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A Descriptive study to assess the Nutritional Status and Eating Habits among Adolescents in Selected Schools of Ambala, Haryana

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Abstract

Background: Adolescence is a period of life which is the transition from dependent childhood to independent adulthood in which rapid growth and development took place. Maintaining key vitamins and minerals are important to maintain good health. **Aims:** The present study aims to assess the nutritional status and eating habits among the adolescent in selected schools of Ambala, Haryana. **Methodology:** Descriptive study was conducted among 200 adolescents in M.M. International School, Mullana, Ambala, Haryana. Sample were selected by using convenient sampling technique. Data was collected by using socio-demographic variables, Modified Standardized Mini Nutritional Assessment scale and Standardized Adolescent Food Habits checklist scale. **Results:** The study findings revealed that more than half of the adolescents (55.5%) are under risk of malnutrition. Moreover, majority of the adolescents (73%) keep to average eating habits. There was a significant association between age of adolescent and nutritional status with the calculated't' value of 2.44(p=0.00*). Similarly there was a significant association between Educational status of father and mother with eating habits 1.58 (p=0.01*) and 1.42 (p=0.03*). **Conclusion:** Nutritional status of an adolescents were found to be risk of malnutrition. Furthermore majority of the adolescent go through average eating habits. Additionally the study finding showed that there was a significant association between age, educational status of father and mother with nutritional status and eating habits of adolescent.

INTRODUCTION

A child is a human being between the stages of birth and puberty or between the developmental period of infancy and puberty. They are classed as unable to make serious decisions. Child may also describe a relationship with a parent (such as sons and daughters of any age) or, metaphorically, an authority figure, or signify group membership in a clan, tribe, or religion. [1]

Adolescence is a period of life ranging from 10 to 19 years old which is the transition from dependent childhood to independent adulthood. In this period rapid growth and development took place about 45% of skeletal growth and 15 to 25% of adult height. [2]

Food and nutrition are the ways that we get fuel, providing energy for our bodies. Maintaining key vitamins and minerals are also important to maintaining good health. A sizeable portion of a healthy diet should consist of fruits and vegetables, especially ones that are red, orange, or dark green. The USDA advises adults to consume less than 300 milligrams (mg) per day of cholesterol (found in meat and full-fat dairy products among others). Alcohol can be dangerous to health in amounts more than one serving per day for a woman and two per day for a man. [3]

Globally, 828 million people were affected by hunger in 2021 – 46 million people more from a year earlier and 150 million more from 2019.After remaining relatively unchanged since 2015, the proportion of people affected by hunger jumped in 2020 and continued to rise in 2021, to 9.8 percent of the world population. Food prices stemming from the economic impacts of the COVID-19 pandemic and the measures put in place to contain it. An estimated 45 million children under the age of five were suffering from wasting, the deadliest form of malnutrition, which increases children's risk of death by up to 12 times. Furthermore, 149 million children under the age of five had stunted growth and development due to a chronic lack of essential nutrients in their diets, while 39 million were overweight. [4]

In India Malnourishment in children (stunting, wasting and underweight) under 5 years has reduced as per NHFS-5 (2019-21) from 38.4% to 35.5%, 21.0% to 19.3% and 35.8% to 32.1% respectively as compared to NHFS-4 (2015-16). Malnutrition among women aged 15-49 years has also reduced from 22.9% to 18.7%. As many as 71.1 percent children (6-59 months) have anaemia while 62.7 percent women and girls (age 15-49) are anaemic in the state, revealed the factsheet. Meghalaya has the highest number of stunted children (46.5%), followed by Bihar (42.9%). Assam, Dadra and Nagar Haveli, Gujarat, Jharkhand, Madhya Pradesh, and Uttar Pradesh have stunted children higher than the national average of 35.5%. Puducherry and Sikkim have the lowest percentage of stunted child Maharashtra has 25.6% wasted children (weight for height) — the highest — followed by Gujarat (25.1%). Assam, Bihar, Dadra and Nagar Haveli, Karnataka and West Bengal have a higher percentage of wasted children than the national average of 19.3%. Bihar has the highest number of underweight children (41%), followed by Gujarat (39.7%), and Jharkhand at (39.4%). Assam, Dadra and Nagar Haveli, Karnataka, Madhya Pradesh, Maharashtra, and Uttar Pradesh have a higher percentage of underweight children than the national average of 32.1%.[6] In terms of BMI the NFHS-5 data shows that Jharkhand has the highest percentage of women, between 15 and 49 years, who have a below-normal Body

Mass Index (BMI). More than 26% Jharkhand women have below-normal BMI, the national average being 18.5%. Bihar (41%), Gujarat (39%), Chhattisgarh, Madhya Pradesh, Maharashtra, and Odisha also have a higher percentage of undernourished children than the national average of 32%. [5]

NEED OF THE STUDY

Malnutrition is a condition that develops due to either excessive or inadequate intake of nutrients, resulting in health problems. Specifically, it is "a deficiency access, or imbalance of energy, protein and other nutrients" which adversely affects the body's issue and form Malnutrition is a category of diseases that includes under nutrition and over nutrition. [6]

Accordingly, to the 2019 report, the lancet commission suggested expanding the definition of malnutrition to include all its forms, including obesity, under nutrition, and other dietary risks. The world health organization and lancet commission have also identified the double burden of malnutrition, which occurs from the coexistence of over nutrition (overweight and obesity) alongside under nutrition stunted growth and wasting. [7]

In children, severe malnutrition accounts for approximately 1 million deaths annually, with approximately 20 million children under the age of five suffering from severe malnutrition.05-Jul-2022.In India about 2/3 portion of the under five children of our country is malnourished among them 5-8% is severely malnourished whole rest fall in the group of mild or moderate malnutrition so it can be said that malnutrition one of the most wide spread conditions affecting child health. Majority of children in India are not able to get adequate nourishment because of very low per capita income of their families. [8]

Malnutrition during adolescence profoundly impacts the developmental processes. The short-term complications of under nutrition (thinness or stunting) are being underweight, poor performance at school and risk of frequent infections. In the long term, under nutrition among adolescents is associated with poor general health, and less economic productivity. On the other hand, over-nutrition contributes to the early development of non-communicable diseases such as diabetes, hypertension, coronary heart diseases, sleep apnea, and cancer. [9]

A descriptive study was conducted in year 2020 to assess dietary practices, nutrients adequacy and nutrition status among adolescents in boarding high school. Diet of adolescent in boarding studying school is monotonous comprising mainly of serials and legumes with minimal animal sources fruits and vegetables which are important in provision of key micronutrients more over boarding school diet is in adequate in essential micronutrient of iron, zinc, calcium, and vitamin C bases on adolescent recommended daily allowance according to age and sex. In total, 164 students from six high schools (three private and three public schools) participated in this study. Out of which, 112 (68.3%) were female and 52 (31.7%) were male. [10]

Materials and Methods

Study design

A Descriptive study was conducted to assess the nutritional status and eating habits among adolescents.

Variables under Study

Research Variable: Nutritional status and eating habits.

Socioeconomic Demographic variables: Age, Gender, Type of family, Religion, Educational status of Father, Educational status of Mother and Socio-Economic Status.

Setting

The study was conducted in M.M. International School, Mullana, Ambala, Haryana.

Population

Population: Adolescents age group between 10-19 years
Target population: Adolescents age group between 10-19 in selected schools of Haryana.
Accessible population: -Adolescents age group between 10-19 in selected schools of Mullana, Ambala.

Sample and sampling technique

In the present study, sample was adolescents studying in schools of Mullana, Ambala. In the present study, non-probability convenient sampling technique was used to select the sample.

A sample size of 200 student were selected for the study.

Sample Selection Criteria

Inclusion Criteria

The study included adolescent children who were:

- Between 10-19 years
- Available at the time of data collection:
- Willing to participate in the study.

Exclusion Criteria

The study excluded adolescent children who were:

- On the day of data collection.

Data Collection Tools

Section I: Description of selected Socio-demographic Variables**.**

Section II: Modified Standardized Nutritional Assessment Scale to assess the nutritional status among adolescents.

Section III: Adolescent Food Habits checklist to assess the eating habits among adolescents.

Results

Description of Socio-Demographic Variables of Adolescents

More than half of the students were under the age group of middle adolescent (14-16 years) i.e. 122 (61%) whereas minimum of the students i.e. 38 (19%) were under early adolescent (10-13 years) and less than half 40 (20%) of students were under late adolescent (17-19 years). More than half of them were male i.e.114 (57%) while less than half 86 (43%) were female. More than half 101 (50.5%) of them were living in nuclear family meanwhile less than half of family 99 (49.5%) were living in joint family. Majority of the students belongs to Hindu religion i.e. 165 (82.5%) whereas 25 (12.5%) belongs to Sikh religion and same frequency of the students belongs to Christian and Muslims i.e. 5 (2.5%). Majority of students 147 (73.5%) were lived in urban whereas minimum of them 53 (26.5%) were lived in rural. Majority of parents hold graduate qualification where more than half were father 107 (53.5%) while less than half were mother 89 (44%). In addition, minimum of the student's father were illiterate about 3 (1.5%). More than half of the students belongs to upper class family (7008 and above) about 108 (54%).

Table 1

Frequency Percentage Distribution of Adolescent as per Socio-Demographic Variables

N=200

Sr. No	Variables	Frequency (f)	Percentage (%)
1	**Age (in year)**		
	1.1 Early adolescents (10-13 years)	38	19
	1.2 Middle adolescents (14-16 yrs)	122	61
	1.3 Late adolescents (17-19 yrs)	40	20
2.	**Gender**		
	2.1 Male	114	57
	2.2 Female	86	43
3.	**Type of family**		
	3.1 nuclear	101	50.5
	3.2 joint	99	49.5

Sr. No	Variabless	Frequency (f)	Percentage (%)
4.	**Religion**		
	4.1 Hindu	165	82.5
	4.2 Muslim	05	2.5
	4.3 Sikh	25	12.5
	4.4 Christian	05	2.5
5.	**Residence**		
	5.1 Rural	53	26.5
	5.2 Urban	147	73.5
6.	**Educational Status of Father**		
	6.1 Illiterate	03	1.5
	6.2 Primary	18	09
	6.3 Higher Sec	45	22.5
	6.4 Graduation	107	53.5
	6.5 Post. Graduation	27	13.5
7.	**Educational status of Mother**		
	7.1 Illiterate	-	-
	7.2 Primary	06	3.0
	7.3 Higher Sec	82	41
	7.4 Graduation	89	44
	7.5 Post. Graduation	23	11
8.	**Socio-Economic Status**		
	8.1 7008 and above	108	54
	8.2 3504-7007	86	43
	8.3 2102-3503	02	1.0
	8.4 1051-2101	03	1.5
	8.5 Below 1050	01	0.5

Evaluation of Nutritional Status of Adolescents.

The range, mean, median and standard deviation of adolescent children regarding nutritional status. The data reveals that the nutritional status of adolescent children ranged from (2-14). In addition, the mean and standard deviation of adolescent nutritional status were 8.87 ±2.66 with median 9.

Table -2

Range, Mean, Standard Deviation and Median of Modified Standardized Nutritional assessment scale score of Adolescent.

N=200

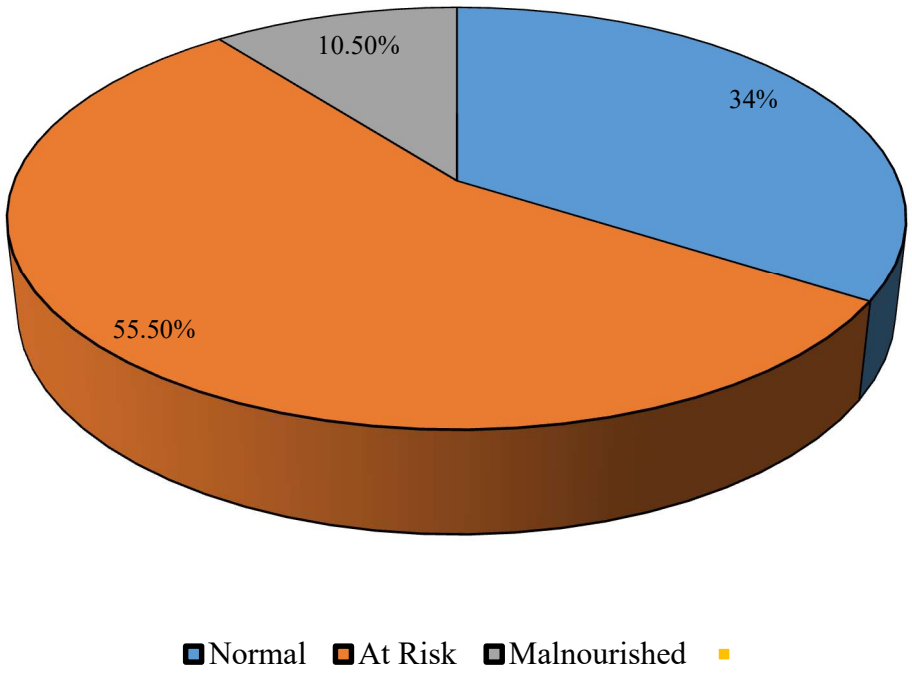
Variable	Range	Mean ± SD	Median
Nutritional Status	2-14	8.87 ± 2.66	9.00

Minimum=00 **Maximum =14**

Figure 1

Pie Chart Showing Frequency and Percentage Distribution regarding Nutritional Status of Adolescents.

N=200



Pie chart illustrates the frequency and percentage distribution regarding nutritional status of adolescents. More than half of the adolescents were at risk of malnutrition about 111 (55.5%) whereas less than half of them were under normal nutritional status around 68 (34%). While minority of the adolescent 21 (10.5%) were under malnourished nutritional status.

Evaluation of Eating Habits of Adolescents

The range, mean, standard deviation and median of adolescent children regarding food habits. Food habits of adolescent children ranged from (5-28). Moreover, the mean and standard deviation of adolescent food habits were 12.66 ±3.63 with median 12.65.

Table 3

Range, Mean, Standard Deviation and Median of Standardized Adolescent Food Habits Checklist score of Adolescent.

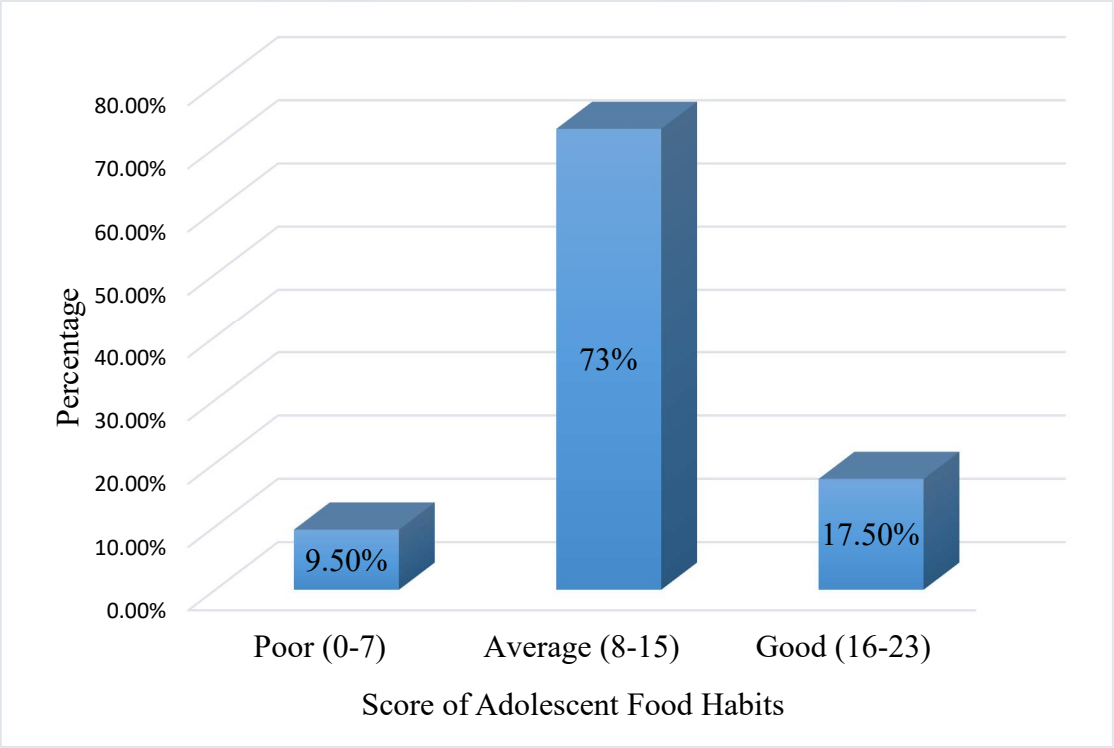
N=200

Variable	Range	Mean ± SD	Median
Adolescent Food Habits checklist	5 -28	12.66 ±3.63	12.65
Minimum= 00			Maximum= 23

Figure 2

Bar Graph showing Frequency and Percentage Distribution of Eating Habits among Adolescents

N=200



Bar graph illustrates the frequency, percentage distribution of eating habits among adolescents. More than half 73% of the adolescent fall into average eating habits scoring under the range of (8-15) and minority of the adolescent around 17.5% represent good eating habits score under the range of (16-23). Similarly, few of them 9.50% constitute poor eating habits score that lies between (0-7).

Correlation between the Mean Nutritional Status and Eating Habits of Adolescents

The correlation between the mean nutritional status and eating habits of adolescents. The findings revealed that there was statistically non-significant correlation between nutritional status and eating habits of adolescents - 0.05 (p= 0.45 ^{NS}) at 0.05 level of significance. Therefore, null hypotheses (H_{01}) was accepted and the research hypotheses (H_1) was rejected.

Hence, it can be concluded that there was no significant correlation between nutritional status and eating habits of adolescents.

Table 4

N=200

	Adolescent food habits	**Nutritional status**
Adolescent Food Habits		- 0.05 (0.45 ^{NS})
Nutritional Status	- 0.05 (0.45 ^{NS})	

^{NS} Not significant (p>0.05) *Significant (p<0.05) r (18) = 0.42

ANOVA and‘t’ test showing Association between Nutritional Status with their Socio-Demographic Variables of Adolescents.

ANOVA and‘t’ test showing association between nutritional status with socio demographic variables of adolescent. The findings revealed that nutritional status of the adolescents was found to be significant association with the age of the adolescent 2.44 (p=0.00*) at 0.05 level of significance. Therefore, null hypotheses (H_{02}) was rejected and the research hypotheses (H_2) was accepted.

Hence, it can be concluded that there was a significant association of nutritional status with the age of the adolescents.

Table 5

N=200

Sr No.	Variables	F (%)	Mean	df	F/t value	P value
1	**Age (in years)**					
	1.1 Early adolescents	38	19	187	2.44	**0.00***
	1.2 Middle adolescents	122	61			
	1.3 Late adolescents	40	20			
2	**Gender**					
	2.1 Male	114	57	187	0.74	0.70^{NS}
	2.2Female	86	43			
3.	**Type of Family**					
	3.1 Nuclear	101	50.5	187	0.68	0.78^{NS}
	3.2 Joint	99	49.5			
4.	**Religion**					
	4.1 Hindu	165	82.5	187	1.07	0.38^{NS}
	4.2 Muslim	5	2.5			
	4.3 Sikh	25	12.5			
	4.4 Christian	5	2.5			
5	**Residence**					
	5.1 Rural	53	26.5	187	0.58	0.85^{NS}
	5.2 Urban	147	73.5			
Sr No.	**Variables**	**F (%)**	**Mean**	**df**	**F/t value**	**P value**
6	**Educational Status of father**					
	6.1 Illiterate	3	1.5			
	6.2 Primary	18	9	187	1.14	0.32^{NS}
	6.3 Higher Sec	45	22.5			
	6.4 Graduation	107	53.5			
	6.5 Post. Graduation	27	13.5			
7.	**Educational Status of Mother**					
	7.1 Illiterate	-	-	187	1.55	0.10^{NS}
	7.2 Primary	6	3.0			
	7.3 Higher sec	82	41			
	7.4 Graduation	89	44			
	7.5 Post Graduation	23	11			
8.	Socio – Economic Status					

8.1 7008 and above	108	54	187	1.34	1.98^{NS}
8.2 3504-7007	86	43			
8.3 2102-3503	2	1			
8.4 1051-2101	3	1.5			
8.5. Below 1050	1	0.5			

^{NS} Not significant (p>0.05) *Significant (p<0.05) t (187)= 1.64

ANOVA, t test showing Association between Eating Habits with their Socio-Demographic Variables of Adolescents

The Anova and't' test showing association of eating habits with their socio demographic variables of adolescent. The findings revealed that eating habits of the adolescents were found to be significant association with the educational Status of father and mother of the adolescent 1.58 (p=0.01*) and 1.42 (p=0.03*) at 0.05 level of significance. Therefore, null hypotheses (H_{03}) was rejected and the research hypotheses (H_3) was accepted.

Hence, it can be concluded that there was a significant association of eating habits with the educational status of father and mother of the adolescent.

TABLE 6

N=200

Sr No.	Variables	F (%)	Mean	df	F/t value	P value
1	**Age (in years)**					
	1.1 Early adolescents	38	19	95	1.24	0.14^{NS}
	1.2 Middle adolescents	122	61			
	1.3 Late adolescents	40	20			
2	**Gender**					
	2.1 Male	114	57	95	0.96	0.57^{NS}
	2.2Female	86	43			
3.	**Type of Family**					
	3.1 Nuclear	101	50.5	95	1.14	0.25^{NS}
	3.2 Joint	99	49.5			
4.	**Religion**					
	4.1 Hindu	165	82.5	95	0.82	0.84^{NS}
	4.2 Muslim	5	2.5			
	4.3 Sikh	25	12.5			
	4.4 Christian	5	2.5			

Sr No.	Variables	F (%)	Mean	df	F/t value	P value
5	Residence					
	5.1 Rural	53	26.5	95	1.21	0.16^{NS}
	5.2 Urban	147	73.5			
6	Educational Status of father					
	6.1 Illiterate	3	1.5	95	1.58	**0.01***
	6.2 Primary	18	9			
	6.3 Higher Sec	45	22.5			
	6.4 Graduation	107	53.5			
	6.5 Post. Graduation	27	13.5			
7.	**Educational Status of Mother**					
	7.1 Illiterate	-	-	95	1.42	**0.03***
	7.2 Primary	6	3.0			
	7.3 Higher sec	82	41			
	7.4 Graduation	89	44			
	7.5 Post Graduation	23	11			
8.	Socio – Economic Status					
	8.1 7008 and above	108	54	95	0.89	0.70^{NS}
	8.2 3504-7007	86	43			
	8.3 2102-3503	2	1			
	8.4 1051-2101	3	1.5			
	8.5. Below 1050	1	0.5			

^{NS} Not significant (p>0.05) *Significant (p<0.05) t (95) = 1.66

DISCUSSION

The findings of the study were discussed with reference to the results obtained in other related research studies. The purpose of this present study was to assess the nutritional status and eating habits among the adolescent in the selected school of Ambala, Haryana**.**

Finding related to the nutritional status among the adolescents

In the present study, most of adolescents had age group followed by 14-16 years of age that is 122 (61%) where most of the adolescent were male 114 (57%) out of 200 students. majority of students were live in nuclear 101 (50.5%) family. the maximum of students was Hindu 165 (82.5%). greater number of students 147 (73.5%) belongs from urban area. Majority of parents have qualification is graduation father were 107 (53.5%) and mother were graduated 89 (44%). Most of students having upper class of socio-economic status 108 (54%). Findings related to assessment of mini nutritional status of Adolescents. Range of nutritional status is lying between (2-14) . Mean and Standard 2.66. Variation of nutritional status is 8.87 ± 2.66. These finding

were consistent with the study conducted by Debidas Ghosh to assess the nutritional status of rural early adolescent girl in dantan west bangel showed that Result shows that mean age of population was 13.95±2.48 years. Majority (63.12%) were Hindu and belonged to nuclear family (54.72%). 45.62% were educated up to high school level. Most of the girls belonged to socio economic class IV (45.46%)

Findings related to assessment of eating habits among the adolescents.

In the present study, majority of adolescent were having average eating habits that is 73% the finding revealed that there is a significant association between the age and nutritional status of the student in addition there was a significant association between the eating habits and education status of the parents These finding were consistent with the study conducted by Lucineia de Pinho IN Brazil to assess the dietary pattern of adolescent attending public school. Finding showed that Adolescents with per capita family income exceeding half a minimum wage were more likely to consume the "junk food" pattern (OR = 1.66; 95% CI = 1.07-2.56), and overweight adolescents had lower chances of eating the "healthy" food pattern (OR = 0.56, 95% CI = 0.35-0.91). It was concluded that solution exhibits that the three dietary patterns identified, "junk food," "healthy," and "traditional" the "healthy" patterns were not associated to low income, but rather to bad eating habits in the studied population. Overweight adolescents did not adhere to the "healthy" dietary pattern, emphasizing the need for nutritional education among them.

CONCLUSION

Nutritional status of more than half of the adolescents were at risk of malnutrition and few of them were found to be malnourished. In view of eating habits, more than half of the adolescents fall into average eating habits while few of them were under poor eating habits. However there was a significant association between nutritional status with the age of adolescent. Similarly, eating habits had a significant association with the educational status of father and mother of adolescent.

RECOMMENDATIONS

- A similar study can be implemented on large sample size of adolescents for wider generalization of findings.
- A comparative study can be conducted to find out the nutritional status and eating habits among different age groups of children.
- An experimental study can be conducted to explore the effect on nutritional status and eating habits of adolescents.

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