

Research Article

Prevalence of nutritional deficiencies other than anaemia among students of government commerce college of Gandhinagar, Gujarat: a cross sectional study

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ABSTRACT

Background: Adolescence and young adulthood are periods of critical development and transition. Adolescent constitutes over 23% of the population in India. Nutrition and health needs of the adolescent are more because of more requirements for growth spurt and increase in physical activity. The aim was to study prevalence of nutritional deficiencies other than anaemia among students of Government Commerce College.

Methods: The study was carried by Medicine Department, GMERS Medical College, Gandhinagar, India during period from July 2016 to August 2016 in purposively selected government college of Gandhinagar city. After taking the permission of principal of college and consent of the students, 421 students were examined for signs of various nutritional deficiencies other than anaemia. The data was collected by predesigned, pretested proforma and analyzed using SPSS 17.0 (Trial Version).

Results: Out of total 421 students 205 (48.6%) were female. Mean age of the study students was 19.8±1.66 years. Maximum numbers of the students were in the age group of 18-21 years (60.5%). Mean age of female and male students was 19.7±1.79 years and 19.9±2.01 years respectively. The study revealed that vitamin A deficiency was present in 28 (7.0%) students. Vitamin B complex deficiency signs were seen in 96 (23.1%) students. Vitamin C deficiency signs were seen in 44 (10.5%) students. PEM was observed in 55 (13.2%) students. Essential fatty acid deficiency was observed in 60 (14.4%) students.

Conclusions: High prevalence of nutritional deficiencies among these students needs great attention and health education.

Keywords: College students, Students' health, Nutritional deficiencies, Vitamin deficiencies, Protein-energy malnutrition

INTRODUCTION

Adolescence and young adulthood are periods of critical development and transition. These young people undergo major physical, cognitive, and psychosocial changes. These changes have important implications for health. As young people become increasingly independent, they face

significant choices in areas such as diet, substance use, sexuality, physical activity and use of health care services. These choices are shaped by individual, family, social environments, and other contextual factors. A college is a key location for educating students about health, hygiene and nutrition, and for putting in place interventions to promote the health of students. At the same time, poor health, poor nutrition and disability can

be barriers to attending college and to learning. Colleges are sacred because they provide an environment, for learning skills, and for development of intelligence that can be utilized by students to achieve their goals in life. It is also observed that “to learn effectively, students need good health.” Health is key factor in college, as well as continued participation and attainment in college.¹

Early adulthood health behavior habits such as diet and physical activity are influenced by the college setting and often track into adulthood.¹ The common morbidities found in college age students are nutritional deficiencies, dental, visual and hearing problems, skin conditions and other problems. The fact is that the most of these conditions are preventable or avoidable and curable especially in early stages by promotion of hygienic practices among college students through proper health education by teachers, who are the first contacts.²

Adolescent constitutes over 23% of the population in India. Nutrition and health needs of the adolescent are more because of more requirements for growth spurt and increase in physical activity. Adolescent need more of all nutrient.³ This study is a humble effort to throw light on prevalence of nutritional deficiencies among college going students.

METHODS

The study was carried by Medicine Department, GMERS Medical College, Gandhinagar during period from July 2016 to August 2016 in purposively selected government college of Gandhinagar city. After taking the permission of principal of college and consent of the students, 421 students were examined for signs of various nutritional deficiencies other than anaemia using pre-designed, pre-tested, semi-structured WHO standard with ICMR modifications questionnaire for nutritional deficiencies. Performa contained general information, anthropometry and general health check-up of the students. The modification included deletion of columns irrelevant to the present study and addition of some columns to record other health abnormalities specially which are common in students. Data were analysed using SPSS version 17 (trial version). Parameters such as rate, ratio and percentages were calculated. In order to have valid interpretation of rates, 95% confidence intervals (CI) were calculated. To test the significance of the difference among the statistical parameters in different subsets of population, suitable statistical tests were applied.

RESULTS

Out of total 421 students 205 (48.6%) were female. Mean age of the study students was 19.8±1.66 years. Maximum numbers of the students were in the age group of 18-21 years (60.5%). Mean age of female and male students was 19.7±1.79 years and 19.9±2.01 years respectively.

Vitamin A deficiency was present in total 28 (7.0%) students. 14 were males and 14 were females. The signs of vitamin A deficiency and gender was not significantly associated (p >0.05). Other signs of vitamin A deficiency such as Bitot’s spot, corneal xerosis and corneal opacities were not observed in any students (Table 1).

Table 1: Vitamin-A deficiency.

Signs	Gender		Total (421)
	Female (205)	Male (216)	
Conjunctival xerosis	11 (5.3)	12 (5.5)	23 (5.5)
Night blindness	3 (1.4)	2 (1.1)	5 (1.3)
Total conditions	14 (6.8)	14 (7.5)	28 (7.0)

Chi- square: 0.24; Degrees of freedom: 2; p=0.88

Table 2: Vitamin B complex deficiency.

Signs	Gender		Total (421)
	Female (205)	Male (216)	
Nasolabial dyssebacea	3 (1.2)	2 (0.9)	5 (1.1)
Angular stomatitis	6 (2.9)	10 (4.8)	16 (3.9)
Cheilosis	17 (8.3)	20 (9.5)	37 (8.9)
Red and raw tongue	3 (1.5)	3 (1.6)	6 (1.5)
Geographic tongue	4 (2.2)	12 (5.3)	16 (3.8)
Pellagrous dermatosis	7 (3.7)	9 (4.2)	16 (3.9)
Total conditions	40 (19.8)	56 (26.3)	96 (23.2)

Chi- square: 3.1; Degrees of freedom: 5; p=0.68

Table 2 shows signs of vitamin B complex deficiency. Signs were seen in total 96 (23.2%) students. 40 (19.8%) were females and 56 (26.3%) were males. Many students have multiple signs of vitamin B complex deficiency. Signs such as angular stomatitis (female:2.9%, male: 4.8% p <0.05) and geographic tongue (female: 2.2% male: 5.3% p <0.05) were significantly more observed in males than in females. The signs of vitamin B complex deficiency and gender was not significantly associated (p >0.05).

Table 3: Vitamin C deficiency.

Signs	Gender		Total (421)
	Female (205)	Male (216)	
Spongy bleeding gums	14 (6.8)	18 (8.5)	32 (7.7)
Petechiae	7 (3.4)	5 (2.1)	12 (2.7)
Total conditions	21 (10.3)	23 (10.6)	44 (10.5)

Chi- square: 0.74; Degrees of freedom: 1; p=0.68

Vitamin C deficiency signs were seen in total 44 (10.5%) students. The prevalence rates in males and the females were 10.3% (21 students) and 10.6% (23 students) respectively. The signs of vitamin C deficiency and gender was not significantly associated (p >0.05). (Table 3).

Table 4: Protein energy malnutrition.

Signs	Gender		Total (421)
	Female (205)	Male (216)	
Flag sign on hair	3 (1.2)	4 (2.1)	7 (1.7)
Lack of lustre of hair	8 (3.9)	18 (8.3)	26 (6.2)
Thin and sparse hair	16 (7.8)	6 (3.0)	22 (5.3)
Total conditions	27 (13.0)	28 (13.4)	55 (13.2)

Chi-square: 8.51; degrees of freedom: 2; $p < 0.05$

Protein energy malnutrition was observed in total 55 (13.2%) students. 27(13.0%) were females and 28 (13.4%) were males. Many students have multiple signs of protein energy malnutrition. The signs of protein energy malnutrition and gender was significantly associated ($p < 0.05$). Thin and sparse hair was more common in girls and lack of lustre of hair was more common in boys. (Table 4)

Essential fatty acid deficiency in the form of phrynoderma was observed in total 60 (14.4%) students. Prevalence was more observed in males (34, 15.7%) than in females (26, 13.0%). Prevalence of essential fatty acid deficiency and gender was not significantly associated ($p > 0.05$) (Table 5).

Table 5: Essential fatty acid deficiency.

Signs	Gender		Total (421)
	Female (205)	Male (216)	
Phrynoderma	26 (13.0)	34 (15.7)	60 (14.4)
Total conditions	26	34	60

DISCUSSION

In Thakor N et al age of the study students (total 867) ranged from 5-19 years. Mean age was 13.80 ± 1.96 years. Out of 867, 434 (49.9%) were boys and 433 (50.1%) were girls. The study revealed that vitamin A deficiency was present in 54 (6.2%) students. Vitamin B complex deficiency signs were seen in 179 (20.6%) students. Vitamin C deficiency signs were seen in 86 (9.9%) students. PEM was observed in 77 (8.9%) students. Essential fatty acid deficiency was observed in 123 (14.1%) students.¹ In Srinivasan K et al 61.4% students were in the age group of 10-14 years, 84.3% students had one or more morbid conditions, 29.9% students had skin disorders.⁴

In Panda P et al 59.5% are boys and 40.5% are girls, 47.8% of students were found to be normal as per their weight for age, 52.2% were malnourished. 28.4 % students had mild, 17.0 % had moderate and 6.8% students had severe degree of malnourishment, 5.6% students had refractive errors.⁵

In Soumya Deb et al, 40.8 % boys and 25.93% girls were underweight, 76% of boys and 74% of girls were suffering from one or more morbidities.⁶

In Chandna S. et al students had night blindness in 35.9%, xerosis conjunctiva in 9.2%, Bitot's spots in 14.2%, nasolabial dyssebacea in 6.8%, angular stomatitis in 6.8%, cheilosis in 8.7% red and raw tongue in 1.6% , pellagrous dermatosis in 13.3%, bleeding gums in 15.2%, ecchymoses in 6.1%, lack of lustre of hair in 26.5%, thinness and sparseness of hair in 24.3%, prevalence of anaemia in students was 34%, 15.9% students had phrynoderma.⁷ In Rema N et al prevalence of vitamin A deficiency in boys was 5.65% and in girls was 8.64%.⁸

As per DLHS (2002-2004), In India 6-7% students aged 14-19 years have problem with their eye sight.⁹

However, study done in single college of Gandhinagar city limits us to generalize the results. There is definitely a need for well-planned, large-scale studies using standardized methodologies to estimate prevalence of nutritional deficiencies. When planning these studies it is necessary to ensure that importance is given to accurate evaluation of socio economic status and representation of the different regions of India. A comprehensive study including anthropometric data, biochemical data, clinical signs of nutritional deficiencies and dietary intake data among the same age group of students will give a better insight into the situation.

CONCLUSION

High prevalence of nutritional deficiencies among students needs great attention and health education.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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