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Effect of Dietary Pattern on BMI of Adolescents in Selected High Schools at Mangalore

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Abstract:- Adolescence is a period that makes a shift from childhood to adulthood. All body organs fully mature enabling the adolescent privileges. The adolescent must adapt to a rapidly changing body contours for several years. To maintain physique and figure, what type of eating habit they develop is of important concern. This study aims to identify and analyze the effect of dietary habits on BMI of adolescents. A descriptive correlative research design with convenient sampling technique was utilized to conduct the study. The study was carried out in selected High School, Mangalore. The sample comprised of adolescents in the age group of 12 to 15 years. Weight and height of the subjects were checked respectively. Rating scale with 40 items was used for data collection. Descriptive and inferential statistics were utilized to analyze the data. Majority of the boys and girls had healthy eating habits (98.30%). Majority of the boys and girls had normal BMI (62. 5% and 75. 38% respectively) and least percentage of sample (1. 78% of boys and 4. 61% of girls) were obese. There was no relationship between adolescents eating habits and BMI (r=0.342). There was significant association of eating habit score with age ($\chi 2_{(3)}$=11. 53) and diet($\chi 2(2)$=19. 32). Significant association was found between BMI score and diet ($\chi 2$=6. 36) From the finding of the study it can be concluded that a good proportion of teenagers had good dietary habits and normal weight.

Keywords:- *Body Mass Index, Adolescents, Eating Habit.*

I. INTRODUCTION

Adolescence is a time passage, signaling finish of childhood, and the beginning of adulthood. Adolescence is marked by a period of rapid growth and development between childhood and adulthood. The World Health Organization defines an adolescent as any person between the ages of 10 and 19. During adolescence, children grow stronger and more muscular and establish the characteristics of male and female pattern of fat distribution. Obesity is increasing worldwide in really alarming proportion. Statistics shows that about one third of the children and adolescents are considered as overweight and obese. More than one in six adolescents are considered as overweight and obese. Eating habits have changed overtime, and nowadays, youngsters and adolescent's environment support the adaptive of unhealthy eating leading to metabolic debilitation. Dietary patters incorporate skipping breakfast, nibbling between dinner, eating before the TV and sugar sweetened beverage consumption. Seven nourishment sources, including sugar sweetened beverages, pizza, full fat milk, grain based deserts, pasta dishes and savory snacks, reliably add to this pattern. During adolescence there are many progressions occurring as a child transforms into that of a grown up and their healthful needs requires increment. National population based overview has discovered that a young people frequently neglect to meet dietary proposals for overall nutritional statuses, and for a particular supplement consumption. A considerable lot of adolescents receive a higher extent of vitality from fat, added sugar and have a lower admission of nutrient A.

Dietary patterns differ from individual teenagers, and also show broader patterns overtime, reflecting sociocultural trends in nourishment availability and nutritional goals. Numerous young people consider themselves to be by and large excessively too fat, while some, especially males, see themselves excessively thin. About 34 percent of females and 13 percent of males announced eating less junk food to shed pounds. Adolescence is period when peer weight can influence teenage eating conduct, and they may begin skipping supper or perhaps under-eating or over-eating. At present around 20 percent of youth in India are stout and this is chiefly due to absence of physical activity, and a high fat eating regimens. Behaviors such as extraordinary eating, binge eating, and intentionally throwing up like wise influence numerous adolescents than grownups and more girls than boys (nine girls to every one boy). Tensions, stress, forlornness and difficulty in overseeing family relationships are sole factors that can prompt to a refusal to eat or excessive eating.

School age adolescents are knowledgeable about their bodies and frequently will think of how they look and how their peer or a grown up look. Youngsters intensely are mindful of physical contrasts identified with height or weight, and know whether they are facilitated as their companions. School age children who are especially sensitive about these differences may be uncomfortable in a swimming suit or shorts, and not participate in activities were their differences may become apparent. Hence, keeping up great sustenance all through child's young years is basic for their well-being and prosperity.

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II. OBJECTIVES

- To assess the dietary pattern among adolescents.
- To determine the BMI of adolescents.
- To find the relationship between dietary pattern and BMI.
- To find out the association of dietary pattern, BMI with selected demographic variables

III. HYPOTHESIS

H_1 - There will be significant relationship between the dietary pattern and BMI of adolescents.
H_2 - There will be a significant association of dietary pattern with selected demographic variable.
H_3 - There will be a significant association of BMI with selected demographic variables.

IV. MATERIAL & METHODS

The research is quantitative research using the descriptive correlation approach to analyze the impact of eating habits on BMI of adolescents. The study setting was selected high school of Mangalore. A sample size of 180 adolescents of age 12-15years and studying in 8th and 9th standard was selected through convenient sampling. The sample was selected based on the criteria:

- *Inclusion Criteria*

- Adolescent between 12-15 years
- Adolescents willing to take part in the research
- Adolescents studying in 8^{th} and 9^{th} standard

- *Exclusion Criteria*

Students who are not present during the information collection

❖ *Method:*

Weighing machine and height measuring device was used to check the weight (in kilogram) and height (in meters) of subjects respectively. BMI was calculated using Quetelet index. Data collection instruments had two sections: demographic proforma with eight items that included age, gender, educational status, type of family, order of birth, income of the family, place of residence, and type of diet. Rating scale with 40 items including the following areas: place of eating, type of food, measures to maintain body weight was used for data collection. The period of data collection was from 12 April to 15 April 2014. First three days height and weight of the 180 students were checked and 4th day data were collected (n=177 due to absentees) using the rating scale. The respondents co-operated with the investigators.

V. RESULTS

The researcher collected the data from 177 students and entered into the master data sheet. Frequency distribution and chi square test was used for assess the demographic data, and association of dietary pattern and BMI with selected demographic variables. Relationship between eating habits and BMI was assessed using Karl Pearson's correlation coefficient.

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Variable	Frequency (f)	Percentage (%)
Age(in years)		
12	0	0%
13	39	22.03%
14	120	67.79%
15	18	10.16
Gender		
Male	112	63.27%
Female	65	36.72%
Education		
8th STD	86	48.58%
9th STD	91	51.41%
Type of family		
Nuclear family	152	85.87%
Joint family	25	14.12%
Ordinal position in the family		
First born	88	9.71%
Second born	68	38.41%
Third born	19	10.73%
Above 3	2	1.12%
Monthly income of the family (in rupees)		
10000 – 15,000	84	47.45%
15,000 – 20,000	40	22.59%
20,000 - 25,000	19	10.73%
Above 25,000	34	19.20%
Living station		
Hostelite	4	2.25%
Day scholar	173	97.74%
Dietary pattern		
Vegetarian	36	20.33%
Non vegetarian	15	8.47%
Mixed diet	126	71.18

Table 1:- Frequency and percentage distribution of sample according to the demographic variables. (n=177)

Data in Table 1 reveals that highest percentage (67. 79%) of adolescents was 14 years old and 63. 27% sample were male. The sample included 48. 58% 8th standard students and 51. 51% 9th standard students. The majority of the sample (85. 87%) belonged to nuclear family and 49. 71% were firstborn. Majority of the sample (47. 45%) had family income of Rs 10,000-15,000. Majority of samples (97. 74%) were day scholars and 2. 25% were staying in hostel. The majority of sample (71. 18%) consumed mixed diet and 20. 33% were vegetarian and 8. 47% were non vegetarian.

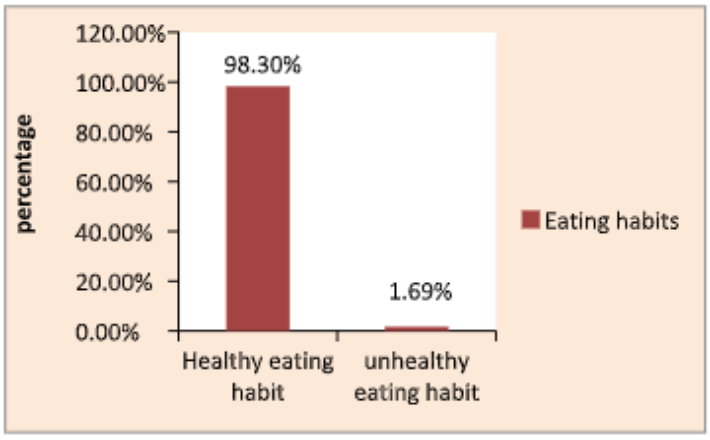

Fig 1:- Frequency and percentage distribution of sample according to their dietary pattern.

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Data given in Figure 1 shows that, a majority (98.30%) of sample exhibits healthy eating habits and 1.69% of sample exhibits unhealthy eating habits.

BMI	GIRLS		BOYS	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Severe	8	7.14%	2	3.07%
Thinness	14	12.5%	5	7.69%
Normal	70	62.5%	49	75.38%
Overweight	18	16.07%	6	9.23%
Obese	2	1.78%	3	4.61%

Table 2:- Distribution of sample according to Body Mass Index. (n=177)

Data as given in the Table 2 reveals that a majority (75. 38%) of boys and 62. 50% of girls exhibited normal BMI, 16. 07% of boys and 9. 23% of girls were overweight, whereas 12. 50% of boys and 7. 69% of girls had thinness, and 7. 14% of boys and 3. 075% of girls had severe thinness, and only 1. 78% of boys and 4. 61% of girls were obese.

	Mean	Standard deviation	Correlation
Dietary pattern	98.76	9.10	0.342
BMI	18.63	3.49	

Table 3:- Correlation between dietary pattern and BMI of adolescents (n = 177)

Karl Pearson's correlation coefficient was computed to find out the correlation between the eating habits and BMI among adolescents. The data presented in Table 3 shows there is a negative correlation between the dietary pattern and BMI among adolescents. Thus, there is no impact of dietary patterns on BMI of adolescents.

Variables	<M	>M	χ^2Value
Age			
a)12	-	-	**11.53***
b)13	16	23	
c)14	63	57	
d)15	16	2	
Diet			
a)Vegetarian	16	20	**19.32***
b)Non vegetarian	9	5	
c)Mixed diet	17	57	

Table 4:- Chi-square test showing association of dietary patterns score with selected demographic variables (n=177)

Data presented in the Table 4 shows that there was significant association of the dietary patterns score with selected demographic variables such as age ($\chi^2_{(3)}$=11.53) and diet($\chi^2_{(2)}$=19.32)as the calculated χ^2value was higher than the table value at 0.05 level of significance. Hence the null hypothesis was rejected

Variables	<M	>M	χ^2Value
Diet			
a)Vegetarian	25	11	6.36*
b)Non vegetarian	5	9	
c)Mixed diet	62	65	

Table 5:- Chi-square showing association of BMI score with selected demographic variables (n = 177)

Data presented in the Table 5 shows that, there was significant association of the BMI score with diet (χ^2=6.36), as the calculated χ^2 value was more than the table value at 0.05 level of significance. Hence research hypothesis was accepted for the above variables.

VI. DISCUSSION

The present study focused on the dietary patterns and BMI of the adolescents. It also determined the association of eating habits and BMI with selected demographic variables. The results show that highest percentages (67.79%) of adolescents were 14 years old and 63.27% were male. The sample included 48.58% 8th standard students and 51.51% were 9th standard students. The majority of the sample (85.87%) belonged to nuclear family and 49.71% were first. The majority of the sample (47.45%) had family income of Rs.10, 000-15,000.The majority of samples (97.74%) were day scholars and 2.25% were staying in hostel. The majority of sample (71.18%) consumed mixed diet and 20.33% were vegetarian and only 8.47% were non vegetarian.

Similar findings were found in a study conducted in Udupi District to determine BMI and dieting attitude among high school students shows that majority of the sample (57%) belongs to 12-14 years.

Similar findings were also found in a study conducted at Loni Village to evaluate the eating behaviours among adolescent girls found that 34.2% of the subject had more than 5 members in the family. Majority (57.1%) of the sample was residing in hostel and 42.8% was living with family. There were 75.5% of the sample consumes mixed diet.

- *Section B: Description of dietary patterns among adolescents*

The present study shows that a majority (98.30%) of sample exhibits healthy eating habits and 1.69% of sample exhibits unhealthy eating habit.

Similar finding were found in a study conducted at Kuala Lumpur to assess the eating pattern of school children and adolescents shows that 60-70% of students exhibit unhealthy (fast food) eating habits.

Similar findings were also found in a study conducted at Loni Village to evaluate the eating behavior among adolescent girls shows that 47.4% was obtained for eating habits and meal time habit indicate adolescents had unhealthy eating habits.

- *Section C: Description of BMI among adolescents*

The present study shows that a majority(75.38%) of boys and 62.50% of girls are exhibiting normal BMI , 16.07% of boys and 9.23% of girls had overweight , and 12.50% of boys and 7.69% of girls had thinness, and 7.14% of boys and 3.075% of girls had severe thinness, and only 1.78% of boys and 4.61% of girls were obese.

Similar findings were found in a study conducted at Kuala Lumpur on eating pattern of school children and adolescents shows that majority(68%) of the sample were exhibits normal BMI, 14.6% had overweight, 9.6% were obese, 7.3% had thinness and 0.6% had severe thinness.

- *Section D: Relationship between dietary patterns and BMI*

The study findings reveal that there is no significant relationship between the eating habit score and BMI score of adolescents. The correlation coefficient is 0.342.

Similar findings were found in a study conducted at Udupi District to determine the dieting attitude and BMI among high school students shows that there is significant relationship between eating habits and BMI. The correlation coefficient is 0.139.

- *Section E: Association of dietary patterns with selected demographic variables*

In this present study there is significant association of eating habit score and selected demographic variable such as age and diet and there was no significant association between eating habit score and selected demographic variables such as gender, ordinal position and living station.

Similar findings were found in a study conducted at Udupi District to determine the dieting attitude and BMI among High School student shows that there is significant association between eating habits and demographic variables. A significant association was found between the class (χ^2= 0.041), mother's educational status (χ^2=0.004) and mother's occupation (χ^2=0.026) with BMI at 0.05 levels of significance. There was no association between dieting attitude and age. It was also found that there was a significant association with eating behaviours and socio demographic variable like family monthly income.

- *Section F: Association of BMI with selected demographic variables*

In this study there is significant association of BMI score and selected demographic variable such as diet and there is no significant association between BMI score and selected demographic variables such as age, gender, ordinal position and living station.

Similar findings were found in a study conducted at the Massachusetts Institute of Technology to assess the relationship between consuming food purchased away from home demonstrates that participants who ate quick-service food twice a week or more at baseline had the greatest mean increase in BMI z-score contrast to those who ate quick-service food once a week or not at all.

VII. IMPLICATION

In primary prevention, efforts are directed towards promotion of health by encouraging children for adopting healthy lifestyle and eating habits. The nurse can make use of effective communication skills and counseling techniques in educating the family members regarding risk factors of increased or decreased BMI.

Nursing students should be equipped with adequate knowledge and skills to assess the deviations in the growth of the adolescents. The nurse can conduct regular health check up, BMI assessment in schools to determine the obesity and malnutrition.

The nurse specialist can be posted in school and must identify the problems of adolescents at school level. The nurse specialist should arrange educational program and counseling program to adolescents and parents.

Most of the adolescents are in a risk to develop obesity and malnutrition because of unhealthy eating habits. There is a good scope for medical caretakers to take lead in research in areas like eating pattern, lifestyle, physical activities etc.

VIII. CONCLUSION

Wholesome needs during youthfulness are increased because of the expanded development rate and changes in body composition during puberty. The dramatic increment in vitality and supplement prerequisite harmonize with different components that may influence adolescence nourishment decision and healthful admission and along this line nutritional status. The components, including the journey of autonomy

and acknowledgement by companions , increased mobility, and greater time spent at school and/ or work exercises, and furthermore distraction with self-image, add to the unpredictable and undesirable eating behaviors that are regular during adolescence. The assessment should elicit how often the adolescents eat food from the different food group and what food the adolescent does not eat. Based on this information nutritious foods for adolescents can be identified planned and developed. Adolescent may not realize that unsound nutritional habit often follows them for a lifetime or that growth and development may be delayed or permanently impaired. As part of this, it is our responsibility to assess what are they deficit in, what problems do they face now and what strategies to put forward to make them healthy and happy in the present world.

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