

# Prevalence of anemia among medical students at medical college, Ambikapur, Chattisgarh

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## ABSTRACT

**Background:** Medical students represent the age group which is vulnerable to anemia. **Objectives:** The aims and objectives of this study are to measure the prevalence rate of anemia among the medical students, to find out any relationship between their socioeconomic status and eating habit with prevalence of anemia. **Materials and Methods:** A cross-sectional study was conducted during 1<sup>st</sup> February 2017-30<sup>th</sup> March 2017. A total of 80 students with age ranging from 17 to 25 years were studied. All the students were administered a performa. The severity of anemia was calculated as per guidelines provided by the WHO. **Result:** Out of 80 students participated in the study, 37 (46.25%) students were anemic; among these anemic students, 8 (10%) were males and 29 (36.25%) were females. 9 (11.25%), 20 (25%), 6 (07.50%), and 2 (02.50%) students were anemic in underweight, normal, overweight, and obese body mass index (BMI) groups anemic, respectively. 23 (28.75%) students taking vegetarian diet and 14 (17.50%) students taking mix diet were suffering from anemia. These results were statistically significant at  $P < 0.01$ . **Conclusion:** There is no difference in prevalence of anemia in different groups of BMI and socioeconomic status. Students taking vegetarian diet are more vulnerable to anemia than students taking mix diet.

**KEY WORDS:** Prevalence; Anemia; Medical Students


## INTRODUCTION

Medical students represent the age group which is vulnerable to anemia. In this age group, nutritional requirements increase to a great extent due to growth spurt. Furthermore, they are under stress due to tight schedules of lectures, demonstrations, practical, and clinical postings. They come from different socioeconomic strata and also varying dietary preferences.

One billion people have iron deficiency anemia worldwide.<sup>[1]</sup> Anemia is a major health problem in India. The National

Family Health Survey-3 conducted in 2005-2006; the prevalence of anemia was 55% in females and 24% in males aged 15-49 years.<sup>[2]</sup> Adolescent girls are at high risk of developing iron deficiency because of increased iron demands during puberty, menstrual losses, and limited dietary iron intake.<sup>[3]</sup> Iron deficiency, even in the absence of anemia, is known to limit physical and mental functions and may impair intellectual performance in adolescents and college students.<sup>[4]</sup>

Objective of this study was to describe the prevalence of anemia among first year medical students at Government Medical College, Ambikapur, Chhattisgarh, to measure the prevalence rate of anemia; to measure the severity of anemia; to compare the nutritional status body mass index (BMI) with the prevalence of anemia; and to find out any relationship between their socioeconomic status and eating habit with prevalence of anemia among these first year medical students.

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## MATERIAL AND METHODS

A cross-sectional study was conducted during 1<sup>st</sup> February 2017-30<sup>th</sup> March 2017 among first year MBBS students between the ages of 17 and 25 years at Government Medical College, Ambikapur, Chhattisgarh. A total of 80 students with age ranging from 17 to 25 years out of 100 students enrolled in the batch were studied. All the students were administered a performa, which include general information, dietary habit, and data for BMI, and a Sahli Hemoglobinometer for hemoglobin estimation. The general information including bio-data, parents' education, occupation, and income collected to estimate socioeconomic status using Kuppuswamy scale.<sup>[5]</sup> The students were directed for the measurement of height and weight to evaluate their nutritional status with the help of BMI according to cutoff directed by the WHO.<sup>[6]</sup> Then, blood sample was taken from them with sterile needle and blood hemoglobin level is estimated with the help of Sahli Hemoglobinometer method. Severity of anemia was calculated as per guidelines provided by the WHO.<sup>[7]</sup> The data were recorded in the performa. Data were analyzed and results were tabulated.

## RESULTS

Data were analyzed and results were tabulated. Out of 80 students participated in the study, 37 (46.25%) students were anemic, among these anemic students, 8 (10%) were males and 29 (36.25%) were females, and out of 37 anemic students, 7 (18.91%) males and 19 (51.35%) females were mildly anemic; 1 (02.79%) male and 10 (20.02%) females were moderately anemic; and no student was suffering from severe anemia (Tables 1 and 2).

9 (11.25%), 20 (25%), 6 (07.50%), and 2 (02.50%) students were anemic in underweight, normal, overweight, and obese BMI groups, respectively. The results were not statistically significant at  $P < 0.01$ . In underweight anemic students, mean hemoglobin percentage is 10.067 with standard deviation 0.966. Anemic students with normal BMI have mean hemoglobin percentage of 10.835 with standard deviation 1.33. In overweight anemic group, mean hemoglobin percentage is 10.667 with standard deviation 1.06 (Tables 3 and 4).

33 (41.25%) students from middle and 4 (5%) students from upper socioeconomic status were anemic. The result was not statistically significant. The Chi-square statistic is 2.938. This result is not statistically significant at  $P < 0.01$  (Table 5).

23 (28.75%) students taking vegetarian diet and 14 (17.50%) students taking mix diet were suffering from anemia. The Chi-square statistic is 12.4219. These results were statistically significant at  $P < 0.01$  (Table 6).

**Table 1:** Gender-wise distribution of anemia

Anemia	Male (%)	Female (%)	Total (%)
Present	08 (10)	29 (36.25)	37 (46.25)
Absent	30 (37.5)	13 (16.25)	43 (53.75)
Total	38 (47.5)	42 (52.50)	80 (100)

**Table 2:** Severity of anemia among medical students

Severity of anemia	Male (%)	Female (%)	Total (%)
Mild	07 (18.91)	19 (51.35)	26 (70.27)
Moderate	01 (02.70)	10 (20.02)	11 (40.74)
Severe	00 (00.00)	00 (00.00)	00 (00.00)
Total	08 (21.62)	29 (78.38)	37 (100)

**Table 3:** BMI of medical students

BMI	Male (%)	Female (%)	Total (%)
Underweight	12 (15.00)	09 (11.25)	21 (26.25)
Normal	18 (22.50)	25 (31.25)	43 (53.75)
Overweight	08 (10.00)	06 (07.50)	14 (17.50)
Obese	00 (00.00)	02 (02.50)	02 (02.50)
Total	38 (47.50)	42 (052.5)	80 (100)

BMI: Body mass index

## DISCUSSION

In the present study, 36.25% of females were anemic and 10% of males were anemic. The similar trend was observed in a study carried out by Chaudhary and Dhage,<sup>[8]</sup> at an area under Urban Health Training Center of a medical college, Nagpur, they found prevalence of anemia to be 35.1% among a total of 296 adolescent females (10-19 years old).

In this study, out of these 37 anemic students, 18.91% of males and 64.86% of females were mildly anemic, 2.70% of males and 13.51% of females were moderately anemic, and no one was severely anemic. Our findings differ from the study done by Bulliyy et al.<sup>[9]</sup> who found 96.5% prevalence among non-school going adolescent girls in three districts of Orissa, of which, 45.2%, 46.9%, and 4.4% had mild, moderate, and severe anemia. Medical students are expected to be from well to do families and non-school going adolescent females from poverty hit families and may have dietary difference as cause for higher prevalence of anemia in among these adolescent girls.

In our study, we found that there is no significant difference in the prevalence of anemia in different BMI groups ( $P = 0.3$ ). Similar results were found in a study done by Ugwuja et al.<sup>[10]</sup> ( $P = 0.985$ ). While earlier studies have shown the occurrence of anemia, in both undernourished and overnourished individuals.<sup>[11,12]</sup> In contrast to our study, some studies have associated anemia with low BMI.<sup>[13,14]</sup>

Our study shows a statistically insignificant association of anemia and socioeconomic status though the amount of data

**Table 4:** Prevalence of anemia among medical students belonging different nutritional level

Anemia	Underweight (%)	Normal (%)	Overweight (%)	Obese (%)	Total (%)
Present	09 (11.25)	20 (25.00)	06 (07.50)	02 (02.50)	37 (46.25)
Absent	12 (15.00)	23 (28.75)	08 (10.00)	00 (00.00)	43 (53.75)
Total	21 (26.25)	43 (53.75)	14 (17.50)	02 (02.50)	80 (100)

**Table 5:** Prevalence of anemia in relation with socioeconomic status among medical students

Anemia	Lower (%)	Middle (%)	Upper (%)	Total (%)
Present	00 (00.00)	33 (41.25)	04 (05.00)	37 (46.25)
Absent	03 (03.75)	37 (46.50)	03 (03.75)	43 (53.75)
Total	03 (03.75)	70 (87.50)	07 (08.75)	80 (100)

**Table 6:** Type of diet and anemia

Anemia	Veg diet (%)	Mix diet (%)	Total (%)
Present	23 (28.75)	14 (17.50)	37 (46.25)
Absent	10 (12.50)	33 (41.25)	43 (53.75)
Total	24 (30.00)	56 (70.00)	80 (100)

to arrive at this conclusion is less. Similar results are found in a study done by Ugwuja et al., it shows that educational status and occupation had no effect on anemia prevalence.<sup>[10]</sup>

In our study, we found that anemia is more common in students on vegetarian diet than on mix diet. similar result was found in a study done by Chaturvedi et al.<sup>[15]</sup>

Our study effectively shows the effect of diet on prevalence of anemia. It also delinks socioeconomic status and nutritional status BMI of the individual from prevalence of anemia. Our study is not conducted on a large study group, to make it statistically more reliable it should be conducted among sufficiently large study groups.

## CONCLUSION

In our study, we have found that anemia is more common in female medical students as compared to male students. Students with mixed dietary habits are having less prevalence of anemia as compared with vegetarian students. There is no difference in prevalence of anemia in different groups of BMI and socioeconomic status.

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