

Iron deficiency anemia in college students

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ABSTRACT

Background: Iron deficiency anemia is the most common nutritional deficiency diseases in Turkey.

Aims: To evaluate iron deficiency anemia in college students.

Methods: 30 boys, 30 girls college students were screened for the presence of anemia in Gazi University the Department of Food and Nutritional Education.

Results: Out of 60 participating students anemia was detected in 1/30 boys (3.3%) and 18/30 girls (60.0%). Serum iron and ferritin levels are 126.0 ± 9.9 mcg/dL, 78.7 ± 8.3 ng/mL in boys and 75.2 ± 6.3 mcg/dL, 25.2 ± 6.9 ng/mL in girls.

INTRODUCTION

Nutritional anemia though global in occurrence, is more of a concern in the developing countries because of the high prevalence in these regions. Progressive stages of iron deficiency can be evaluated by different measurements such as ferritin, transferrin saturation, hemoglobin and hematocrit.

The present study was designed to evaluate the prevalence of iron deficiency anemia in college students.

METHODS

30 boys, 30 girls college students, between 19-23 years of age were screened for the presence of anemia in Gazi University the Department of Food and Nutritional Education in November and December 2004. Early morning venous blood samples were obtained from each student for biochemical screening tests, following a 12-hour overnight fast. Professional staff performed venipuncture, using vacutainers to obtain 15 ml of whole blood. Blood was centrifuged for plasma separation at the local Ankara Government Hospital where the actual biochemical analyses were made.

Figure 1: Hemoglobin, hematocrit, serum iron, total iron binding capacity, % saturation and unsaturated iron binding capacity, ferritin and transferrin levels in college students

Parametres	Boys (n:30) mean±SD	Girls (n:30) mean±SD	p
Hemoglobin (g/dL)	15.70±1.07	12.57±1.33	0.0
Hematocrit (%)	44.35±2.78	36.55±3.39	0.0
Serum iron (µg/dL)	126.0±54.1	75.2±34.2	0.0
Total iron binding capacity (µg/dL)	348.9±39.5	401.9±68.1	0.001
Saturation (%)	36.1±14.9	19.6±9.9	0.0
Unsaturated iron binding capacity (µg/dL)	222.9±60.7	326.7±85.9	0.0
Ferritin (ng/mL)	78.7±45.6	25.2±37.8	0.0
Transferrin (g/L)	2.45±0.28	2.81±0.48	0.001

Figure 2: Anemia status in college students according to different criteria

	Boys (n:30)	Girls (n:30)	Total (n:60)	χ^2	p
	n (%)	n (%)	n (%)		
Hemoglobin (g/dL)					
<i>Low (<11.7)</i>	1 (3.3)	18 (60.0)	19 (31.7)	22.98	0.0
<i>Normal (11.7-15.5)</i>	27 (90.0)	12 (40.0)	39 (65.0)		
<i>High (>15.5)</i>	2 (6.7)	-	2 (3.3)		
Hematocrit (%)					
<i>Low (<35.0)</i>	1 (3.3)	23 (76.7)	24 (40.0)	33.61	0.0
<i>Normal (35.0-45.0)</i>	29 (96.7)	7 (23.3)	36 (60.0)		
Serum iron ($\mu\text{g/dL}$)					
<i>Low (<37.0)</i>	2 (6.7)	11 (36.7)	13 (21.7)	13.3	0.001
<i>Normal (37.0-145.0)</i>	21 (70.0)	19 (63.3)	40 (66.7)		
<i>High (>145.0)</i>	7 (23.3)	-	7 (11.7)		
Saturation %					
<i>Low (<15.0)</i>	2 (6.7)	14 (46.7)	16 (26.7)	14.6	0.00
<i>Normal (15.0-50.0)</i>	24 (80.0)	16 (53.3)	40 (66.7)		
<i>High (>50.0)</i>	4 (13.3)	-	4 (6.7)		
Total iron binding capacity ($\mu\text{g/dL}$)					
<i>Low (<228.0)</i>	1 (3.3)	-	1 (1.7)	9.9	0.007
<i>Normal (228.0-428.0)</i>	29 (96.7)	22 (73.3)	51 (85.0)		
<i>High (>428)</i>	-	8 (26.7)	8 (13.3)		

RESULTS

We determinate hemoglobin, hematocrit, serum iron, total iron binding capacity, % saturation and unsaturated iron binding capacity. Serum iron and ferritin levels are 126.0 ± 9.9 mcg/dL, 78.7 ± 8.3 ng/mL in boys and 75.2 ± 6.3 mcg/dL, 25.2 ± 6.9 ng/mL in girls. In addition, girls' serum iron, ferritin, hemoglobin, hematocrit levels were smaller than boys ($p < 0.001$) and total iron binding capacity, % iron saturation, unsaturated iron binding capacity were higher than boys ($p < 0.001$). This situation related with nutritional habits and girls' daily protein and iron intake lower than boys. It has been determined that the girls' inadequate intake for the following items were 70.0% energy, 13.3% protein, 86.7% iron ($p < 0.005$).

CONCLUSION

Iron deficiency anemia is common nutritional problems among girls. Evaluating the nutritional status of the college students especially in girls and detection of their health problems based on anemia in early stages is important due to public health.

*This study was supported by Gazi University Unit of Scientific
Research Project*