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Original Research

Study of Demographic Profile, Risk Factors and Clinical Presentation of Iron Deficiency Anemia Cases

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ABSTRACT

Background: Iron deficiency anemia (IDA) is considered as the major public health problem and the most common nutritional deficiency in India. Anemia affects the physical and mental growth of children, associated with increase maternal and fetal mortality, leads to reduced work productivity in adults.

Objectives: The present study was undertaken to determine socio-demographic profile, risk factors and clinical profile of iron deficiency anemia patients in GMCH, Aurangabad.

Methods: This hospital based retrospective observational study was conducted in the department of pathology in GMCH, Aurangabad. Patients diagnosed as iron deficiency anemia according to standard guidelines were enrolled in this study. A questionnaire regarding socio-demographic profile, risk factor details and clinical examination was done.

Results: Among total anemia patients, most of them (73.5%) were female, observed in 31 -40 years of age group (35.5%). Majority of them (64.5%) residing in rural area, belong to lower socio-economic class (46%), lives in joint family (57.5%), poor education (63%) and labourer (45%). Moderate anemia was most common (66%) primarily microcytic hypochromic in nature. Nutritional inadequacy (62%) and chronic blood loss (49%) was the most common risk factors. The commonest clinical presentation was pallor (84%), fatigability (62%), dyspnea (40%), koilonychias (34%), and sore tongue (26%).

Conclusion: We have conclude that the proper policy planning to better identify and design strategies to help prevent and treat iron-deficiency anemia.

Keywords: demographic profile, Hemoglobin, iron deficiency Anemia, clinical presentation, risk factors.

INTRODUCTION

Globally, anemia is a public health problem-affecting people in both developed and developing countries with bad consequences for human health as well as social and economic development [1]. World Health Organization (WHO) coined the term nutritional anemia in 1968 and defined it as ‘a condition in which the haemoglobin content of the blood is lower than normal as a result of a deficiency of one or more essential nutrients, regardless of the cause of such deficiency’ [2]. However, with advancements in medicine, iron and serum B-12 were diagnosed as the main deficiency among the patients. Thereafter, another term was coined as Iron-Deficiency Anemia. Iron deficiency anemia causes a significant decrease in the productivity of an individual by affecting the transport of oxygen across the tissues. Iron deficiency anemia occurs in multiple stages (i) Iron stores of the body for haemoglobin synthesis are reduced (ii) Insufficient Iron is transported to bone marrow (iii) Deficient red blood cells (RBC) enter individuals' blood circulation and replace the normal RBCs [3]. IDA is more prevalent in children and women, adult men are also susceptible depending on their socioeconomic status and health conditions [4]. Anemia associated with an

increased risk of morbidity and mortality [5]. Anemia is still considered a major health problem in India. In the 2005- 2006 national family health survey (NFHS-3), revealed a high prevalence of anemia in children (78.9%) of age 6-59 months, 55% in females of age 15-49 years and 24% in males of age 15-49 years [6]. The most common causes of IDA are gastrointestinal (GI) bleeding and menstruation in women; decreased dietary iron intake and absorption are also culpable causes [7]. Iron is required for various cellular functions, including but not limited to enzymatic processes, DNA synthesis, oxygen transport and mitochondrial energy generation [8]. As such, the symptoms of IDA can vary over a wide range. Shortness of breath, fatigue, palpitations, tachycardia and angina can result from reduced blood oxygen levels. IDA in infancy has been linked to long-term poor cognitive and behavioural performance in children [9]. The brain, central nervous system, and immunological system of children under the age of 5 are all affected by IDA.[5] Low birth weight, frequent use of cow's milk, low consumption of iron-rich supplementary foods, and low socioeconomic status are all thought to be risk factors for IDA [10]. Poor sanitation, joblessness, low wages, poor housing, low education, living in rural areas, drinking cow's milk more frequently, and poor health conditions, are all possible causes and associated factors for anemia in people of all ages, particularly children under the age of two [11].

Aims & objectives: The objective of the present study was to determine demographic features, predisposing factors and clinical profile among iron deficiency anemia patients in our tertiary care hospital.

MATERIALS AND METHODS

This was a hospital based cross sectional observational study conducted in the department of pathology at GMCH, Aurangabad, India.

The World Health Organization defines anemia as the level of haemoglobin below 13 g/dl in males over 15 years of age and below 12 g/dl in non-pregnant women over 15 years of age [12].

Inclusion criteria:

- Patients' aged ≥18 years with both gender
- Patients diagnosed as Anemia according to WHO criteria
- Patients who provide written informed consent

Exclusion criteria:

- Patients <18 years of age
- Patients whose haemoglobin percentage is within the normal range
- Patients with chronic diseases

Detailed information on socio-demographic characteristics (age, gender, residential status, education, socio-economic class, family type and anthropometric details) risk factors, clinical presentation and examination were recorded. Variables such as name, Investigations including complete hemogram, peripheral smear, ESR, thyroid function test, reticulocyte count, Iron profile, Vit B12, folic acid levels, stool for occult blood, endoscopy, bone marrow analysis and radiological investigations were evaluated

Statistical analysis: Descriptive statistics were computed with percentages, mean, standard deviation, and student's t-test was applied to test the association of age with occurrence of anemia, $p<0.05$ was considered statistically significant.

RESULTS

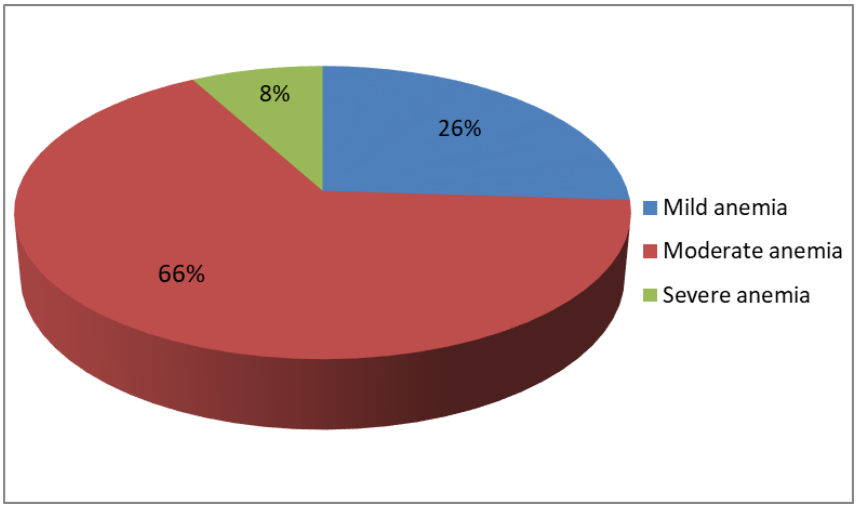
A total of 200 patients of iron deficiency anemia were enrolled and analysed. Among total most of them 137 (73.5%) were female patients, most commonly observed in 31 -40 years age group (35.5%), most of them (64.5%) residing in rural area, belong to lower socio-economic class (46%), lives in joint family (57.5%), education up to primary school (37%), and majority of them (45%) were laborer (Table 1).

Table 1: Distribution of study participants according to Sociodemographic variables

Sociodemographic variables		Frequency (n=200)	Percentage
Age Group (in years)	18-30	28	14%
	31-40	71	35.5%

	41-50	54	27%
	>50	47	23.5%
Gender	Male	63	26.5%
	Female	137	73.5%
Family type	Nuclear	85	42.5%
	Joint	115	57.5%
Residential Status	Urban	71	35.5%
	Rural	129	64.5%
Socio economic status	Lower	92	46%
	Middle	73	36.5%
	Upper	35	17.5%
Body mass index	Underweight	77	38.5%
	Normal	84	42%
	Obesity	39	19.5%
Education	Illiterate	52	26%
	Primary	74	37%
	Higher Secondary	49	24.5%
	Graduation	25	12.5%
Occupation	Laborer	90	45%
	Employee	41	20.5%
	Student	21	10.5%
	Other	48	24%

Most common being moderate anemia constituting 66% followed by mild anemia (26%) and severe anemia (8%).



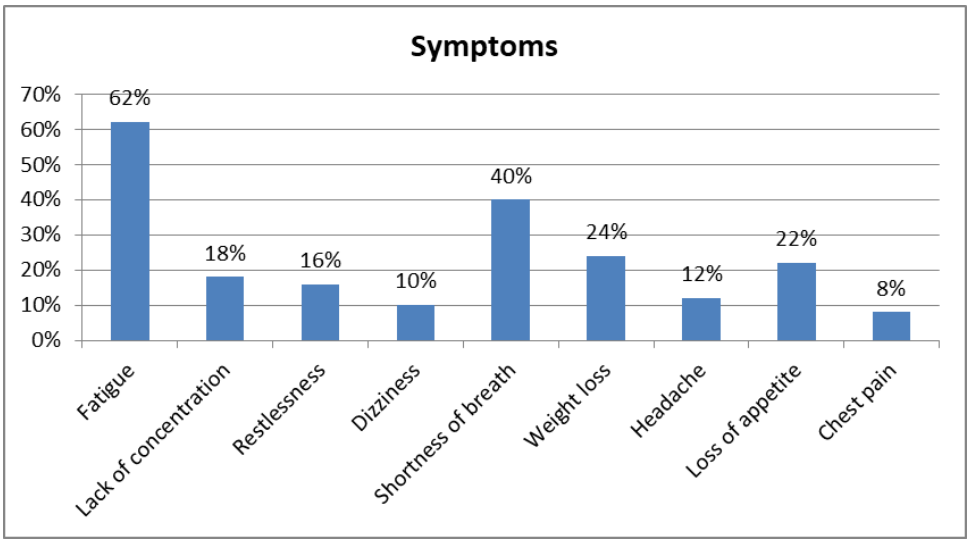
Graph 1: Severity of anemia among study subjects

Among risk factors of anemia nutritional inadequacy was the most common (62%) followed by Haemorrhoids (23%), pregnancy (18%), gastro intestinal pathologies (15%), Menorrhagia (13%), Hematuria (11%) and Hook worms infections in 7% cases [Table 2].

Table 2: Risk Factors of iron deficiency anemia

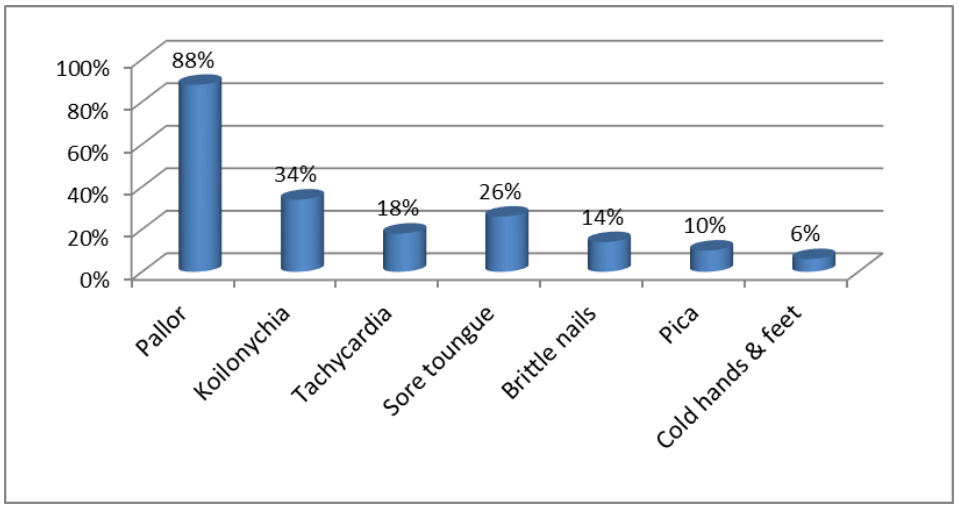
Risk Factors	Frequency	Percentage
Nutritional inadequacy	124	62%
Pregnancy	36	18%
Various gastro intestinal pathologies	30	15%
Menorrhagia	26	13%
Hemorrhoids	46	23%
Hook worms	14	7%
Hematuria	22	11%

The commonest clinical symptoms was fatigability (62%), followed by dyspnea (40%), weight loss (24%), poor appetite (22%) and lack of concentration (18%) [Graph: 2].



Graph 2: Clinical symptoms in iron deficiency anemia patients

The common clinical signs were pallor (88%), koilonychias (34%), and sore tongue (26%) [Graph: 3].



Graph 3: Clinical signs in iron deficiency anemia patients

DISCUSSION

The clinical presentation of IDA can range from being completely asymptomatic (found on routine testing) to varying degrees of weakness, fatigue, irritability, headache, poor exercise tolerance, and work performance.

The present study revealed that the prevalence of anemia is more in 31-40 years age group. This finding is similar to studies done by Raghuram et al [13] and Thankachan et al [14]. It was found in many studies that anemia is a common problem in reproductive age group women due to low income leading to low dietary intake of iron rich food, multiparity, lack of awareness, chronic blood loss or disease, mal-absorption, or a combination of all these factors.

The high proportion of anemia was observed in females compared to Males in this study, findings was consistent with prior studies done by Kandasamy et al [15], Sanjay et al [16] and Vitull et al [17].

In present study majority of the anemia patients were resided at rural area, belong to lower socio-economic class,

less education level, lives in joint family and labourer by occupation, our results are comparable with the Thyagaraja K, et al [18] and Wang, L, et al [19]. Lack of awareness about the problem coupled with their low educational status, poor nutritional practices, unhealthy food habits, low iron bioavailability in the diet, infections, etc. are some factors associated with lower haemoglobin levels in anemia population.

We have found that moderate anemia was most common followed by mild anemia, in agreement with the Fatima SH et al [20]. Majority of anemia cases were Microcytic, suggesting that iron deficiency was the main cause of anemia. The reason for higher incidence of moderate anemia cases in our study could be either poor compliance of women in taking iron and folic acid tablets supplied to them by the government or concurrent nutritional deficiency.

Our study reported that the, nutrition inadequacy, chronic blood loss (Haemorrhoids or GI bleeding), dietary iron deficiency and pregnancy were the common risk factors for iron deficiency anemia, accordance with the Joharah M, et al [21] and Jbireal JM, et al [22].

The common clinical presentation were fatigue, pallor, dyspnea, palpitation, weight loss, koilonychias and sore tongue in current study, consistent finding reported by Kumar A, et al [23] and A Aggarwal, et al [24].

CONCLUSION

The present study re-emphasize that anemia still is an important public health burden especially in women, moderate anemia being more prevalent and majority of anemia cases were Microcytic, suggesting iron deficiency as the main cause of anemia. Failure to evaluate anemia and delayed in diagnosis of potentially treatable conditions. Nonspecific symptoms like fatigue and weakness should not be ignored, an effort should always be made to reach etiological diagnosis before instituting treatment.

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