

## Prospective Observational Study to Provide Clinical and Laboratory Profile of Anaemia Patients at a Tertiary Care Hospital in Bihar, India

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Received: 03-08-2021 / Revised: 04-09-2021 / Accepted: 24-09-2021

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Conflict of interest: Nil

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### Abstract

**Aims:** Study of anaemia profile in a tertiary care hospital in Bihar, India.

**Methods:** This was a prospective observational study conducted in the Department of Geriatrics, Patna Medical College and Hospital, Bihar, India for 15 months. In all 100 patients thorough history was taken, general physical examination and systemic examination were done. Patients were subjected to routine blood investigations including complete blood count, peripheral smear study and serology for viral markers.

**Results:** 51 (51%) were easy fatigability and generalised weakness the most common symptoms of anaemia in our study. Incidentally detected patients constituted 31% of patients and were the second most common in occurrence. This was followed by breathlessness seen in 22% of patients. On systemic examination haemic murmurs on CVS examination were detected among 25(25%) patients. Bibasilar crepts not attributable to other diseases were found among 5 patients. Isolated hepatomegaly was found in 12(12%), splenomegaly in 7(7%) and hepatosplenomegaly was found in 8 patients. Moderate anaemia (defined as Hb between 8 to 10.9 g/dl in both males and females) was seen in 15% of patients. Whereas severe anaemia (defined as Hb less than 8 g/dl in both males and females) showed 85 (85%) highest occurrences. Microcytic hypochromic anaemia 50(50%) attributed to iron deficiency unless proved otherwise was the most common form of anaemia in our study. Dimorphic anaemia 25(25%) was the second most common suggesting that nutritional anaemia continues to predominate in our part of world.

**Conclusion:** we conclude that some extensive steps taken by WHO and Government bodies in educating and treating people about the disease.

**Keywords:** Anaemia, Clinical Profile, Laboratory Profile.

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### Introduction:

Anemia is a major health problem worldwide. It affects mostly preschool children, adolescents and pregnant women. There are about 1.2 billion adolescents in the world, which is equal to 1/5th of the

world's population and their numbers are increasing. Out of these, 5 million adolescents are living in developing countries. India's population has crossed the 1 billion mark, out of which 21% are

adolescents[1]. Adolescent period is very crucial, since these are the formative years in the life of an individual, when major physical, psychological and behavioral changes take place. The nutritional and the health needs of the adolescents are also more because of the growth spurt and the increase in physical activity in them[2]. In females, adolescence also marks the beginning of the menstrual cycle or reproduction. Adolescent girls are, therefore, at a high risk for anemia and malnutrition. Inadequate nutrition during adolescence can have serious consequences throughout their reproductive years of life and beyond[3].

Anemia is one of the most important disorders of blood in infancy and early childhood. These result in significant morbidity and mortality in children and constitute a public health problem of considerable importance[1]. Anemia is generally defined as a reduction in red cell mass or blood hemoglobin concentration characterized by decreased oxygen carrying capacity of blood which results in tissue anoxia producing various signs and symptoms. Anemia is not a diagnosis in itself but merely an objective sign of presence of disease. Anemia in children differs from those of adults as they tend to be more pronounced and develop rapidly. As much as 51% children in 0-4 years and 46% children 5- 12 years are anemic in developing regions[1-3].

Anaemia is an indicator of poor nutrition and poor health. It is a global public health problem affecting both developed and developing nations. In 2002 iron deficiency anaemia was considered amongst the most important contributing factor to the global burden of disease[4]. India is among the countries with highest prevalence of Anaemia in the world. It is estimated that about 20%-40% of maternal deaths in India are due to Anaemia; India contributes to about 50% of global maternal deaths due to Anaemia[5]. Anaemia is of different types. Iron deficient Anaemia is the most common

type of anaemia<sup>1</sup>. Quite frequently faulty nutrition is the cause of Anaemia. There are many factors like inadequate diet, unsatisfactory method of preparation of food, faulty social habits, unhygienic practices, associated infections and infestations contributing to the causation of nutritional Anaemia[6,7]. India lies partly in the tropics and partly in subtropics with extreme variations of climate. In the region where hot and humid climate prevail throughout the best part of the year, the loss of iron through sweat is appreciable. Iron is lost through sweat to the extent of 15mg per month. This suggests dermal loss of iron should be one of the possible contributing factors in the genesis of iron deficiency Anaemia in the tropics[6,7]. Our study aimed to provide clinical and laboratory profile of anaemia patients at a tertiary care hospital in Bihar, India.

### Material and methods

This was a prospective observational study conducted in the Department of Geriatrics, Patna Medical College and Hospital, Bihar, India for 15 months, after taking the approval of the protocol review committee and institutional ethics committee. 100 patients with anaemia were included in the study.

### Inclusion criteria

- Patients more than or equal to 16 years of age of both sexes.
- Patients with anaemia as per WHO definition.

### Exclusion criteria

- Patients not willing to give informed consent.

In all 100 patients thorough history was taken, general physical examination and systemic examination were done. Patients were subjected to routine blood investigations including complete blood count, peripheral smear study and serology for viral markers. Required radiological investigations were done and further studies like bone marrow examination, iron profile,

vitamin B12 and folate levels were done in selected patients who did not respond to therapy started based on peripheral smear

### Results

Among 100 patients studied 30(30%) were males and 70(70%) were females. In our study it was found that anaemia had its highest occurrence in the age group of 20-

report. Stool for occult blood was done among elderly patient presenting with iron deficiency anaemia.

30 years 58(58%) followed by below 20-year age group 20(20%). It was least among individuals aged above 50 years 3(3%) Table 1.

**Table 1. Demographic profile of the patients**

Gender	N=100(%)
Female	70(70%)
Male	30(30%)
Age (years)	
Below 20 years	20(20%)
20-30years	58(58%)
30-40years	12(12%)
40-50years	7(7%)
Above 50years	3(3%)

51 (51%) were easy fatigability and generalised weakness the most common symptoms of anaemia in our study. Incidentally detected patients constituted 31% of patients and were the second most common in occurrence. This was followed by breathlessness seen in 22% of patients (Table 2).

**Table 2: Symptomatology of anaemia patients**

Symptoms	Number of patients
Easy fatigability and generalized Weakness	51 (51%)
Breathlessness	22 (22%)
Swelling of limbs, puffiness of face	9 (9%)
Giddiness	12(12%)
Chest pain	3 (3%)
Fever	17(17%)
Tinnitus	6 (6%)
Asymptomatic (incidentally detected)	31(31%)

Pallor was noted in all patients. Platonychia/koilonychia suggesting iron deficiency anaemia was seen in 29(29%) of patients, whereas knuckle pigmentation suggestive of megaloblastic anaemia was observed in 19(19%) of patients. (Table 3).

17 (17%) patients presented with anaemia in failure as evidenced by elevated jugular venous pulse and pedal oedema. None of the patients in this study was due to hemolysis. Hence icterus seen in 8(8%) patients was due to ineffective erythropoiesis seen in patients with megaloblastic anaemia. On systemic

examination haemic murmurs on CVS examination were detected among 25(25%) patients. Bibasilar crepts not attributable to other diseases were found among 5 patients. Isolated hepatomegaly was found in 12(12%), splenomegaly in 7(7%) and hepatosplenomegaly was found in 8 patients.

**Table 3: Signs in patients with anaemia**

Signs	Number of patients
Tachycardia	52 (52%)
Tachypnea	19(19%)
Elevated JVP	17 (17%)
Pallor	100 (100%)
Icterus	8 (8%)
Pedal oedema	15(15%)
Platonychia/koilonychia	29 (29%)
Knuckle pigmentation	19(20%)

**Table 4: Degree of anaemia**

Degree	Number of patients
Mild anaemia	0 (0%)
Moderate anaemia	15(15%)
Severe anaemia	85(85%)

On laboratory examination degree of anaemia (as defined by WHO) was distributed as shown in Table 4. None of the patients admitted in the hospital had mild anaemia (defined as Hb between 11-11.9 g/dl in women and 11-12.9 g/dl in men aged 15 years or more). Moderate anaemia (defined as Hb between 8 to 10.9 g/dl in both males and females) was seen in 15% of patients. Whereas severe anaemia

(defined as Hb less than 8 g/dl in both males and females) showed 85 (85%) highest occurrence (Table 4). Microcytic hypochromic anaemia 50(50%) attributed to iron deficiency unless proved otherwise was the most common form of anaemia in our study. Dimorphic anaemia 25(25%) was the second most common suggesting that nutritional anaemia continues to predominate in our part of world (Table 5).

**Table 5: Peripheral smear study in patients with anaemia**

Peripheral smear	Number of patients
Microcytic hypochromic anaemia	50(52%)
Macrocytic anaemia	2 (2%)
Dimorphic anaemia	25 (25%)
Normocytic normochromic anaemia	21 (21%)

## Discussion

In our study it was found that anaemia had its highest occurrence in the age group of 20-30 years 58(58%) followed by below 20-year age group 20(20%). It was least among individuals aged above 50 years 3(3%). predominantly affecting the working class of the population. Similar observations were made in a study conducted by Azad KL et al.[8]. Statistically 71% of patients were females and rest were males depicting a female

preponderance. Such female dominance was also shown in studies conducted by Alvarez-Uria G et al, and Talwelkar SR et al.[9,10] WHO statistics noted that the prevalence of iron deficiency anaemia, most common cause of anaemia in females in the age group of 15-49 years is 52%[11]. This study upholds this fact as well. In our study 51 (51%) were easy fatiguability and generalised weakness the most common symptoms of anaemia in our study. Incidentally detected patients constituted

31% of patients and were the second most common in occurrence. Easy fatiguability as the predominant symptom was also noted in studies conducted by Dashratham P et al, and Gayathri BN et al.[12,13] Incidentally detected anaemia constituted the second most common class. This may be explained by the fact of lack of knowledge or presence of chronic anaemia. 22(22%) presented with breathlessness whereas puffiness of face and swelling of limbs was seen in 9 (9%) of patients. Fever secondary to anaemia and not attributable to any other cause was seen in 17(17%) patients. Fever as a symptom of anaemia was also noted in study conducted by S. Selvamuthukumar[14]. Anaemia causing tinnitus after ruling out neuro-otologic and other secondary causes was seen in 6(6%) patients.

As far as signs on general physical examinations were concerned pallor was the universal finding present in 100% of patients. Such predominance of pallor as a sign on examination was noted in studies conducted by Gayathri BN et al, and Vineetha et al.[13,15]. This was followed by tachycardia seen in 51(51%) patients. 16(16%) patients presented with anaemia in failure as evidenced by elevated jugular venous pulse and pedal oedema. None of the patients in this study was due to hemolysis. Hence icterus seen in 8(8%) patients was due to ineffective erythropoiesis seen in patients with megaloblastic anaemia. On systemic examination haemic murmurs on CVS examination were detected among 25(25%) patients. Bibasilar crepts not attributable to other diseases were found among 5 patients. Isolated hepatomegaly was found in 12(12%), splenomegaly in 7(7%) and hepatosplenomegaly was found in 8 patients. Dashratham P et al, in their study found that 76% of patients had cardiac murmurs[12]. Isolated hepatomegaly was found in 12(12%), splenomegaly in 7(7%) and hepatosplenomegaly was found in 8 patients. This study noted that 85% of cases presented as severe anaemia. This may be

because of the reason that mild anaemia is neglected by people, and they do not approach a doctor. Another reason may be illiteracy and lack of knowledge which makes them present to the hospital as severe anaemia cases. None of mild anaemia cases were noted in our study as they are often treated on outpatient basis and our study targeted inpatients. On peripheral smear examination microcytic hypochromic anaemia attributable to iron deficiency 50(50%) patients based on examination and observation of response to therapy was the most common cause of anaemia. Similar findings were noted by Kouli R et al, and Milman N et al.[16,17]. This was followed by dimorphic anaemia was found in 25(25%) patients as the second most common cause of anaemia. Hence nutritional anaemia continues to predominate as the most common cause of anaemia in our part of world.

### Conclusion

We conclude that some extensive steps taken by WHO and Government bodies in educating and treating people about the disease and the consequences of not getting treated, severe anaemia with or without failure continues as the most common mode of presentation of anaemia in medicine department of the hospital.

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