

Relationship among Body Mass, Self-esteem and Depression in Overweight Indian Adolescents: Role of Binge Eating

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The problem of overweight is increasing among the adolescents. While overweight is associated with physical and physiological complications, emerging evidence suggest that it is also associated with psychological problems, particularly low self-esteem and depression. But the association with psychopathology is reported to be mediated by binge eating. In this context, the present study examines whether binge eating has any role in the relationship between body mass and self-esteem and depression in overweight adolescents. Accordingly, 39 overweight adolescents and 39 normal weight cohorts in the age range of 12-17 years were recruited in the study through purposive sampling method. Participants were assessed with standardized tools of binge eating, self-esteem and depression. The results indicated that binge eating mediates the relationship between body mass and psychopathology. This study suggests that binge eating is an important variable in the context of overweight and psychopathology. Implications of the same for the management of weight-related psychopathology in adolescents are discussed in detail.

Keywords: Adolescents, Binge eating, Body mass, Depression, Overweight, Self-esteem.

It is estimated that 14% of the population in south-east Asia is overweight while an additional 3% may have obesity (World Health Organization, 2011). Overweight and obesity once considered problems of the middle aged are now widely prevalent among the children and adolescents. A recent study, which explored the prevalence of overweight and obesity in 20243 Indian children in the age range of 2 to 17 years, found that 18.2% was obese as per the International Obesity Task Force Classification. But the percentage of obesity was found to be much higher, that is, 23.9% when World Health Organization criteria were applied. The prevalence of overweight and obesity was higher in boys than girls. The mean body mass scores for the age group of 5 to 17 years have increased tremendously as compared to the normative data of approximately 24 years ago (Khadiolkar, Khadiolkar, Cole, Chiplonkar, & Pandit, 2011). Overweight is associated with many psychosocial adversities but the relationship appears to be mediated by other factors among which binge eating seems to

be very important (Telch & Agras, 1994; Stice, Presnell, & Spangler, 2002). It is generally reported that about 40% of overweight girls and 20% of overweight boys engage in at least one of the disordered eating behaviors (Decaluwe, Braet, & Fairburn, 2003; Neumark-Sztainer et al., 2007). In fact disordered eating is considered to be a risk factor for obesity, particularly among adolescent girls (Stice et al., 2002).

Though there is limited data, it is generally recognized that overweight is associated with lowered self-esteem and high rates depression and anxiety. The association between overweight and depression seems to be stronger among the adolescents (Needham & Crosnoe, 2005). It is understood that body mass shares a positive correlation with body dissatisfaction (Kostanski & Gullone, 1998; Taylor, Sullivan, & Kliewer, 2012), anxiety and depression (Kostanski & Gullone, 1998; Isnard et al., 2003) and an inverse relationship with self-esteem (Ackard, Neumark-Sztainer, Story, & Perry, 2003; Taylor et al., 2012). Studies focusing on the impact of perceived weight and

psychopathology in adolescents suggest that appearance overvaluation, body dissatisfaction and depressive symptoms are mediated by comorbid binge eating problem (Stice et al., 2002). A confirmatory factor analysis by Dunkley and Grilo (2007) supports that low self-esteem and depression show a strong relationship in patients with binge eating disorder but not in others. But there are some studies that indicate binge eating correlates with self-esteem but not with depression (Decaluwe et al., 2003).

In a recent study, Zeeck and colleagues (2010) compared 20 binge eaters, 23 obese patients and 20 normal weight controls with regard to everyday emotions and the relationship between emotions and eating pattern. They found that binge eaters show a more negative pattern in everyday emotions, with feelings of loneliness, disgust, exhaustion or shame leading the list. Araujo, da Silva Santos and Nardi (2010) conducted a systematic literature review to examine the relation between depression and binge eating disorder. They sourced 14 studies published from 1980 through 2006, which included one cohort, four cross-sectional and nine case-control studies. Most studies (7/14) were conducted in the United States and the majority of the studies (10/14) showed an association between depression and binge eating disorder.

This review suggests that over weight (or high body mass) shares a relationship with low self-esteem and depression but the relationship may vary with associated binge eating. Most of the studies in this direction are based on obese population and come from the West. There is no robust data in this area in India. As the prevalence of overweight and obesity is rising alarmingly in Indian population, particularly among the adolescents, understanding the impact of overweight on psychopathology will go a long way in developing appropriate intervention programmes. In this backdrop, the purpose of the study was to examine the role of binge eating in relationship between body mass and self-esteem and depression in overweight adolescents.

Method

Sample :

The study involved 78 school-going adolescents (39 overweight adolescents and 39 normal weight cohorts), aged 12-17 years, and studying in standard VIII to X. The students were recruited from local schools through purposive sampling method. Incidentally the sample had 40 boys and 38 girls. With reference to the grade, there were 28 adolescents each from grade VIII and IX; and 22 from grade X.

Procedure:

The participants were approached through community-based, private and public schools. After explaining the purpose of the study, informed consent was obtained from the school authorities, parents and the prospective participants. The data of height and weight of the participants were collected from the school records. Each participant was assessed individually with Binge Eating Scale (Gormally, 1982), Rosenberg Self Esteem Scale (Rosenberg, 1965) and Birlson Depression Self Rating Scale for Children (Birlson, 1981) in a convenient environment. Overweight was identified by calculating the Body Mass Index (BMI) by using the standard procedure i.e. weight-to-height ratio expressed as Kg/M² (World Health Organization, 2000). Those with a BMI below 25 were categorized as normal weight and those with a BMI above 25 were categorized as overweight. But it was ensured that those with underweight and obesity were not included in the study. Statistical Analysis was carried out with Statistical Package for Social Sciences for Windows Version 20.0 (SPSS 20.0). Descriptive Statistics, Pearson's r, point-biserial correlation and linear regression analysis were applied as per their basic assumptions.

Results

Table 1. Binge eating scores of the normal weight and overweight adolescents (N=39)

BMI	Mean	SD	t (df=57)
Below 25 (Normal weight)	9.10	4.14	14.18**
Above 25 (Overweight)	15.05	7.87	

**p <.01

Table 2. Correlation matrix for BMI, Binge eating, Self-esteem and depression.

Main Variables	Binge Eating	Self-Esteem	Depression
BMI ^a	0.43**	-0.12	0.06
Binge Eating	-	-0.50**	0.22*
Self- Esteem		-	-.13
Depression			-

** p < .01; * p < .05

^aBMI coding: 1= normal weight; 2= overweight; SPSS computes Pearson's r for point-biserial correlation.

Table 3. Partial correlation matrix for BMI, Self-esteem and depression when binge eating was controlled.

Control Variable	Main Variables	BMI	Self-Esteem	Depression
Binge Eating	BMI	-	.13	-.04
	Self-Esteem		-	-.02
	Depression			-

Table 4. Regression analysis for self-esteem as dependent variable

Independent variable	Unstandardized Coefficients		Standardized Coefficients Beta	t	p
	B	Std. Error			
(Constant)	22.74	1.89		12.02	<.01
Gender	-0.79	0.86	-0.09	0.91	NS
BMI	1.09	0.95	0.13	1.14	NS
Binge Eating	-0.35	0.07	-0.56	5.06	<.01

Table 5. Regression analysis for depression as dependent variable

	Unstandardized Coefficients		Standardized Coefficients Beta	t	p
	B	Std. Error			
(Constant)	18.75	1.63		11.54	<.01
Gender	0.36	0.74	0.06	0.48	NS
BMI	-0.30	0.82	-0.05	0.37	NS
Binge Eating	0.12	0.06	0.25	1.95	<.05

Table 1 indicates that overweight adolescents had higher binge eating scores than those with normal weight. Table 2 indicates that body mass and binge eating are significantly correlated. Body mass index did not have any significant correlation with self-esteem or depression. But binge eating showed a significant negative correlation with self-esteem; and a significant positive correlation with depression. Table 3 shows that body mass, self-esteem and depression did not show any significant correlation when binge eating scores were controlled. Table 4 indicates binge eating predicts self-esteem. Table 5 indicates binge eating predicts depression.

Discussion

Problems of obesity and overweight are on the rise in India, particularly among the adolescents (Khadiilkar et al., 2011). Overweight is associated with several psychological problems albeit it is considerably influenced by binge eating problem. In this context the present study examined the relationship between body mass and self-esteem and depression in overweight adolescents; and the possible role of binge eating in the relationship. The present study indicates that obese adolescents will score high on binge eating than those with

normal weight. This finding is important in the backdrop where studies indicate that eating disorders is the key factor in weight-related body dissatisfaction and related psychopathology (Johnson & Wardle, 2005). Present study also indicates that binge eating shares a significantly negative correlation with self-esteem; and a significantly positive correlation with depression. This finding is supported by previous studies on obese population, which indicate that binge eating was related to high levels of anxiety and depression and low levels of self-esteem (Isnard et al., 2003). But when binge eating scores were controlled, the relationship between body mass, self esteem and depression became non-significant, which may imply that binge eating is an important mediating factor in manifested psychopathology (Yanovski, Nelson, Dubbert, & Spitzer, 1993; Telch & Agras, 1994; Stice et al., 2002). In tune with most of the earlier studies (Kostanski & Gullone, 1998; Isnard et al., 2003), this study indicates that binge eating predicts depression in overweight adolescents. It would be logical to infer that binge eating denotes a severe psychopathology. Similarly, binge eating was able to predict self-esteem i.e. higher the binge eating, lower would be self-esteem (Ackard et al., 2003). This phenomenon was well explained in previous studies that episodes of disinhibited eating pattern might lower a person's self-esteem, making the person more susceptible to disinhibited eating in the future, in a self-perpetuating spiral. Such a spiral may provide at least part of the mechanism that contributes to both binge eating (Polivy & Herman, 1985) and low self-esteem (Garner, et al., 1983). These findings support previous studies that there is a need to identify overweight adolescents who binge-eat as a subgroup so as to extend appropriate help in dealing with associated psychopathology (Isnard et al., 2003). Interestingly, gender vis-à-vis body mass and binge eating had no effect on psychopathology. This finding may imply that there is no need for gender-specific psychosocial intervention programmes while addressing psychopathology in overweight adolescents (Ackard et al., 2003).

The present study has several implications for intervention with adolescents. First, interventions for overweight adolescents should aim at developing healthy eating

patterns, which in turn may prevent problems related to low self-esteem and depression. Gender may not be very important as far as weight-related psychopathology is considered. Rather, overweight adolescents should be routinely screened for binge eating so as to identify and manage serious psychopathology. Nevertheless, the study has specific limitations, which need to be considered before generalizing the findings. For instance, BMI, the measure of overweight was measured only once. For a robust understanding, a BMI of 19 should have been considered the cutoff for normal cohorts. Onset of binge eating and pre-morbid psychopathology was not considered. Binge eating was not clinically diagnosed. These issues may be addressed in future studies.

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