Paediatrics

A STUDY OF EATING BEHAVIOR DISORDER IN SCHOOL AND NON-SCHOOL GOING ADOLESCENT

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ABSTRACT **Background :** Eating disorder is serious condition related to persistent eating behavior that negatively impact one's health, emotion, and ability to function in important area of life. **Aims:** To study eating behavior disorder in school going and non-school going adolescents. **Material and methods:** This study was conducted from 2019 among a adolescents aged 11–19 years selected from Government & private school and school going children from Madhav dispensary pediatric OPD and non-school going from slum, street, shops, hotels, garage in the city of Gwalior M.P. The survey interview will be structured to cover five questionnaries components, assessing. **STUDY DESIGN:** Community based cross-sectional study. **SAMPLE SIZE:** 375 school & 375 non-school going children. Statistical analysis: SPSS software. **Results and conclusion:** Total No. of male 273 (72.8%) and female 108(27%) school going and 230(61.3%) male and 145(27.2%) female in non school going. In school going alcohol abuse cases 8 (2.1%) and no female and 7 male (1.8%) and 60 female (4.3%) in female of non school going. 1 case of Bulimia Nervosa in male and 7 female (1.8%) in school going while non school 5 male (1.3%) and 5 female (1.3%). In school adolescent maximum number of adolescents in late group who have suffered of alcohol abuse, bulimia nervosa, panic attack, alcohol tried and cigarette smoking, heard about alcohol abuse & cigarette smoking by peers, desired to weight gain is also more common in males, while in females anorexia nervosa, bulimia nervosa, depression, alcohol tried, cigarette smoking, heard about alcohol abuse & cigarette smoking by peers and desire to lose weight were reported significantly. In Non-school going adolescent in both middle and late female were using more alcohol then male and in bulimia nervosa was equal in both males and females, anorexia nervosa was common in females and panic attack were more in males

INTRODUCTION

Eating disorder is serious condition related to persistent eating behavior that negatively impact one's health, emotion, and ability to function in important area of life. According to American psychological association (APA) eating disorder are abnormal eating habit that can threaten one's one health or even life It is common well known eating disorders, such as anorexia nervosa, bulimia nervosa, and binge eating disorder, are an extremely complex set of conditions characterized by abnormalities in feeding patterns, extreme weight control practices, self-induced vomiting, purging or diet pills, excessive concern for physical fitness, and altered perception of body image, pre occupation with food thoughts. In addition, it is now an established fact that eating disorders represent one of the major public health problems due to important negative health consequences associated with comorbidity The adolescent is considerably vulnerable to developing eating disorders and their serious physical and psychosocial consequences.

A few studies have been conducted on adolescents' knowledge, attitudes, and behaviors from different regions of the world regarding these disorders but, to our knowledge, little research has been conducted in India concerning this topic.

Body image is the subjective perception of an individual of his own body regarding its health or aesthetics. Body image is influenced by many factors like race, conventional standards of beauty, family and peers. In adolescence, the individual is extremely sensitive to peer pressure, bullying and criticism, hence body image is very fragile.

An adolescent with a healthy body image grows up to be a balanced and confident individual, who contributes better to the nation's social and economic wellbeing. An adolescent with a negative body image, in turn can suffer with numerous health problems like anorexia nervosa, bulimia nervosa, depression or in general lack of self-esteem.

AIMS AND OBJECTIVES
AIMS
1. To study eating behavior disorder in school going and non-school going adolescents.

OBJECTIVES
Primary objective:
To study the incidence of eating behavior in adolescents.

Secondary objective:
1. To study if any physical and psychiatric morbidities are associated with disordered eating behavior.

MATERIAL AND METHODS
This study was conducted from 2019 among a adolescents aged 11–19 years selected from Government & private school and school going children from Madhav dispensary pediatric OPD and non-school going from slum, street, shops, hotels, garage in the city of Gwalior M.P.

Inclusion criteria:
1. Age limit >11 to <19 years are included.

Exclusion criteria:
1. Adolescent with Intellectual disability.
2. Known case of chronic illness like diabetes, celiac, CKD, were excluded.

METHOD:
Consent and assent is taken from parents of all participant as well as from all participant.

MATERIAL:
The survey interview will be structured to cover five questionnaries components, assessing:

1. Basic socio-demographic and general information about the students and their parents (age, gender, nationality, weight, height, educational level).
2. Knowledge of eating disorders.
3. Attitudes towards eating habits (satisfaction with their weight, fear of getting fat, self-perception of their weight).
4. Behaviors regarding eating habits.
The items of the questions regarding the attitudes and behaviors of the participants will be derived from the items of the Indian scale to measure EDS By T.N. Srinivasan SQ-EDS scale by swami *et. al.*
5. Psychiatric morbidity using MINI international neuropsychiatric interview (mini) kids screen
6. WHO standard Anthropometry and figure rating scale and stabilized conversation to BMI By Stunkard
7. H.E.A.D.S.S. - A Psychosocial Interview for Adolescents Interview Questions for Adolescents

STUDY DESIGN: community based cross-sectional study.
SAMPLE SIZE: 375 school & 375 non-school going children.
STUDY TOOLS:
Anthropometry
Weight was recorded using a single weighing machine for all subjects and height was taken using Stadiometer. BMI was calculated using the formula
BMI=Weight (kg) /Height (M²).

Body image
Body image was evaluated using Photographic Figure Rating Scales (PFRS)

Psychiatric morbidity:
Screening for the presence or absence of any symptom of various mental disorders was done using Mini International Neuropsychiatric Interview (MIND) Kid questionnaires.

STATISTICAL ANALYSIS
The total number of cases included were a maximum of 750 including school going and non-school going adolescent. Results were calculated using SPSS 20 software.

OBSERVATION AND RESULTS
Out of 375 school going adolescents, 8(2.1%) cases were from early adolescent age (10-13), 76(20.2%) were from middle adolescent age (14-16)   and 291(77.6%) were from late adolescent age (17-19) .

Table 1 SHOWING SCHOOL GOING ADOLESCENT AGE WISE DISTRIBUTION

Age group	No of adolescent
10-13	8(2.1%)
14-16	76(20.2%)
17-19	291(77.6%)
TOTAL	375

Out of 375 non-school going adolescents, 4(1%) cases were from early adolescent age (10-13), 42(11.2%) cases were from middle adolescent age (14-16) and 329(87.7%) cases were from late adolescent age (17-19) .

The chi square statistic is 13.459. The p value is 0.001195. The result is significant at p <0.05 for non-school age group.

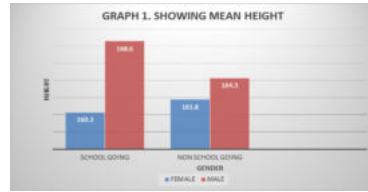**Table 2 SHOWING NON SCHOOL GOING ADOLESCENT AGE WISE DISTRIBUTION**

Age group	No of adolescent
10-13	4(1%)
14-16	42(11.2%)
17-19	329(87.7%)
TOTAL	375(100%)

P value = 0.001195

Out of 375 Adolescents, in school going group 273 (72.8%) were male & 102 (27.2%) were female, and in non-school going group 230(61.3%) were male & 145 (38.6%) were females.

Out of 375 school going adolescent, the mean height was 168.6 cm (273 cases) of male and 160.3 cm (102 cases) in female. P value is not significant in both early and middle adolescent age group but significant in late adolescent group (p value <0.05).

Mean height Out of 375 non-school going adolescent , the mean height was 164.3cm (208 cases) in male and 161.8cm(169 cases) in females. P value is not significant in both early and middle adolescent age group but significant in late adolescent group (p value <0.05).

GRAPH 1. SHOWING MEAN HEIGHT

Out of 375 school going adolescent, the mean weight was 64.7kg (273 cases) in male and 66.16kg(109 cases) in females. P value is not significant in all early, middle, and late adolescent age groups.

Out of 375 non-school going adolescent, the mean weight was 62.78 (208 cases) in male and 56.6(167 cases) in females. P value is not significant in all early, middle, and late adolescent age groups.

Mean BMI of cases in school going group were 22.7 (273 cases) in male & 18.6(102 cases) in female and in non-school going group were 20.9(20.9) in male & 21(144) in female. P value is not significant in both groups.

GRAPH 2.SHOWING MEAN BMI AMONG TWO GROUPS
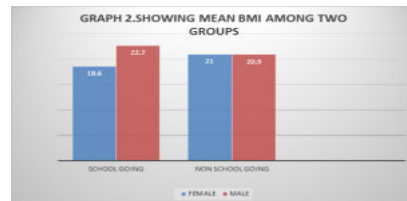
HEADSS SCORE <2 ACCORDING TO AGE & GENDER WISE AMONG SCHOOL GOING ADOLESCENT

Table 3 HEADSS SCORE <2 ACCORDING TO AGE WISE AMONG SCHOOL GOING ADOLESCENT

Age group	M	F	SD	MARGIN OF ERROR	P VALUE	CHI SQUARE
10-13	3(0.8%)	1(0.2%)	3.17	1.05	0.191	4.489
14-16	59(15.7%)	23(6.1%)	0.77	0.08	0.169	7.362
17-19	155(41.3%)	134(35.73%)	0.54	0.032	0.112	8.365

Out of 375 school going adolescents, HEADSS score <2 was 57.8% (217 cases) in male while 42.2% (207 cases) in female. early adolescent age (10-13) was 3(0.8%) for male and 1(0.2%) for female; middle adolescent age (14-16) male were 59(15.7%) and female were 23(6.1%) and late adolescent age (17-19) 155(41.3%) Were male & 134(35.73%) were female. P value is not significant in all early, middle and late adolescent age groups.

Table 4 HEADSS SCORE <2 ACCORDING TO AGE WISE AMONG NON SCHOOL GOING ADOLESCENT

Age group	M	F	SD	MARGIN OF ERROR	P VALUE	CHI SQUARE
10-13	1(0.2%)	3(0.8%)	0.43	0.21	0.196	2.345
14-16	28(7.46%)	14(3.73%)	0.49	0.076	0.122	6.936
17-19	102(27.2%)	227(60.5%)	0.46	0.02	0.119	8.965

Out of 375 Non-school going adolescents, HEADSS score <2 was 34.9% (131 cases) in male while 65% (244 cases) in female. early adolescent age (10-13) was 1(0.2%) for male and 3(0.8%) for female; middle adolescent age (14-16) male were 28(7.46%) and female were 14(3.73%) and late adolescent age (17-19) 102(27.2%) Were male & 227(60.5%) were female, P value is not significant in all early, middle and late adolescent age groups.
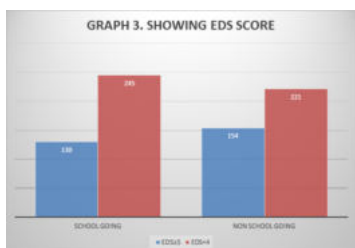
EDS SCORE:

Table 5 SHOWING EDS SCORE AMONG TWO GROUPS

	EDS≥5	P VALUE	CHI SQUARE
SCHOOL GOING	130(34.6%)	0.0942	52.3673
NON SCHOOL GOING	154(41%)	0.0871	84.325

Out of 375 school going age 245 have EDS<4 And 130 have EDS≥5.

Out of 375 Non-school going age 221 have EDS<4 And 154 have EDS≥5. P value is not significant in both the groups.

GRAPH 3. SHOWING EDS SCORE

MINI KID DIAGNOSIS:
Table 6 SHOWING MINI KID SCORE IN SCHOOL GOING

DIAGNOSIS SR NO		10-13			14-16			17-19		
		M	F	TOTAL	M	F	TOTAL	M	F	TOTAL
1	ALCOHOL ABUSE	0	0	0	0	0	0	8(2.1%)	0	8(2.1%)
	P VALUE	0	0	0.86						
2	BULIMIA NERVOSA	0	0	0	0	2 (0.5%)	2 (0.5%)	1 (0.2%)	7 (1.8%)	8 (2.1%)
	P VALUE	0	0.9	0.86						
3	ANOREXIA NERVOSA	1 (0.2%)	0	1 (0.2%)	1 (0.2%)	11 (2.9%)	12 (3.2%)	3 (0.8%)	8 (2.1%)	11 (2.9%)
	P VALUE	0.9	0.74	0.86						
4	PANIC ATTACK	0	0	0	4 (1%)	0	4 (1%)	6 (1.6%)	4 (1%)	10 (2.6%)
	P VALUE	0	0.96	0.864						
5	DEPRESSION	0	0	0	2 (0.5%)	0	2 (0.5%)	3 (0.8%)	6 (1.6%)	9 (2.4%)
	P VALUE		0			0.9			0.63	

MINI KID TEST: Out of 375 cases in school going adolescents, alcohol abuse 8(2.1%) was male and there was no female. alcohol abuse in school going group no cases in early adolescent age (10-13) & middle adolescent age (14-16) of alcohol abuse are seen, in late adolescent age (17-19) ,8(2.1%) in male & no cases of female were seen. P value is not significant in all early, middle and late adolescent age groups.

In bulimia nervosa male was 1(0.2%) and female were 7(1.8%). P value is not significant in all early, middle and late adolescent age groups.

In anorexia nervosa Out of 375 cases male was 14(3.7%) and female was 16(4.2%). P value is not significant in all early, middle and late adolescent age groups.

In panic attack Out of 375 cases total male were 12(3.2%) and there was no female. P value is not significant in all early, middle and late adolescent age groups.

In depression out of 375 cases total female were 17(4.5%) and male were 8(2.1%). P value is not significant in all early, middle and late adolescent age groups.

Table 7 SHOWING MINI KID SCORE IN NON SCHOOL GOING

DIAGNOSIS SR NO		10-13			14-16			17-19		
		M	F	TOT	M	F	TOTA	M	F	TOTA
1	ALCOHOL ABUSE	0	0	0	3 (0.8%)	2 (0.5%)	5 (1.3%)	4 (1%)	14 (3.7%)	18 (4.8%)
	P VALUE	0	0.96	0.049						
2	BULIMIA NERVOSA	1 (0.2%)	1 (0.2%)	2 (0.5%)	0	2 (0.5%)	2 (0.5%)	2 (0.5%)	2 (0.5%)	4 (1%)
	P VALUE	0.9	0.9	0.0864						
3	ANOREXIA NERVOSA	1 (0.2%)	0	1 (0.2%)	3 (0.8%)	0	3 (0.8%)	3 (0.8%)	8 (2.1%)	11 (2.9%)
	P VALUE	0.9	0.87	0.061						
4	PANIC ATTACK	0	0	0	0	0	0	2 (0.5%)	1 (0.2%)	3 (0.8%)
	P VALUE	0	0	0.0864						
5	DEPRESSION	0	0	0	0	0	0	3 (0.8%)	7 (1.8%)	10 (2.6%)
	P VALUE		0			0			0.069	

Out of 375 cases in non-school going group ,Total male in alcohol abuse are 7(1.8%) and there were 16(4.2%) females, no cases in early adolescent age (10-13) & in middle adolescent age (17-19) of alcohol abuse in males 3(0.8%) are seen and in female 2(0.5%) are seen, in late adolescent age (17-19), 4(1%) in male & 14(3.7%) cases of female are seen. P value is not significant in both early, middle adolescent age groups. P value is significant in late adolescent age groups (P value < 0.05).

In bulimia nervosa out 375 cases Total male were 5(1.3%) and female were 5(1.3%). P value is not significant in all early, middle and late adolescent age groups.

In anorexia nervosa out 375 cases Total male were 6(1.6%) and female were 9(2.3%). P value is not significant in all early, middle and late adolescent age groups.

In panic attack out of 375 cases Total male were 2(0.5%) and female was 1(0.2%). P value is not significant in all early, middle and late adolescent age groups.

In depression out of 375 cases Total male were 3(0.8%) and female were 7(1.8%). P value is not significant in all early, middle and late adolescent age groups.

In school going group in case of alcohol tried Out of 375 cases Total male were 62(16.5%) and female were 20(5.2%).
In school going group in case of cigarette tried Total male were 49(13%) and female were 3(0.8%). P value is not significant in all early, middle and late adolescent age groups.

In non-school going group in case of alcohol tried Out of 375 cases Total male were 117(31.2%) and female were 96(25.6%). P value is not significant in early and middle but significant in late adolescent age groups.

In non-school going group in case of cigarette tried, out of 375 cases Total male were 49(13%) and female were 3(0.8%). P value is not significant in all early, middle and late adolescent age groups.

Out of 375 cases Among school going adolescents, Total male were 103(27.45%) and female were 93(24.8%) in alcohol abuse heard and in cigarette smoking heard total male were 40(10.6%) and female were 11(2.9%). P value is not significant in all early, middle and late adolescent age groups.

Out of 375 cases Among non-school going adolescents, Total male in alcohol abuse by peers were 121(32.2%) and female were 96(25.6%), Total male in cigarette smoke by peers male were 49(13%) and female were 13(3.4%). P value is not significant in all early, middle and late adolescent age in both school going and non-school going groups.

School going adolescent are 4.93 times risk of tried substance as compared to non-school going adolescent. P value is significant.

In school going out of 375 adolescent, total male having desire to weight gain are 212(56%) And female were 38(10.1%), total 71(18.9%) male and 17(4.5%) female were satisfied with self-image, and total 20(5.3%) males and 77(20.5%) Females have desire to lose weight.

GRAPH 4.SHOWING BODY DISSATISFACTION SCORE AMONG SCHOOL GOING ADOLESCENT
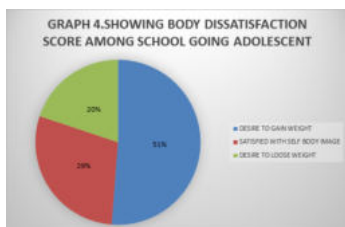
In non-school going group, out of 375 adolescent, total male for desire to weight gain are 99(26.4%) And female were 5(1.3%), total 102(27.2%) male and 118(31.4%) female are satisfied with self-image, and total 8(2.1%) males and 43(11.4%) Females have desire to lose weight. P value is not significant in early, middle adolescent and late adolescent age group.

DISCUSSION

Out of 375 in school age group maximum number were reported in late adolescence 289 (79.4 %) and the least number were reported in early adolescent group 8 (2.1 %). In the non-school going age group, maximum number were reported in late adolescence 329 (87.7 %) and the least 4(1%) cases were in early adolescent. This shows that p-value is significant in the non-school age group and is also reported by Tingting Feng[1] (2017).

In the school age group 272(72.8%) are male and in non-school going age group 230(61.3%) are male and 102(27.2%) cases of female in school age group and 145(38.6%) females were in non-school going age group, in both the group p value is not significant a also reported by Unal et al[2] (2016) and Amit Upadhyay et al (2014)[3].

In school going age group the mean height was 168.6cm (273 cases) of male and 160.3cm (102 cases) in female the mean height was 168.5 (35 cases) in mid adolescent while 170.7 (3 cases) in early adolescent in female group the mean height was significant in in late adolescent in both male and female while not significant in other groups, P value non-significant in school going in late adolescence in both male and female. The reason for non-significant might be good nutrition to the adolescent as well as more concern to their health. The mean height in non-school going adolescent was 164.3 CM (208 cases) male and 161.8 CM (169 cases) in female, mean height was 173 cm (11 cases) in adolescent in male while 160 7.1 (134 cases) in female in later adolescent while p-value is not significant in all groups
In present study mean weight was 74.2 kg (6 cases) in early adolescent male while 73.2 kg (57 cases) in female the P value is not significant in all the groups. Nadira mallick and susmita Mukhopadhyay[4] (2014) also reported. Kalyani et al (2016)[5] reported 24.7, Sabry et al (2020)[6]. 25 to 29.9 kg in female which is more, Mazubir et al 2020[7] also reported.

HEADDS score was done to diagnose in eating disorder & related comorbidities, the HEADDS score was <2 (no immediate action needed) 57.8% (212 cases) in male and 42.2% (20 cases) in females , the HEADDS score was less than 2 in school going adolescent was reported in more in late adolescent male were 41.3% and females were 134 (35.73%) , p value is not significant in age group as well as gender wise as also reported by Eric Cohen et al[8].

In non-school going adolescent HEADDS score was less than 2 in 131 males (34.9%) and 244 female (65%) this indicate the female of non-school going adolescent was more aware of this disorder then male, out of 375 , 102 male (27.2%) and 227 (60.5%)in the late adolescent group this indicate that late adolescent in school going and non-school going adolescent was more aware then early and mid-adolescent.

EDS SCORE ≥5 was found in school going adolescents where 130 (36.4%) and from school going and in non-school going 154(41%) were reported the P value is significant in non-school age group also reported by Erdal Vardar et al (2011)[9].

Mini kid scoring all 375 cases any school going age in alcohol abuse 8 cases 2.1 % were reported in in male and no cases of female, Marshal et al (2014)[10] reported 39% in late adolescent.

School going age bulimia nervosa were reported 7 cases (1.8%) of males and one case 0.2% in female in late adolescent group while two cases 0.5% reported in middle adolescent and 1 male (0.2%) and 1 female (0.2%) in early adolescent in both the group, P value is not significant. Sonja et al (2011)[11] reported 0.9% in late adolescent, Jennifer et al (2007)[12] also reported 5% adolescent Katari et al (2016)[13] also reported 71% in which they are showing only knowledge regarding bulimia nervosa, Stices et al (2013)[14] also reported 2.6% Cavalanti et al (2017)[15] also studied and reported 3% cases , Vilela et al (2014)[16] reported 1.1%.

11 females (2.9%) cases of anorexia nervosa and one male (0.2%) case reported in middle adolescent and 5 females (1.3%) and 3 males (0.8%) in late adolescent this showing anorexia nervosa is more in mid adolescent group compared to late & early adolescent as reported by Mendhekar et al (2009)[17], Sties et al (2013)[14] reported in in late adolescent 0.8% cases, Convalanti et al (2017)[15] reported 3% cases. Yael et al (2012)[18] analyzed and reported 2.05% cases, Preeti jet et al (2018)[19] reported prevalence by 0.06% cases.

In school going adolescent group many adolescents had tried substances like alcohol and cigarette smoking out of 375 cases 62 male (16.5%) and 20 (5.2%) female tried alcohol and 54 Male (14.4%) and 9 (2.4%) female of late adolescence 11 female 2.9% and 6 male (1.6%) tried alcohol in mid adolescent. In non-school going adolescent group 117 Male (31.2%) and 96 female (25.6%) tried alcohol. In school going adolescent group 52 cases tried smoking out of these 49 males (13%) 3 female (0.8%) tried cigarette smoking. in non-school age group 63 adolescent had tried cigarette smoking in which 45 male (12.3%) and 13 female (3.4%) from late adolescent, 4 male (1%) and 1female (0.2%) had tried cigarette smoking in middle adolescent group. In non-school going adolescent in the group male were more engaged in smoking this clearly shows cigarette smoking is more common in males.

School going adolescents heard about substance use by peers , in alcohol use 90 cases (24%)of female and 88 cases (23.4%) of male in late adolescent group were reported followed by 11 cases (2.9%) in male and 2 cases (0.5%) in female of middle adolescent group and also cases of 4(1%) male and one female (0.2%) in early adolescence were reported. The p-value is not significant school going age group. In non-school going age group heard about substance use by peers , in alcohol Use 106 female (28.2%)cases and 91 cases(24.2%) in male were reported. In non-school going age group female were more aware of alcohol abuse because in non-school going children living in slum areas there are more people who are consuming alcohol hence, they are indulge in alcohol intake.

which school is group body dissatisfaction score the desire for weight gain of male in late adolescence were 186 (49.6 %) and in females 4 (1%) cases reported followed by 22 males (5.8%) and 33 females (8.8%) in middle adolescence age.

Sing Lee et al (2011)[20] Also reported 29.82 percent adolescents want to be thin and 32.5% want to be fat.

CONCLUSION

In our study we have found in school adolescent maximum number of adolescents in late group who have suffered of alcohol abuse, bulimia nervosa, panic attack, alcohol tried and cigarette smoking, heard about alcohol abuse & cigarette smoking by peers, desired to weight gain is also more common in males , while in females anorexia nervosa, bulimia nervosa, depression, alcohol tried, cigarette smoking, heard about alcohol abuse & cigarette smoking by peers and desire to lose weight were reported significantly.
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While in Non-school going adolescent in both middle and late female were using more alcohol then male and in bulimia nervosa was equal in both males and females, anorexia nervosa was common in females and

panic attack were more in males and not in females, depression is common in females. Alcohol tried by female was high, but cigarette is smoking is less in females, in alcohol taking my peers is also common in female and desire to lose weight is common in females in our study.

I concluded that adolescent of late and middle age of school going and non-school going suffering of alcohol abuse smoking, panic attack anorexia nervosa and bulimia nervosa and this were reported in all groups.

RECOMMENDATIONS
In our country Still many adolescents deprived of knowledge regarding eating disorder and its complications. Proper planning regarding their education about disorder is needed.

Conflict of Interest: Nil
Source of Support: Nil

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