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Original Research Article

The Prevalence and Incidence of the Anaemia in Indoor Patients of Central India, Chhattisgarh State

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Abstract
Objective: *The main objective of the present study is an identifying to the incidence and prevalence of anaemia an In-door patients of Chhattisgarh.*
Research Design: *The current study was designed to the prospective observational cohort study.*
Method: *Diagnosis of the anaemia was made on the basis of various clinical findings (symptoms and sign) as well as mandatory and/or optional laboratorial investigation done in primary screenings.*
Result: *Finding of the study shows that the male patients of age group above 45 years 21/23 (56.75%) is higher than the age group. Whereas female patients age group of 31-45 and above 45 were higher than the other group of age, its value of 31-45 years of age group are 5/14(13.5%) and age group of above 45 years are 5/14(13.5%).Overall of the cases in anaemia was age group of above 45 years, it is 26/37 (70.22%), this value is higher in other age group.*
Conclusion: *Findings of the current study we concluded that the incidence and prevalence of moderate anaemia is higher than the severe and mild anaemia, normocytic of anaemia was the common type of anaemia of chronic disease in indoor patients. While the study was find the overall prevalence percentage is 41.57%, it is a prevalence rate of the anaemia in Chhattisgarh.*
Keyword: *Incidence, prevalence, anaemia, Indoor patients.*

Introduction

Anaemia is often defined in term of the WHO criteria, established in 1968 (Datta, Abraham, Mathew et al, 2006). The WHO definition of anaemia is a hemoglobin (Hb) concentration <130g/l in men and <120g/l in women (Ray, Schultink & Dillon, 1999). Anaemia can occur when the body does not produce enough red blood cells, such as in vitamin B12 deficiency. Anaemia can also occur when the body destroys old red blood cells faster than it produces new ones, such as in hemolytic anaemia and sickle cell disease.

Anaemia can also occur when there is a deficiency of hemoglobin in the red blood cells, such as in iron deficiency anaemia and thalassemia.

Iron deficiency anaemia is caused by insufficient dietary intake or absorption of iron to replace losses from menstruation or losses due to disease (MMWR, 1998). In the United States 20% of all women of child bearing age have iron deficiency anaemia, compared with only 2% of adult men.

The principal causes of iron deficiency anaemia in premenopausal women are blood lost during menses. Studies have shown that the iron deficiency without anaemia causes poor school performance and lower IQ in teenage girls, although this may be due to socioeconomic factors (Halterman, Kackzorowski, Aligne, et al 2001; Grantham McGregor & Ani, 2001). Worldwide the most common causes of iron deficiency anaemia is parasitic infections (hookworm, amebiasis, schisto-miasis and whipworm) (Iron deficiency anaemia report, 2010).

We did this study because our region i.e. Bilaspur (Chhattisgarh) is a tribal backward state of India where most of the population is suffering from anaemia of various kind like iron deficiency anaemia, sickle cell anaemia, megaloblastic anaemia, anaemia of chronic disease etc.

Objective

The main objective of the present study is an identifying to the incidence and prevalence of anaemia an In-door patients of Chhattisgarh.

Research design

The current study was designed to the prospective observational cohort study.

Method

Diagnosis of the anaemia was made on the basis of various clinical findings (symptoms and sign) as well as mandatory and/or optional laboratorial investigation done in primary screenings.

Sample: The present work was carried out in patients who visited the department of general medicine at Apollo hospital Bilaspur CG from 1-1-2010 to 30-6-2010. Total of 288 patients were visited during the six month of the study period, while 89 were fulfilling the inclusion criteria of study.

Inclusion criteria: All the patients age was> 18years, both sexes, Hb< 13gm/dl in males and Hb<12gm/dl in females.

Exclusion criteria: Patients who were excluded that <18 years, patients admitted with blood loss due to trauma, pregnant women and Hb > 13gm/dl in males and >12gm/dl in female.

Statistical analyses: Purpose of the current study the descriptive analyses was done by the help of SPSS 16.

Result

Findings of our study has been shown below the table-

Table 1 shows the sex wise distribution of anaemic patients an in-patients department (IPD)

Total no. of patients	Male	Female
37	23	14

Table 1 reveals that the out of 37 outpatients were fulfilling the inclusion criteria of current study, 23patient's male and 14 patients were female.

Table 2 shows the age wise distribution of in-dooranaemic patients

Age group	Male	Female	Total
18-30	1(2.70%)	4(10.8%)	5(13.5%)
31-45	1(2.70%)	5(13.5%)	6(16.21%)
>45	21(56.75%)	5(13.5%)	26(70.22%)
Total	23(62.16%)	14(37.83%)	37(100%)

Reveal the table 2 it is shows that the male patients of age group above 45 years 21/23 (56.75%) is higher than the age group. Whereas female patients age group of 31-45 and above 45 were higher than the other group of age, its value of 31-45 years of age group are 5/14(13.5%) and age group of above 45 years are 5/14(13.5%). Overall of the cases in anaemia was age group of above 45 years, it is 26/37 (70.22%), this value is higher in other age group.

Incidence of anemia in Indoor patients

Incidence of anaemia = $\frac{\text{no.of newly detected cases of Anaemia treated on OPD basis}}{\text{total No. of persons visited OPD during 3 months}} X100$

$= \frac{21}{89} \times 100$

= 23.59% is incidence of anaemia

Prevalence of anaemia in Indoor patients

Prevalence = $\frac{\textbf{no of total cases of anaemia treated on OPD basis}}{\textbf{total no. of persons visited during 3 months}} \times 100$

$= \frac{37}{89}$ **x100**

= 41.57% it is a prevalence rate of the anaemia in Chhattisgarh

Table 3 shows that the degree of anaemia in IPD male patients

Hb(ingm/dl)	**N**	**10-12.9**	**7-9.9**	**<7**
Age group (in years)				
18-30	1(4.34%)	-	-	1(4.34%)
31-45	1(4.34%)	-	1(4.34%)	-
>-45	21(91.30%)	1(4.34%)	11(47.8%)	9(39.1%)
Total	52(100.00%)	1(4.34%)	12(52.1%)	10(43.44%)

Table 3 shows the prevalence of moderate anaemia is higher in indoor male patients (91.30%) than severe and mild anaemia.

Table 4 shows that the degree of anaemia in IPD female patients

Hb(in gm/dl)	N	10-12.9	7-9.9	<7
Age group (in years)				
18-30	4(28.57%)	-	3(21.42%)	1(7.14%)
31-45	5(35.71%)	1(7.14%)	3(21.42%)	1(7.14%)
>45	5(35.71%)	-	2(14.25%)	3(21.42%)
Total	14	1(7.14%)	8(57.14%)	5(35.71%)

Table 4 shows that prevalence of moderate anaemia is higher in indoor female patients (57.14%) than severe and mild anaemia.

Table no.5 shows the type of anaemia in indoor patients according to MCV(infemtoliter)

Sex	Total No.	Normocytic (76-98)	Microcytic(<76)	Macrocytic(>98)
Male	23(62.16%)	12(29.73%)	6(16.21%)	5(13.51%)
Female	14(37.83%)	9(24.32%)	4(10.8%)	3(2.7%)
Total	37(100%)	21(56.75%)	10(27.02%)	6(16.21%)

Table 5 shows the prevalence of anaemia (according to MCV) is higher amongst males than females in Indoor patients (62.16%:37.83%).

Normocytic anaemia is the commonest type of anaemia according to MCV found in indoor patients (56.75%) followed by microcytic anaemia (27.02%) and macrocytic anaemia (16.21%).

Table 6 shows that the anaemia subtype in OPD patients

Types of anaemia	Male (52)	Female (44)
Normocytic anaemia		
1. Anaemia of chronic disease	**5(21.7%)**	**2(14.2%)**
2. Anaemia due to blood loss	**1(2.7%)**	**3(21.42%)**
3. Heamolytic anaemia	-	-
4. Pancytopenia		
a. Hypercellularity	**3(13.04%)**	**2(14.2%)**
b. Hupocellularity	**2.(8.6%)**	-
c. Acellularity	-	-
5. Anaemia due to infectious disease	**1(2.7%)**	**1(2.7%)**
Microcytic anaemia		
1. Iron deficiency anaemia	-	**2(14.2%)**
2. Anaemia of chronic disease	-	-
3. Thalassemia	-	**1(7.1%)**
4. Sideroblastic anaemia	**2(8.6%)**	-
5. Pancytopenia		
a. Hypercellularity	**3(13.04%)**	**1(7.1%)**
b. Hypocellularity	**1(2.7%)**	-
c. Acellularity	-	-
Macrocytic anaemia		
1. Megaloblastic anaemia	**4(17.3%)**	**1(7.1%)**
2. Hypothyroidism	-	-
3. Alcoholic liver disease	**1(4.3%)**	-
4. Pancytopenia		
a. Hypercellularity	**1(4.3%)**	-
b. Hypocellularity	-	-
c. Acellularity	-	-

Discussion

Anaemia is a public health problem that effects population of both poor as well as developed countries. Although the primary cause is iron deficiency anaemia, it is seldom present in isolation. More frequently, it coexists with a number of other causes, such as malaria, parasitic infections, nutritional deficiency and heamoglobinopathies. It occurs at all stages of life cycles, but more prevalent in women of child bearing age group and young children.

In our study we screened 89 inpatients, who visited in department of medicine at Apollo Hospital, Bilaspur, Chhattisgarh, between Jan. 2010 to June 2010, total duration of the screening of patients is six months.

Total 89 patients fulfilled our inclusion criteria, amongst 37 patients 23 was male and 24 were female.

Some studies have find the similar results and support of our study findings. Malhotra, Kumari, Kumar, et al, (2004) reported that overall prevalence of anaemia in 16-70 years of age group was 47.9% being 55.7% among female and 44.9% among males. Madhusnata, Halder, Ajanta, Chakrabarty, et al (2011) found that more than 50% of women in some areas were to have suffering from anaemia.

Another study done by Ludwieng, Belle, Lee, et al (2010) reported that the prevalence of anaemia was 53.7%. Gaytri & Rao (2011) showed the clinical presentation in pancytopenia due to various causes and evaluation of hematological parameter including bone marrow aspiration, it was found that the bone marrow was conclusive in all cases. The commonest marrow findings were hypercellurity with megaloblastic erythropoiesis. Similar study has found that the prevalence of anaemia with iron deficiency and minor thalassemia in women was 9.7%, 7% and 1% while men was 9.7%, 2% and 5% they concluded that there was not any significant association between MCV and sex (Kolahi, Farzin, Manouchehar, Khosbaten, 2008).

The drawback of our study was that the sample size and the duration were small, similar kind of

study in generalized population for a longer duration might have resulted in better result.

Conclusion

Findings of the current study we concluded that the incidence and prevalence of moderate anaemia is higher than the severe and mild anaemia, normocytic of anaemia was the common type of anaemia of chronic disease in indoor patients.

Conflict of interest- Authors are declaring that no any conflict interest.

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