ASSESSMENT OF ANEMIA IN PREGNANCY – PREVALENCE, TYPING AND AWARENESS

Medical Science

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ABSTRACT

This study aims at estimating prevalence of anemia and type it with help of red blood cell (RBC) indices. It also aims at assessing knowledge regarding anemia and to see correlation between knowledge scores with prevalence of anemia in antenatal women attending ANC (Antenatal Care) clinics. Total 100 women attending ANC OPD in a tertiary care hospital over a period of a month were randomly included in study. They were screened for anemia with Hemoglobin estimation and red blood cell indices. Their knowledge scores were also estimated with help of preformed questionnaire. Knowledge scores were correlated with prevalence of anemia. Prevalence of anemia in present study was 60% with microcytic hypochromic anemia being most common type suggesting iron deficiency. High occurrence of anemia was significantly observed in subjects with poor knowledge scores, suggesting need for imparting knowledge during ANC visits to prevent anemia.

KEYWORDS

Anemia, Pregnancy, RBC Indices, Knowledge

Introduction :

Anemia is a condition in which Hemoglobin concentration is lower than normal or it reflects presence of fewer than normal RBCs in circulation. Anemia is one of the most widespread nutritional deficiency disease and a major preventable public health concern all over the world affecting all ages.

It is a one of the most prevalent health issue among women within reproductive age group. According to WHO the prevalence of anemia in reproductive age women is 14% in developed countries as compared to 51% in developing countries.[1,2] WHO has estimated that prevalence of anemia among reproductive age is 65-75% in India.

A simple tests like hemoglobin estimation and red blood cell indices (MCV, MCH, MCHC) helps in diagnosis and typing of anemia, which also points towards the cause of anemia and helps in further management.[3,4]

Iron deficiency anemia is one of the commonest forms of anemia and its prevalence is high among reproductive age women. The main reason is excessive loss of iron or demand of iron associated with menstruation and child birth. It is a critical health concern as it affect growth, energy levels and also leads to various health problems. It is one of the main cause of morbidity in reproductive age and a key factor to low birth weight.[2,4,5]

Reproductive age women are at the highest risk for anemia. Risk for anemia is further aggravated by poverty, illiteracy, ignorance, lack of knowledge regarding iron deficiency anemia and inadequate accessibility to health care.[2,5]

Despite easy accessibility to the healthcare in urban area as compared to rural area, prevalence of anemia remains high as shown by many studies.[2,5,6] So awareness and knowledge regarding anemia need to be tested in order to prevent anemia and its consequences.

Thus study aims at determining the burden of anemia i.e. prevalence of anemia in reproductive age group by estimation of hemoglobin levels of mothers attending ANC (Antenatal Care) OPD. Blood indices and peripheral smears were also assessed to determine type of anemia, which further helps in treatment of anemia.

It also aims at assessing knowledge regarding anemia in pregnant women with the help of predesigned questionnaire and to determine the relationship between prevalence and knowledge of anemia.

Material and Methods:

Hundred subjects attending ANC OPD were examined randomly over a period of 1 month with informed consent. Their knowledge of anemia was assessed with the help of predesigned questionnaire. Whenever needed subjects were interviewed (e.g illiterate subjects). Hematology data for all subjects was gathered from pathology laboratory. Complete blood counts with indices were obtained along with peripheral smear examination. Complete blood counts with haemoglobin in pathology departments were estimated by using sysmex KX21 cell counter. Haemoglobin levels less than 11gm/dl were considered as anemia. Severity of anemia was graded according to WHO classification.[5] Anemia was typed on basis of erythrocyte indices and peripheral smear examination.

Knowledge scores were calculated based on questions answered ranging from minimum score of 0 to maximum score of 24. Chi square test was applied to demonstrate relationship between knowledge scores and anemia.

Results:

Total 100 subjects were included in study. The age of subjects involved in present study ranged from 19 to 35 years. Majority (90%) were in age group of 19 to 25 years. Among 100, eighty were primigravida and 20 were multigravida.

Hemoglobin among screened ANC population ranged from 5.8-14.2 with mean of 10.4 with standard deviation of +/- 2.2 Sixty out of 100 subjects attending ANC OPD were anemic which were graded according to WHO grading. Following histogram shows grading of anemia.

**Graph 1. Distribution of anemic cases according to severity.**
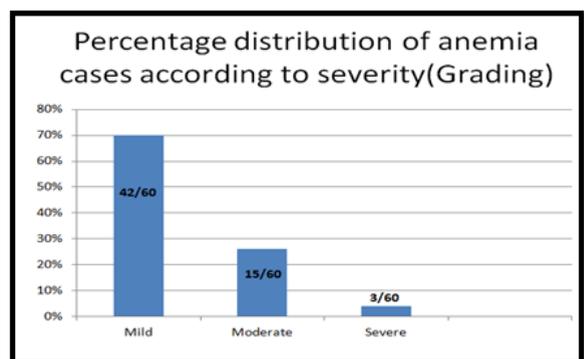
The most common morphologic type of anemia was microcytic hypochromic anemia. Out of 60 anemic subjects 48(80%) showed microcytic hypochromic anemia, while 6 cases each of normocytic and macrocytic anemias were observed. Following table and graph depicts the distribution of morphologic types of anemias.

Table 1 : Distribution of anemia in screened ANC population

| Subjects (n=100)	No. of cases	Percentage
Healthy non anemic	40	40%
Microcytic anemia	48	48%
Macrocytic anemia	06	06%
Normocytic anemia	06	06%

Graph 2. Percentage distribution of various types of anemias (60 cases). [Microcytic (80%), Normocytic (10%), Macrocytic (10%)]
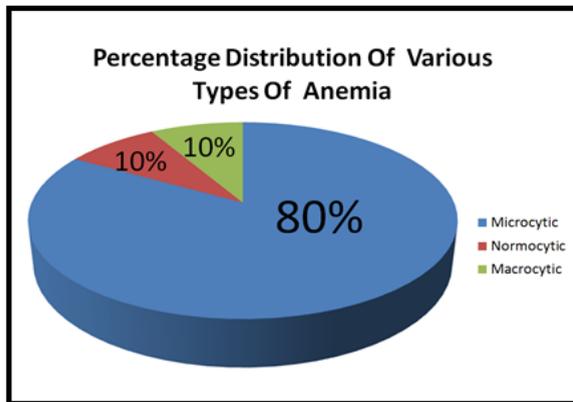
Erythrocyte indices were estimated for all subjects. MCV ranged from 56-114 fl with mean of 77.36 fl. MCV was found to be low in all cases of microcytic anemia. It ranged from 56 to 72. It was raised in all cases of macrocytic anemia and ranged from 102 to 114 fl. Reduced MCH and MCHC was observed in 55% and 50% of subjects respectively. Reduced MCH and MCHC was observed in almost all cases of microcytic anemia. The cases of normocytic normochromic anemias showed reduced RBC count and Hematocrit with normal indices. All cases were also confirmed by peripheral smear examination. Among 3 cases of severe anemia 1 was microcytic and 2 were macrocytic anemias.

We assessed knowledge scores of screened ANC subjects with help of predesigned questionnaire. Knowledge scores among screened ANC population ranged from 0-17 with mean score of 7.6. The following graph shows knowledge scores of screened ANC population.

Graph 3: Knowledge regarding anemia among screened ANC population
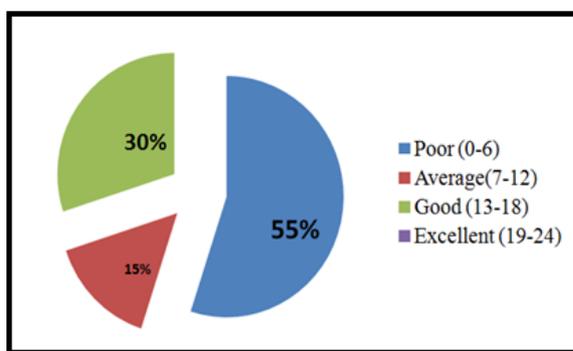
We divided knowledge scores in good knowledge (>50 % questions anwered)and poor knowledge (<50% questions answered) groups. The relation between Knowledge scores and prevalence of anemia was determined statistically as follows.

Following table shows correlation between occurrence of anemia and knowledge scores.

Table 2 : Correlation of Knowledge scores with occurrence of anemia.

Knowledge regarding anemia	Score >50% Good knowledge	Score<50% Poor knowledge
Anemia present	9	51
Anemia absent	21	19

Chi square test was applied to see the difference between the 2

knowledge groups. The difference was found to be statistically significant with Chi square value of 14.335 and p value of 0.00 which is less than 0.05.

Discussion:
The aim of study was to assess prevalence and knowledge regarding anemia among pregnant women in urban area. Hundred women attending ANC OPD were recruited in study. Overall prevalence of anemia in pregnancy in present study was 60% with majority falling (70% of anemia cases) in mild anemia. In India prevalence of anemia in pregnancy ranges from as low as 33% to as high as 96%.[6,7,8] Similar results were observed in a study carried out by P Mishra (2012) where about 96.8% of the subjects were anemic and majority of anemic women were in category of mild to moderate anemia. Manmeet kaur and Kamaljit Singh (2009) also conducted a similar kind of study in an urban area of Chandigarh and they found overall prevalence of anemia among reproductive age women was 73.3%. Another study carried out in Karnataka (NFHS 3-2005-06) also showed that prevalence of anemia among rural reproductive age women was about 52.7%. Study conducted by Kundap R. P. et al. in Pune district revealed overall prevalence of 66% in antenatal women, with rural population showing higher prevalence (81%) than urban population (51%).[2,9]

Importance of erythrocyte indices have been established since long back. Erythrocyte indices helps in establishing etiology for anemia.[3] In present study most common morphologic type of anemia is microcytic hypochromic anemia. All (48) cases of microcytic hypochromic anemia showed low MCV, MCH, MCHC with high RDW. Neha tyagi et al and Babita bansal et al also showed similar result in their study with most common type of anemia being microcytic hypochromic.[8] Low MCV MCH and MCHC are indicative of iron deficiency anemia. Study by Rigvardhan et al have also confirmed these findings and states that the Hb MCV and MCHC shows correlation with ferritin levels. It also mentions that subclinical iron deficiency cannot be diagnosed with red cell indices as sufficient changes do not develop in RBCs to be picked up by routine hematological cell counters.[4] Though no iron studies have been carried out in present study it is an established fact that commonest cause of microcytic hypochromic anemia is iron deficiency.[3,8] Similarly macrocytosis also indicates B12 or Folic acid deficiency. Not all cases of macrocytosis occurs because of nutritional deficiency. Some of them exhibit physiological macrocytosis because of iron suppliments.[10] Six cases (15%) of normocytic normochromic anemia were also noted in present study with reduced PCV and RBC count in all indicating probable blood loss or production defect. Similar findings were seen by Neha tyagi et al.[8]

Various studies conducted in rural as well as urban areas showed that prevalence of anemia in pregnancy is more in rural area than urban area owing to scarcity of health facility and illiteracy.[2,9,11,12] Most of them have also revealed importance of knowledge , education and its relationship with occurrence of anemia. Poor education and knowledge are associated with higher occurrence of anemia in pregnancy. Despite good education, easy availability of health facilities and other resources in urban area, present study shows high prevalence (60%) of anemia among pregnant women attending ANC clinic. Other studies have also shown similar findings.[2,9] In present study overall 55% subjects have poor knowledge. When we compared prevalence of anemia in good knowledge group verses poor knowledge group we found statistically significant difference (p<0.05) in two groups for occurrence of anemia with significant higher prevalence of anemia in poor knowledge group. This suggests that despite all health facilities and education, knowledge of anemia in urban population is inadequate. Thus educating and imparting knowledge during regular ANC visit can reduce prevalence of anemia and related hazards to both mother and foetus. Study by Raksha et al, Mamata et al and Imunticha Tashara et al suggested similar inference.[2,11,12]

Conclusion:
Prevalence of anemia in pregnancy remains high in urban area due to inadequate knowledge regarding anemia. Screening for anemia with hemoglobin and red blood cell indices are extremely important for early diagnosis and intervention. Erythrocyte indices give clue towards etiology and help in early intervention.

Prevalence of anemia can be reduced by educating and imparting knowledge regarding prevention of anemia to women attending ANC clinics.

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