Original Research Article

TO STUDY CORRELATION OF ANTHROPOMETRY WITH NUTRITIONAL STATUS OF MEDICAL STUDENTS

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Abstract: The aim of the study is to find the nutritional status of the medical students by anthropometry. Even though various methods are used to find out nutritional status, anthropometry is widely used. The prevalence of overweight and obesity is commonly assessed by using body mass index (BMI). The journey from high school to medical college is a stressful lifestyle change for young adults. During this period students can develop a variety of health attitudes and behaviors that can lead to negative impact on their overall wellbeing.

In the present study, we studied the anthropometry and nutritional status of 150 Medical Students in age group of 18 to 23 years out of which 107 were male and 43 were females. Students completed a questionnaire on dietary intake. Anthropometric measurements including Height, Weight, BMI, and WC were performed. Hb estimation done by Sahli's Method. The findings were analyzed by using chi-square test.

Keywords: Caloric intake, Body Mass Index, Medical Students.

Conclusion: Moving from High school to medical college is a vibrant period in which health is neglected along with number of siblings (family size) show statistically significant impact on anthropometry and nutritional status of medical students

Keywords: Nutritional status, Anthropometry.
Study Design: Cross Sectional Study.

1. Introduction

Nutrition is defined as a science concerned with the role of food and nutrients in the maintenance of health. The physiology of nutrition is further restricted to the interactions between food and the healthy human body which include digestion, absorption, and intermediary metabolism of nutrients.[1] Proper nutrition is important in improving the community health. Nutritional Physiology provides the scientific basis of diets appropriate for various physiological states however excess, deficiency or indiscretion might lead to disease and dietary modification might help in the prevention and treatment of certain diseases. Balance nutrition can protect against many diseases resulting from nutrient deficiencies or excess. Nutrients are the constituents in food that must be supplied to the body in adequate amounts. These include Carbohydrates, Proteins, Fats, Minerals and Vitamins. Nutritional status is the condition of health of the individual as influenced by the utilization

of the nutrients.[2] Under nutrition in terms of protein and energy results in poor growth, poor resistant to bacterial or viral infection. The science of Nutrition has been developed by using the combined knowledge of physical and biological sciences. Its application involves the social sciences related to human behavior - Psychology, Sociology, Anthropology and Economics. Until World War I, the significance of nutrition was recognized by a relatively small group of scientists and physicians. Since then, a wider awareness has developed on the role of nutrients in health of individuals and the economic development of the nation[3]. A great number of important discoveries and developments in this field have enabled health care professionals to understand the nutrient needs of people and the means of supplying them. It is difficult to set in a chronological order of events that show the development of nutrition. Many aspects developed simultaneously or overlapped each other. Some discoveries went unnoticed for several years because scientific attention was occupied with other developments and theories.[4]

The years between the ages of 18 and 23years are often difficult as it is a transition stage when one ceases to be a child and begins to be an adult. Nutritionally these are important years because during this time young adults develop eating habits that are likely to be maintained for life. In addition to continued physical maturation, young adults also endure the stress of social maturation and independence

College students, like other segments of the adult population, may not consume an adequate diet, or exercise regularly. Their diet is usually high in fat, sodium, and sugar because of frequent snacking and consumption of fast food. Students generally skip breakfast or have something they can eat quickly, or carry to class. These behaviors could be linked to the perception that students are exposed to the college environment where unhealthy foods are more readily available than healthy foods. Medical Students are stressful throughout the whole course of training.

The objective of present study was to assess nutritional status of medical students by determining their caloric intake, Height, Weight, BMI, WC and Hb and to compare nutritional status of male and female students.

Assessment of the socioeconomic status, which affects various Physiological parameters in human being is an inherent part of various community based and many hospital-based studies.

2. Material and Methods

The study was conducted on 150 MBBS students of age 18 to 23 years in the Physiology Laboratory at Topiwala National Medical College and BYL Nair Ch. Hospital, Mumbai. A self-formulated questionnaire was given to the students. The caloric intake of students was compared with recommended daily allowance according to age and sex as per ICMR.[14] Students were divided accordingly - Caloric intake Less than recommended for male < 2700 and for female < 2200, Recommended caloric intake for male 2700 -2800 and for females 2200 -2300, Caloric intake more than recommended for male > 2800 and for female > 2300. Anthropometric measurements were made in the class room as per guidelines given by World Health Organization.[13] Weight was determined by using weighing scale, height was measured by

using a stadiometer and Body Mass Index (BMI)) was calculated using the formula weight (kg)/height (m) ^{2}. Students were classified according to their BMI as less than Normal (underweight < 18.5), Normal (18.5- 25) and above normal (pre-obese > 25). All the measurements were done by one observer. Hemoglobin estimation of the students was done by Sahli's method.

Assessment of the socioeconomic status is an inherent part of various community based and hospital-based studies, which affects different physiological states. In the present study we have taken number of siblings (family Size) to compare socioeconomical status and nutritional level. Nutritional status of an individual was determined by anthropometric measurements.

 Observations:

Table 1. Anthropometric measurements of 150 MBBS students

S. No.	Variables (Mean ± SD)	Male (N=107)	Female (N=43)	Total (N=150)	P value
1	Age	21.20±1.77	21.80±2.68	21.60±2.45	=.001
2	Caloric Intake	2307 ± 743.21	1847 ± 629.44	1975 ± 750.30	<0.001
3	Height	171.81±8.34	160.90±5.23	166.82±10.32	<0.001
4	Weight	68.43 ± 9.75	55.61 ± 8.50	61.70 ± 10.38	<0.001
5	BMI	22.96 ± 3.72	21.72 ± 3.30	22.01 ± 3.50	<0.001
6	WC	75.16 ± 1.04	68.25 ± 0.93	70.81 ± 5.74	<0.001

Table no.1 shows that values of Caloric intake, Height, weight, BMI and WC are more in male as compare to female students and it is statistically significant also.

Table 2. Percentual distribution of types of BMI in male and female students

BMI	Percentual Distribution				P-value
	Male		Female		
< 18.5	11	(10.2%)	7	(16.8%)	< 0.05
18.5-24.9	82	(76.4%)	31	(72.5%)	0.17
≥ 25	14	(13.4%)	5	(10.7%)	0.13

 Table no. 2 shows that Sex of the student and BMI value are statistically significant for BMI less than 18.5 while in other type of BMI and sex of students was not significant

Table 3. Comparison of energy intake in male and female students as per BMI types

BMI	Energy Intake (Mean ± SD)		P-value
	Male	Female	
< 18.5	1681.2 ± 231.31	2280.1 ± 110.31	<0.01
18.5-24.9	2312.1 ± 431.42	1865.6 ± 316.45	<0.01
≥ 25	2320.1 ± 203.51	1904.3 ± 103.12	<0.01

Table no.3 Caloric intake in male students with BMI 18.5-24.9 and more than or equal to 25 is more and statistically significant as compare to female students while in female students with less than 18.5 BMI shows more caloric intake as compare to male.

Table 4. Number of Siblings to the medical students and BMI types

Number of Siblings	BMI categories			Total	P-value for association
	Underweight	Normal	Overweight		
0-1	1 (0.66%)	13 (8.66%)	3 (2.00%)	17(11.32%)	<0.001
2-3	13 (8.66%)	92(61.34%)	15(10.00%)	120(80.00%)	
≥ 4	7 (4.66%)	6 (4.01%)	0 (0.00%)	13 (8.67%)	

Table no.4 Shows students with more than or equal to 4 siblings are very less in number showing underweight BMI while students having 0-1 and 2-3 siblings remain in normal BMI type

Table 5: Comparison of Hemoglobin levels of male and female students

Hb	Male	Female	Total
< Normal	20 (18.75 %)	29 (66.67 %)	49 (32.66%)
Normal	87 (81.25%)	14 (33.33%)	101 (67.33%)
Total	107	43	150

Table no.5 Shows 66.67% female and 18.75% male students having Hb level less than normal while 81.25% male and 33.33% female students having Normal hemoglobin level

3. Discussion

The present study was done to access the student's nutritional status and the anthropometric measurements. The anthropometric result showed that the percentage of underweight students was 13.98%, normal 74.01% and overweight 12.00%. Male students were observed to be more inclined to become overweight and obese. When compared between male and female students, it was found that the percentage of less caloric intake was more in female students. Sex of the student and caloric intake shows statistical significance. The female students were more inclined to lose weight and acquire ideal weight, and this trend has been on the increase particularly in the past few years as a result of which some cases of malnutrition are observed.

Since females are afraid of gaining weight which consequently ruins their figures, leading to an undesirable status as compared to their peers, they make changes in their food intake which result in nutritional inadequacies. BMI and Number of siblings (family size), monthly income may lead to members of larger households are more prone to being underweight. Examining the consumed food indicated qualitative deficiencies as and quantitative compared with standard recommendations, so that students were affected by hidden hunger resulting from micronutrients deficiency. Due to the fact that students consume greater amounts of

energy as compared with other age groups since they have higher brain activity. we can encourage students to follow correct eating plans, as well as optimal use of local nutrients as dates, walnuts, raisins, and apricots.

When compared amongst male and female students, the percentage of less than normal Hemoglobin level was more in female students (66.67%) than male students (18.75%) and this difference was statistically significant.

4. Conclusion:

This Study was carried out on 150 MBBS students out of which 71% were male and 29% were female students. Less caloric intake was significant in female student as compare to male student. In term of anthropometric data BMI, height, WC appeared to be greater in male than female students. Socioeconomically students having one sibling and students with 2 to 3 siblings significantly coming in normal EMI category while students having more than 3 siblings are underweight. The percentage of lower hemoglobin was more in female than male students.

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