**ORIGINAL ARTICLE:**

**THE EFFECT OF BODY DISSATISFACTION ON DISORDERED EATING ATTITUDES: THE MEDIATING ROLE OF NEGATIVE AFFECTS IN ADOLESCENTS**

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**ABSTRACT**

**OBJECTIVE**

Body dissatisfaction is considered the most primitive risk factor for developing eating pathology and is also found in the normative population. This study aimed to determine the interacting variables, social anxiety and depression, that possibly influence the relationship between body dissatisfaction and disordered eating.

**STUDY DESIGN**

Cross-sectional research design.

**PLACE AND DURATION OF STUDY**

The data were collected from different schools and universities in Karachi through non-probability convenience sampling method, from August 2018 to November 2018.

**METHODS**

A total of 300 students were approached aged 15-20 years (mean age = 17.23 years, SD = 1.42 years) who completed the Body Area Satisfaction Subscale of the Multidimensional Body-Self Relations Questionnaire–Appearance Scales, Social Anxiety subscale of self-consciousness scale, Patient Health Questionnaire-9 and Eating, Attitudes Test-26.

**RESULTS**

Based on the research findings, the serial-multiple mediation of social anxiety and depression in the relationship between body dissatisfaction and disturbed eating attitudes was found to be statistically significant, as indicated by the total indirect (Indirect effect = -0.68, 95% CI: lower limit (LL)= -1.2216 to upper limit (UL) = -0.2290). Hence, endorsing the manifestation of a serial mediation effect.

**CONCLUSION**

The study's findings highlighted the link between body dissatisfaction and eating pathology and their fundamental mediators in the chain. Adolescents with disturbed eating, along with body image issues and the fear of negative evaluation and negative effects, should also be acknowledged by the mental health practitioner in order to design effective treatment plans.

**Keywords**

Adolescent; Anxiety; Body Dissatisfaction; Body Image; Consciousness; Depression; Personal Satisfaction

**INTRODUCTION**

Adolescence is considered the most susceptible age group for the development of eating disorders and for subclinical disturbed eating conditions as well1. Evaluating epidemiologic trends reveals an important fact: - medical professionals are treating many patients who present with incomplete symptomatology for specific eating disorders (specifically, Otherwise Specified Eating Disorders) compared to those whose illness meets all necessary diagnostic criteria. Such findings bring attention to potential gaps in screening or other clinical practices2. Furthermore, studies suggested that the migration from sub threshold eating disorders to threshold cases of eating disorders may take place within a year3 and two or more years’ time period4. Eating disorders, although not frequently diagnosed, are a group of disorders that should not be taken lightly due to their severe psychological and physical effects. They pose a significant risk of chronicity and even mortality, making it crucial to address them with the utmost care and attention5.

When assessing the risk factors for eating disorders, body image dissatisfaction is the primary risk factor for eating disturbances6. However, a number of studies also show an evident prevalence of body dissatisfaction in the normative population as well7. Given the high prevalence of body dissatisfaction, the eating disorders must be high but, in contrast the incidence rate of eating disorders is relatively lower. Considering the indications that there could be certain potential factors which acts as intermediate agent and influence the relationship of body dissatisfaction with eating disorder symptomatology. The current study aims to highlight the role of the possible risk factor: social anxiety and depression as intermediate agents between body dissatisfaction and eating symptomatology.

Eating and anxiety disorders has been highly associated with each other8. Of the anxiety disorders, social anxiety is the most co-occurring disorder along with the eating pathology9. Various cross-sectional and longitudinal research studies have found that anxiety disorders tend to appear before the development of eating disorders in most instances. This pattern has been evident in more than one half of the studiessuggesting anxiety as a pathway in the development of eating disorders.

Anxiety disorders’ research from both clinical and epidemiological studies have documented substantial comorbidity between eating disorders and depression10. With regards to the mechanism of this relationship significant portion of literature suggested that there might be a bidirectional connection between eating disorders and depression. A meta-analysis of longitudinal studies concluded that ED and depression both have a tendency to act as preceding risk11 and maintain factor12.

Studies suggest that people struggling with their weight and shape might avoid interacting with others out of fears related to rejection sensitivity,13 or the fear of being negatively evaluated by others14- features common in social anxiety disorders. Consequently, it does not come as a surprise that numerous studies have identified links between social anxiety disorders and body dissatisfaction15. A longitudinal study16 found evidence for the notion that enhanced levels of depression paired with fears related to adverse evaluations predict bulimic symptomatology- implying those who agonise over being evaluated negatively based on their perceived imperfect bodies could be at risk for experiencing negative effects resulting from faulty eating attitudes17. Regarding Eating Pathology; psychologist Stice suggests disordered eating results from attempts at impulsively minimizing emotional pain while other researchers claim bulimic symptoms on clinical and sub clinical level help the suffering individual to regulate discomforting emotions resulting from fear of negative evaluations18,19.

Although literature lack a clear understanding of how body dissatisfaction, social anxiety, depression and disturbed eating relate in a series effect. Hence, it’s an imperative to understand the association between above mentioned variables to identify factors associated with disturbed eating attitudes therefore, the current study aimed to explore the mediating role of negative affect that is social anxiety and depression in the relationship between body dissatisfaction and disturbed eating attitudes among individuals. Anticipated findings of this study will help to understand etiological factors related to disturbed eating habits and will be helpful to develop therapeutic interventions for clinicians.

**METHODS**

**Participants**

This study consisted of three hundred participants (150 male and 150 females). Participants were approached in different school, colleges and universities from Karachi, city of Pakistan. Participants' mean age was 17.23 years (SD=1.42).

**Instruments**

**Demographic Form.**

Demographic sheet was devised to attain information regarding following demographic variables, such as participants age, gender, qualification, socioeconomic status, relationship status, dietary habits and exercise/gymming hours.

**The Eating Attitudes Test (EAT-26)20**

EAT 26 is used to assess “eating disorder risk” based on attitudes, feelings, and behaviours related to eating and eating disorder symptoms. The EAT-26 includes three subscales (i.e. Dieting, Bulimia and Food Preoccupation and Oral Control). The scoring is done on a 6-point scale from always to never. A total score of ≥20 in the questionnaire indicates disturbed eating behaviour.

**Body Areas Satisfaction Scale (BASS)**

The BASS assesses satisfaction/dissatisfaction with eight particular body areas, as well as overall appearance. It is a subscale of the Multidimensional Body-Self Relations Questionnaire–Appearance Scales (MBSRQ-AS)21, consists of nine items. High scores are suggestive of satisfaction with most areas of the body, while low scores indicate dissatisfaction with the size and appearance of several areas. The BASS has reported a reliability coefficient of 0.73 for females and 0.77 for males.

**Social Anxiety Scale**

It is the six item subscale from the revised version of The Self-Consciousness Scale22, served to assess the fear of being negatively evaluated by others and concerns related to self-presentations. The subscale had an internal consistency of α0.79.

**Patient Health Questionnaire (PHQ-9)**

The Patient Health Questionnaire (PHQ-9) consists of nine items assessing depressive mood over the past two weeks on a 4-point Likert scale (0 = never to 3 = nearly every day). The recommended cut-off points were as follows: normal/minimal (0–4), mild (5–9), moderate (10–14), moderately severe (15–19), and severe (20–27).The internal consistency of the scale was α = .88

**Procedure**

The sample population consisted of students from various schools, colleges, and universities in Karachi. The selection of these educational institutions was based on convenience. In the initial phase of the study, the purpose of the study was explained to the concerned authorities of the institutes. Participants of age ranges 15-20 years were approached. After explaining the aim of conducting the study was presented to them and informed consent was taken. In case of the adults, written consent was taken from the participants themselves whereas, in case of minor’s consent was taken from the institutional authorities. After taking informed consent, the participants were ensured about the rights related to the privacy of the data. Following this, participants were asked to fill the survey forms. Questionnaires were administered in groups. Participants were allowed to ask questions regarding the questionnaire during the administration procedure.

Statistical analyses were calculated using SPSS Statistics 21.0 (IBM Corporation, 2012). Descriptive results are reported as means and Standard Deviations for the variables along with it, independent t test was applied to compare the level of body dissatisfaction, social anxiety and depression between participants with disturbed eating attitude and normal eating. Pearson correlation coefficients were conducted prior to using regression analyses. Correlations were two-tailed, and P-values ≤ 0.05 were considered significant. The principal data analysis technique of sequential mediation was used in order to test the role of social anxiety and depression mediating in serial, between body dissatisfaction and eating disorder. SPSS macro PROCESS V3.3 by Andrew F. Hayes (model 6), two mediators with a 95% bias corrected confidence interval (CI) and 5,000 bootstrapped re-samples. Furthermore, possible indirect effects between body dissatisfaction (X) and disturbed eating attitude (Y) has been evaluated to estimate the direct effect of X on Y i.e., the specific indirect effect through social anxiety (M1) and depression (M2) respectively and in serial. The total indirect effect along with the all estimated paths for serial mediation are explained in table 3 and figure 1.

**Table 1**

**Descriptive statistics and tests of difference between participants with normal eating and disturbed eating attitude on body dissatisfaction, social anxiety and depression.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | EAT 26<20  Mean (SD) | EAT26≥20  Mean (SD) | F | Sig | t(df) |
| Body satisfaction | 3.675 (0.793) | 3.211 (0.969) | 4.098 | P<0.05 | 3.852(290) |
| Social Anxiety | 9.536 (4.052) | 11.216(4.004) | 0.073 | P<0.05 | -2.868(289) |
| Depression | 8.508 (5.055) | 11.916 (5.636) | 1.342 | P<0.05 | -4.543(290) |

**Table 2**

**Pearson’s correlations between body dissatisfaction, social anxiety, depression and disturbed scores for adolescent girls and boys**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 |
| 1-Body satisfaction | - |  |  |  |
| 2- Social Anxiety | -0.174\*\* | - |  |  |
| 3- Depression | -0.178\*\* | 0.243\*\* | - |  |
| 4-Disturbed eating attitude. | -0.152\*\* | 0.185\*\* | 0.263\*\* | - |

(\*p<.05, \*\*p<.01, \*\*\*p<.001)

**Table 3**

**Path coefficients, indirect effects, and 95% bias-corrected confidence interval predicting disturbed eating attitude (N=300)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Product of Coefficients | | Bootstrapping 95% BCa Confidence Interval | |
| Effects | Point Estimate | SE | Lower | Upper |
| Total Indirect Effects | -0.687 | 0.2515 | -1.2168 | -0.2402 |
| BS→SA→Dist.eating | -0.237 | 0.169 | -0.618 | 0.304 |
| BS→Dep→ Dist.eating | -0.353 | 0.216 | -0.842 | -0.010 |
| BS→SA→Dep→ Dist.eating | -0.096 | 0.054 | -0.225 | -0.015 |

BS: body satisfaction, SA: social anxiety, Dep: disturbed eating, Dist. Eating : disturbed eating

**Result**

Differences in means and correlations

Table 1 illustrates the comparison between group having disturbed eating attitudes with normal eating patterns. Adolescents with disturbed eating attitudes scored significantly higher on body dissatisfaction t(290) = 3.852, p > .05 , Social Anxiety t(289) = -2.868, p > .05 and depression t(290) = -4.543, p < .05. The magnitude of the differences was found large in body dissatisfaction (d = 0.8).

Table 2 shows that body Area Satisfaction was found to have a weak negative association with social anxiety (r=-0.174 ), depression(r=-0.178) and disturbed eating attitude(r=-0.152), indicating that the higher the body dissatisfaction the high the social anxiety, depression and the disturbed eating was. Whereas significant weak positive association was found between both mediators and dependent variable that is disturbed eating and Social anxiety (r=0.185 ) and depression (r=0.263 ) respectively.

Table 3 illustrates that body satisfaction had a negative direct effect on social anxiety (a1 = -0.844, SE = 0.276, p < .01) and depression (a2 =-0.883, SE =0.360, p < .05). whereas body satisfaction did not have a significant direct effect on disturbed eating attitude (c = -1.038, SE =0.66, p=0.11).

According to 24 in the absence of a direct effect of X on Y there is possibility that there is some casual link exists between them. Serial mediation analysis indicated that body satisfaction did not have a significant effect disturbed eating attitude however the indirect effect was investigated to ensure a significant influence of social anxiety and depression in the relationship between body satisfaction and disturbed eating attitude was not missed. Analysis revealed there was a significant indirect effect of body dissatisfaction on disturbed eating through the sequential process of social anxiety and depression (a1db2 = -0.096, SE = 0.055, CI: -0.2243 to -0.0147), as was the total indirect (a1db2+ a1b1+ a2b2 = -0.68, SE = 0.25, CI: -1.2216 to -0.2290), hence endorsing the manifestation of a serial mediation effect. Further results concerning the indirect effects showed that the specific indirect effect through only social anxiety was insignificant (a1b1 = -0.23, SE = 0.17, CI: -0.629 to 0.028), showing that social anxiety, in the absence of depression, is an insignificant mediator in the relationship between body dissatisfaction and disturbed eating attitude. However, the specific indirect effect through only depression was significant (a2b2 = -0.35, SE = 0.22, CI: -0.8544 to -0.0175), reflecting that adolescents having depression or low mood due to dissatisfaction with their body weight and shape is associated with a higher likelihood of developing disturbed eating patterns.

d=0.28\*\*\*

b2=0.399\*\*\*

a1=-0.844\*\*

DEPRESSION

SOCIAL ANXIETY

b1=0.280\*

a2=-0.883\*

BODY DISSATISFACTION

c’=- 1.038

DISTURBED EATING.

c = - 0.68

**Figure 1**. Serial-multiple mediation of Social anxiety and depression in the relationship between body dissatisfaction and disturbed eating. \*p < .05, \*\*p < .01, \*\*\*p < .001

**Discussion**

The current study investigated factors predicting eating pathology in adolescents. It aimed to assess the social anxiety and depression as serial mediators in the relationship between body dissatisfaction and disturbed eating attitude. Outcomes of the current study suggested social anxiety and depression—but not body dissatisfaction—are direct predictors of disturbed eating attitude in adolescents, suggesting that in addition with body dissatisfaction other variables are needed to be in alliance in order to predispose an individual towards eating disorder. An indirect pathway to the eating pathology through body dissatisfaction and through social anxiety and depression in a serial effect was found, however, this effect is insignificant in the absence of depression.

Depression was found as the one of the significant predictor of eating pathology in adolescents, as suggested by the results. Depression can produce direct effect and indirect effect through body dissatisfaction, 25 specifically in reference to adolescents, whose body dissatisfaction could be a risk factor for depression. Erickson in his psychosocial theory noted that the hallmark of the adolescence phase is the development of identity. When an individual fails to attain a healthy sense of self, that individual might be a more suggestible to societal standards to give oneself a false sense of achievement and attain approval from others. One such society’s standards are of beauty and attractiveness (i.e., specific body types, thinness for women, and muscularity for men). Internalisation of unrealistic sociocultural norms leads towards body dissatisfaction26. The contribution of body dissatisfaction as a predicting factor in developing depression has been highlighted by several studies, 27 as the certain body types are associated with specific ideas and stigma28. The most used strategy to gain satisfaction and ideal weight is the dieting. However, unsuccessful attempts of attaining weight and shape satisfaction that is unrealistic ideals and standards for beauty, in most of the cases found to be associated with low self-esteem, depression and frustration. These discomforting emotional experiences intensify individuals' inclination towards unhealthy and extreme weight loss tactics29. As the pathological eating patterns might help individual in minimising the discomforting emotional experiences on temporary level30,31 such as restrict eating provide sense of control over weight and achievement of ideal weight aggravate the sense of worth and mood state whereas, lack of control over food gives sense of failure, low mood and may lead to binging and purging which further add to the greater emotional disturbance and severe eating pathologies.

On the other hand, results suggested that social anxiety has a direct influence on disturbed eating attitude among adolescents because of its core feature of fear of negative evaluation and judgment from others. This was found as one of the shared feature of eating disorders and has been highlighted by various studies as the risk factor for anorexia nervosa and bulimia nervosa both32. However, the indirect effect of body dissatisfaction on eating pathology through social anxiety alone was not found to be significant. Pointing toward a commonly used strategy that is active avoidance of a stimulus to manage the discomfort of anxiety state. Whereas, social anxiety did positively predict depression, which in turn predicted the probability of developing disturbed eating patterns. These findings suggest that, while social anxiety may not be enough to independently predict disturbed eating. It is possible that to avoid threatening circumstances of getting judged and evaluated by others because of weight and shape one may adopt avoidance and safety strategies such as social isolation, avoid attending weight related information and thoughts (cognitive avoidance). However, it may reduce anxiety in the short term, whilst exposing adolescents to depression and further risk for developing eating pathologies. The role of depression as a mediator between anxiety and eating disorders were also highlighted by many studies.

**Conclusion**

The present study concluded that along with the body dissatisfaction, other variables like social anxiety and depression also work as contributing factors to develop eating pathology. Furthermore, the findings from this study are also beneficial if along with the body image issues, societal evaluative concerns and negative effects are also acknowledge while designing awareness programs for adolescents and selecting treatment strategies for adolescents who are suffering from disturbed eating.

**Limitations**

The present study is exploratory and has several limitations. First, the study design was cross-sectional and causal relationship cannot be determined between the variables of body dissatisfaction, social anxiety, depression and disturbed eating attitude. Since a cross-sectional study is the initial step for the basic understanding of the relationship between these variables, thus, future research should employ longitudinal or experimental designs in order to clarify the causal relationships between the variables. Secondly, the current study data comprised non-clinical sample and Asians. It is suggested for future research, to conduct investigations with similar goals with larger and diverse sample, most importantly with the clinical population.

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**UNDERTAKING FORM**

