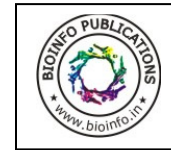


Nutritional assessment of medical students

Salve S.B., Dase R.K.*, Mahajan S.M., Adchitre S.A., Yadav V.B.

Department of Community Medicine, Mahatma Gandhi Mission's Medical College,
Aurangabad, MS, India, rdase25@gmail.com



Abstract- The objective of this study was to determine nutrient intake and food consumption patterns among medical students at Mahatma Gandhi Mission's Medical College Aurangabad, Maharashtra state, INDIA. This study was carried out in year 2009, a total of 270 first, second and third-year medical students (166 male, 104 female) aged 20 ± 2 year were the participants. Students completed a questionnaire on dietary intake and anthropometric measurements were performed. The findings were analyzed and statistical relationships were determined by using chi-square test. The recommended caloric intake was recorded only in 39.15% boys and 27.88 % girls. Daily intake of non-veg diet and cold drinks were more in boys compared to girls and difference is statistically significant ($p < 0.05$). The percentage of recommended caloric intake in exercise doing girls was more and which was statistically significant ($p < 0.05$).

Key Words - Nutrition, Caloric Intake, Body Mass Index

Introduction

Nutrition is the science of Food has been comprehensively defined by, Robinsons as "The science of Foods, Nutrients and other substances their in, their action, interaction and balance in relationship to health and disease the process by which the organism ingests, digest, absorb, transport, and utilizes nutrients and disposes of their end products"[1]. Good Nutritional is fundamental requirement for Health. Nutritional status is the internationally recognized as an indicator of National Development. Food if not taken in balanced form may lead to deficiency disorders like PEM, Scurvy, and Vit. A deficiency or over nutrition likes obesity, Diabetics, Heart diseases, etc. Besides fulfilling the biological requirement of energy, food caters to the important Psychological cue of satiety, so one eats not only to meet the nutritional requirements but also because one needs to be psychologically satiated each and every time he sits to dine. In recent years change in life style and busy schedule, food has changed from a necessity to a fashion statement. Fad for fast food is increased tremendously fast food are served quickly and conveniently at a relatively low cost and so are very popular specially amongst youngsters and this tendency has increased over the past decade, becoming an integral part of our fast packed life style [6]. Medical Student have knowledge and they know the importance of balanced diet as Syllabus on nutrition is taught from 1st MBBS so they have got better knowledge about nutrient compared to general population. Hence to know their dietary pattern and to motivate them to take it, the present study was carried out.

Aims - To know about the dietary intake pattern of Medical Students and to motivate them to take balanced diet.

Objectives

To know their caloric intake.

To know BMI.

To compare male and female nutritional status.

To know about exercise.

Material and Methodology

This present study was carried out amongst the MBBS student's studying in Mahatma Gandhi Missions Medical College, Aurangabad, and Maharashtra, India in April 2009. Information was collected directly from students in pretested and predesigned questioner. The survey was performed in the form of personal interview.

Dietetic study

Data on average daily food consumption was recorded in diet sheet; conversion factors of Indian food provided by Gopalan³ et al. were used to calculate caloric consumption. Observed intake of calories were compared with recommended daily allowance according to age and sex. As participant come under moderate type of category, the caloric requirement for boys are in the range of 2800-2900 and for girls 2200-2300 guidelines given by ICMR[5]. So participants were classified based on caloric intake as 1) less than recommended (for boys < 2800 and for girls < 2200) 2) Recommended (for boys 2800 -2900 and for girls 2200 -2300) and 3) More than recommended (for boys > 2900 and for girls > 2300).

Anthropometric measurements

Measurements were made in the class room. Weight and height were taken by following standards of World Health Organization [10]. Weight was determined by using weighing scale, Height was measured by using a stadiometer and Body Mass Index (BMI) was calculated using Height and Weight. Students were classified according to their BMI which is mentioned by Rajvir [6] et al. as less than Normal (underweight - < 18.5), Normal (Normal 18.5- 23) and above normal (pre-obese > 23) using the guidelines which have been revised lately for Asians considering the fact that the Asians (specially

South-East Asians including Indians) are more susceptible to metabolic system.

In this study 270 students were participated out of which 166(61.48%) were boys and 104 (38.52%) were girls. Out of 270 students, 120 (44.44%) take less than recommended calories, 94(34.81%) take recommended calories and 56(20.74%) take more than recommended. The percentage of less than recommended caloric intake in girls was 50(48.67%) more than the boys 70(42.17%). The recommended caloric intake was more in boys 65 (39.15%) compared to girls 29(27.88%) and the more than recommended caloric intake in girls 25(24.02%) was more compared to boys 31(18.68%). It was found that the percentage of normal caloric intake of boys was more than girls. Sex and caloric intake shows statistical significance ($p < 0.05$). Irena Collic [4] et al. has reported the percentage of low caloric intake was significantly lower in women than men ($p < 0.01$) due to women's ideas of slimness and Present study also shows similar findings. Table 3 shows that out of 270 students 165(61.11%) were non-vegetarian and 105 (38.79%) were vegetarian, out of these 166 boys, non-vegetarian were 101(60.84%) and 65(39.16%) were vegetarian. And in 104 girls, 50(65.53%) were non-vegetarian and 29(38.46%) were vegetarian. The percentage of non vegetarian boys and girls are nearly same and the association between sex and type of food was not statistically significant ($p > 0.05$). Table 4 shows that out of 165 non-vegetarian, 94(56.97%) were occasionally in taker and 71(43.03%) were daily in taker. Out of 101 boys, the daily intaker were more 65(64.45%) than occasionally intaker 36 (45.55%) where as among 64 girls, occasionally intaker 58(90.63%) were more than daily intaker 06(9.37%). The percentage of daily intaker was very in boys i.e. 65(64.45%) than girls 06 (9.37%). This difference is statistically significant ($p < 0.05$). Stefanikova [8] et al. found that men eat more non-veg ($p < 0.001$) than female. Similar findings were recorded by Collic baric et al [2]. and skeniene L. et al [6] was also found males used excessive amount of animal fats. Table 5 shows that, amongst boys the percentage of daily intake of Green leafy vegetables and fruits was more as compared to intake of salad, Spouted pulses, cold drinks and Sweets and Similar finding were recorded amongst girls. When compared amongst boys and girls the percentage of daily intake of Green leafy vegetables, fruits, Salad and Sweets was more as compared to boys but this difference was statistically not significant, while the percentage of daily intake of cold drinks was more in boys compared to girls. And the difference was statistically significant ($X^2 = 10.86$ $p = 0.001$). Stefanikova z [7] and et al was reported Women eat more fruits, Vegetables and

Observations and Discussion

Sweets than men. Skimiene L [3] and et al. was found that female students eat vegetables more frequently than men and Irena Collic [4] et al. was also reported similar findings. In table 6, in 171 Exercise doer students, 99 (57.89%) students were found to be taking caloric less than Recommended, only 57(33.33%) students were taking recommended calories and 15 (8.77%) were recorded as taking more than Recommended caloric. When compared amongst boys and girls, Interestingly it was found that, in Recommended caloric intaker the girls was more 31(54%) compared to boys 26(22.08%) and the percentage of less caloric intake was more in boys i.e. (75(65.79%) as compared to girls 99(57.89%). And this difference was statistically significant ($p < 0.05$). In table 7, Out of 270 students 143(52.92%) were having normal BMI, 82(30.37%) were having less than normal and 45(16.66%) were having more than normal BMI. In 166 boys most of the boys 87(52.41%) having normal BMI, 49(29.52%) were having less than normal BMI and 30(18.07%) were having more than normal BMI. In 104 Girls 56(54.85%) were having Normal, 33(31.73%) were having less than normal and only 15 (14.42%) were having more than Normal BMI. But Sex and BMI value are not statistically significant ($p = 0.726$). Study Carried out Irena Collic et al [4]. found that 82% adolescent were having normal BMI. Collic Baric et al [2]. has reported that 80.4% of the students were having Normal BMI and these are quiet high than the present study. It might be due to difference in life style and eating habits. In table 8, Out of 270 students 127(47.04 %) were having normal Hemoglobin, 121 (44.81 %) were having less than normal and 22(8.15%) were having more than normal Hemoglobin. In 166 boys most of the boys 82(49.40%) were having normal Hemoglobin, 72(43.37%) were having less than normal and 12(7.23%) were having more than normal Hemoglobin. In 104 Girls most of were having less than Normal i.e. 49 (47.16%), 45(43.27%) were having normal and only 10 (9.62%) were having more than Normal Hemoglobin. When compared amongst boys and girls the percentage of less than normal Hb was more in girls 49(47.16%) than boys 72(43.37%). but difference was statistically not significant ($p = 0.726$).

Summary and Conclusion

- 1) This Study was carried out on 270 MBBS students, amongst this 166 (61.48%) were boys and 104 (38.52%) were girls.
- 2) Less caloric intake was recorded in 120 (44.44%) students and this percentage was more in girls.
- 3) Percentage of non-vegetarian was near about 62 in boys as well as in girls but percentage of

daily non-veg intake was more (64.45%) in boys and only 9.37% in girls'. Difference was statistically significant.

4) Girls preferred Vegetables, fruits, sweets, where as boys preferred non-veg and cold drinks daily.

5) Amongst exercise doer recommended caloric intake was recorded in 54.58%, girls compared to 22% boys and Difference was statistically significant.

6) In term of anthropometric data lower BMI appeared to be greater in girls than boys.

7) The percentage of lower hemoglobin was more in girls than boys.

Recommendation

In teaching curriculum of community medicine more weightage should be given to topics of nutrition.

Students should give more attention towards their diet pattern, so as it will be according to recommended dietary pattern.

Boys should include vegetables, fruits, sprouted pulses etc. in their daily diet, so as to avoid vitamins and mineral deficiency.

Acknowledgement

We express our sincere thanks to the Management and Dean of Mahatma Gandhi Missions Medical College, Aurangabad (MS), India for permitting us to carry out this research work. We also express our sincere gratitude to the Staff of Dept. of Community Medicine for their

Support and MBBS Students for proving needed information.

References

- [1] Bamji M S Rao, Reddy N. P. (2003) *Text book of human nutrition , Second Edition, Oxford and IBH Publishing Co.pvt Ltd*
- [2] Colic baric I., Satalic Z., Lukesic Z. (2003) *International Journal of Food science nutrition*, 54(6), 473-84.
- [3] Gopalan C., Sastri B.V., Rama and Balasubramanian S.C. (1999) *National Institute of Nutrition, ICMR, Hyderabad.*
- [4] Irena Colic Baric, Romana Kaifez and Selma Cvijetic (2000) *Food Biotechnol* 38(3), 217-224.
- [5] *ICMR, Delhi* (1990).
- [6] Rajvir Bhalawar et al., (2009) *Text Book of Public health and community medicine, First edition.*
- [7] Skimiene L., Ustinaviciene R., Piesine L., Radisauskas R. (2007) *Nutrition Medicina (Kaunas)*, 43(2), 145-52.
- [8] Stefanikova z. , Sevecikova L., Jurkovicova J., Sobotova L., Aghova L. (2006) *Bratis leklisty* , 107(5), 217-220.
- [9] WHO (1975) *Technical Report series no. 580.*
- [10] WHO (1976) *Technical Report series 53, Geneva.*
- [11] WHO (1985) *Technical Report series no.724.*

Table 1- Class wise Distribution of Participants

Year	Boys	Girls	Total
I st	22	26	48
II nd	62	40	102
III rd	82	38	120
Total	166(61.48%)	104(38.52%)	270(100%)

Table 2- Caloric Intake of Participants

Caloric intake	Boys	Girls	Total
< Recommended	70(42.17%)	50(48.67%)	120(44.44%)
Recommended	65(39.15%)	29(27.88%)	94(34.81%)
>Recommended	31(18.68%)	25(24.02%)	56(20.74%)
Total	166(100%)	104(100%)	270(100%)

(x² = 16.82, p=0.000)

Table 3- Type of Food Intake

Type of Food	Boys	Girls	Total
Non-Veg	101(60.84%)	50(61.53%)	165(61.11%)
Veg	65(39.16%)	29(38.46%)	105(38.89%)
Total	166(100%)	104(100%)	270(100%)

(x²=0.013, p=0.909)

Table 4: Frequency of non – Vegetable intake

Non-veg	Boys	Girls	Total
Daily	65(64.45%)	06(9.37%)	71(43.03%)
occasionally	36(45.55%)	58(90.63%)	94(56.97%)
Total	101(100%)	64(100%)	165(100%)

(x²=48.31, p=0.000)

Table 5 -Frequency of intake of various vegetarian food stuffs

ITEM		Boys	Girls	Total	X ² -Value	P-value
GLV	Daily	84(50.60%)	59(56.73%)	143(52.96%)	0.73	0.39
	Occa.	82(49.40%)	45(43.27%)	127(47.04%)		
Fruits	Daily	68(40.96%)	54(51.92%)	122(45%)	2.67	0.11
	Occa	98(59.04%)	50(48.08%)	148(55%)		
Salad	Daily	72(43.73%)	46(44.23%)	118(44%)	0.02	0.82
	Occa	94(56.27%)	58(55.77%)	152(56%)		
Sprouted Pulses	Daily	60(37%)	37(35.57%)	97(35.92%)	0.01	0.92
	Occa	106(63%)	67(64.43%)	173(64.08%)		
Cold Drinks	Daily	74(44.57%)	31(29%)	105(38.88%)	10.86	0.001
	Occa	92(55.43%)	73(71%)	165(61.12%)		
Sweets	Daily	67(40.37%)	46(44.23%)	113(41.85%)	0.25	0.617
	Occa	99(59.67%)	58(55.73%)	157(58.15%)		

Table 6- Caloric Intaker in Exercise Doer

Caloric Intake	Boys	Girls	Total
< Recommended	75(65.79%)	24(42.10%)	99(57.89%)
Recommended	26(22.80%)	31(54%)	57(33.33%)
>Recommended	13(11.41%)	02(3.52%)	15(8.77%)
Total	114(100%)	57(100%)	171(100%)

(X² = 16.82, p=0.000)

Table 7- BMI of participants

BMI	Boys	Girls	Total
< Normal	49(29.52%)	33(31.73%)	82(30.37%)
Normal	87(52.41%)	56(54.85%)	143(52.92%)
>Normal	30(18.07%)	15(14.42%)	45(16.66%)
Total	166(100%)	104(100%)	270(100%)

($X^2 = 0.639$, $p=0.724$)

Table 8- Hemoglobin level of participants

Hb	Boys	Girls	Total
< Normal	72(43.37%)	49(47.16%)	121(44.81%)
Normal	82(49.40%)	45(43.27%)	127(47.04%)
>Normal	12(7.23%)	10(9.62%)	22(8.15%)
Total	166(100%)	104(100%)	270(100%)

($X^2 = 0.639$, $p=0.724$)