



Prevalence of anemia among the first year MBBS students

KEYWORDS

Anemia, Prevalence, MBBS student

Dr. R S Sood

Dr. A. Sood

Assistant Professor, Department of Physiology, Padmashree Dr. DY Patil Medical College, Hospital & Research Center, Pimpri, Pune 411018.

Private Practitioner. Flat 6, Mazda Nest, C-21, Kasturba Housing Society, Vishrantwadi, Pune 411 015

ABSTRACT This study was designed to examine the prevalence of anemia among the first MBBS students. Haemoglobin (Hb) level was determined for 150 students by cyanmethemoglobin method. Prevalence of anemia was detected to have been quite high at 57%. Self-awareness of the condition among those anemic was dismally low at 9%. Possible causes of anemia were investigated and are discussed. Need to institute preventive measures as well as to screen the medical students for anemia periodically has been emphasized. The facts in discussion underline the need to provide suitable infrastructure like hostel and mess in the same campus as the study place. Implementing suitable lifestyle changes, periodic screening of the students of all fields of study, living in hostels and instituting suitable remedial measures may hold the key to anemia prevention.

1. Introduction:

Anemia is defined as a state in which hemoglobin (Hb) is below the normal range for the patient's age and sex [1]. It is amongst the most common disorders affecting mankind [1]. 30% of the world's population may be affected at some time [1]. This state of decreased oxygen carrying capacity of blood can occur due to a variety of reasons including insufficient production of red blood cells (dyshaemopoietic anemia), blood loss (haemorrhagic anemia) or haemolysis (haemolytic anemia) [2].

Some of the common symptoms of anemia are lassitude, fatigue, loss of stamina, dizziness, tinnitus, headache, dimness of vision, insomnia, general ill health and frequent infections among other symptoms [1, 3]. Megaloblastic anemia is associated with poor memory [1]. Gradual onset of anemia, particularly in young patients may not be associated with signs and symptoms until anemia is severe [3]. Anemia may only be detected once the person becomes symptomatic. It is most often recognized by abnormal screening laboratory tests [3].

In view of their general nature, some of these symptoms may affect the students' performance. Furthermore, frequent infections may lead to academic losses.

2. Material and methods:

2.1. Study design:

This study was designed as a cross sectional, descriptive study providing a snapshot of the prevalence of anemia in the study population.

2.2. Study population:

One hundred fifty first year M.B.B.S students of a medical college in Western Maharashtra, comprising 59% (n = 89) male participants and 41% (n = 61) female participants (Figure 1) were recruited after approval of the institutional ethics committee. The mean (SD) age of the participants was 18.82 (1.34) years. Age was recorded as number of completed years as on the nearer birthday. The sex distribution was 59% (89/150) males and 41% (61/150) females.

Fifty four percent (n = 81) participants were vegetarian and forty six percent (n = 69) were non-vegetarian. Informed consent was taken from all the participants.

2.3. Estimation of Hemoglobin level:

Hb level was estimated by cyanmethemoglobin method [4].

Capillary blood was collected by the finger prick method, using 22 G disposable needles and Sahli's 20 micro-liter pipette. All samples were collected after lunch after having ensured that the participants do not have any possibility of haemo-concentration (enteritis, gastritis, fever or excess sweating for any reason) or haemo-dilution (blood donation, water intoxication, or edema). Drabkin's reagent batch number 1749ST and Hb standard solution batch number 1579T, both manufactured by Biolab diagnostics (India) Pvt. Ltd. were used. Absorbance was determined on colorimeter Kanad Vidyut model H 0392.

2.4. Data collection:

Personal particulars and risk factors for anemia were asked for, vide a questionnaire. The values of the Hb level were recorded on a numerical continuous scale and subsequently collapsed into categorical dichotomous scale, based on the presence or absence of anemia. Anemia was diagnosed at Hb level lower than 13 g/dl for males and lower than 12 g/dl for females [2, 5, 6].

The following variables were tabulated from the questionnaire on a categorical dichotomous scale:

- Participants' vegetarian / non-vegetarian status. (Meat and/or egg eaters were classified as non-vegetarians)
- Anemic participants' awareness about them suffering from anemia.

Finally, detailed interviews were conducted with some of the anemic participants to get insight into their recent lifestyle.

2.5. Data Analysis:

- Prevalence of anemia was calculated separately, as a proportion for all the participants taken together, the male participants and the female participants.
- Self-awareness, among those anemic, of having anemia was calculated as a proportion for the anemic participants.
- Prevalence of anemia among the vegetarian and the non-vegetarian participants was calculated separately as a proportion for the two groups.

3. Results:

Overall, 57% (n = 85) students were detected to be anemic (Table 1).

Sixty seven percent of the female students & 49% of the male

students were detected to be anemic (Table 1).

We also observed there was hardly any difference in the prevalence amongst vegetarians or non-vegetarians which were 58 % and 55 % respectively (Table 1).

Only 9 % of the 85 anemic participants, all of them females, were aware of having anemia (Table 2).

	Anemic % (n)	Non Anemic % (n)	Total (n)
All participants	57 (85)	43 (65)	150
Female	67 (41)	33 (20)	61
Male	49 (44)	51 (45)	89
Vegetarian	58 (47)	42 (34)	81
Non vegetarian	55 (38)	45 (31)	69

Table 1: Prevalence of anemia amongst various classes of participants.

	Aware % (n)	Not aware % (n)	Total (n)
All anemic participants	9 (8)	91 (77)	85
Female anemic participants	9 (8)	91 (33)	41
Male anemic participants	0 (0)	100 (44)	44

Table 2: Awareness of anemia amongst anemic participants.

4. Discussion:

We report an overall prevalence of anemia at 57% in the study participants. As there is no published literature available for prevalence of anemia among MBBS students, it can only be compared to that reported for the adult population of India. The last National Family Health Survey, India, NFHS-3, reported prevalence in India for the 15-49 years age group at 56% for females and 24% for males [7]. Furthermore, for those with education level of 10 years or more, it also reported lesser prevalence rates of 47% for the females and 17% for the males [7]. We report a much higher prevalence of 67% among the females and 49% among the males which is 1.43 and 2.88 times that reported by NFHS-3 for the educated females and males respectively.

The results could possibly be partially explained as follows. The participants were first year MBBS students who were selected for the course at all India level. As a result, most of them were away from their families. This stress combined with that of having to cope with the professional course study pressure, could have caused them to neglect their diet. The participants had already been in this new environment for about six months when the study was undertaken. The stress factor could even have started much earlier when they were preparing for their twelfth standard examination and the subsequent competitive examinations.

Being in an alien place, non-availability of the preferred food could have made them lose interest in eating. Easy avail-

ability of junk food could have added to the problem. Lack of parental supervision of their eating habits could also be expected to have contributed. Many students depended on the canteen or tiffin provider ('dabba-wala') for their meals. None of these systems provided fresh fruit as part of the meals. Salad was provided only by the mess. Most of the students took a snack instead of a proper breakfast.

The prevalence of anemia in the females is known to be higher due to menstrual losses. Media exposure to messages about weight loss affects eating behaviour and might lead to many a female young adults indulging in undue dieting [8, 9]. Published literature supports a need to research over weight related social pressure [9]. Frequent reading of magazine articles about dieting/weight loss is strongly associated with unhealthy weight-control behaviors in girls (but not boys). A need has been lately felt for interventions aimed at reducing exposure to, and the importance placed on, media messages regarding dieting and weight loss [8]. In the case of the females, these factors are in addition to all the factors mentioned above which are common for the sexes. It would be inappropriate to blame the lack of erythropoietic stimulatory effect of testosterone for anemia in females. This physiological variation only removes the extra stimulation of erythropoiesis, which is available only to the males and is probably offset by the lower cut off Hb level for the diagnosis of anemia in case of the females. Pregnancy and lactation are two more factors adding to loss of iron from the mother. However these factors were not applicable as far as this study group was concerned.

The 49% prevalence of anemic for the males reported by this study is very high at 2.88 times that for the educated males reported by the NFHS-3. In the case of the females, it was only 1.43 times instead. This could, at least partially, be explained by the detection of one adverse factor applicable only to the male participants. The hostel for the males was located 2.5 Km away from the campus and the mess was on the campus. As a result the male participants were obliged to travel that distance for the sake of dinner, which they might not have been inclined to do. As a result they were either depending on the tiffin provider (who did not provide fresh fruit) or forgoing their dinner or taking a snack instead. In the case of the female participants, the hostel and the mess were located in the same building on the campus.

Awareness among the anaemic in the study participants, about the presence of anemia in them, is very low at nil, among the male participants and at nine percent, among the female participants. As far as the overall low awareness is concerned, it is known that a gradual onset of anemia, particularly in young patients may not be associated with signs and symptoms until anemia is severe [3]. Anemia may only be detected once the person becomes symptomatic. It is most often recognized by abnormal screening laboratory tests [3].

5. Conclusion:

The facts in discussion underline the need to provide hostel and mess in the same campus as the study place, implement lifestyle changes and periodic screening of the medical students for anemia. The problem may be prevalent even in hostels catering to other fields of study and must be looked into and remedial measures be instituted.

REFERENCES

1. Craig JIO, McClelland DBL, Watson HG. Blood diseases (2010) In: Haslett C, Chilvers ER, Boon NA, Colledge NR, Hunter JAA. Editors. Davidson's principles and practice of medicine. 19th ed, Edinburgh, Churchill Livingstone, 985-1043. | 2. Antia FP, Abraham P. Editors (1997). Clinical dietetics and nutrition. 4th ed. Oxford, Oxford university press, 328. | 3. Adamson JW, Longo DL. Anemia and polycythemia. In Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson JL (2005) Editors. Harrison's principles of internal medicine. 16th ed. New York (NY), McGraw-Hill, 330. | 4. Rusia U, Sood SK. Routine haematological tests (1998). In: Mukherjee KL. Editors. Medical laboratory technology, New Delhi, Tata McGraw-Hill publishing company Limited, 228-236. | 5. Park K. Park's textbook of preventive and social medicine (2007). 19th ed. Jabalpur: M/s Banarsidas Bhanot, 493. | 6. WHO (1968). Techn. Rep. Ser. No. 405. | 7. National Family Health Survey, India. NFHS-3 Publications - Reports. [Last accessed on 2012 July 11]. Available from: <http://www.rchiiips.org/NFHS/report.shtml>. | 8. Van den Berg P, Neumark-Sztainer D, Hannan PJ, Haines J (2007). Is dieting advice from magazines helpful or harmful? Five-year associations with weight-control behaviors and psychological outcomes in adolescents. Pediatrics, 119(1), e30-37. | 9. Neumark-Sztainer DR, Wall MM, Haines JI, Story MT, Sherwood NE, Van den Berg PA (2007). Shared risk and protective factors for overweight and disordered eating in adolescents. American Journal of Preventive Medicine, 33(5), 359-369. |