Original Article

A SINGLE-CENTRE PROSPECTIVE CROSS-SECTIONAL STUDY OF SCHOOL AGE CHILDREN AT RISK FOR EATING DISORDERS

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Abstract

Amongst all psychiatric ailments in school-age children, eating disorders (ED) receive the negligible attention and have the possibility to encounter serious morbidity. Due to their many different forms, EDs in young children are very challenging to diagnose. Invariably, numerous co-morbid psychiatric diagnoses, especially body image issues, self-esteem concerns are more common in children and young adults with ED. In this study, children between the ages of 8 and 13 were evaluated for their prospect of acquiring an early-onset eating disorder (EOED) and their preponderance of experiencing a negative body image. We also intended to investigate if body image issues and BMI were related to EOED.A cross-sectional study was conducted on 133 kids (75 boys and 58 girls) in the pediatric outpatient department of a tertiary care medical college in Chennai who were between the ages of 8 and 13. After receiving informed written agreement, the Socio-demographic Proforma, Children's Eating Attitudes Test-26 (Ch-EAT 26), and Body Shape Questionnaire-8C were administered. Statistical methods namely Pearson correlation and chi-square test were used. Children were more likely than adults to be at hazard for enduring eating disorders early on (10.2% vs. 39.8%). The likelihood of eating disorders, concerns about one's body form, and body mass index were found to have a tepidly positive association. Young children have a high chance of developing early eating disorders, which offers insight into effective intervention options.

Keywords: Body image concern, Child, Children's Eating Attitudes Test-26, Early onset Eating disorder, Eating disorder.

Introduction

Many people believe that eating disorders are twentieth-century Western phenomena. This is untrue because people who exhibit these characteristics have been documented for more than a thousand years. By ardently changing the cultural practices of food intake to the extent that meager or exorbitant eating behavior can negatively impact either person's bodily or the mental state of well-being[1]. Preeminent eating disorders (EDs) are primarily categorized as Anorexia nervosa (AN), Bulimia nervosa (BN), and binge eating disorder (BED) perceived by the DSM-5[2]. All three EDs have a tendency to be chronic and may have serious, even fatal, medical and psychological repercussions.

In the past, South Asia and India had fewer studies on eating disorders in young children than did the West [3]. The ascendancy of EDs in adolescents below the age of 12 has been rising recently, so it's critical for parents and

pediatricians to be aware of the warning signals[4].Between the ages of 16 and 20 is when EDs that are marked by concerns about body weight/shape and maladaptive weight control most frequently manifest[5] . Early-onset eating disorders (EOED) afflict roughly 3 out of every 100,000 children under the age of 13, according to Nicholls et al.[6].Parents and pediatricians must be familiar with the warning signals; because the paramountcy of EDs among children under 12 years has heightened recently(7).Between the ages of 6 and 18, there were no appreciable sex differences in the diagnosis of EDs, according to research by Kinasz et al. Eating disorders are ancestral, and research work involving twins dictate that accompaniment of genetic wavering imparts between forty percent and sixty percent of happenstance for efflorescent eating disorder [8] .A youngster is eleven fold more prone to establish an eating disorder if one of their relatives happens to possess, as eating disorders can run in families [9] . Anorexia Nervosa (AN) is represented by intense aversion to feed, eating, and maintaining a healthy body weight [10] .

A person with an aberrant eating pattern could endure both physical and mental stress [11] . ED has significant rates of mental and medical co-morbidity, with the most prevalent conditions being anxiety, depression, OCD[12] . On account of their discontent concerning physical appearance, Sertoz et al study's participants had high rates of co-morbid anxiety and depression. There are clinical variations in presentation of AN relying on the age of beginning, with early onset AN possibly signifying a negative correlation between longer sickness period and increased illness austerity[14]. Accordingly, in a research guided by Abbate Daga et al.[15] , Early onset AN participants had considerably greater rates of distorted self-perception of body image than those with Late onset AN.

The intention of this study is to measure the prevalence of EOED and its relationship to issues with body image in kids between the ages of 8 and 13. Early screening and therapies, like medication and psychotherapy, can be utilized to benefit children who are vulnerable to emerging eating disorders in the near future.

Methodology

Children who visited the paediatric outpatient department at Saveetha Medical College and Hospital comprised the sample population. This population was typical of a non-urban area with a uniform socioeconomic profile. Consecutive children and youngsters amidst the ages of 8 and 13 who were enrolled in the study between February 2022 and May 2022 were studied using a cross-sectional study design. Parents of the subjects provided signed, fully informed consent. Children with special education requirements and intellectual disabilities with documentation, chronic infections, chronic gastrointestinal inflammatory disorders, and participants not declaring consent were excluded from the study.

Calculating sample size

Implicating British national surveillance study[6] in 2011, which reported that 9.51% of children are liable to acquire eating disorders, we supposed that a specimen proportion of 133 would be needed. Institutional Ethical committee approval was accomplished.

Socio-demographic variables were documented via organized questioning of the participants intended at detailing their demographic data i.e. name, age, gender, dwelling details, social status, education, parental education, birth order, and familial eating disorder.

Physical examination on children and teenagers was done for numerous anthropometric dimensions namely weight (in Kilograms [kgs]) and height (in centimeters [cms]) were gauged {using Omron digital body weight scale HN-286[16] and SECA 206 wall mounted metal tapes[17] respectively}. Weight and height was measured to the adjacent 0.1 kg and 0.5 cm respectively. Every anthropometric calibration express the mean of three compilations (performed by the same investigator by the same instrument to evade inter-instrument and interpersonal difference). Body Mass Index (BMI) was calculated by Weight (Kg)/ height squared (m^2). Age and gender standardized BMI Z-scores was utilised from the World Health Organization (WHO) growth standards(18). Z-score cut off points of BMI for age < -3.0, - 3.0 to - 2.0, - 2.0 to 1.0, 1.0 to 2.0 and > 2.0 were used to classify children as severe thinness, thinness, normal, overweight and obese, respectively(19).

Children's Eating Attitude Test (Ch-EAT) 26

Ch-EAT 26 computed by Garner et al[20] was selected for the appraisal of attitudinal and behavioral measure pertinent to eating disorders i.e. screen children with eating disorders amongst healthy children. It delineates the existence of malady that are coherent with either a likely eating disorder or disordered eating behaviour and necessitate a detailed valuation. Ch-EAT comprises of 26 items graded on a six point likert scale, with the three least-symptomatic response categories being collapsed and ordered a value of 0, whereas the most-symptomatic response category is designated a value of 3, the second most-symptomatic is appropriated a value of 2, and the third most-symptomatic is specified a value of 1. Every items are phrased such that always is the most-symptomatic response category except for item 26 ("I enjoy trying new, rich foods"), which is reverse scored[21]. The maximum score is 78 points with a clinical cut-off equal to 20 points[22] . The higher the score, the higher will be the possibility for Disordered Eating Symptoms (DES). Ch-EAT 26 grouped into three subscales: "Dieting"(Items 1,6,7,10,11,12,14,16,17,22,23,24,26), "Bulimia and Food Preoccupation"(Items 3,4,9,18,21,25) and "Oral Control"(Items 2,5,8,13,15,19,20) with 13, 6, and 7 items respectively(21).

Body Shape Questionnaire (BSQ)-8C version

Historically Schilder[23] voiced the notion of body image from a psychological viewpoint, wherein, body image is detailed by the mental image of our soul. The Body Shape Questionnaire (BSQ) is a self-report survey created originally by Cooper et al[24] comprising 34 items to evaluate concerns about body image. Later various shorter adaptations with good reliability (Cronbach's $\alpha > 0.87$ for all versions) and validity prevail nowadays in English(25). Accordingly, the English 8-item version BSQ-8C was employed in this study. Each item is answered using a six point Likert scale: 1 (never), 2 (rarely), 3 (sometimes), 4 (often), 5 (very often), and 6 (always). The total score obtained on this questionnaire is used to measure body image dissatisfaction and is calculated by adding up the scores given for each of the 8 items. The total score can therefore vary between 8 and 48 points and higher the score, the greater the degree of dissatisfaction and discomfort with regard to body image. A score of less than 19 is taken as evidence of no dissatisfaction, 19 to 25 represents slight dissatisfaction, 26 to 33 moderate dissatisfaction and a score higher than 33 indicates serious dissatisfaction, according to the cut-off points proposed by Cordás and Castilho(26).

Statistical Analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS version 27 for Windows). Descriptive statistics including means with standard deviations or frequencies with percentages were used to investigate patient demographics. Two correlation analyses (Pearson correlation test) were performed between Ch-EAT score and BMI, Ch-EAT score and BSQ-8C score, and Ch-EAT score and age of subjects. The Chi-square test (for categorical variables) and T-Test (for numerical variables) were used to compare the two subgroups (according to the Ch-EAT score) relatively to the other variables.

Results

In toto, 133 subjects constituted the study. 58 (43%) and 75 (56%) of the subjects were females and males respectively. Majority 57 (43 %) of children belonged to 3rd class, according to the modified kuppusamy scale. The mean (SD) age of the study population was 10.4 (2.00) years, and mean height was 137.60 (13.60) centimeters, mean weight was 35.10 (11.90) kg, and mean BMI was 18.10 (3.89) kg/m^2. 82 (62%) of the study subjects had BMI in the normal range, 37 (28 %) were overweight, 13 (10 %) belonged to thinness, and 1 (0.7 %) were obese as per the WHO classification of BMI. In our study, the mean (SD) Ch-EAT 26 score and BSQ-8C score for study subjects was 10.2 (4.90), and 16.2 (7.70) respectively. 14 (10.52 %) subjects were found to be at risk of eating disorders with a Ch-EAT score cut-off ≥ 20. The preponderance of body shape concerns among subjects was determined to be 39.8% (Table 1).

Table 1 - Socio-demographic variables and distribution of Ch-EAT 26 score and BSQ-8C score among study subjects

Variable	**n (%)**
Sex	
Females	58 (43)
Males	75 (56)
Socio-economic Status	
Upper (I)	0 (0)
Upper Middle (II)	22 (17)
Lower Middle (III)	57 (43)
Upper Lower (IV)	54 (41)
Lower (V)	0 (0)
BMI	
Severe Thinness	0 (0)
Thinness	13 (10)
Normal	82 (62)
Overweight	37(28)
Obese	1 (1)
Ch-EAT 26 Score	
≥ 20	14 (10)
≤ 19	119 (90)
BSQ-8C Score	
No concern (< 19)	80 (60)
Mild concern (19 - 25)	29 (22)
Moderate concern (26 - 33)	17 (13)
Severe concern (> 33)	7 (5)

Majority of study subjects 80 (60 %) had no body image concerns followed by 29 (22%) having mild body image concerns. 17 (13%) had moderate concerns and 7 (5%) had severe concerns. As depicted in Table 2, body image concerns, as measured by BSQ-8C scores, were not confederated with higher Ch-EAT 26 scores (p=0.774).

Table 2 - Factors associated with eating disorders among the study subjects

Variable	Category	Ch-EAT 26 score		Chi-square	p-value
BSQ-8C Score		≤ 19 n (%)	≥ 20 n (%)	0.8359	0.840868
	No concern	76 (57.1)	8 (6)		
	Mild concern	21 (15.8)	4 (3)		
	Moderate concern	15 (11.3)	2 (1.5)		
	Severe concern	7 (5.3)	0 (0)		

The risk of eating disoders and age of study subjects was negatively correlated (r=-0.0849, p=0.33). An insignificant mild positive correlation was noted between the risk of eating disorders and BMI, which means that the higher the BMI, the greater the risk of eating disorders. (r= 0.0879, p=0.31). A mild positive correlation was observed between the risk of eating disorders and body shape concerns (r=0.0250, p=0.77). A positive correlation was observed between the body shape concerns and age of subjects (r=0.0697, p=0.43) (Table 3). A low positive was found between body shape concern and BMI (r=0.1078, p=0.22).

Table 3 - Relationship between variables using Pearson's correlation Significant at α=0.05

Variable correlation	Pearson correlation	p-value (2 tailed)
Ch-EAT 26 Score		
With Age	-0.0849	0.33
With BMI	0.0879	0.31
With BSQ-8C	0.0250	0.77
BSQ-8C Score		
With Age	0.0697	0.43
With BMI	0.1078	0.22

Discussion

This study guessed at the occurrence of eating disorders amid children aged between 8 and 13 years attending the pediatric outpatient department, Saveetha Medical College and Hospital and established its alliance with body shape concerns. In our current study, among 133 study subjects, the mean (SD) age was 10.40 (2.00) years, mean weight was 35.10 (11.90) kg, mean height was 137.60 (13.60) centimeters, mean BMI was 18.10 (3.89) kg/m^2. Similar results have been obtained in a study done by Peebles et al[27] and Yang et al[28].

4.5% of girls and 6% of boys were determined to be at risk of early onset eating disorders out of the total study participants, or 10.52% [Ch-EAT score 20]. These findings are in line with research by Peebles et al[27] and Rosen[29] , which compared EDs in adolescents with younger children and found that younger patients were more likely to be males. Yang et al[28] did yet another study on South Korean children where they discovered an equal distribution of cases between the sexes. As demonstrated by our findings, one of the most crucial things to comprehend regarding early onset EDs is that both boys and girls are typically affected equally. In contrast to the

research we conducted, Pinhas et alstudy[30] eating disorders were discovered to affect 0.3% of girls and 0.1% of boys between the ages of 5 and 12. According to a research by the Agency for Healthcare Research and Quality[31] , the hospitalisation rate for eating disorders in children under the age of 12 increased by 119% between 1996 and 2006. This points to the necessity to evaluate the risk of eating disorders in youngsters, a factor that goes unnoticed.

Among our study subjects, the prevalence of body image concerns was as high as 39.8%. A study by Allarballeh et al[32] observed that 36.7% of their study participants are dissatisfied with their body image.

In our study, the mean (SD) Ch-EAT 26 score was 10.20 (4.90). As per the study by Pourghassem Gargari et al[33] , the mean (SD) of Ch-EAT 26 was 11.71 (8.48), which is comparable.

In the current study, a mild positive correlation was noted between Ch-EAT 26 scores and BSQ-8C scores, which means that the higher the level of body shape concerns, the greater the risk of developing an eating disorder, which is supported by Alipoor et al[34] . A study by Jung et al[35] observed that greatest body dissatisfaction was associated with disordered eating behaviors and these changes originated prior to adolescence.

Ch-EAT scores and BMI was positively correlated indicating that greater the risk of developing eating disorders, higher the possibility of increased BMI, as evidenced by Abdalla et al[36].

Limitations

Every study has limitations and ours is no exception. As the study had enmeshed children amongst rural area, the findings cannot be generalized. Yet another limitation was cross-sectional study design. Prospective on-going interpretation could be helpful, but logistically arduous.

Conclusion

The current study concludes by showing a growing pattern in the likelihood of eating disorders with early onset. These individuals demonstrated higher degrees of body image dissatisfaction, it was discovered. This offers more knowledge on how to raise awareness among kids and their caregivers about proper and prompt management to prevent the negative impacts of irregular eating practices in later life.

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Conflict of interest:

The authors have no conflict of interest and nothing to declare.

Author contributions:

Srinath M V, and Vaanmathi A.S. unindemnified to the visualization, conceptualization, and project administration of the study. Srinath M V aided to writing original draft preparation and data curation. Vaanmathi A.S. advocated to validation and formal analysis. All authors endorsed manuscript revision and have certified the submitted manuscript**.**

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