PREVALENCE AND RISK FACTORS FOR EATING DISORDERS IN INDIAN ADOLESCENT FEMALES

Background: Eating disorders (ED) are one of the most common psychiatric problems faced by adolescents, and are characterized by a persistent course, comorbid psychopathology, medical complications, and elevated mortality.

Aims & Objective: To assess the prevalence and correlates of eating disorders in a sample of adolescent Indian females.

Materials and Methods: In a cross-sectional survey, 120 adolescents females (age: 13-17 years) filled out questionnaires on eating attitudes and behaviors at one independent school. ED was measured with the 26-item Eating Attitudes Test (EAT). Participants who scored ≥ 20 on the EAT were considered to have disordered eating and effect of psychological, behavioral, and socio-environmental variables in individuals with and without eating disorders, were assessed.

Results: Disturbed eating attitudes and behaviors were present in 26.67 % of adolescents girls in the sample studied. This group was significantly older, had earlier menarche and lower BMI. Mean scores and percentage scores on all the scales to assess psychological risk factors were found to be significantly higher in the ED group i.e. there were significant associations (p< 0.0001) between elevated EAT scores and dieting behavior, higher drive for thinness and body dissatisfaction, external pressures, mood susceptibility of feeding patterns, perfectionism, occurrence of negative life events and presence and adequacy of emotional support system.

Conclusion: Eating disorders and subthreshold eating conditions are prevalent in a sample of adolescent girls and were strongly associated with various psychological, behavioral, and socio-environmental domains. Future prospective and experimental studies are warranted to advance our understanding of the risk factors to enable better preventive programme planning.

Key Words: Adolescent Females; Eating Attitude Test; Eating Disorder; Psychological Risk Factors

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INTRODUCTION

Eating disorders (ED) are one of the most common psychiatric problems faced by females, characterized by chronicity and relapse along with disordered eating behavior where the patient's attitude towards weight and shape, as well as their perception of body shape, are disturbed.[1] They are ranked among the ten leading causes of disability among young women[2], have the highest levels of treatment seeking, inpatient hospitalization, suicide attempts, and mortality of the most common psychiatric syndromes.[3] Furthermore, eating pathology increases the risk for onset of obesity, depression, and substance abuse.[4] The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)[5] or the International Statistical Classification of Diseases and Related Health Problems (ICD-10)[6] classified ED in anorexia nervosa, bulimia nervosa and eating disorders not otherwise specified (EDNOS). Diagnosis of AN and BN is based on strict diagnostic criteria and patients with disordered eating not fulfilling all of these criteria are diagnosed as having EDNOS.[5,6]

Although there has been a burgeoning of longitudinal and experimental studies on the risk and maintenance factors for eating pathology in the western population, there is a paucity of such studies in Indian population, more so in adolescent girls. There is high prevalence of overweight and obesity in Indian adolescent females[7],which, coupled with rapid socio-cultural changes puts them at risk for eating disorders. Thus, we aimed to identify prevalence and shared risk factors for disordered eating behaviors in Indian adolescent females that could serve as targets for integrated preventive interventions. To achieve this aim, cross-sectional associations between a range of psychological, behavioral, and socio-environmental factors and ED among a sample of adolescent females were assessed.

MATERIALS AND METHODS

The study protocol of this cross-sectional observational study was approved by the Institutional Human Research Ethical Committee and a detailed study overview was described to parents and participants as an investigation of adolescent mental and physical health. An active parental-consent procedure was used to recruit participants. The study group consisted of 120 adolescent

girls from Crosthwaite Girl's College, Allahabad, UP (after taking authorization from the Principal, thereafter no further involvement of the school was required). Participants ranged from 13 to 17 years of age. Inclusion criteria for enrollment required that participants would have entered puberty (based on self-reported attainment of menarche). However, participants with preexisting medical or psychiatric illness severe illness or any form of pharmacological intervention, impairment of speech, hearing, vision, or cognition, age > 18 years, or any medical condition that prevented participants from adhering to the protocol and students showing disinterest were excluded from the study.

A self-report questionnaire was administered to all enrolled participants. The questionnaire had three parts, the first part for socio-demographic variables, second comprised of Eating Attitude Test (EAT) to assess the abnormalities in eating behavior and the third part had questions to assess psychological variables and risk factors. Body image distortion was evaluated using Body Silhouette charts[8] to compare self-reported body shape with investigator reported body shape. A difference of two or more places on the body silhouette chart in student and investigator reported body silhouette was taken as presence of body image distortion.

Socio-Demographic Questionnaires

This questionnaire collected socio-demographic variables regarding their general information i.e. name, age, address, economic status, education, parental education, birth order, age at menarche, history of any systemic illness.

Eating Attitude Test (EAT)

The EAT developed by Garner et al[9] was employed in this study for the assessment of attitudinal and behavioral dimensions relevant to eating disorders i.e. to distinguish patients with eating disorders from weight-preoccupied, but otherwise healthy, female adolescents. It identifies the presence of symptoms that are consistent with either a possible eating disorder or disordered eating and warrant a complete evaluation. EAT consists of 26 items rated on a six point scale, with a score of 3 assigned to the responses farthest in the "symptomatic" direction, a score of 2 for the immediately adjacent response, a score of 1 for the next adjacent response and a 0 score assigned to the three responses farthest in the "asymptomatic" direction.[10] Higher scores indicate higher disordered eating attitudes and behaviors.

Psychological Evaluation Questionnaire

This is a semi-structured pre-tested questionnaire for the assessment of the specific psychopathology of eating disorders and presence or absence of various psychological and socio-cultural factors which are known risk factors for eating disorders. It had seven items, each having variable number of questions- Dieting behavior, Body image and Self-esteem, Societal pressures, Mood variations, Support system, Perfectionism, Negative Life events. The first five items - Dieting behavior, Body image and self-esteem, Societal pressures, Mood variations and support system were graded on a continuous three point scale from zero to two with highest score provided to the most stressful situation, most abnormal behavior or the response most towards symptomatic direction, a score of one for the intermediate response, and a score of zero signifying normal response or absence of the stressor or behavior under question. The responses for Perfectionism and Negative life events items were either Yes or No. "Yes" signified presence of stressor and was given a score of one, "No" signified absence of stressor and was scored zero.

Those who completed the questionnaires were then examined for various anthropometric parameters: Weight (Kg) and height (meters) were measured (using Omron digital body weight scale HN-286 and SECA 206 wall mounted metal tapes respectively). Body Mass Index (BMI) was calculated by Weight (Kg)/ height squared (m^2). Waist circumference was assessed in the standing position, midway between the highest point of the iliac crest and the lowest point of the costal margin in the midaxillary line. Hip circumference was measured at the level of the femoral greater trochanter. All anthropometric measures reflect the average of 3 measurements (measured by same person on same instrument to avoid inter-instrument and inter personal variation). Age was defined as the age at the time of interview (based on student's school ID). All assessments took place on school campus.

Statistical Analysis

Data were expressed as mean ± SD (continuous variables), or as percentages of total (categorical variables). Prior to hypothesis testing, data were examined for normality. Non–normally distributed variables were logarithmically transformed before analysis. Statistical significance was checked using the Student's t test. 95 % confidence limits were set so that if p value was less than 0.05, the difference was considered significant.

RESULTS

Using EAT questionnaire as a screening tool for defining the population at high risk for an ED, participants (n= 120) were divided into two non-overlapping groups: Group I or Symptomatic group (n=32; 26.6%) with scores ≥ 20 {mean score: 24.66 ± 2.42 (range: 20-30)} and Group II or asymptomatic group, composed of 88 females (73.3%) who had scored less than 20 {mean score: 10.22 ± 3.94 (range: 2-18)} on the Eating Attitude Test.

Table-1: Characteristic of participants with EAT score ≥20 and < 20

Characteristics	Group I (n = 32) EAT Score ≥20	Group II (n = 88) EAT Score < 20
Age (years)	15.05 ± 0.86	14.70 ± 0.56*
Age at Menarche (years)	11.58 ± 0.91	13.43 ± 0.79*
Height (m)	1.53 ± 0.05	1.57 ± 0.03*
Weight (Kg)	44.18 ± 4.71	48.26 ± 3.03*
Body Mass Index (Kg\m²)	18.64 ± 2.01	19.37 ± 1.38*
Waist Circumference (cm)	59.92 ± 4.03	60.42 ± 3.84
Hip Circumference (cm)	79.46 ± 5.42	80.26 ± 5.21
Waist-Hip Ratio	0.76 ± 0.04	0.76 ± 0.06

* p < 0.05

Table-2: Mean ± SD Scores and % Scores on Psychological Scales

| Scale	Max. Score	Group I (EAT Score ≥20) (n = 32)		Group II (EAT Score < 20) (n = 88)		p Value
		Mean ± SD	% Score	Mean ± SD	% Score	
Dieting	8	5.28 ± 1.42	66.0	1.47 ± 1.30	18.3	<0.0001
Body Image, Self Esteem	18	11.16 ± 2.92	62.0	2.67 ± 1.98	14.8	<0.0001
External Pressures	22	15.66 ± 2.12	71.2	3.33 ± 2.62	15.1	<0.0001
Effect of Mood	6	4.22 ± 0.97	70.3	1.88 ± 1.34	31.3	<0.0001
Perfectionism	5	3.97 ± 0.86	79.4	1.95 ± 0.95	39.1	<0.0001
Negative Life Events	12	5.69 ± 1.60	47.4	2.90 ± 1.86	24.1	<0.0001
Support System	7	4.16 ± 0.95	59.4	1.83 ± 1.32	26.1	<0.0001
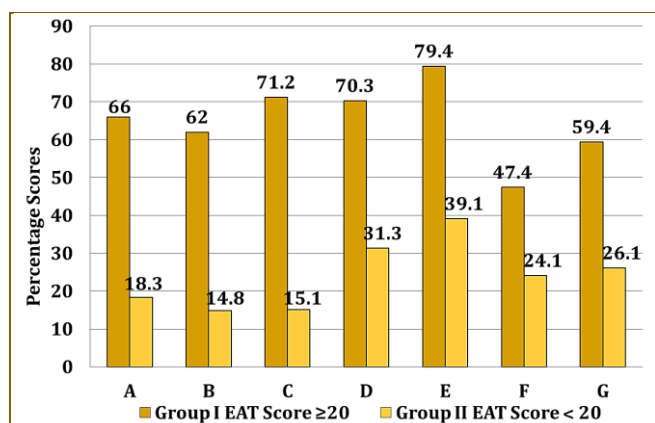
Figure-1: Percentage scores on Psychological Scales (A: Dieting Scale; B: Body Image; C: External Pressure; D: Effect of Mood; E: Perfectionism; F: Negative Life Events; G: Support System)

Socio-demographic and psychological variables and risk factors were compared between these two groups. Table 1 shows the socio-demographic characteristics of the group I and group II participants. By analyzing, we find that group I females were significantly older (p = 0.0210), had a lower age at menarche (p <0.0001), lower BMI (p=0.0321) and lower body weight (p < 0.0001) than the other group. However, there was no significant difference in waist to hip ratio, birth order, parents working status and socio economic status between the study groups. No significant distortion of body image was observed in participants belonging to either of the study groups, signifying that these girls are aware of their actual body size and shape, but it is the cult of thinness that is driving them to unhealthy eating behaviors.

Table 2 presents the scales of various psychological and socio-cultural factors which are known risk factors for eating disorders. We found a significant difference (p < 0.0001) between the two groups on all the scales - their reported eating of meals, i.e. dieting behavior, had a higher drive for thinness and body dissatisfaction, higher perceived external pressures, mood susceptibility of feeding patterns, perfectionism, reported negative life events and presence and adequacy of emotional support system.

DISCUSSION

The primary finding of this study, the prevalence of eating disorder symptoms and disordered eating attitudes and behaviors in a sample of adolescent girls came out to be 26.67%. This is comparable with reports from other investigators[11-16] who had used Eating Attitude Test and reported prevalence of disordered eating attitudes and behaviors to be between 16.5 and 27% in different study groups.

Jones JM et al[12] had observed that prevalence of disordered eating and behavior increases gradually during the adolescence years. Our study found a statistically significant (p value = 0.0210) difference in the mean age of two groups (Table 1). Further, mean age at menarche in Group I subjects was significantly lower (p < 0.0001) than Group II subjects, consistent with previous findings[17,18], thus substantiating the hypothesis that earlier age at menarche is a risk factor for development of Eating Disorder. Persons with their weights and body mass indexes in the highest quartile and elevated adiposity are considered to be at risk of developing an eating disorder[19,20], as the culturally defined ideal for attractiveness currently favors thinness. However, in the present study, weight and BMI of Group I subjects were found to be significantly lower than those of Group II subjects. This may be due to the fact that this is a cross-

sectional study and ongoing disordered eating and dieting behaviors might have led to decreased body weight and BMI.

The secondary aim of this study was to evaluate the psychosocial risk factors for ED in a sample of early adolescent girls. Mean scores and percentage scores on all the scales to assess psychological risk factors were found to be significantly higher for Group I subjects (Table 2). Few studies[12,21] had emphasized the role of dieting attitude and behaviors in development of future eating disorders. In our study, scores on Dieting scale were associated with the scores on EAT. Similar pattern was obtained on Body image and self-esteem scale (Table 2), in accordance with another study.[22] Self-esteem based on weight and shape may be particularly important[23], as it is identified as a core feature of bulimia nervosa in DSM-IV.[5] The scales assessing perceived pressure to be thin from family, peers, and media also correlated with EAT scores (Table 2). This finding is consistent with previous studies covering different developmental periods[24-26], thereby suggesting this effect is robust.

The difference in scores on scale assessing effect of mood on eating behavior, perfectionism score (Table 2) was found to be statistically significant showing that subjects who are perfectionist and in whom mood controls the feeding pattern are more at risk of developing an ED. Findings on the scale estimating presence of negative life events and other stressors are in conformity with the importance of negative life events as emphasized by other studies.[27,28] Another important finding was that deficits in perceived social support were related with the development of disordered eating. Our results (Table 2) are consistent with the assertion that acceptance in one's immediate social network might help girls feel more positively about themselves and their bodies and render them more resilient to socio-cultural pressures to be thin. Results suggest that it might be fruitful to direct greater attention to the role of social support deficits in promoting body image disturbances, especially since females tend to reach out more to their peers to cope with stress.[29]

Nonetheless, this study has a few limitations. Firstly, sampling may not be representative of all of the adolescent Indian population. Participants were taken from one school, having more or less same socio-economic status and cultural environment, which may reduce the generalizability of our findings. Secondly, the study was cross-sectional and thus, we are not able to

infer causality. Another limitation is the use of anonymous self-report questionnaires to collect data, relying upon the honesty of the students. It is possible that biased answers were collected, in which case the prevalence rate may have been under- or overestimated.

Still, taken together, these results provide important information for clinical practice. The results of this study suggest that the prevalence of disordered eating and unhealthy weight-control behaviors in adolescent population is high, with a multitude of psycho-social factors contributing to their vulnerability. There is a need for longitudinal study in Indian setup to isolate the risk factors and evaluate the possible relationship between demanding environments and psychosomatic vulnerability. In the interim, our findings convey that eating disorders comprise a significant health concern among adolescent females and health programs should be included for educational services on school campuses in an effort to alleviate potential risk factors and unhealthy behaviors and attitudes.

CONCLUSION

Eating disorders and subthreshold eating conditions are prevalent in a sample of adolescent girls and were strongly associated with various psychological, behavioral, and socio-environmental domains. Future prospective and experimental studies are warranted to advance our understanding of the risk factors to enable better preventive programme planning.

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