



## Cross Sectional Study to Evaluate the Awareness and Knowledge about Anaemia and Its Complications among Undergraduate Medical Students

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### ABSTRACT

**Background:** Anaemia is a condition in which oxygen carrying capacity of blood is reduced to meet the various physiological demands. Medical students are at high risk of anaemia due to long duration of study, stress and strain of vast curriculum, inappropriate and inadequate diet. So they are the most vulnerable group for development of nutritional anaemia.

**Objective:** This study is aimed to evaluate the knowledge and awareness about anaemia and its complications among undergraduate medical students.

**Methodology:** A cross sectional questionnaire based study was conducted for 2 months among undergraduate medical students of all professional years of medical colleges in Vidarbha region. A total of 300 students were included in the study. A questionnaire was designed to assess their awareness and basic knowledge regarding the signs and symptoms, investigations, diagnostic and treatment modalities of anaemia.

**Results:** Majority of students (99.3%) were aware about what is anaemia and had the basic knowledge regarding it. Vast majority of the participants were aware about the various complications associated with long standing anaemia affecting their cognitive functions, physical capacity, work performance and immunity.

**Conclusion:** Mild anaemia is highly prevalent among medical students regardless of gender. Presence of anaemia has shown to significantly affect their academic performance, personal as well as professional life. Awareness and knowledge about anaemia is very important in medical students to prevent further complications.

**Key Words:** Anaemia, awareness, medical students, questionnaire



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### INTRODUCTION

Anaemia is a global public health problem affecting developed as well as developing countries with serious consequences upon human health, social and economic development. Anaemia which is the most prevalent problem worldwide, occurs mostly in young children, students, pregnant women and women of child bearing age because of nutritional deficiencies [1].

Anaemia is characterized by a reduction in the total Red Blood cell count or a reduction in hemoglobin concentration when compared with normal for that particular age group and sex. Most of the symptoms of anaemia are due to decreased oxygen carrying capacity of blood leading to decreased oxygen supply to cells and tissues [2].

Nutritional anaemia is most common type of anaemia in developing countries [3]. Several factors contribute in the development of anaemia including deficiency of Iron, folate, riboflavin, Vitamin B12 along with frequent acute and chronic infections like Malaria, Tuberculosis, worm infestations and inherited disorders of hemoglobin synthesis (Haemoglobinopathies) [3]. During the period of most rapid growth i.e. adolescence, with inadequate and improper dietary habits, one is vulnerable to all kinds of nutritional morbidities [4]. Mild to moderate nutritional deficiency has adverse functional consequences upon health of an individual resulting in altered behaviour, impaired cognitive functions and work performance [5]. Immunity is significantly affected by anaemia resulting in repeated infections and loss of quality time. The medical students also come under vulnerable age group that suffer anaemia because of having busy schedule in college, hectic clinical postings and other curricular activities, stress and strain of vast curriculum, frequent exams which results in increased stress leading to irregular eating habits and inadequate nutrition [6]. Students staying in the hostel are more prone to have improper food habits and inadequate nutrition resulting in major health consequences

[7]. Thus, the etiological factors responsible for causation of anaemia are young age, female sex, dietary deficiencies, stress, helminthic infections [8]. Screening is very important for early detection of anaemia so as to identify the population at risk as well as to determine the treatment pattern in different individuals. This may help to avoid further complications [9]. Considering all the situations and factors involved, present study is undertaken to evaluate the knowledge and awareness about anaemia and its complications among undergraduate medical students.

### Objective

To evaluate the knowledge and awareness about anaemia and its complications among undergraduate medical students

### Methodology

The research was carried out online using google forms. The data collected was analyzed using excel applications.

### Study Design

Cross sectional questionnaire based research design. According to diagnostic criteria, questions were asked to the subject via google forms. The questions were based on knowledge of anaemia, its etiology, treatment and ways of prevention. The questionnaire contained additional information like age, gender, height, weight etc. Anonymity was maintained as neither name nor email id was asked.

### Study population

Students of all professional years studying in medical colleges in Vidarbha region were included.

### Type of study

A cross sectional study was conducted among medical students of all professional years after obtaining permission from institutional ethics committee.

### Inclusion criteria

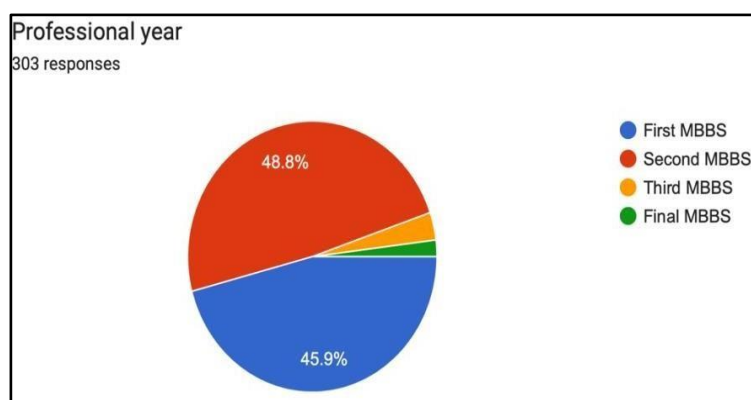
Medical students of all professional years willing to participate

### Exclusion criteria -nil

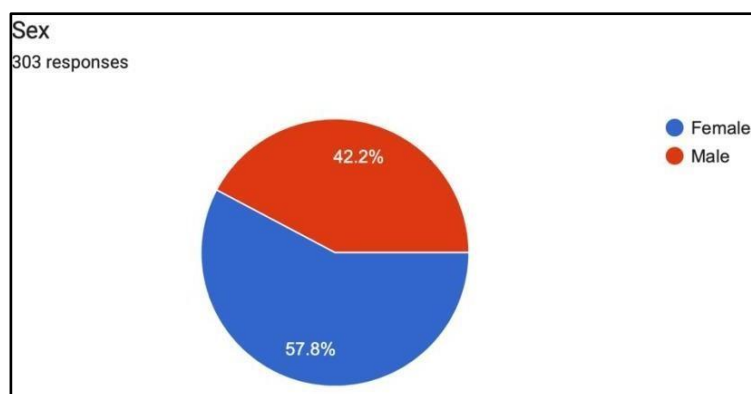
The volunteers were requested to fill the questionnaire on google forms containing knowledge of anaemia, its complications, treatment and prevention

### Observations

303 medical students of all professional years from medical colleges in Vidarbha region had participated in the study. 45.9 % students were of first professional year and 48.8% from second professional year. Remaining percentage belonged to third and fourth professional years.



Out of all students, 57.8% were females and 42.2% were males.



Most of the students (61.4%) were residing in hostel and 38.6% were dayscholars

### Personal Awareness

Majority of students (99.3%) were aware about anaemia. (Table 1)

**Table 1: Awareness of Symptoms due to Anaemia**

S.N.	Symptoms	% of students experiencing
1	Frequent headaches	25.1%
2	Breathlessness on routine activities	12.2%
3	Fatigue after short duration exercise	23.5%
4	Fatigue after long duration exercise	24.9%
5	Dizziness	31%

But few of the students were not aware that breathlessness could be due to anaemia. Sudden dizziness, which is mostly because of anaemia in student life, was experienced by 31% of students.

Only 39.7% students exercised regularly. Whereas 60.3% students exercised occasionally.

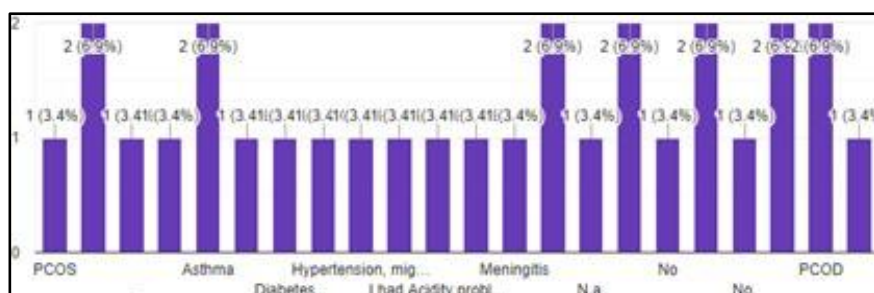
23.5% of students got tired after short period of exercise. 24.9% of students sometimes experienced tiredness after exercise.

Only 51% students followed three time meal pattern. Out of all the students who did not follow a three time meal pattern, approximately 55.3% of students had a habit of skipping breakfast. (Table 2)

**Table 2: Dietary habits related to development of anaemia**

S.N.	Habits	Percentage of students
1	Not following three meal pattern	49%
2	Skipping breakfast once a week	15.3%
3	Skipping breakfast twice a week	24.9%
4	Skipping breakfast thrice a week	22%
5	Skipping breakfast more than three times in a week	37.9%
6	Not eating fresh fruits and vegetables	28.7%

Some students gave history of chronic illnesses like PCOD, Asthma, diabetes, acid reflux, autoimmune thyroiditis, GIT ulcers, hypertension, hypothyroidism, depression, migraine, IBS (irritable bowel syndrome) etc.



In this study, menstrual history was obtained from female medical students and the results were as follows:

In 11.8% of students the age of menarche was less than 12 years. In 12.2% of the students, menstrual cycles were not regular.

Approximately 19% of the students reported that the length of their menstrual cycle was more than 32 days (average being 28-32 days).

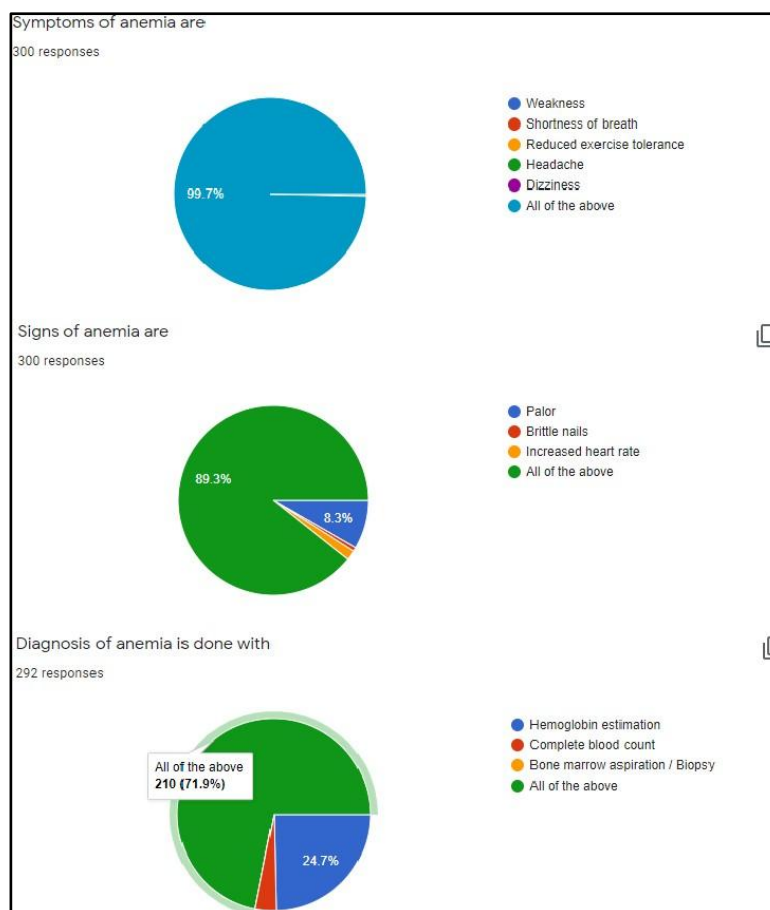
Results suggested that about 15% of the female students had heavy menstrual blood flow. 30.6% reported presence of clots in menstrual blood.

To test the knowledge and general awareness about anaemia, questions were asked about types of anaemia, normal haemoglobin level in blood, role of haemoglobin, causes of anaemia, symptoms and signs and diagnosis of anaemia etc. Results were as follows: (Table 3)

**Table 3: Awareness of students about knowledge of anaemia**

S.N.	Knowledge of anaemia	Percentage of students
1	What is anaemia	99.7%
2	What is normal Hb level	95.35
3	What is the role of Haemoglobin	99%
4	What are the types of anaemia	95.7%
5	Which type of anaemia is commonly seen in medical students	89%

99.7% of participants were aware of symptoms of anaemia like weakness, shortness of breath, headache, dizziness, reduced exercise tolerance and signs of anaemia like pallor, brittle nails, increased heart rate etc.



## DISCUSSION

According to WHO, Anaemia is a condition in which the number of red blood cells or the haemoglobin concentration within them is lower than normal for that particular age group and sex. i.e. Hb levels < 12g/dl in women Hb levels < 13g/dl in men

### Based on severity of anaemia, it is classified into

Sr NO.	Type of anaemia	Hb levels
1	Mild anaemia	9-11.9 g/dl
2	Moderate anaemia	6-8.9 g/dl
3	Severe anaemia	< 6 g/dl

According to WHO, over 30% of world's population is anaemic, thus creating importance of anaemia as a public health issue. Anaemia, a public health concern, is most common condition caused by malnutrition as one of the etiological factors. Few studies have shown an increased prevalence of anaemia among medical students due to nutritionally inadequate diet. The present study was undertaken to assess the knowledge and awareness about anaemia and its complications [2, 3].

The present study revealed that 99.3% students were aware about anaemia and had good basic knowledge about it.

Anaemia usually manifest in the form of various symptom like frequent headache, breathlessness, sudden dizziness, difficulty in concentrating on studies. 25.3% students have experienced frequent headaches. 12.7% students have experienced breathlessness during routine activities. Sudden dizziness was experienced by 31.3% students. 23.5% students had less exercise tolerance. All these manifestations could be due to less oxygen supply to various cells and tissues of the body due to reduced haemoglobin and less oxygen carrying capacity [5].

As nutritional deficiency is one of the most important factor for development of anaemia, awareness about regular consumption of balanced diet is very important [6].

Only 51% students are following three meal pattern. 55.3% of students in our study usually skip breakfast either

because of early morning lectures/clinics, unavailability of food in hostels etc. 28.7 % students do not have habit of eating fresh fruits and vegetables. It predisposes them to nutritional deficiencies and makes them susceptible to anaemia. Some students are suffering from various chronic illnesses like PCOD, GIT ulcers, hypothyroidism, inflammatory bowel disease etc. which may increase nutritional demand and may impair intestinal absorption of nutrients causing nutritional deficiency anaemia [8, 9].

Chronic blood loss is one of the causative factors of anaemia. Early onset of menstruation, prolonged menstrual period along with heavy menstrual blood flow are some of the factors contributing to chronic blood loss in females which can lead to development of anaemia [1, 4 & 10]

89.3% of students were aware about signs of anaemia like pallor, brittle nails and increased heart rate. So if they find such signs they can go for diagnostic modalities of anaemia and seek early treatment.

The students were also aware about various complications produced by long standing anaemia, involving CVS, CNS, and psychomotor system, if not treated early. Manifestations of psychomotor system involvement like anxiety, depression, irritability, lack of concentration are seen in students due to anaemia, for which they have to take psychiatric treatment [2, 3].

Many students are of the opinion that knowledge about anaemia, its manifestations, causes, complications and treatment will help them in providing better patient care in future.

94% students are of the opinion that anaemia is a health problem which could affect their studies, academic performance and ultimately professional life. In spite of all the above facts, only 74% students were aware about their haemoglobin levels and knowledge of diagnostic tests for anaemia, thus increasing necessity for awareness of anaemia.

90.7% students have awareness about early diagnosis and treatment of anaemia. They are aware that mild anaemia can be prevented and treated by simple measures like vit B12, folic acid, iron supplementation and blood transfusion in acute blood loss.

Thus early detection and simple treatment can prevent many complications and decrease financial burden due to costly treatment. So majority of the students are in favour of frequent health check-ups so as to reduce the problem.

## CONCLUSION

Mild anaemia is highly prevalent among medical students regardless of gender. Though the students are not severely affected, it is a subject of concern since the cause might be a negligence of food habits or the food facilities available at hostel. This study revealed that nutritional anaemia is a major problem in medical students due to irregular food habits, long working hours, stress of professional education etc.

Anaemia causes cognitive impairment, lack of concentration thereby decreasing the performance. It is the need of an hour to impart knowledge about anaemia to medical students for the prevention and early detection of anaemia so as to avoid further complications, as well as for better patient care in professional career. Frequent screening of students and regular health check-ups for the presence of common disorders like anaemia is mandatory. This will help the students for betterment of self as well as society.

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