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STUDY OF BLOOD INDICES IN THE PHASE I PROFESSIONALS OF MEDICINE ADMITTED AT SMT. KASHIBAI NAVALE MEDICAL COLLEGE & GENERAL HOSPITAL, PUNE.

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ABSTRACT: Anemia is one of India's major public health problems. During adolescence anemia is estimated to be the greatest nutritional problem. Anemia in adolescents and young adults can have negative effects on their cognitive performance & growth. So the present study is planned to assess prevalence of anemia in the adolescents in the phase I professionals of medicine admitted at SKNMC & GH, Narhe, Pune in the academic year 2013-14. Hematological parameters like hemoglobin levels, red blood cell count, packed cell volume; blood indices (MCV, MCH and MCHC) were studied. Data was analyzed statistically, the study shows the highly significant ($p < 0.001$) difference in hemoglobin level, RBC count, PCV, MCV and MCHC, however there is no significant difference in MCH in males & females. Thus the result concludes the prevalence of anemia is higher in female compare to male.

KEYWORDS: Anemia, Blood Indices, adolescents.

INTRODUCTION: Anemia is global public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic growth. Anemia is an indicator of both poor nutrition and poor health¹. In addition, the negative consequences of iron deficiency anemia on cognitive and physical development of children, adolescents, on physical performance particularly work productivity in adults is of major concern^{2, 3}. During adolescence anemia is estimated to be the greatest nutritional problem. WHO defined adolescents as the population of 10 to 19 yrs of age² and is a period of intense growth, similar to infancy, iron, proteins having high biological value, vitamins and minerals are in high demand in order to support optimum growth and development.

Iron is present in all body cells & its fundamental role in basic physiological process such as haemoglobinization and enzyme function and other important non erythroid functions especially is required for mentation specifically of memory and cognitive concern is of paramount importance. Deficiency of these generally results when dietary intake cannot meet required needs as well as iron reserve in the body are depleted in order to support the body's physiological demands. The body needs for these nutrients is more, especially iron, when it is growing rapidly^{4, 5, 6}. Furthermore, through its effects on cognitive and work performance, anemia can impact current and future economic productivity.

At all levels, the negative effects of anemia during adolescence justify public health action, unfortunately because initiatives to prevent anemia commonly target infants, young children and pregnant and lactating women, and not necessarily adolescents, the needs of adolescents may remain unmet and consequences of anemia in adolescents continue.⁷ So the present study was planned to

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assess prevalence of anemia in the adolescents in the phase I professionals of medicine admitted at SKNMC & GH, Pune.

MATERIAL & METHODS: A total Of 100 professionals of phase I medicine admitted at SKNMC & GH, Narhe, Pune in the academic year 2013-14 were included in the study with following inclusion & exclusion criteria.

Inclusion criteria: All the normal & apparently healthy professionals and female professionals with their regular menses and in proliferative phases.

Exclusion criteria:

- a) All the subjects suffering from any haematological, gynaecological, cardiovascular, respiratory and nervous disorders and evidence of infection at the time of sampling.
- b) In female during menses.
- c) The subjects suffered from any major illness in last 6months.
- d) The subject has history of blood transfusion or donation in last 3months.
- e) The subject has any kind of addiction.
- f) The subject who refuses to sign informed consent form was excluded.

METHOD OF COLLECTION OF BLOOD: The protocol was explained to the volunteers. Informed consent was obtained from each of the participant. A detailed history of both males and females were taken, including menstrual and relevant past history in case of female volunteers. The Physiological parameters recorded were pulse rate, height, weight, blood pressure and body temperature.

A sample of 2ml venous blood was drawn from the vein once only; all the samples were taken between 2-3pm to avoid diurnal variations. Also the samples were analyzed immediately within 30 minutes, to avoid any variations due to storage. The samples were analyzed by Sysmex KX-21, Automated Hematology Analyzer. It is automatic multi-parameter blood cell counter for in vitro diagnostic use in clinical laboratories. It processes approximately 60 samples an hour and displays on the LCD screen the particle distribution curves of WBC, RBC and platelets along with data of 18 parameters as the analysis results. It performs speedy and accurate analysis and detects the abnormal samples. Obtained data analyzed statistically by using paired "t" test and discussed.

RESULT:

	Male	Female
N	39	61
Mean	14.48	12.55
SD	1.41	1.08

Table 1: HAEMOGLOBIN (Hb gm %)

Table 1 shows statistically highly significant difference ($p < 0.001$) in the Hb gm% of males and females.

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	Male	Female
N	39	61
Mean	5.45	4.63
SD	0.88	0.76

Table 2: RED BLOOD CELLS COUNT

Table 2 shows a statistically highly significant difference ($p < 0.001$) in RBC COUNT of males and females.

	Male	Female
N	39	61
Mean	41.15	39.47
SD	3.49	3.84

Table 3: PACKED CELL VOLUMES (PCV)

Table 3 shows a statistically highly significant difference ($p < 0.001$) in PCV of males and females.

	Male	Female
N	39	61
Mean	76.66	86.71
SD	8.85	10.92

Table 4: MEAN CORPUSCULAR VOLUME (MCV)

Table 4 shows a statistically highly significant difference ($p < 0.001$) in the MCV of males and females.

	Male	Female
N	39	61
Mean	27.08	27.96
SD	4.10	5.83

Table 5: MEAN CORPUSCULAR HEMOGLOBIN (MCH)

Table 5 shows statistically NO significant difference ($p = 0.414$) in the MCH of males and females.

	Male	Female
N	39	61
Mean	35	32
SD	3.26	4.30

Table 6: MEAN CORPUSCULAR HEMOGLOBIN CONCENTRATION (MCHC)

Table 6 shows a statistically highly significant difference ($p < 0.001$) in the MCHC of males and females.

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Thus the result shows the highly significant ($p < 0.001$) difference in hemoglobin level, RBC count, PCV, MCV, MCHC, no significant difference in MCH in males and females. Thus the result confirm the prevalence of anemia is more in young females as compare to males of the same age group.

DISCUSSION: The exact figures for the prevalence of anemia vary from study to study, but there is no doubt that anemia is an extremely serious public health problem in India, especially among the pregnant women & children.^{1,8,9} Our study presents the more prevalence of anemia in young females compare to young males of same age group.

In our study it is observed that highly significant ($p < 0.001$) difference in hemoglobin level, RBC count, PCV, MCV, MCHC, no significant difference in MCH in males and females. All the above result, though there is no significant difference in MCH in males and females shows the prevalence of anemia is more in young females as compared to males of the same age group.

Anemia is a critical health concern because it affects growth and energy levels¹⁰. In the adolescent stage, iron need is increased due to rapid growth. In order to increase the absorption of iron, the level of ferritin decreases. Additionally, the onset of menstruation in girls results in reduced ferritin level. Irregular eating habits and lower consumption of animal source foods contributes to the development of anemia. Therefore, girls have higher incidence of anaemia.^{2, 3 11, 12, 13, 14, 15}

Anemia in adolescents and young adults can have negative effects on their cognitive performance and growth. Furthermore, through its effects on cognitive and work performance, anemia can impact current and future economic productivity. At all levels, the negative effects of anemia during adolescence justify public health action, unfortunately because initiatives to prevent anemia commonly target infants, young children, pregnant, lactating women and not necessarily adolescents, the needs of adolescents may remain unmet and consequences of anemia in adolescents continue.⁷ To prevent all adverse effects of anemia education is fundamental because adolescents have poor knowledge about its cases and adverse effects.

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