questionnaires: Sociodemographic proforma, Body Shape Questionnaire-34 for BID, Rosenberg's Self-Esteem Scale, and Big Five Inventory for Personality traits. **Results:** Out of 200, 23.5% (n=47) participants had BID. BID significantly correlated with higher body mass index (BMI) ($r = .402$, $P = 0.000$) and lower self-esteem ($r = -.200$, $P = 0.004$). Among the personality traits, neuroticism ($r = .309$, $P = 0.000$) showed significant positive correlation and openness ($r = -.309$, $P = 0.000$) extraversion ($r = -.139$, $P = 0.05$) conscientiousness ($r = -.188$, $P = 0.004$) agreeableness ($r = -.176$, $P = 0.014$) had significant negative correlation. **Conclusion:** BMI, self-esteem, personality have a role in BID and this knowledge can be further utilized in identifying the contributing factors for development of BID and its psychiatric consequences which might serve as targets for designing intervention.

Key words: body image dissatisfaction, body mass index, personality, self-esteem.

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Introduction

Body image is described as a multi-dimensional construct which includes cognitive (our thoughts about our body), affective (how we feel about our body), and behavioural components (how our body image influences our behaviour) which is "subjective and open to change by social influence" [1-3].

Body image dissatisfaction (BID) is a psychological discrepancy between a person's perceived body and ideal body. It refers to negative subjective assessments related to one's body part, figure or weight [4]. Prior research reveals that Body Image Dissatisfaction has increasingly become prevalent since the 1980s and has negative consequences. It is found to be associated with greater psychological distress like depression [5] anxiety, low self -esteem [6] and maladaptive eating behaviours and dieting [7,8]. It is therefore important to identify factors that can contribute to BID.

Body image dissatisfaction among young people has been explained by various socio-cultural models. With the growing exposure to Western world, Asian countries are gradually becoming susceptible to internalization of body ideals. These models propose how appearance culture is promoted by society and also emphasizes the desirability of physical attractiveness, irrespective of gender [9,10]. Female beauty is linked to thinness, with low body weight as a key evaluative dimension of physical attractiveness [11]. In contrast to females, evolving cultural ideals of male appearance endorse a muscular physique [12]; despite both the gender being aware of the socio-cultural ideals, it's argued that females respond with greater intensity to body ideals and as a consequence experience greater body image dissatisfaction than males [13]. Studies have also shown that to

follow these standards women have tried to change their bodies [14]. So, it has become important for early identification and prevention in at-risk subjects.

Body mass index (BMI) is an individual's weight in kilograms (kg) divided by their height in meter square. Research data reveals that BMI is an important biological factor in the development of negative body image [15,16]. Some studies suggest women are more likely than men to describe themselves as fat, to weigh themselves often, to diet frequently, and judge themselves overweight when by objective standards they are not [17], whereas men are more likely to perceive themselves as underweight with respect to objective standards [18] yet some researchers have indicated that men are as dissatisfied as women with their body shape and weight [19]. The literature reports inconsistent findings regarding the relationship between BMI and body image disorders in males and females. These studies suggest that both genders misperceive their weight or uses an unhealthy standard to make judgements about their weight.

Self-esteem plays an important role in the mental health of young people. Strong sense of self-worth and a positive self-image is likely to help people become more content with their bodies. Since body image represents a large part of a person's self-concept, it is unsurprising that self-esteem and body dissatisfaction are related. [20] and high self-esteem reduces the chances of bulimia in females [21]. Research has, till now, associated low self-esteem with body dissatisfaction and psychological distress [22-25]. In fact, one study found that being female and having low self-esteem was most predictive of body image dissatisfaction for participants with healthy body weight [26].

The association between body image and personality traits seems to have received less research compared with that of body mass index, gender and self-esteem but some researchers argue that personality factors do play a role in 'shaping beauty ideas and body dissatisfaction [27]. The characteristic manner in which people feel, think and behave is known as Personality. There is still some debate regarding the number of trait dimensions [28] but most scholars

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accept that there are at least five major dimensions of trait personality: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness [29,30]. Briefly, Neuroticism includes susceptibility to emotional instability, Extraversion includes the quantity and intensity of interpersonal interactions, Openness includes the tendency to seek out new experiences, Agreeableness includes concern for cooperation and social harmony, and Conscientiousness includes organisation and goal-directed behaviour. [31] Personality could be expected to relate to negative body perceptions, regardless of actual body proportions. Previous research data has shown that more negative body evaluation is associated with higher Neuroticism and lower Extraversion, [27] while lesser actual- ideal weight discrepancy is associated with lower Neuroticism. Generally, however, as per the current research data it doesn't appear that the personality traits of Openness, Agreeableness, and Conscientiousness are strongly associated with body image evaluation [27,32].

The aim of our study is to find out the prevalence of body image dissatisfaction among Indian medical students and to assess its relationship with BMI, self-esteem and personality traits. Often our self-image rather than being formed on rational basis is biased by socio-cultural norms and beliefs. Despite normal appearance Person may have a negative self-image on the basis of how other's see him or Person's imagination about another person's opinion. The continuous re-evaluation of one's self if biased negatively can maintain or worsen this negative self-image and ultimately causing more dissatisfaction regarding the same. This study will help identify the contributing factors for development of body image dissatisfaction and its psychological consequences which might serve targets for designing intervention strategies.

Material and Methods

This is an observational cross-sectional study conducted on intern doctors of medical college in Rajkot. In present study 205 intern doctors of two consecutive batches were enrolled over a time period of one year after approval from institutional ethical committee for conducting the study. Purpose of the study was explained to all the participants and written informed consent was obtained from them. Participants were enrolled considering the mentioned inclusion and exclusion criteria. Data which can reveal identity like name and other personal details were not asked in study to make the study more reliable as well as after filling the required data, filled questionnaire sheet had to be dropped by participant directly into a box. Inclusion Criteria: Intern Doctors who have given informed written consent.

Instruments

Socio-Demographic Pro Forma

containing socio-demographic details and participant details including height and weight, which was later used to calculate BMI (Kg/m²). WHO classification for BMI was used. In data analysis, we made three groups <18.5 (underweight), 18.5 – 24.9 (normal weight) and >24.9 (overweight: which includes WHO categories of overweight and obese).

Body Shape Questionnaire -34(BSQ-34) [33]

Table 1: Descriptive statistics for BSQ-34, BMI, RSES and BFI Personality traits

	Male		Female		Total		P value
	Mean	SD	Mean	SD	Mean	SD	
AGE	23.19	1.35	22.88	1.34	23.03	1.35	.100
BSQ-34 SCORE	60.66	25.5	63.87	25.51	62.37	25.51	.376
BMI	23.46	4.34	21.68	3.67	22.51	4.08	.002
RSES SCORE	20.85	4.87	20.66	4.09	20.75	4.46	.770
PERSONALITY TRAITS (BFI)-							
BFI-Extraversion score	26.22	5.37	25.81	4.62	26.00	4.97	.570
BFI -Agreeableness score	32.16	4.77	32.74	4.79	32.47	4.8	.390
BFI-Conscientiousness score	30.29	5.23	30.56	4.855	30.43	5.02	.705
BFI -Neuroticism score	22.30	6.23	24.23	5.18	23.33	5.76	.018
BFI-Openness score	34.56	5.54	34.47	5.55	34.51	5.53	.907

BSQ-34- Body Shape Questionnaire-34, BMI-Body Mass Index, RSES-Rosenberg's Self-esteem Scale, BFI- Big Five Inventory. *Statistically significant at P<.05.

It is used to assess the participants concern for their body shape. It consists 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 reliability coefficient was 0.88. The classification of scores were- 80 and below meant that the participants have no concern with their body, 81-110 meant a mild concern, 111-140 meant a moderate concern and above 140 meant that they have severe body concern [34]. In data analysis we made two groups- BSQ score less than or equal to 80 (No Concern /No BID) and score more than 80 (Concern /BID present).

Rosenberg Self-Esteem Scale (RSES) [21]

In order to measure the global self-esteem, a ten item self-report scale was used. The items were answered using a four-point Likert scale that ranges from strongly disagree = 0 to strongly agree = 3, respectively. The scale has high reliability ratings, such as 0.77 internal consistency, minimum Coefficient of Reproducibility rating at least 0.90.

Big Five Inventory (BFI) [35]

It assesses five higher-order personality traits consisting of 44-item measure with five sub-scales: Extraversion (8 items), Agreeableness (9 items), Conscientiousness (9 items), Neuroticism (8 items), and Openness (10 items). Respondents indicated to what degree they agreed with the statement using a 5-point Likert scale ranging from 1 (Disagree Strongly) to 5 (Agree Strongly). The BFI has shown excellent psychometric qualities and has been used extensively in different contexts and cross-cultural studies [36].

Statistical analysis: All the collected data was appropriately tabulated and data analysed using SPSS software version 24. Mean, standard deviation (SD), and percentage were used for descriptive statistics, and Pearson correlation co-efficient was used to find out correlations between variables. Statistical significance was tested with the help of t-test for continuous data & ANOVA test for categorical data. Probability value less than 0.05 was taken as statistically significant.

Results

Data were collected from 205 participants, of whom five could not be included in the analysis due to incomplete/missing data. In the final analysis, 200 participants' data was used.

Out of 200 participants studied, 46.5% (n=93) participants were male and 53.5% (n=107) were female. 76.5% (n=153) participants had no concern about their body shape that is no Body Image Dissatisfaction, 23.5% (n=47) participants had concern about body shape that is they had Body Image Dissatisfaction. 62% (n=124) participants had BMI in normal range, 24% (n=48) were overweight and 14% (n=28) were underweight. There was no significant difference in mean Age, mean BSQ-34 score, mean RSES Score between males and females. Mean BMI was found significantly higher (p=0.002) among males (23.46±4.34) as compared to females (21.68±3.67). In personality traits (BFI) mean score in BFI -Neuroticism score was significantly low among the males (22.30±6.23) as compared to females (24.23±5.18) [Table 1].

Table 2(A): Two-way descriptive table for BSQ-34 scores according to the BMI category and Gender

BMI	Gender		
	Male; Mean (SD)	Female; Mean (SD)	Total
Underweight; Mean (SD)	48.00(26.90)	56.05(23.84)	53.75(24.52)
Normal; Mean (SD)	54.46(22.28)	61.64(23.53)	58.34(23.15)
Overweight; Mean (SD)	76.89(24.62)	79.15(28.48)	77.83(26.02)
Total; Mean (SD)	60.66(25.55)	63.87(25.51)	62.37(25.52)

BSQ-34= Body Shape Questionnaire-34, SD= Standard Deviation

Table 2(B): Two-Way ANOVA of BSQ-34, BMI categories and Gender

Source	Type III SS	df	MS	F	P
Intercept	482699.403	1	482699.403	836.256	.000*
BMI	16170.497	2	8085.249	14.007	.000*
Sex	1043.707	1	1043.707	1.808	.180
BMI * Sex	230.315	2	115.158	.200	.819
Error	111979.722	194	577.215		
Total	907701.000	200			

*Statistically significant at P<0.05. SS – Sum of squares; MS – Mean squares

Table 3: Correlation between Body Image Dissatisfaction (BSQ-34 scores) with BMI, Self-esteem (RSES) and Personality traits (BFI)

Variables	BSQ-34	
	r-value	P value
BMI	.402	.000*
RSES	-.200	.004*
PERSONALITY DOMAINS (BFI)		
BFI-Extraversion	-.139	.050*
BFI-Agreeableness	-.176	.013*
BFI-Conscientiousness	-.188	.004*
BFI-Neuroticism	.309	.000*
BFI-Openness	-.309	.000*

*Statistically significant at P<.05.

Table 4: Independent t-test of Body shape Questionnaire and BMI, Self-esteem, Big Five Personality traits

	BSQ-34				Total		
	No Concern (score ≤ 80) No BID		Concern (score >80) BID		Mean	SD	P value
	Mean	SD	Mean	SD			
BMI	21.80	3.48	24.80	4.99	22.51	4.08	.000*
RSES SCORE	21.05	4.32	19.79	4.80	20.75	4.46	.091
PERSONALITY							
BFI-Extraversion score	26.29	4.57	25.04	6.07	26.00	4.97	.132
BFI-Agreeableness score	32.99	3.97	30.77	6.52	32.47	4.8	.005*
BFI-Conscientiousness score	30.90	5.02	28.94	4.77	30.43	5.02	.019*
BFI-Neuroticism score	22.34	5.52	26.57	5.37	23.33	5.76	.000*
BFI-Openness score	35.00	5.01	32.91	6.57	34.51	5.53	.023*

[Table 4] compares variables in subjects with BID and those without BID. *Statistically significant at P<.05.

A two-way ANOVA was conducted to compare the main effects of BMI categories and gender as well as their interactive effects on the body concern (BSQ-34). Higher average BSQ-34 scores were observed in significant majority of participants of overweight category irrespective of gender [Table 2A,2B]. Main effect of BMI categories but not of gender on BSQ-34 scores was statistically significant. The interactive effect was not significant ($F(2,194) = .200, P = .819$), indicating that effect of BMI categories does not depend on gender thus there was no combined effect of BMI categories and gender on average BSQ-34 scores [Table 2B].

[Table 3] shows significant positive correlation between BSQ-34 scores and BMI in total sample; also, there was significant negative relationship between BSQ-34 scores and self-esteem scores in total sample. For Personality subtypes we found that in the total sample there was significant negative relationship between BSQ-34 scores and Extraversion score, Agreeableness scores, Conscientiousness scores and Openness scores whereas significant positive correlation was found between BSQ-34 scores and Neuroticism scores.

Independent t-test showed that Mean BMI scores were significantly higher in subject with body image dissatisfaction than those without. The self-esteem scores were lower in subject with body image dissatisfaction but difference was insignificant. For Big Five Personality traits, subjects with BID showed significantly lower

agreeableness, conscientiousness, openness scores. However, neuroticism scores were significantly higher in subjects with BID. The scores for extraversion were lower in subjects with BID but the difference was not significant [Table 4].

Discussion

The prevalence of Body Image Dissatisfaction in our study sample was 23.5%. This finding is consistent with other Indian studies. Soohinda et al. reported 28% moderate-severe body dissatisfaction in young college women [37]. While, other two reported prevalence rates for body dissatisfaction as 13.5% and 33.3% [38,39].

In the present study significant positive correlation was found between BMI and body concern in total sample, as well as significant majority of subjects from overweight category had higher body image concern irrespective of their gender. We also found that the mean BMI was significantly higher in subjects with BID as compared to subjects without it. Various studies [40-42] have reported similar finding although a few authors [43,44] did not report such findings. We did not find any significant difference in the average scores of BSQ-34 in males versus females. In literature regarding the role of gender the findings have been inconsistent, as some authors [17,22,45] reports higher BID risk in females while an Indian study [46] reported higher BID in males compared to females probably because in their study

male subsample had significantly higher BMI than females. In literature it appears, correlation between BMI and negative Body Image is higher in women than in men [47] maybe because most research regarding risk factors for weight gain and body image disorder has been conducted in college women, but some study reports college men are at risk too [48,49].

In line with previous studies, we found significant negative correlation between self-esteem and BID. Similar finding was found by and various others [20,24]. Indian study by Kornapalli et al. also reported the same [50].

For Big Five Personality traits, we found significant positive correlation of neuroticism scores with BID. Our findings appear to be similar to most of the available literature,[31] in which neuroticism has been linked with more negative appearance evaluation,[51,52] greater weight preoccupation,[53] higher self-objectification,[54] low appreciation for body,[27] and heightened actual-ideal weight discrepancy [55]. We also found BID to be negatively correlated with extraversion, which was in line with previous studies [31]. Literature reports individuals who score high on extraversion have comparatively more positive appearance evaluation and positive body appreciation [27]. They also experience more positive emotions,[56] and are less sensitive to social threat,[57] which might decrease their vulnerability to socio-cultural factors contributing to negative body image. Agreeableness was found to be significantly negatively correlated to BID. In other studies, contradicting our study, research reveals higher Agreeableness score in individuals is associated with greater self-objectification,[54] and endorsement for traditional values [58] and therefore such individuals might assign greater importance to physical appearance, making them vulnerable to higher risk of a negative body image. Overall, it was concluded Agreeableness was found to be unrelated to body image.[31] There was a significant negative relationship between BID and Conscientiousness scores in total sample. In past researches it has been found that Conscientious individuals have higher levels of confidence and hence might be less receptive to idealized physical appearance,[59] also their eating habits are healthy and in general are healthier,[60] and therefore holds more positive body appreciation. These may be the reasons for such findings in our study which was also seen in an Indian study.[37] However, a meta-analysis concluded findings for Conscientiousness with BID were indeterminate.[31] There was a significant negative relationship between BID and Openness scores in total sample. Research reveals in individuals with higher Openness score there is tendency to value emotional and intellectual autonomy, acceptance as well as cultivation of diversity,[58] and therefore might be more open to different body image ideals which ultimately might lower their risk of negative body image.[61] Meta-analysis has come to the conclusion that the relationship between Openness and body image was indeterminate.[31] Thus, BMI, self-esteem, personality have a role in BID and this knowledge can be further utilized in early identification of some of the contributing factors for development of BID and its psychiatric consequences and designing intervention strategies especially by health care professional aiming in helping people attain a more positive body image. This study further supplements the current evidence of increasing BID in Asia, with no exclusion of any particular gender, therefore more studies are warranted on both the gender without keeping the bias of female preponderance in such body image related topics. There are only a few studies found in India assessing relationship of Body Mass Index, self-esteem and Personality with body image dissatisfaction. This study will help for further research on this area among large sample and co-relation of body image dissatisfaction with Personality, self-esteem and BMI.

Strengths and limitations

One of the strengths of our study is that it is one of the first to explore the relationship between personality traits with body image dissatisfaction among young medical doctors of both the genders in India. This research can provide a base for future research in heterogeneous population. Still, our study has certain limitations. The sample was homogeneous in terms of ethnicity, education, age. These participants may not be representative of all the people in the

community which limits the generalizability of our results. The implementation of a correlational cross-sectional research design limits the causal conclusions that may not be drawn from the present study, we could not find the direction between BID and self-esteem, that is whether BID causes low self-esteem or vice versa. Sole reliance was on self-reported measures. Measure of BID only reports dissatisfaction with body image but fail to indicate specific dissatisfactions with various aspects of body.

Conclusion

To conclude, the results of the present study showed that there was no significant gender difference in average BSQ-34 scores in males versus females. Mean BMI scores were significantly higher in subjects with BID as compared to those without it and majority of participants with higher average BSQ-34 scores belonged to overweight category irrespective of gender. Significant positive correlation was found between Body Image Dissatisfaction with BMI and neuroticism whereas higher levels of body image dissatisfaction were significantly associated with lower self-esteem and low levels of Extraversion, Agreeableness, Conscientiousness, Openness scores.

References

1. Cash TF. The situational inventory of body-image dysphoria: Psychometric evidence and development of a short form. *Int J Eat Disord.* 2002;32(3):362-366.
2. Silberstein L, Striegel-Moore R, Timko C, Rodin J. Behavioral and psychological implications of body dissatisfaction: Do men and women differ? *Sex Roles.* 1988;19(3-4):219-232.
3. Grogan S. *Body Image: Understanding Body Dissatisfaction in men, women and children.* Routledge: London;1999.
4. Myers TA, Crowther JH. Sociocultural pressures, thin-ideal internalization, self-objectification, and body dissatisfaction: Could feminist beliefs be a moderating factor? *Body Image.* 2007; 4:296-308.
5. Denniston C, Roth D, Gilroy F. Dysphoria and body image among college women. *Int J Eat Disord.* 1992; 12:449-452.
6. Thompson JK, Altabe MN. Psychometric qualities of the figure rating scale. *Int J Eat Disord.* 1991; 10:615-619.
7. Cash T, Fleming E. Body image and social relations. In: Cash T, Pruzinsky T (Eds.), *Body image: A handbook of theory, research, and clinical practice.* New York: Guilford Press;2002. p.277-286.
8. Powell MR, Hendricks B. Body Schema, Gender, and Other Correlates in Nonclinical Populations. (Statistical Data Included). *Genet Soc Gen Psychol Monogr.* 1999; 125:333 - 412.
9. Keery H, Shroff H, Thompson JK, Wertheim E, Smolak L. The Sociocultural Internalization of Appearance Questionnaire - Adolescents (SIAQ-A): Psychometric analysis and normative data for three countries. *Eat Weight Disord.* 2004; 9, 56-61.
10. Keery H, van den Berg P, Thompson JK. An evaluation of the Tripartite Influence Model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image.* 2004; 1: 237-251.
11. Nichter M, Nichter M. Hype and Weight. *Med Anthropol.* 1991; 13:249-284.
12. Grogan S. *Body image. Understanding body dissatisfaction in men, women, and children (2nd ed.)* London: Routledge; 2008.
13. Knauss C, Paxton SJ, Alsaker FD. Relationships amongst body dissatisfaction, internalisation of the media body ideal and perceived pressure from media in adolescent girls and boys. *Body Image.*2007; 4:353-360.
14. Cash T, Fleming E. Body image and social relations. In: Cash T, Pruzinsky T (Eds.), *Body image: A handbook of theory, research, and clinical practice.* New York: Guilford Press;2002. p.277-286
15. Claes L, Hart TA, Smits D, Van Den Eynde F, Mueller A, Mitchell JE. Validation of the Social Appearance Anxiety

- Scale in female eating disorder patients. *Eur Eat Disord Rev.* 2012; 20(5): 406–409.
16. Seidman G. Self-presentation and belonging on Facebook: How personality influences social media use and motivations. *Pers Individ Dif.* 2013; *Personality and Individual Differences* 54(3): 402–407.
 17. Furnham A, Badman N, Sneade I. Body image dissatisfaction: gender differences in eating attitudes, self-esteem, and reasons for exercise. *J Psychol.* 2002; 136:581–596.
 18. Furnham A, Calnan A. Eating disturbance, self-esteem, reasons for exercising and body weight dissatisfaction in adolescent males. *Eur Eat Disord Rev.* 1998; 6: 58–72.
 19. Drewnowski A, Yee D. K. (1987). Men and body image: Are males satisfied with their body weight? *Psychosomatic Medicine*, 49, 626–634.
 20. van den Berg PA, Mond J, Eisenberg M, Ackard D, Neumark-Sztainer D. The Link Between Body Dissatisfaction and Self-Esteem in Adolescents: Similarities Across Gender, Age, Weight Status, Race/Ethnicity, and Socioeconomic Status. *J Adolesc Health*;2010: 47(3) :290–296.
 21. Rosenberg M. *Society and the adolescent self-image.* Princeton, NJ: Princeton University Press;1965.
 22. Paxton SJ, Eisenberg ME, Neumark-Sztainer D. Prospective predictors of body dissatisfaction in adolescent girls and boys: A five-year longitudinal study. *Developmental Psychology.* 2006; 42(5): 888–899.
 23. Cruz-Sález S, Pascual A, Salaberria K, Echeburúa E. Normal-weight and overweight female adolescents with and without extreme weight-control behaviours: Emotional distress and body image concerns. *J Health Psychol.* 2015; 20(6): 730–740.
 24. Murray K, Rieger E, Byrne D. The relationship between stress and body satisfaction in female and male adolescents. *Stress Heal.* 2015; 31(1): 13–23.
 25. Wichstrøm L, von Soest T. Reciprocal relations between body satisfaction and self-esteem: A large 13-year prospective study of adolescents. *J Adolesc.* 2016; 47: 16–27.
 26. Kostanski M, Gullone E. Adolescent body image dissatisfaction: Relationships with self-esteem, anxiety, and depression controlling for body mass. *J Child Psychol Psychiatry Allied Discip.* 1998; 39(2): 255–262.
 27. Swami V, Hadji-Michael M, Furnham A. Personality and individual difference correlates of positive body image. *Body Image.* 2008; 5: 322–325.
 28. Ashton MC, Lee K, Perugini M, Szarota P, de Vries RE, Di Blas L, et al. A Six-Factor Structure of Personality-Descriptive Adjectives: Solutions from Psycholexical Studies in Seven Languages. *J Pers Soc Psychol.* 2004; 86: 356–366.
 29. John OP, Naumann CP, Soto CJ. Paradigm shift to the integrative Big Five Trait Taxonomy: History, measurement, conceptual issues. In: John OP, Robins RW, Pervin LA (Eds) *Handbook of Personality. Theory and research* (3rd ed) New York, NY: Guilford;2004.p.114-158.
 30. McCrae RR, Costa PT. The five-factor theory of personality. In: John OP, Robins RW & Pervin LA (Eds) *Handbook of Personality. Theory and research* (3rd ed.) New York: Guilford; 2008.p.159-181.
 31. Allen MS, Walter EE. Personality and body image: A systematic review. *Body Image.* 2016; 19: 79-88.
 32. Hayes N, Joseph S. Big 5 correlates of three measures of subjective well-being. *Pers Individ Dif.* 2003; 34: 723–727.
 33. Cooper PJ, Taylor MJ, Cooper Z, Fairburn CG. The development and validation of the Body Shape Questionnaire. *Int J Eat Disord.*1987;6 :485-494.
 34. Taylor MJ. *The Nature and Significance of Body Image Disturbance* [Dissertation]. Wolfen College, Cambridge, University of Cambridge; 1987
 35. John OP, Donahue EM, Kentle, RL. The Big Five Inventory-- Versions 4a and 54. Institute of Personality and Social Research, Berkeley, University of California;1991.
 36. John OP, Srivastava S. The Big Five Trait Taxonomy: History, Measurement, and Theoretical Perspectives. In: Pervin LA, John OP. (eds.) *Handbook of Personality: Theory and Research*, Guilford Press, New York;1999. p.102-138.
 37. Soohinda G, Mishra D, Sampath H, Dutta S. Body dissatisfaction and its relation to Big Five personality factors and self-esteem in young adult college women in India. *Indian J Psychiatry.* 2019; 61:400-4.
 38. Goswami S, Sachdeva S, Sachdeva R. Body image satisfaction among female college students. *Ind Psychiatry J.*2012; 21:168-72.
 39. Priya D, Prasanna KS, Sucharitha S, Vaz NC. Body Image Perception and Attempts to Change Weight among Female Medical Students at Mangalore. *Indian J Community Med.* 2010;35(2):316-320.
 40. Knauss C, Paxton SJ, Alsaker FD. Relationships amongst body dissatisfaction, internalisation of the media body ideal and perceived pressure from media in adolescent girls and boys. *Body Image.*2007; 4:353-360.
 41. Lynch WC, Heil DP, Wagner E, Havens MD. Ethnic differences in BMI, weight concerns, and eating behaviors: Comparison of Native American, White, and Hispanic adolescents. *Body Image.* 2007;4 :179-190.
 42. Watkins JA, Christie C, Chally P. Relationship between body image and body mass index in college men. *J Am Coll Heal.* 2008; 57(1): 95-100.
 43. Candy CM, Fee VE. Underlying dimensions and psychometric properties of the Eating Behaviors and Body Image Test for preadolescent girls. *J Clin Child Psychol.* 1998; 27:117-127.
 44. Canpolat BI, Orsel S, Akdemir A, Ozbay MH. The relationship between dieting and body image, body ideal, self-perception, and body mass index in Turkish adolescents. *Int J Eat Disord.* 2005; 37:150-155.
 45. Kaminsky LA, Dewey D. The association between body mass index and physical activity, and body image, self-esteem and social support in adolescents with type 1 diabetes. *Can J Diabetes.* 2014; 38(4): 244–249.
 46. Chaudhari B, Tewari A, Vanka J, Kumar S, Saldanha D. The Relationship of Eating Disorders Risk with Body Mass Index, Body Image and Self-Esteem among Medical Students. *Ann Med Health Sci Res.*2017;7(3):144-149.
 47. Yates A, Edman J, Aruguete M. Ethnic differences in BMI and body/self-dissatisfaction among Whites, Asian subgroups, Pacific Islanders, and African-Americans. *Journal of Adolescent Health.* 2004;34(4):300-307.
 48. Andersen AE, DiDomenico L. Diet vs. shape content of popular male and female magazines: A dose-response relationship to the incidence of eating disorders? *Int J Eat Disord.* 1992;11: 283–287.
 49. Agliata D, Tantleff-Dunn S. The impact of media exposure on males' body image. *J Soc Clin Psychol.* 2004; 23:7–13.
 50. Kornapalli SE, Macharapu R, Kumar V, Mallepali KR, Ravulapati SB. The relationship between Body shape concern, Self-esteem, Social anxiety and Body Mass Index in College students. *Telangana Journal of Psychiatry.*2017;3(2):78-84.
 51. Kvale IL, von Soest T, Roald HE, Skolleborg KC. The interplay of personality and negative comments about appearance in predicting body image. *Body Image.* 2006; 3: 263–273.
 52. Davis C, Claridge G, Brewer H. The Two Faces of Narcissism: Personality Dynamics of Body Esteem. *J Soc Clin Psychol.* 2011; 15: 153–166.
 53. Davis C, Shuster B, Blackmore E, Fox J. Looking Good - Family Focus on Appearance and the Risk for Eating Disorders. *Int J Eat Disord.* 2004; 35, 136–144.
 54. Miner-Rubino K, Twenge JM, Fredrickson BL. Trait self-objectification in women: Affective and personality correlates. *J Res Pers.* 2002; 36: 147–172.

-
55. Swami V, Taylor R, Carvalho C. Body dissatisfaction assessed by the Photographic Figure Rating Scale is associated with sociocultural, personality, and media influences. *Scand J Psychol.* 2011; 52: 57–63.
 56. Steel P, Schmidt J, Shultz J. Refining the Relationship Between Personality and Subjective Well-Being. *Psychol Bull.* 2008; 134: 138–161.
 57. Wilt J, Revelle W. Extraversion. In: Leary MR, & Hoyle RH (Eds.) *Handbook of individual differences in social behavior.* New York, NY: Guilford; 2008. p.27-45.
 58. Roccas S, Sagiv L, Schwartz SH, Knafo A. The Big Five personality factors and personal values. *Personal Soc Psychol Bull.* 2002; 28: 789-801.
 59. Roberts A, Good E. Media images and female body dissatisfaction: The moderating effects of the Five-Factor traits. *Eat Behav.* 2010; 11: 211-216.
 60. Hakulinen C, Elovainio M, Batty GD, Virtanen M, Kivimäki M, Jokela M. Personality and alcohol consumption: Pooled analysis of 72,949 adults from eight cohort studies. *Drug Alcohol Depend.* 2015; 151: 110–114.
 61. Swami V, Buchanan T, Furnham A, Tovée MJ. Five-factor personality correlates of perceptions of women's body sizes. *Pers Individ Dif.* 2008; 45:697–699.

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