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Nutritional status and its determinants among selected polytechnic college students in Puducherry: A cross sectional study

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ABSTRACT

Background: Indian population comprises 21.4 % of adolescents. Malnutrition, both under nutrition and over nutrition, resulting from deficiency or from excess or imbalance of nutrients is of public health significance among adolescents across the world which leads to impairment of health and creates lasting effect on the growth, development and physical fitness of a person.

Objectives: To study the dietary/lifestyle habits and to identify the possible determinants of malnutrition among adolescents.

Materials and Methods: Cross sectional study was carried out in Madagadipet, Puducherry during November 2014. A total of 1034 participants were interviewed in their college using a pre tested questionnaire which comprised of variables such as Socio-demographic details, dietary behavior, physical activity, history of alcohol intake and smoking. The height and weight of the participants were measured and BMI was calculated. Data were entered in Microsoft Excel 2007 and analysed using SPSS 16. Means and proportions were calculated. Chi square test was applied and p value <0.05 was considered statistically significant.

Results: The prevalence of malnutrition was higher in females (15.2%) when compared to males (11.7%). 41.5% females were underweight and 15.2% overweight. The proportion of overweight was higher among those who skipped breakfast (16.9 %) and this association was statistically significant (p<0.01). Physical inactivity, smoking and alcohol intake had statistically significant association with malnutrition among adolescents (p<0.05).

Conclusion: This study showed that faulty dietary intake and poor lifestyle habits are some of the determinants of malnutrition among adolescents.

Keywords: Adolescents, Malnutrition, Dietary Behaviour

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INTRODUCTION

Indian population comprises 21.4 % of adolescents. Adolescence is a unique period in life because of its intense physical, psychosocial, and cognitive development. Adequate nutrition for the adolescents is a primary determinant for their growth spurt.[1] Malnutrition, both under nutrition and over nutrition, resulting from deficiency or from excess or imbalance of nutrients is of public health significance among adolescents across the world which leads to impairment of health and creates lasting effect on the growth, development and physical fitness of a

person.[2] The main nutrition problems affecting adolescent populations worldwide include under nutrition, iron deficiency and anemia, iodine deficiency, vitamin A deficiency, calcium deficiency and other specific nutrient deficiencies like zinc, folate, and obesity. India has one among the highest underweight burdens in the world, even twice that of sub-Sahara region. However, it is also beginning to experience the emerging problem of overweight.[3,4] Studies also show that the prevalence of overweight and obesity in Punjab, Maharashtra, Delhi and Chennai fluctuates between 11 and 23 percent.[5] In Northeast India, Assam counts for 53.9% prevalence of under nutrition among school-aged children.[6] In developing nations like India, inadequate diet and unfavorable environmental condition may adversely affect the growth and nutrition of adolescents. The rising urbanization and improvements in economic development has led to concurrent under and over nutrition in the population. Hence present study was conducted to the study the dietary/lifestyle habits among adolescents and also to identify the possible determinants of malnutrition so that adequate measures can be taken to tackle the problem at an early stage.

OBJECTIVES

(1) To study the dietary/lifestyle habits among selected Polytechnic college students in Puducherry.
(2) To assess nutritional status and identify the possible determinants of malnutrition

MATERIALS AND METHODS

Cross sectional study was carried out in Madagadipet, Puducherry during November2014. Among the 4 polytechnic colleges in Puducherry, 2 were selected randomly and all available students during our visit were included in the study. A total of 1034 participants were interviewed in their college using a pre tested questionnaire by the medical postgraduates. The questionnaire comprised of variables such as Socio-demographic details, dietary behavior, physical activity, use of alcohol and smoking. Each question was explained to the participants in the local language and then questionnaire was self-administered. The height and weight of the participant was measured after completion of the questionnaire. The need for the study was explained to the participants and written informed consent was obtained before interviewing the participants. Stadiometer was used for measuring height and standard dial type weighing machine was used to measure weight. Height was rounded off to the nearest cm and weight was rounded off to the nearest Kilogram. International WHO classification of BMI was used to categorise the students. Data were entered in Microsoft Excel 2007 and analysed using SPSS 16. Means and proportions were calculated. Chi square test was applied and p value<0.05 was considered statistically significant.

RESULTS

Table 1 shows that maximum 604 (58.4%) of participants belong to the age group of 18-20 years. 43.8% of the participants were females. 33.9 % and 56.2% of the participants belonged to social class 2 and class 3 respectively.

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Table 1 Socio-Demographic Characteristics of the Study Population (n=1034)

Variables	Number (%)
Age (in years)	
15 -17	317 (30.7)
18 - 20	604 (58.4)
20 -23	113 (10.9)
Gender	
Male	581 (56.2)
Female	453 (43.8)
Social class*	
1 (Upper)	5 (0.5)
2 (Upper middle)	32 (3.1)
3 (Lower middle)	65 (6.3)
4 (Upper lower)	351 (33.9)
5 (Lower)	581 (56.2)

*Modified BG Prasad classification April 2013

Table 2 shows that the prevalence of underweight and overweight was higher in females when compared to males. In females 41.5% were underweight when compared to males who were 39.2 % underweight. The prevalence of overweight was 15.2 % in females when compared to 11.7% in males.

Table 2 Distribution of Study Participants according to their BMI (n=1034)

Gender	Underweight Number (%)	Normal Number (%)	Obese/Overweight Number (%)	Total Number (%)
Male	228 (39.2)	285 (49.1)	68 (11.7)	581 (100)
Female	188 (41.5)	196 (43.3)	69 (15.2)	453 (100)
Total	416 (40.2)	481 (46.6)	137 (13.2)	1034 (100)

Table 3 shows that the proportion of overweight was higher in the non-vegetarians (13.5%) when compared to vegetarians (10.2%). However, this difference was not statistically significant ($p>0.05$). The proportion of overweight was higher (16.9%) among those who skipped breakfast, than those (11.1%) who did not do so ($p<0.01$).

The percentage of overweight was lower among those who consumed fruits and vegetables (13%) regularly as compared to the non-consumers (24%) and the percentage of overweight was higher (14.3%) in those who consumed fried foods more frequently. However this difference was not statistically significant ($p>0.05$).

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Table 3 Association between the Dietary Pattern of the Study Participants and BMI (n=1034)

Dietary Pattern	Underweight Number (%)	Normal Number (%)	Obese/Overweight Number (%)	Total Number (%)	p value
Diet					
Vegetarian	36 (40.9)	43 (48.9)	9 (10.2)	88 (100)	0.673
Non vegetarian	380 (40.2)	438 (46.3)	128 (13.5)	946 (100)	
Skipping breakfast everyday					
Yes	456 (46.3)	362 (36.8)	166 (16.9)	984 (100)	**<0.01**
No	18 (36.7)	26 (52.1)	6 (11.1)	50 (100)	
H/o intake of fruits (3 times/week)					
Present	392 (38.7)	497 (49.1)	123 (12.2)	1012 (100)	0.091
Absent	10 (45.4)	9 (40.9)	3 (13.7)	22 (100)	
H/o intake of vegetables (3 times/week)					
Present	410 (40.6)	468 (46.4)	131 (13)	1009 (100)	0.141
Absent	6 (24.0)	13 (52.0)	6 (24.0)	25 (100)	
H/o intake of fried foods (3 times/ week)					
Present	349 (38.9)	420 (46.8)	128 (14.3)	897 (100)	0.192
Absent	59 (43.1)	63 (46.0)	15 (10.9)	137 (100)	

Table 4 shows that physical inactivity, smoking and alcohol intake had statistically significant association with malnutrition among adolescents (p<0.05).

Table 4 Association between Life Style Habits of the Study Participants and BMI (n=1034)

Lifestyle habits	Underweight Number (%)	Normal Number (%)	Obese/Overweight Number (%)	Total Number (%)	p value
H/o intake of alcohol					
Present	8 (9.6)	59 (71.1)	16 (19.3)	83 (100)	**0.000**
Absent	399 (42.0)	426 (44.8)	126 (13.2)	951 (100)	
H/o smoking					
Present	12 (24.5)	26 (53.1)	11 (22.4)	49 (100)	**0.031**
Absent	404 (41.0)	455 (46.2)	126 (12.8)	985 (100)	
H/o physical activity					
Present	187 (43.1)	205 (47.2)	42 (9.7)	434 (100)	**0.012**
Absent	229 (38.2)	276 (46.0)	95 (15.8)	600 (100)	

DISCUSSION

The present study shows that adolescents suffer from both forms (underweight and overweight) of malnutrition. Malnutrition was higher in females as compared to males. The prevalence of underweight was high in both sexes as compared to overweight. Possible reasons for the high occurrence of underweight could be due to faulty dietary intake and changing lifestyle habits. The similar trend of increasing of overweight and obesity in combination with a high prevalence of underweight is found to be common in many developing countries.[7] Skipping breakfast regularly is significantly associated with

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overweight and obesity in the present study. Breakfast though considered as the most important meal of the day, very few research studies in India have focused on this determinant. This study results are similar to a study done among Italian children where skipping breakfast regularly was associated with overweight.[8] A systematic review of cross-sectional and longitudinal studies from Europe suggests that infrequent or never breakfast consumers are at a higher risk of being overweight and obese.[9] Physical inactivity, smoking and alcohol intake were associated with malnutrition among adolescents in the present study which is similar to Dutch study done among adolescents.[10]

CONCLUSION

Our study highlights the double burden of underweight and overweight, among adolescents though underweight is a common problem than overweight. Therefore, to reduce both forms of malnutrition, with special attention to underweight, it is essential to educate and create awareness programmes at the community levels. Health education programs and effective policies are urgently required to promote healthy eating and life style activity habits to ensure optimum health among adolescents.

STRENGTH AND WEAKNESS OF THE STUDY

Strengths

(1) Proper sampling methodology and standard procedures for anthropometry were followed.

(2) The information regarding diet and lifestyle behaviour was assessed only for one week thereby minimizing the chances of recall bias.

Weakness

A temporal association could not be established between the determinants studied and malnutrition. Hence further analytical studies are needed to minimize the confounders and to determine the factors associated with malnutrition.

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