PREVALENCE OF ANAEMIA IN FIRST MBBS STUDENTS IN A RURAL MEDICAL COLLEGE

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ABSTRACT

Anaemia is one of the most commonly recognized disorders. Adolescence is a vulnerable period in the human life cycle for the development of anaemia. Anaemia is seen in both developing and developed countries and so also in rural and urban population, literate and illiterate people. Study was done to assess the level of anaemia among first (I) MBBS medical students and its relation to Body Mass Index (BMI). Anaemia prevalence was 29.0% among medical students. Out of these 6.9% were male and 93.1% were female. Out of 60 female students, 27(45%) were anaemic and out of them 7(25.9%) were underweight. No correlation was found in between body mass index and anaemia. Anaemia is also prevalent in literate medical students who are aware about health and disease and the cause of anaemia should be sought and treated in these upcoming doctors.

KEYWORDS

Anaemia, Medical Students, Haemoglobin Level, Body Mass Index.

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INTRODUCTION

Anaemia is a global public health problem that affects both developing and developed countries with major consequences for human health as well as social and economic development. More than half of the world's undernourished population lives in India.¹ and half of Indian children and women are malnourished.² Nutritional deficiencies leading to anaemia could have detrimental effect on health of future doctors and health care providers. Anaemia during adolescence severely impairs the physical and mental development; weakens behavioural and cognitive development; reduces physical fitness; decreases the work performance.^{3,4}

BMI is age and sex independent and a known epidemiological marker of nutritional status of adolescents. Hence, this study was taken to know the prevalence of anaemia and its correlation with nutritional status of the medical students.

MATERIALS AND METHODS

This cross-sectional study was conducted to estimate the prevalence of anaemia among the students of rural Medical College in Konkan area of Maharashtra after Ethical Committee approval. Haemoglobin levels of 100 newly admitted first MBBS students were measured on cell counter during month of September 2015. Anthropometric measurements of students like height and weight were noted. Complete blood count with peripheral smear examination was done.

Statistical analysis was done by using SPSS software for Windows (Version 16). Subjects were divided into anaemic and normal subjects according to haemoglobin value.

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Anaemia is established if the haemoglobin is below than cut-off points as recommended by WHO.⁵ Cut-off points for the diagnosis of anaemia in adult males 13.0 g/dL and adult non-pregnant females is 12.0 g/dL. BMI was graded based on WHO classification for Asian adults.⁶

The relationship between haemoglobin (Hb) concentration and BMI was examined by calculating the Pearson's correlation coefficient (r) and the significance of correlation (p).

RESULTS

There were 60 (60%) female and 40 (40%) male students admitted in rural medical college of Konkan region in Maharashtra. Anaemia prevalence was 29.0% among medical students. In our study, we observed that out of 100 students 29 were anaemic. Out of 29 anaemic students, 2 (6.89%) were male and 27 (93.1%) were female as seen in Fig. 1.

Anaemia was more prevalent in female students than male students as seen in Table No. 1. It shows out of 60 female students 27(45%) were anaemic, while out of 40 male students only 2 (5%) were anaemic.

Parameters	Males	Females
Anaemic	2(5%)	27(45%)
Non Anaemic	38(95%)	33(55%)
Total	40(100%)	60

Table 1: Sex-wise distribution of Anaemia

Majority of students had mild grade of anaemia (86.2%), which was seen in girls. Both anaemic boys had mild anaemia. None had severe anaemia.

Severity	Males (%)	Females (%)
Mild	2(6.9)	23(79.3%)
Moderate	-	4(13.8%)
Severe	-	-

Table 2: Severity of Anaemia among Medical Student

AS per WHO.⁷ the students are divided into Overweight (25-29.9 kg/m²), Normal (18.5-24.9 kg/m²), Underweight (<18.5 kg/m²). A BMI of over 30 kg/m² is considered obese. Fig. 2 shows distribution of anaemia and BMI in first MBBS students.

Table 3 shows cross tabulation of anaemia and BMI status in I MBBS female students.

Anaemia in Female	BMI Status in Female				Total
	Under weight	Normal	Over weight	Obese	
Present	7	15	4	1	27
Absent	3	22	8	0	33
Total	10	37	12	1	60

Table 3: Anaemia and BMI Correlation among Female I MBBS Students

Table 3 shows correlation between BMI and Anaemia among the female anaemic students, about half (55.6%) were found normal weight, 25.9% were underweight and 14.8% were overweight and 1 female (3.7%) was obese.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.705. ^a	3	.195
Likelihood Ratio	5.122	3	.163
Linear-by-Linear Association	1.210	1	.271
N of Valid Cases	60		

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .45

Here, Chi-Square statistics value is 4.705 and as p value (Asymp. Sig. (2-sided)) is 0.195, which is greater than 0.05 indicates that there is no correlation between nutritional status and anaemia in females of I MBBS Students). This is also proved by Spearman Correlation (0.169) and Pearson's Correlation (0.143) as indicated in below table.

Symmetric Measures					
		Value	Asymp. Std. Error. ^a	Approx. T. ^b	Approx. Sig. ^a
Nominal by Nominal	Contingency Coefficient	.270			.195
Interval by Interval	Pearson's R	.143	.133	1.102	.275. ^c
Ordinal by Ordinal	Spearman Correlation	.169	.129	1.309	.196. ^c
N of Valid Cases		60			
a. Not assuming the null hypothesis					
b. Using the asymptotic standard error assuming the null hypothesis					

Table 4 shows Correlation between BMI status and Anaemia in I MBBS male candidates.

Anaemia in Male	BMI Status in Male				Total
	Under weight	Normal	Over weight	Obese	
Present	1	1	0	0	2
Absent	7	21	6	4	38
Total	8	22	6	4	40

Table 4: Anaemia and BMI Correlation among I MBBS Male Candidates

Out of two anaemic male students, one had normal BMI, while the other was underweight.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-Sided)
Pearson Chi-Square	1.483. ^a	3	.686
Likelihood Ratio	1.717	3	.633
Linear-by-Linear Association	1.192	1	.275
N of Valid Cases	40		

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is .20

Symmetric Measures					
		Value	Asymp. Std. Error. ^a	Approx. T. ^b	Approx. Sig. ^a
Nominal by Nominal	Contingency Coefficient	.189			.686
Interval by Interval	Pearson's R	.175	.109	1.095	.281. ^c
Ordinal by Ordinal	Spearman Correlation	.186	.128	1.169	.250. ^c
N of Valid Cases		40			
a. Not assuming the null hypothesis					

Here, Chi-Square statistics value is 1.483 and as p value (Asymp. Sig. (2-sided)) is 0.686, which is greater than 0.05 indicates that there is no correlation between nutrition status and anaemia in males of I MBBS Students). This is also proved by Spearman Correlation (0.186) and Pearson's Correlation (0.186) as indicated in above table.

DISCUSSIONS

In this study 29% students were anaemic, of whom 93.1% were female. Thus, anaemia was found to be much more common among females than males. The prevalence of anaemia among underweight was 27.6% and in students with normal BMI were 55.2%. Overweight and obese anaemic students constitute 13.6% and 3.4% respectively.

The prevalence of anaemia among young adult medical students in study done in Lucknow was 59%, where 72% of the female students and 52% of the male students were detected to be anaemic.⁸

In study by Bano R.⁹ 32.0% students were anaemic with 44.0% girls and 20.0% boys.

The overall prevalence of anaemia was found to be 39% with preponderance among female students (56%) as compared to male students (22%) in study done among undergraduate medical students of Central India.¹⁰

In our study two male students were anaemic with Haemoglobin less than 13, but more than 12.0 g/dL. In study by Yogesh Saxena.¹¹ none of the boys had haemoglobin less than 13 g/dL.

In present study, total 12 female students were overweight and out of them 33.3% were anaemic, 10 female students were underweight and out of them 70.0% were anaemic. Out of 37 normal weight female students, 15 (40.5%) were anaemic.

In females no association was seen between BMI and Hb in our study contrast to study by Yogesh Saxena.¹¹ In their study, a negative association of BMI to Hb concentration was observed among girls who were overweight and obese. In our study, only one female student was obese and was anaemic having haemoglobin 11.2 gm/dL.

While Waseem SM and et al.¹² in their studies have reported significant correlation of BMI with Hb in males, but non-significant negative correlation between BMI and HB in females.

Pandey S and Pal A showed that anaemia decreases with increase in nutritional status.^(13,14)

In present study, prevalence of anaemia among female first MBBS students accounted 45% which is similar to our previous study done from the same geographical area. It showed 41% prevalence of anaemia in adolescent girls and 2/3rd of them were underweight.¹⁵ However, only 1/4th (25.9%) of anaemic MBBS female students were underweight.

CONCLUSION

Anaemia is prevalent even in medical students who are well educated and well oriented about the nutrition and its effect on health. No association was seen among the BMI and prevalence of anaemia. Hence some more parameters besides nutrition also should be sought like menstrual irregularities, underlying diseases to look for the cause of anaemia in these female upcoming doctors. Being suffered by anaemia, these upcoming health care providers may campaign against anaemia in their professional practice later in a better way.

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