



EVALUATION OF ANEMIA AMONG WOMEN OF REPRODUCTIVE AGE GROUP IN UPPER AND LOWER SOCIOECONOMIC STATUS- A CROSS SECTIONAL STUDY.

Community Medicine

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ABSTRACT

Anaemia is a global public health problem. It has been estimated that 20% of world's population is iron deficient. It occurs at all ages, but is especially common in women of child bearing age. **Aims And Objectives:** To study anaemia among women of reproductive age group in upper and lower socioeconomic status. **Material and Methods:** A cross sectional study was done over a period of one year and six months from January 2012 to June 2013 in the Department of preventive and social medicine, D.M.C darbhanga. Total number of 500 subjects were recruited in the study out of which 250 were women in reproductive age group visiting OPD and Indoors of different department another 250 subjects were all interns and post graduate female students of this institute. **Results:** Out of 250 subjects in lower economic status group 175(70%) cases belonged to microcytichypochromic anemia. 42(17%) were diagnosed Normocytic hypochromic anemia. 17(7%) were diagnosed as dimorphic anemia. 43% women were mildly anaemic, 43% women were moderately anaemic and 16% were severely anaemic. **Conclusion:** The incidence of microcytichypochromic anaemia is high in reproductive age group in low socioeconomic status due to inadequate diet and poor iron absorption.

KEYWORDS

Anemia, Reproductive age

Introduction

Iron deficiency anaemia is the most common type of anaemia met with in clinical practice. It occurs at all ages, but is especially common in women of child bearing age, in whom it is an important cause of chronic fatigue and ill health.

Anaemia is defined as haemoglobin level in blood below the lower extreme of normal range for the age and sex of individual. [1]

During the reproductive life of the female, menstruation, pregnancy, and lactation significantly increase the physiological requirements of iron. It has been reported to affect about 50-60% of young children and pregnant females and 20-30% of non-pregnant females in the developing countries. It is reportedly the most common cause of anaemia in general medical practice. [2]

When iron deficiency is sufficiently severe, the haemoglobin concentration in the blood decreases leading to iron deficiency anaemia, which has negative consequences especially in children, pregnant women and adolescents. Hence women with inadequate stores are at increased risks of developing iron deficiency anaemia during pregnancy. It also causes distortion of red cells with microcytosis and hypochromia and produces deleterious effect on health [3]

The screening procedure used most often is blood Hb determination, values falling below the cut off point are considered abnormal. WHO cut off points 12gm/dl for non pregnant women and 11gm/dl for pregnant women. Highest incidence of iron deficiency anaemia is seen in women of reproductive age. The incidence is much higher in underdeveloped countries to developed countries. [4]

According to WHO, in developing countries the prevalence of anaemia among pregnant women averages 56%, ranging between 35 to 100% among different regions of the world. Various studies from different regions of the country (INDIA) have reported the prevalence of anaemia to be between 33 and 100%. In a recent survey in Sweden, Rybo (1985) found that marrow iron stores were absent in 32% of 38 years old females. In India and other developing countries, incidence of nutritional anaemia in reproductive age groups ranges from 60-80% compared to 10-20% in developed countries. In Asia the prevalence of nutritional anaemia is particularly high in countries such as Bangladesh (74-80%), Indonesia (37-73%), India (34-69%) and Philippines (42-47%). [5]

The overall prevalence of anaemia in India has increased from 74.2% (1998-99) to 79.2% (2005-06). Nagaland has the lowest prevalence (44.3%), the Goa (49.3%) & Mizoram (51.7%). Bihar has the highest prevalence (87.6%) followed closely by Rajasthan (85.1%) and Karnataka (82.7%). [16] Since several decades it has been known to be

an important problem in most tropical countries. The advances made in the therapy of iron deficiency anaemia have greatly minimised the problem of this disease. [6]

In India, anaemia is the second most common cause of maternal deaths, accounting for 20% of total maternal deaths. Anaemia affects mainly the women in child bearing age group, young children and adolescent girls. Association of anaemia with adverse maternal outcome such as puerperal sepsis, ante-partum haemorrhage, post-partum haemorrhage and maternal mortality is no longer a debatable subject. Apart from the risk to the mother, it is also responsible for increased incidence of premature births, low birth weight babies and high perinatal mortality. [7]

In pregnant women WHO defined anemia as a reduction in haemoglobin level <11 gm/dl. It occurs in 40-80% of the pregnant women. Iron and folic acid deficiencies, malaria, intestinal parasitic infections and haemoglobinopathies are the principal causes of anaemia in pregnancy. [8]

Socioeconomic factors such as access to adequate health care, food availability, safe drinking water, environmental sanitation and personal hygiene in as much as they contribute to inadequate diet and prevention also contribute to anaemia. According to WHO, the cut off point for diagnosis of anaemia in different age group on the basis of Hb Concentration is-Haemoglobin level at or below 9 gm/dl required detailed investigations and appropriate treatment. Anaemia is responsible for 20% maternal deaths in the third world countries. [9] However, risk factors such as anaemia in pregnancy can be controlled and monitored by good antenatal care and appropriate action, including referral, in accordance to the level of severity of the anaemia. [10]

Hence the present study was performed to evaluate the status of anemia among female so free productive age groups (15-49years) in high and low socio-economic status.

Materials and Methods:

A cross sectional survey comparative in nature was done over a period of one year and six months from January 2012 to June 2013 in the Department of preventive and social medicine, D.M.C Darbhanga. A total number of 400 subjects were recruited into the study which were divided into two groups- lower economic status (LES) group and upper economic status (UES) group on the basis of Kuppuswamy's socioeconomic status scale. The subjects in LES group (n=250) were women in reproductive age group attending OPD and Indoors.

An interview-administrated questionnaire was used to collect information from participants on the demographic (i.e., age, gender and education attainment), socioeconomic (i.e., father or mother

occupation, household income) and medical treatment (i.e., whether the participant has taken antihelminthic drugs and iron supplement) of the participants which will assist the assessment of potential factors associated with serum iron status. It was adapted from a standard questionnaire.

The subjects in UES group (n=250) included all interns and post-graduate female students of DMC, Darbhanga, from January 2012 to June 2013. 77% of the students were normal because of the fact that anaemia prevalence in many areas persists at moderate to severe levels according to internationally accepted standards primarily reflects the difficulty of meeting the dietary iron needs of women. Clinical history and thorough examination was performed. Consent was taken from each patient after introducing the importance and procedure of the test.

Sample Collection:

Venous blood was collected in all women with aseptic precautions in EDTA anticoagulant for haematological investigations. The hematological investigations were performed on ABX Micros 60, an automatic cell counter with standard calibration using fresh whole blood.

As a part of CBC, red blood cell indices (MCV, MCH, MCHC), PCV, RDW, White blood cell count and Platelet count were obtained by ABX Micros 60. All these tests have been done in the department of pathology, PMCH, Patna. Peripheral blood smear study was performed on each of these patients. A good peripheral smear was made and the blood film was stained by Leishman's stain for morphological classification of anemia.

Statistical Analysis:

Prevalence of anaemia and its types were calculated using percentage method. For all data analysis level of significance was set as $p = 0.05$. Data was analyzed by using the software Program Statistical package for the Social Sciences (SPSS). Spearman rank correlation test was used for finding the correlation between socio-economic factors and the prevalence of anaemia. Preceding the study, approval was obtained from the Institutional Research and Ethics Committee.

Results: These are the result of our study.

Table: 1. Age wise distribution of cases with Mild, Moderate and Severe anaemia

Age (In Years)	Mild Anaemia	Moderate Anaemia	Severe Anaemia	Total
15-20	20	23	6	49
21-25	21	28	8	57
26-30	29	26	5	60
31-35	28	20	11	59
36-40	6	13	6	25

Table- 2. Showing relation of RBC Count with Severity of Anaemia

RBC	NORMAL	REDUCED
Mild anaemia (n=104)	32	70
Moderate anaemia (n=110)	30	82
Severe anaemia (n=46)	0	46
Total	62	188

Table-3: Correlation of Age with Type of Anaemia:

Age in yrs	Dimorphic Anaemia	Normocytichy pochromic Anaemia	Microcytic hypochromic Anaemia	P Value
15-20	6	8	33	<0.1
21-25	7	11	37	
26-30	4	14	40	
31-35	5	13	29	
36-40	1	6	32	
Total	27[10%]	52[20%]	216[86%]	

Discussion

The prevalence of anemia in women of reproductive age in developing countries is still high. 52% of reproductive age group women in the world are estimated to be anemic; compared to 23% in industrialized countries. [11]

During the last 2 decades, automated blood cell counters have undergone a formidable technological evolution owing to the introduction of new physical principles for cellular analysis. For some

consolidated parameters, such as WBC and RBC counts, hemoglobin concentration and mean corpuscular volume (MCV), analytic performance is generally excellent.

From the RBC volume distribution histogram, modern analyzers calculate an index of heterogeneity known as the RDW, almost always expressed as a percentage coefficient of variation and less frequently as the SD. The usefulness of the anisocytosis obtained from the measurement of RBC size (diameter) has been recognized. [12]

In the present study, 250 women of reproductive age group with haemoglobin was less than 11 gm/dl were included. Anaemia is one of the most common medical conditions met during women of reproductive age group. In the present study, keeping Hb standard as 11 gm%, maximum number of cases i.e 43% were classified as moderate anaemia and minimum number of cases i.e 17% were classified as severe anaemia.

Table: 4 Showing Age Distribution Of Anemic Cases in comparison with other studies

Authors	20-25Yrs	26-30Yrs	31-35Yrs	36-40Yrs
AhmadN	30.9%	20.9%	2.36%%	45.84%
PaiPM	48%	14%	13%	25%
HaniffJetal	53.6%	37.9%	4.2%	4.3%
Present Study	22.7%	23.8%	20.3%	15.4%

Authors	Mild Anemia	Moderate Anemia	Severe Anemia
RatnamR	30.2%	35.8%	3.3%
AhmadN	30.17%	50.9%	18.9%
Present Study	40.4%	43.7%	17.7%

In the present study, keeping haemoglobin standard as 11 gm% maximum number of cases was classified as moderate anaemia (43%) and minimum number of cases was classified as severe anemia (17%). [13]

The present study shows maximum number of cases in the category of microcytic hypochromic anemia (72%) and minimum number of cases in the category of dimorphic anemia (9%).

Varying selection criteria for cases to be included in the study was probably the contributing factor to the variability in sensitivity of RDW. [14]

Beutler E [Beutler E. The Red Cell indices in the diagnosis of Iron deficiency anemia. Ann Intern Med 1959; 50: 313-322] in his series of 80 patients with iron deficiency anemia, found out that in most of his patients red cell indices indicated the presence of hypochromasia and microcytosis. [15]

Among the less severely anemic patients normal red cell indices were common and examination of stained smears was not superior to determination of red cell indices. The examination of stained smears was important but could not exclude the diagnosis of iron deficiency anemia on the basis of normal appearance of red cells on smear examination alone. This was particularly true in mildly anemic patients. [16]

In our present study of 250 women, 205 women had low MCV values and 45 women had normal MCV values, the mean MCV value was decreased as the severity of anemia increased from mild, moderate and severe.

In our present study of 250 women, 214 women had low PCV values, 36 women had normal PCV values and the mean PCV values was decreased as the severity of anemia increased from mild to moderate to severe anemia.

In this study examination of stained peripheral smears revealed a microcytic hypochromic anemia in 180 women (72%). Thus our study is in accordance with the study done by Beutler E. [Beutler E. The Red Cell indices in the diagnosis of Iron deficiency anemia. [17]

Jen P [Jen P. The Value of peripheral blood smear in anaemic patients. Arch Intern Med 1983; 143: 1120] in their study concluded that blood smear examination performed no better than RBC indices in detecting

probable iron deficiency anaemia. Our study is in accordance with the above findings and it was found that red cell indices were more sensitive than peripheral smear findings. This was true specifically in cases with mild anaemia.

In the present study of 250 women, platelet counts were found to be normal in 200 women (80%), increased in 22 women (9%) and decreased in 27 women (11%). The probable reason for the thrombocytosis is presumed to be related to increase in thrombopoietic substance, low level of circulating haemoglobin and low level of serum or tissue iron. The exact cause for thrombocytopenia is unknown. A concomitant deficiency of folic acid or vitamin B12 in some of them could be reasonable explanation for thrombocytopenia.

Conclusion:

Anemia is common in women of reproductive age group in low socioeconomic status due to inadequate diet and poor iron absorption.

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