Original Research Article

Assessment of hemoglobin, RBC Count, MCH & colour index status in 1st year medical students

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Abstract: Aim of the study is to assess the hemoglobin, RBC count, MCH and Colour index status of 1st year medical students. 60 medical students of 1st year in VMKVMC in Salem were asked to measure their own Hemoglobin and RBC count in the Hematology practical lab. Hemoglobin was done by Sahli's method. RBC count was done by counting the cells in a Neubauer's counting chamber under the 45x (high power) objective of microscope. The colour index and MCH were calculated from the HB and RBC. The result shows decreased hemoglobin, RBC and colour index in girls when compared to boys. Iron-deficiency anemia is the most common form of malnutrition, early intervention during adolescence girls can prevent high morbidity and mortality of these future mothers. This study is only a simple tool to asses' nutrional status among our students and to make aware of their well being.
Keywords: Anemia, hemoglobin, Mean corpuscular hemoglobin, Colour index

INTRODUCTION:

Prosperity of a nation is reflected in the strength of its human resources, and welfare states all over the world aim to ensure the well-being of their populations in order to remain in the forefront of development at all times [1]. Anemia is the Major Clinical Problem in the world especially more common in India. It has a Direct and Indirect Impact on the people which are more common In Adoloscent Girls. Adolescence is a crucial phase of growth in the life cycle of an individual [2]. Due to rapid growth there is an increase in iron requirement in both adolescent boys and girls. Though the exact prevalence has not been determined, atleast 65-75%adolescentgirls in India are anemic. Anemia not only affects the present health status of adolescents, but also has deleterious effects in the future [3].

MATERIALS AND METHODS:

Sixty 1st year medical students in VMKVMC, Salem were selected for the study. Written consent wastaken and institutional ethical clearance was obtained. The blood sample was collected and RBC count done by counting the cells in a Neubauer's counting chamber under the 45x (high power) objective of microscope. Hemoglobin content done by Sahli's method MCH (Mean corpuscular hemoglobin) i.e. the average amount of hemoglobin in RBC count.

$$MCH = (Hb \text{ in gm\%}/ RBC \text{ count in millions/mm}^3) \times 10$$

Colour index (CI) is ratio of Hemoglobin % and RBC % $CI = (Hb \% / RBC \%)$

in which Hb is taken as 14.8 gm% and RBC count is taken as 5 millions/mm^3

Inclusion Criteria:
 i) Age17 -20 years

Exclusion Criteria:
 i) Age <15yrs&> 21 years
 ii) H/O iron supplementation.

RESULTS:

Table 1 shows the differences in Hb, RBC, Colour index and MCH in Boys and Girls.

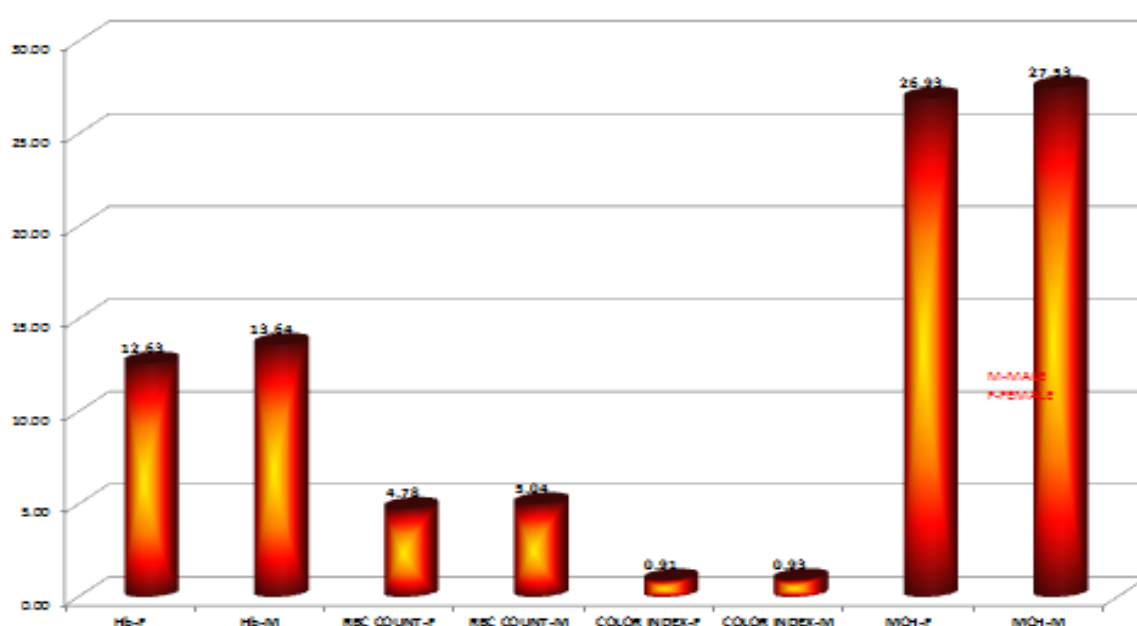|	**Hb in GIRLS**	**Hb in BOYS**	**RBC COUNT-GIRLS**	**RBC COUNT-BOYS**	**COLOR INDEX-GIRLS**	**COLOR INDEX-BOYS**	**MCH-GIRLS**	**MCH-BOYS**
MEAN	12.63	13.64	4.78	5.04	0.91	0.93	26.93	27.53
STDEV	1.28	1.93	0.63	0.58	0.16	0.19	4.81	5.74

Fig 1: **Comparison of Blood Indices of Male & Female Students (Mean Values)**

DISCUSSION:

Three boys had Hemoglobin less than 12gm% and thirteen girls had Hemoglobin less than 10gm% [4]. Though colour index and MCH have no clinical significance the colour index is normal in both boys and girls (0.85-1.15).These shows anaemia is more prevalent in girls as compared to the boys similar to national standards [5]. Several studies has been done and multiple causes are made out. In India alone, depending on age and sex, IDA has been reported to range from 38-72%, majority of them being women and children. The IDA prevalence rate beyond the age of 6 years increases in girls. This could be due to certain factors like menstruation, gender discrimination in intra household food allocation and early marriage leading to early pregnancy [6]. Adolescent anemias like the tip of an iceberg, major part of iron deficiency is hidden as most adolescents with anemia are asymptomatic. A few may notice weakness, headache, irritability, fatigue, low physical performance, exercise intolerance and poor cognitive function. Pica or perverted appetite may occur in some adolescents [7]. Adolescent girls form 22% of the total population and estimates suggest that about 25-50% girls become anaemic by the time they reach menarche [8]. Absorption from a single dose of iron supplementation reduces from 30-40% on the first day to as low as 3-6% after a few days of continuous daily administration of iron supplements. The present study was therefore conducted to obtain baseline data on haemoglobin (Hb) levels of adolescent girls - investigate the comparative efficacy of once 'weekly' and 'daily' administration of iron-folate tablets with

respect to impact on the Hb levels; and find out the effect of added ascorbic acid supplementation [9,10].

CONCLUSION:

Ideally Packed cell volume to determine MCV (Mean corpuscular Volume) and MCHC need to be done and calculated to determine the Type of Anemia. The cause may then be identified and the sixteen anemic students could be treated. This remains a lacuna of our study. So this study is only a simple tool to asses' nutrional status among our students and to make aware of their well being. To decrease the prevalence of anemia in adolescents to ensure healthy parenthood. To increase awareness among adolescent regarding anemia & appropriate nutrition.

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