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Assessment of Haemoglobin Status Among Female College Students

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ABSTRACT

The present study was carried out to find the haemoglobin levels and prevalence of anaemia among the Govt. College(A), Ananthapuramu who participated in routine health checkups. It was carried out for three day in the month of January 2026. Four hundred twenty eight female students blood samples were collected and analyzed for haemoglobin levels. This test were carried out by Sachivalyam Health Staff. The haemoglobin levels ranged from 6.5% to 16%. Out of 428 female students 131(30.60%) were Normal or Non Anaemic, rest of Female students 40(9.34%) were Mild, 209 (48.83%) were Moderate, 47(10.98%) were Severe anaemic.

Keywords: Female students, Haemoglobin levels, Normal, Anaemia, Mild, Moderate, Severe.

INTRODUCTION

Hemoglobin (Hb) is an iron-containing amino acid that binds with CO2 and oxygen to transport RBCs. Hemoglobin accounts for 95% of the dry weight of the red blood cells. Haemoglobin levels are a key indicator of anaemia and are frequently tested in laboratories. Anaemia is a global public health concern as it negatively affects energy levels. Anaemia is derived from a Greek word that means "without blood." Anaemia is caused by a lack of haemoglobin, either quantitatively or qualitatively, and indicates poor nutrition and health. According to WHO (2004), approximately two billion people worldwide suffer from anaemia, with iron deficiency accounting for roughly 50% of all cases. Recent results have shown that the rural population of India is suffering from anemia with the majority of children (Gerardo*et.al.*, 2014).

WHO defined anemia as a condition where the number of RBC is less(Census of India, 2013).Anaemia may occur due to nutritional inadequacies or any other clinical conditions like mal absorption and hookworm infestation where intestinal absorption of iron altered due to gut environment. Nutritional anaemia can also be defined as the condition resulting from the inability of the erythropoietic tissue to maintain a normal hemoglobin concentration due to inadequacy of one or more nutrients (De Mayer & Tegman,1998). Adolescence is the period of the growth spurt in all aspects hence the nutritional status plays a vita lrole in the progress(Ezzati *et al,* 2002).Anaemia is widely prevalent among all age

groups, butsince the requirement of iron is more and loss of around 12.5-15mg iron each month through menstruation, adolescent girls are more vulnerable to anaemia(Kalaivani, 2009).

Anaemia affects the over all nutritional status of adolescents and causes adverse consequences as it progresses(Premanada Bharathi, 2008; Gerardo *etal,* 2014). It affects the growth, onset of menarche, academic performance, physical performance, cognitive development etc., The most common cause of anemia is iron-deficiency anemia. Other conditions like parasitic infections, excessive blood loss during menstruation and growth spurts with suboptimal hematopoietic contents also contribute to anemia. Many nutrients play a vital rolein the process of erythropoiesis- a process of formation ofRedbloodcells inthe bone marrow, such as proteins (glycine, histidine, proline and hydroxyl proline), iron, copper, vitaminE, riboflavin, pyridoxine, folate and cyanocobalamin and vitaminC (De Mayer & Tegman, 1998).Deficiency in any of these nutrients may retard the process thus contributing toanemia.

Controlling iron deficiency anaemia in young children and adolescents improves their quality of life. Detecting and treating anaemia can boost economic growth and replace lost productivity from the silent epidemic. Most anemia prevalence studies have focused on infants, children, adolescents, and pregnant women. Very few studies focused on college students as their target audience. This study investigates the prevalence of anemia by hemoglobin level among college students and categorizes severity based on hemoglobin concentration. The Present study also aimed to determine the haemoglobin levels and awareness of anemia among the women students of Govt. College (A).

MATERIALS AND METHODS

The present study was carried out over a period of one month January 8th, 2026, January 28th 2026 & January 29th 2026 for three days. As a part of routine health checkups and after taking ethical permission from the institute's authorities 428 results were obtained through convenient sampling. The subjects were undergraduate female students between the ages of 18 and 23 years of Govt. College(A), Ananthapuramu. The students were made aware of the purpose of the study and taken their written consent. The measurement of Hb was relied on the services of awell-equipped clinical laboratory, using automated hematology analyzers which are reliable and accurate. This system isa n automated blood cell counter which measures hemoglobin using non-cyanide method and was carried out by electrical impedence method. Criteria for anaemia among these students were accepted as haemoglobin value <12gm/dl as per W.H.O. recommendations. This haemoglobin test were conducted by Sachivalyam Health staff with digital Haemoglobinometer along with the help red cross volunteers.

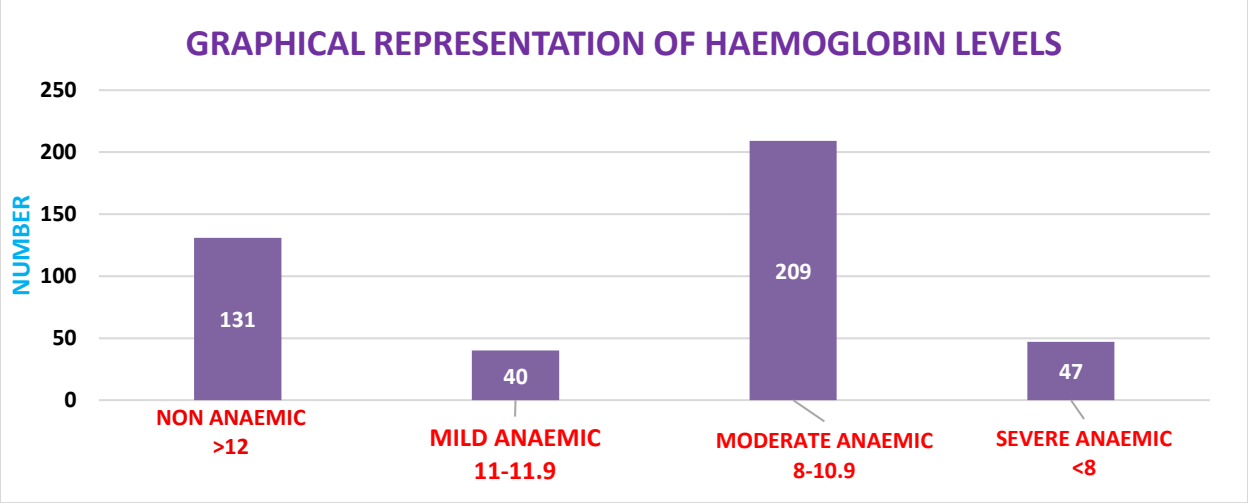
RESULT AND DISCUSSION

The normal hemoglobin levels vary with age, sex, and physiological status the WHO has developed a haemoglobin threshold which is used to define anaemia; The hemoglobin cut-off values suggested by WHO(1992)are used to diagnose anemia in students and the cut-off values defining mild, moderate and severe anemia are presented inTable 1.

Table1: Showing the Number of Women Students and the Percentages with different levels of anemia((g/dL).

Women Students	Non- Anaemic 12 or Higher	Anaemic		
		Mild 11.0- 11.9	Moderate 8.0-10.9	Severe Lower than 8.0
Number: 428	131	40	209	47
Percent	30.60	9.34	48.83	10.98

Figure 1: Graphical representation showing the percentage of college Women students with different levels of Anaemia.



The percentage of women students with non-anemic condition or normal is only 30.60 % which causes a concern about their health status. Rest of our students 9.34 % Mild Anaemic, 48.83 % Moderate Anaemic and 10.98 % Severe Anaemic. Overall the percentage of anemic students falls in the range of 69.15 % of total category.

CONCLUSION

The present investigation has shown that 69.15 percent of girls students were anaemic and 30.60 percent of women students were non-anaemic. But the students showed a notable lack of awareness on anaemia. This study strongly recommends health education, which can be carried out by regular educational interventions like Sachivalayam health staff giving iron tablets to anaemic students. Red Ribbon club(RRC) / Youth red cross(YRC) is also giving Iron tablets purchase from Local Medical stores. This could be a useful tool for raising awareness and knowledge among the students who belongs to rural environment. Considering all of this, it is important to inform young adult female students about the high incidence of anemia and to make sure that their hemoglobin levels are regularly checked out. Therefore, it is essential to improve

nutritional status of a women who further makes up the family and society, which is possible only by implementing health education, early detection and effective management ofa nemia, especially through diet.

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