Effect of Academic Stress on Dietary Pattern among Adolescents (16-17 Years)

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Abstract— The present study was conducted on effect of academic stress on dietary pattern among adolescents (16-17 years). The total samples selected were 100 adolescents (50 boys & 50 girls) by using purposive sampling technique. Academic stress scale constructed and standardized by R. Balaji Rao and 24hour Dietary Recall method was used to gather data. The data was then analyzed by using chi square and unpaired T Test by Statistics package for social sciences (SPSS) version 21.Results revealed that 52% adolescents experience mild stress with academic score <53 & 48% adolescents experience moderate stress with academic score 54-106. The academic mean score of girls was found to be 58.0 which were higher than boys (53.74). So it can be concluded that academic stress was higher in girls as compared to boys. But statistically non- significant difference was observed between boys and girls at p<0.05. On comparing the dietary intake of boys and girls with recommended dietary allowance, it was found that both boys & girls energy intake was statistically significant (p<0.05).Protein intake was non-significant (p<0.05) and carbohydrate intake of both adolescents was found to be significant (p<0.05). Fat intake of boys was found to be non-significant in comparison to fat intake of girls which was found to be significant (p<00.05).

Key words: Academic Stress, Dietary Pattern

I. INTRODUCTION

The World Health Organization (WHO) has defined adolescence as the progression from the appearance of secondary sex characteristics (puberty) to sexual and reproductive maturity, the development of mental processes and adult identity, and the transitions from total socio-economic dependence to relative independence.(1) Stress is associated with physical, psychological and behavioural experiences of life. Out of a number of stresses faced by adolescents and young adults, academic stress emerges as a significant source of stress in recent years that affects their academic performance, psychological adjustment along with their overall emotional and physical wellbeing. Academic stress is becoming increasingly common and widespread among adolescents (2, 3). Academic stress is a mental distress with respect to some anticipated frustration associated with academic failure or even an awareness of possibility of such failure (4)

The present world is the world of achievements but also a world of stress, and has therefore rightly been called the "Age of Anxiety and Stress". (5) Students have to face many academic demands, for example, school examination, answering questions in the class, showing progress in school subjects, competing with other class mates, fulfilling teacher's and parent's academic expectations. These demands may tax or exceed available resources of the students. As a consequence, they can be under stress, since the demand is related to achievement of an academic goal so it causes academic stress among them(6) Omidvar and Begum (2014) investigated a study on dietary pattern, food habits and preferences among adolescent and adult student girls from urban area, south India. It was found that 50.1% of adolescents were underweight. Higher percentage of overweight subjects was adults. Skipping meals was significantly higher among adolescents. Subjects belonged to low SES had higher percentage of underweight and higher proportion of overweight girls belonged to high SES. Adolescents formed highest proportion of meal skippers (53.9% vs 49.1%). 68.7% of subjects consumed fast foods daily or frequently. 53.7% of adolescents and 40.2% of adults had snacks regularly. Adolescents from low SES had higher percentage of daily consuming of fast foods and bakery items. Only 13.7% of subjects use to consume at least one animal product, such as meat or an egg every day(7)Dhull and kumari (2015) conducted a study to examine Academic Stress among Adolescents in relation to Gender which indicated that, there is a significant difference between academic stress of male and female adolescents. Female subjects were found to be under more academic stress as compared to their male counterparts. (8)Ghosh (2016) did a study on academic stress among government and private high school students. It was found that students in private schools have more academic stress than their counterparts in government schools. Female students experienced higher academic stress than male students. (9)

II. METHODOLOGY

The Study was conducted in Tuition centers of Faridabad. The total samples selected were 100 adolescents (50 boys & 50 girls) by using purposive sampling technique. The questionnaire was formulated and used to gather data on demographic profile, anthropometric measurements. The dietary intake was assessed by 24hour Dietary Recall method. Academic stress was assessed by using Academic stress scale which was constructed and standardized by R.Balaji Rao. This scale consists of as many as 40 items and each item has five alternative responses i.e. "No Stress", "Slightly Stress", "Moderate Stress", "Highly Stress" and "Extremely High Stress". High scores are an indication of high stress and low scores on the scale are an indication of low stress. In order to assess the diet quality, the adequacy of nutrient intake by each subject was computed in terms of Nutrient adequacy Ratio (NAR) using

$$\text{NAR} = \frac{\text{Subject's nutrient intake of a day}}{\text{RDA of the respective nutrient}} \quad (10)$$

The data was analyzed by using chi square and unpaired T Test by Statistics package for social sciences (SPSS) version 21. Descriptive statistics such as frequencies and percentage were used. Chi square was performed to

compare the different associations between variables. All reported probability values were compared to a significant level of 0.05. For all statistical tests a p value of <0.05 was considered as statistically significant.

III. RESULTS

	Mean ± SD	T value
Boys (N=50)	53.74 ± 20.70	1.14
Girls (N=50)	58.0 ± 16.07	
Total (N=100)	55.87 ± 18.56	

Table 1: Mean Academic Score of Adolescents
Significant at p<0.05

Table 1 shows adolescent mean and standard deviation for Academic stress score which was found to be 55.87 ± 18.56 which indicates that adolescents experienced a lot of academic stress It can be concluded from the above table that girls (58.0 ± 16.07) experience higher academic stress than boys (53.74 ± 20.70). There was no significant difference was observed between the mean academic scores of boys and girls at p<0.05.

Academic Stress Scale	Boys (N=50)	Girls (N=50)	TOTAL (N=100)
Mild stress: < 53	28 (56)	24 (48)	52 (52)
Moderate stress: 54-106	22 (44)	26 (52)	48 (48)
Severe stress: 107-160	-	-	-

Table 2: Distribution of subjects on the basis of Academic stress scale

A. Values in parenthesis represent percentage (%)

Table 2 concludes that 56% boys and 48 % girls experience mild level of academic stress and 44 % boys and 52 % girls had moderate level of academic stress. No adolescent was found to be in the category of severe level of academic stress.

Nutrients	Adequate	Fairly adequate	Inadequate
Energy	1(2)	10 (20)	39 (39)
Protein	18 (36)	25 (50)	7 (7)
Fat	27 (54)	14 (28)	9 (9)
Carbohydrate	0	2 (4)	48(48)

Table 3 (a): Distribution of subjects on the basis of nutrient adequacy ratio (Boys)

B. Values in parenthesis represent percentage (%)

Table 3(a) reveals that 39 % had inadequate, 20% had fairly adequate, 2% had adequate intake of energy but 54% had adequate, 28% fairly adequate and 9% inadequate intake of fat. It was also revealed that 48% had inadequate, 4% had fairly adequate intake of carbohydrate. From all the nutrients protein intake was highly adequate which was 36% adequate & 50% fairly adequate.

Nutrients	Nutrient Adequacy Ratio		
	Adequate	Fairly adequate	Inadequate
Energy	1(2)	21(42)	28(28)
Protein	24 (48)	17 (34)	9 (9)
Fat	38 (76)	6 (12)	6 (6)
Carbohydrate	2(4)	5 (10)	43 (43)

Table 3(b): Distribution of subjects on the basis of nutrient adequacy ratio (Girls)

C. Values in parenthesis represent percentage (%)

Table 3(b) concludes that out of the total subjects, only 2% had adequate, 42 had fairly adequate and 28% inadequate intake of energy but intake of fat was 76% adequate, 12% fairly inadequate and 6% inadequate. It was also revealed that intake of carbohydrate was inadequate (43%) whereas 48% had adequate intake, 34% had fairly adequate intake, 9% had inadequate intake of Protein.

Nutrients	Recommended dietary allowances (16-17 years)		Boys (N=50)	Girls (N=50)	T Value boys	T Value girls	P value boys	P value girls
	Male	Female	Mean± SD	Mean± SD				
Energy	3020	2440	1690.78± 543.78	1543.8496± 504.14	17.284	12.56	.00	.00
Protein	61.5	55.5	66.64± 53.65	54.92± 20.899	.678	.196	.50	.84
Carbohydrate	581	475.7	245.32± 69.24	237.29± 94.21	1.171	3.924	.000	.00
Fat	50	35	54.0± 24.2	50.67± 28.23	23.5	25.7	.244	.00

Table 4: Mean of nutrient intake of subjects
Significant at P<0.05

Table 4 shows that the mean energy intake of boys was found to be 1690 ± 543.78 & girls intake was 1543.84 ± 504.14 respectively which was low in comparison to recommended dietary allowance. The mean intake of protein of both boys and girls was found to be adequate (66.64± 53.65), (54.92 ± 20.89) as compared to recommended dietary allowance. Mean intake of carbohydrate and fat were found to be (245.32 ± 69.24, 54.0 ± 24.2) of boys which was low as compared to the recommended dietary allowance. But in girls it was found that fat intake was higher than the recommended dietary allowance which is 50.67 ± 28.23 and the mean intake of carbohydrate was 237.29 ± 94.21 respectively which was low as compared to recommended dietary allowance.On comparing the dietary intake of boys and girls with recommended dietary allowance, it was also found that both boys & girls energy intake was statistically significant (p<0.05). Protein intake was found to be non-significant (p<0.05) of boys & girls. Carbohydrate intake of both adolescents are significant (p<0.05). But fat intake of boys was found to be non-significant (p<0.05) whereas girls fat intake was found to be statistically significant (p<00.05).

Meal Skipping Pattern	Boys (N=50)	Girls (N=50)	Total (N=100)
1) Bring food from home			
– Yes	32 (64)	20 (40)	52 (52)
– No	10 (20)	11 (22)	21(21)
– Sometimes	8 (16)	19 (36)	27 (27)
2) Eat three regular meals each day			
– Yes	19 (38)	12 (24)	31(31)

– No	21 (42)	20 (40)	41(41)
– Sometimes	10 (20)	18 (36)	28(28)
3) Which meal is skipped?			
– Breakfast	16 (32)	17 (34)	33(33)
– Lunch	6 (12)	10 (20)	16(16)
– Dinner	9 (18)	11 (22)	20(20)
4) Frequency of skipping the meals			
– Once in a week	14 (28)	8 (16)	22(22)
– Twice in a week	5 (10)	2 (4)	7 (7)
– Once in a month	6 (12)	11 (22)	17 (17)
– Once in a fortnight	1 (2)	3 (6)	4 (4)
– Daily	5 (10)	14 (28)	19 (19)
5) Reasons for skipping the meals			
– Lack of time	11 (22)	8 (16)	19 (19)
– Illness	0	2 (4)	2 (2)
– Dislike for food	19 (38)	7 (14)	26 (26)
– Dieting	1 (2)	15 (30)	16 (16)
– Fasting	0	6 (12)	6 (6)

Table 5: Distribution of respondent on the basis of Meal Skipping Pattern

D. Values in parenthesis represent percentage (%)

Table 5 shows that nearly 64% of boys & 40% girls brought food from home. It was also found that 38% boys and 24% girls had habits of taking three regular meals each day but 42% boys & 40% girls don't eat three regular meals each day whereas 28% of adolescents had habit of taking three regular meals sometimes. 34% girls and 32% boys had skipped breakfast whereas 28% boys & 16% girls skipped the meals on the daily basis. The reasons for skipping the meals were dieting (30% boys & 14% girls), lack of time (22%boys& 16% girls). Only 12% girls had stated that the reason for skipping their meals was fasting. A similar study had shown that 60% of adolescents had their breakfast daily while the remaining missed taking breakfast daily. Nearly 55% of adolescent boys & girls had habits of taking regular meals (thrice a day and not a single meal skipped in entire week) but 30% boys and 40% girls missed a meal once or thrice a week whereas 5% of adolescents missed their meals 3 to 4 times a week (kotecha et al., 2013)[92]

Academic stress	Energy (NAR)			P value
	>1.00	0.66-1.00	<0.66	
Mild	1	3	24	.13
Moderate	0	7	15	

Table 6.1(a): Association between Academic stress with Energy (Boys)

Academic stress	Energy (NAR)			P value
	>1.00	0.66-1.00	<0.66	
Mild	1	8	15	.32
Moderate	0	13	13	

Table 6.2(a) Association between Academic stress with energy (Girls)

The table 6.1(a) and 6.2(a) shows that there was no significant difference observed between academic stress and energy intake of boys and girls. (P<0.05)

Academic stress	Protein (NAR)			P value
	>1.00	0.66-1.00	<0.66	
Mild	9	14	5	.62
Moderate	9	11	2	

Table 6.1(b): Association between Academic stresses with Protein (Boys)

Academic stress	Protein (NAR)			P value
	>1.00	0.66-1.00	<0.66	
Mild	9	8	7	.11
Moderate	15	9	2	

Table 6.2 (b): Association between Academic stress with Protein (Girls)

Table no. 6.1(b) and 6.2(b) shows that there was no significant difference observed between academic stress and protein of boys and girls. (p<0.05)

Academic stress	Fat (NAR)			P value
	>1.00	0.66-1.00	<0.66	
Mild	16	8	4	.73
Moderate	11	6	5	

Table 6.1(c): Association between Academic stress with Fat (Boys)

Academic stress	Fat (NAR)			P value
	>1.00	0.66-1.00	<0.66	
Mild	17	3	4	.60
Moderate	21	3	2	

Table 6.2(c): Association between Academic stress with Fat (Girls)

Table 6.1(c) and 6.2(c) reveals that there was no significant difference observed between academic stress and fat of boys and girls. (p<0.05)

Academic stress	Carbohydrate (NAR)			P value
	0.66-1.00	<0.66	< 0.66	
Mild	1	27	0	.86
Moderate	1	21	0	

Table 6.1(d): Association between Academic stress with Carbohydrate (Boys)

Academic stress	Carbohydrate (NAR)			P value
	>1.00	0.66-1.00	<0.66	
Mild	1	2	21	.93
Moderate	1	3	22	

Table 6.2(d): Association between Academic stress with Carbohydrate (Girls)

Table 6.1(d) and 6.2(d) shows that there was no significant difference observed between academic stress and Carbohydrate of boys and girls. ($p<0.05$)

Academic stress	Meal skipping			P value
	Yes	No	Sometimes	
Mild	9	10	7	.44
Moderate	10	11	3	

Table 7.1: Association between Academic stress with Meal skipping (Boys)

Academic stress	Meal skipping			P value
	Yes	No	Sometimes	
Mild	5	11	8	.71
Moderate	7	9	10	

Table 7.2: Association between Academic stress with Meal skipping (Girls)

Table 7.1 and 7.2 reveals that there was no significant difference observed between academic stress and meal skipping pattern of boys and girls ($p<0.05$)

IV. Conclusion

The present study found that 52% adolescents experience mild stress with academic score <53 and 48% adolescents experience moderate stress with academic score 54-106. The academic mean score of girls was found to be 58.0 which were higher than boys (53.74). So it can be concluded that academic stress was found to be higher in girls as compared to boys. There was no significant difference observed between the mean academic scores of boys and girls at $p<0.05$.

On comparing the dietary intake of boys and girls with recommended dietary allowance It was also found that both boys & girls energy intake was statistically significant ($p<0.05$). Protein intake was found to be non-significant ($p<0.05$) of boys & girls. Carbohydrate intake of both adolescents are significant ($p<0.05$). But fat intake of boys was found to be non-significant ($p<0.05$) whereas girls fat intake was found to be statistically significant ($p<00.05$).

There was no significant difference observed between academic stress and energy, protein, fat and carbohydrate of boys and girls ($p<0.05$). It was also revealed that there was no significant difference observed between academic stress and meal skipping pattern of boys and girls ($p<0.05$).

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