

Assessment of Prevalence of Iron Deficiency Anemia among Patients Reporting to Medicine OPD: An Observational Study

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ABSTRACT

Background: The World Health Organization defines anemia as blood hemoglobin values of less than 7.7 mmol/l (13 g/dl) in men and 7.4 mmol/l (12 g/dl) in women. Typically, the evaluation of the cause of anemia includes a complete blood cell count, peripheral smear, reticulocyte count, and serum iron indices. Hence; we assessed the present study to assess the prevalence of iron deficiency anemia among patients reporting to medicine OPD.

Materials and Methods: The study was conducted in the Department of Medicine, World College of Medical Sciences and Research, Gurawar, Jhajjar, Haryana (India) on patients reporting to the department of general medicine during the study period. A total of 200 patients were included in the study. The age of the patients ranged from 20-70 years. A written informed consent was obtained from the patients prior to commencement of the study.

Results: In the present study, a total of 200 of subjects were recruited. The number of male subjects was 81 and female subjects were 119. The age of subjects ranged from 21-70 years. We observed that 55% subjects did not have iron

deficiency anemia. 15 % subjects had mild anemia, 22% subjects had mild anemia and 8 % subjects had severe anemia.

Conclusion: The iron deficiency anemia is most prevalent in old age groups and females in young age groups.

Keywords: IDA, Iron Serum Level, Ferritin.

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INTRODUCTION

The World Health Organization defines anemia as blood hemoglobin values of less than 7.7 mmol/l (13 g/dl) in men and 7.4 mmol/l (12 g/dl) in women.¹ Typically, the evaluation of the cause of anemia includes a complete blood cell count, peripheral smear, reticulocyte count, and serum iron indices. The severity of anemia is based on the patient's hemoglobin/hematocrit level.² Iron deficiency anemia is characterized by microcytic, hypochromic erythrocytes and low iron stores. The mean corpuscular volume is the measure of the average red blood cell volume and mean corpuscular hemoglobin concentration is the measure of the concentration of hemoglobin in a given volume of packed red blood cells. In developing countries, low iron bioavailability of the diet is the primary cause of iron deficiency anemia; however, in developed countries, decreased iron absorption and blood loss account for the more likely etiologies of iron deficiency.^{3,4} Decreased iron absorption may also be the result of atrophic gastritis or malabsorption syndromes especially celiac disease. Postsurgical gastrectomy (partial or total) and

intestinal resection or bypass may also produce iron deficiency anemia secondary to decreased iron absorption.⁵ Chronic blood loss from genitourinary, gynecological, or gastrointestinal tracts accounts for the majority of causes for iron deficiency anemia. The most common etiology of iron deficiency anemia in premenopausal women is excessive menstruation.⁶ Hence, the present study was conducted to assess the prevalence of iron deficiency anemia among patients reporting to medicine OPD

MATERIALS AND METHODS

The study was conducted in the Department of Medicine, World College of Medical Sciences and Research, Gurawar, Jhajjar, Haryana (India). The ethical clearance for the study was obtained from the ethical board of the institute prior to commencement of the study.

For the study, patients reporting to the department of general medicine during the study period were included. A total of 200 patients were included in the study. The age of the patients

ranged from 20-70 years. A written informed consent was obtained from the patients prior to commencement of the study. For all the patients, serum ferritin and hemoglobin levels were assessed on venous blood using venipuncture. IDA was defined as a simultaneous serum ferritin of ≤ 12 ng/mL and a hemoglobin of ≤ 11 g/dL. The patients were grouped in various age group and the prevalence of iron deficiency anemia was assessed in different age groups.

The statistical analysis of the data was done using SPSS version 20.0 for windows. The Student's t-test and Chi-square test were used to check the significance of the data. The p-value less than 0.05 was predetermined as statistically significant.

RESULTS

In the present study, a total of 200 of subjects were recruited. The number of male subjects was 81 and female subjects was 119. The age of subjects ranged from 21-70 years. Table 1 shows the prevalence of iron deficiency anemia in subjects in different age groups. We observed that 55% subjects did not have iron deficiency anemia. 15 % subjects had mild anemia, 22% subjects had mild anemia and 8 % subjects had severe anemia. The highest prevalence of iron deficiency anemia was observed in age group from 51-60 years. Table 2 shows the prevalence of anemia in subjects on the basis of sex. We observed that the anemia was more common in female subjects.

Table 1: Prevalence of iron deficiency anemia in subjects in different age groups

Age groups (in years)	No anemia	Mild anemia	Moderate anemia	Severe anemia	Total
21 – 30	17	8	5	3	33
31 – 40	11	5	2	4	22
41 – 50	18	4	4	2	28
51- 60	24	4	12	2	42
61 - 70	40	9	21	5	75
Total	110 (55%)	30 (15%)	44 (22%)	16 (8%)	200 (100%)

Table 2: Prevalence of anemia in subjects on the basis of sex

Sex	No anemia	Mild anemia	Moderate anemia	Severe anemia	Total
Male	45	12	18	6	81
Female	65	18	26	10	119
Total	110 (55%)	30 (15%)	44 (22%)	16 (8%)	200 (100%)

Fig 1: Prevalence of iron deficiency anemia among subjects of various age groups

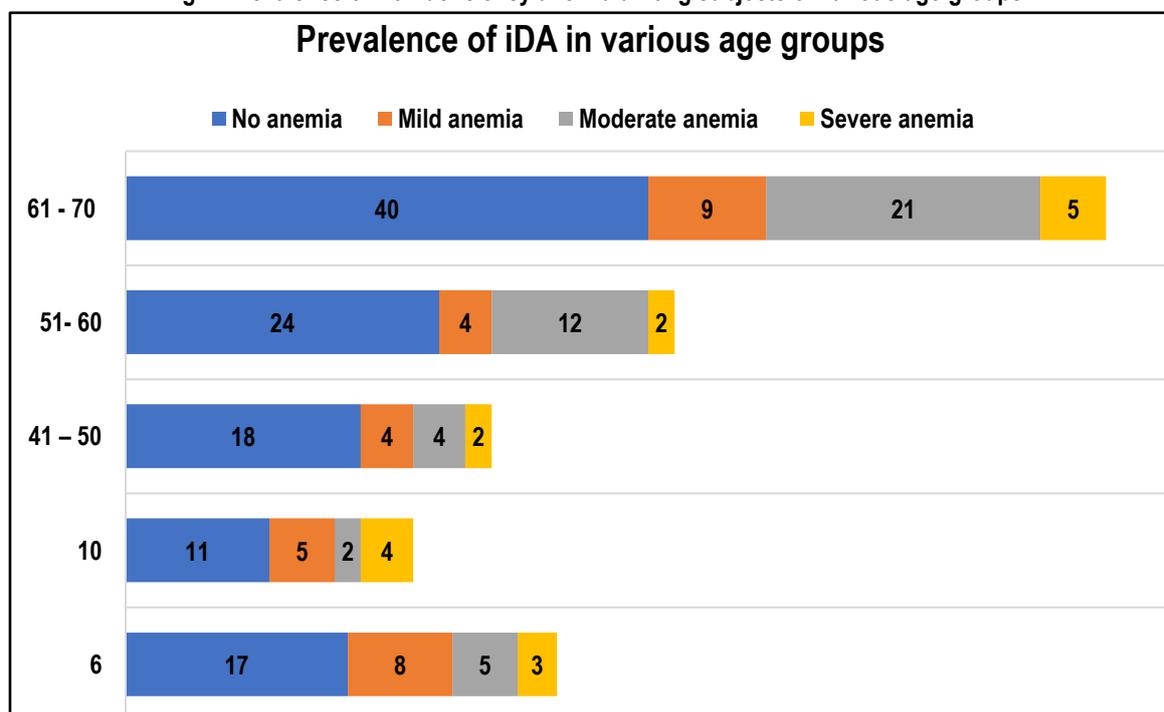
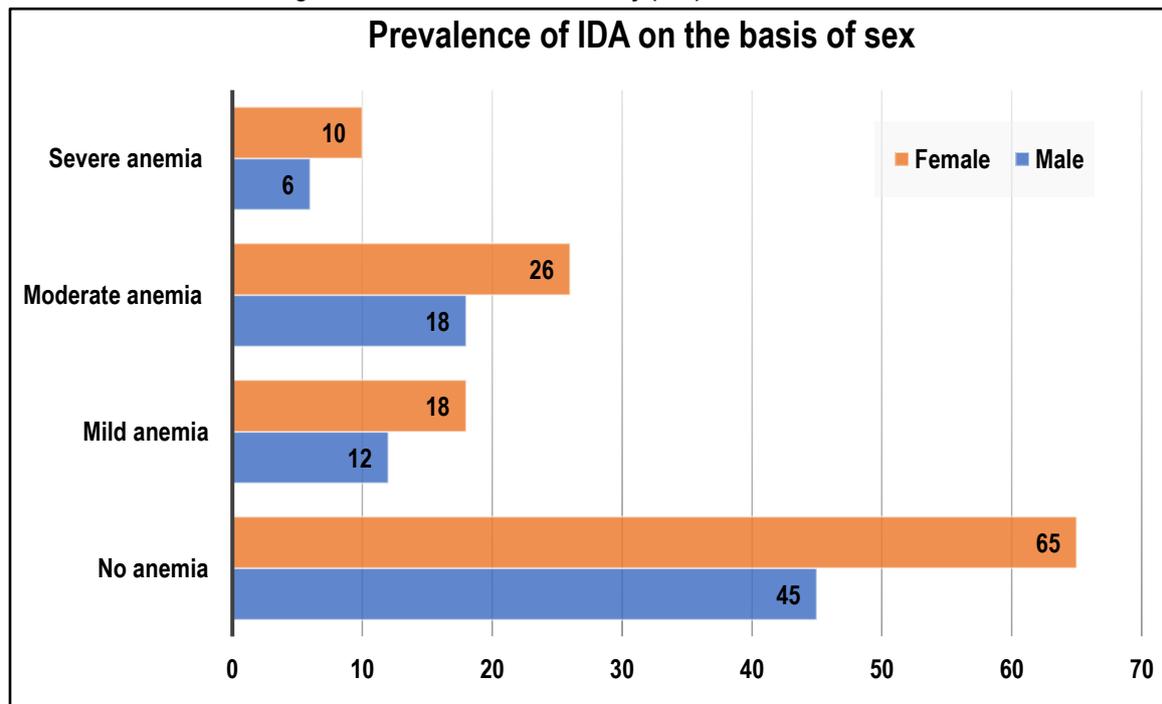


Fig 2: Prevalence of iron deficiency (IDA) on the basis of sex



DISCUSSION

The present study was conducted to assess the prevalence of iron deficient anemia in patients reporting to OPD. We observed that IDA is most prevalent in old age groups and women. The results were compared with previous studies and were found to be compliant. Alzaheb RA et al recruited a sample of female students at the University of Tabuk, Saudi Arabia, to investigate IDA prevalence and risk factors and fill the identified research gap. Data on the participants' sociodemographics, diet, health, anthropometry, and hematological and biochemical iron status indices were gathered. A logistic regression analysis then revealed the IDA risk factors. The IDA prevalence was 12.5%. The factors associated via logistic regression with an elevated anemia risk were inadequate iron and vitamin C intakes, infrequent (≤ 2 times per week) consumption of red meat, frequent (≥ 2 times per week) tea consumption, and a past personal history of IDA. They concluded that focused education and awareness strategies are needed to improve nutritional habits by encouraging the consumption of rich dietary iron sources and by raising awareness of the food and drinks which facilitate or hinder the bioavailability of iron. Al-alimi Abdullah Ahmed et al determined the prevalence and risk factors of IDA among apparently healthy Yemeni students at Hodeida University. Five hundred blood samples (326 males and 174 females) were collected randomly from medical students at Hodeida University. Participants were subjected to different tests including complete blood counts (CBC), serum ferritin (SF), serum iron (SI), and total iron binding capacity (TIBC). Moreover, a questionnaire was designed to collect demographics, food and drink habits, and socioeconomic status. The overall prevalence of IDA was 30.4% ($n = 152$), of whom 54.00% were females ($n = 82$) and 46.0% were males ($n = 70$). Students aged 20–22 years were found more anemic with prevalence 59.2% than students aged 17–19 years (25.0%) and 23–25 years (15.8%). Statistical analysis showed regularly having breakfast had significant ($p < 0.001$) role in preventing development of IDA compared with

irregularly having breakfast. Infrequent consumption of vegetables/fruits; meat, fish, chicken; tea drinking; low household income; smoking and khat (*Catha edulis*) chewing showed a significant role ($p < 0.001$) in provoking of IDA, whereas consumption of coffee and cola showed insignificant influence ($p = 0.585$; $p = 0.513$) on IDA. They concluded that the majority of university students, especially females, have IDA that might become worse by malnutrition, lifestyle habits, and lack of awareness.^{7,8}

Preda CM et al estimated the prevalence and significance of iron deficiency in our patients and medical staff. They performed a prospective cross-sectional study. 383 persons were screened for the presence of iron deficiency (ID): 325 patients and 58 people from the medical staff. Transferrin saturation (TSAT), serum ferritin (SF) and complete blood count were performed. Absolute ID was diagnosed if SF < 100 ng/ml and TSAT $< 20\%$. Relative ID was defined by SF > 100 ng/ml and TSAT $< 20\%$. The group of medical staff was younger and had a greater proportion of women. The prevalence of absolute ID was 22.5% in patients and 43.1% in medical staff; relative ID was present in 15% of patients and 1.7% of medical staff. Among patients, the absolute ID was significantly correlated with the female sex and pre-menopausal status but did not correlate with diagnosis, age, BMI, nonsteroidal anti-inflammatory drug (NSAID), aspirin or acenocoumarol consumption. They concluded that absolute ID had a high prevalence among patients (22.5%), but there was even a bigger issue among the medical staff (43.1%). Meier PR et al determined whether adolescent and/or adult women still need supplements during pregnancy to avoid IDA, even if iron stores are adequate, and whether the IDA translates into maternal and/or infant morbidity and mortality. Adolescent women 18 years or less in their first pregnancy, and adult women 19 years or older, who were found to be healthy and iron sufficient at their first prenatal visit. Participants were randomized to receive iron

supplementation (60 mg/day elemental iron) or placebo. Serum ferritin of 12 ng/mL or less with simultaneous hemoglobin of 11 g/dL or less defined IDA. When IDA occurred at the second trimester, a therapeutic supplement of 180 mg of elemental iron per day was initiated. Forty-seven percent of all placebo-supplemented and 16% of all iron-supplemented patients exhibited IDA; 59% of adolescent placebo-supplemented and 20% of adolescent iron-supplemented patients exhibited IDA. Nausea, vomiting, diarrhea, and constipation were not significantly different in the iron supplemented group compared to the placebo group, and no significant differences were seen in maternal or neonatal health, but the number of women studied was limiting for analysis of these adverse events. They concluded that IDA is common in healthy, iron-sufficient adolescent pregnant women during the second trimester, and body stores of iron decline in both adolescent and adult pregnancies.^{9,10}

CONCLUSION

From the results of present study, this can be concluded that the iron deficiency anemia is most prevalent in old age groups and females in young age groups.

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