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 (dyserythropoietic 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 = 85) students were detected to be anemic. 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.

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 Sahlis' 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 categoric dichotomous scale:

2.5. Data Analysis:

a) Participants’ vegetarian / non-vegetarian status. (Meat and/or egg eaters were classified as non-vegetarians)
b) 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.

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)          | 99        |
| Vegetarian             | 58 (47)     | 42 (34)          | 81        |
| Non vegetarian         | 55 (38)     | 45 (31)          | 69        |

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

Aware

|                        | 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:
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 sub-sequent competitive examinations.

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. The 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 anemia 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 males were often restricted 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.

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