Prevalence of Anemia in Reproductive Age Females in Aligarh: A Retrospective Study.

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Abstract:
Introduction*: Anaemia is one of the most common nutritional disorders with a prevalence of approximately, 52%. It has public health importance in developing countries like India where it is the most widespread nutritional problem. Evaluation of women in their reproductive years irrespective of their pregnancy status provides a critical development of effective intervention strategies to curb anemia related complications. The aim of this study was to establish the prevalence of anemia among the female patients in the reproductive age group (18-42years).*
Material & methods*: It is a retrospective record based study. The study included female patients (aged 18-42 years) attending gynecological OPD. Cases registered from 1st January 2017 to 31st December 2017 were included in the study. Hemoglobin level was taken from the laboratory records and was classified as mild (9.0-11.9 gm/dl), moderate (7.0-9 gm/dl) and severe (<7.0gm/dl) based on WHO classification.*
Results*: The Data was analyzed through percentage analysis. The overall prevalence of anemia among reproductive age females was 47.81% whereas the prevalence in the pregnant group was 14.9%.*
Inference*: Present study undertaken among females of reproductive age group to detect prevalence of anemia brings out the fact that iron deficiency anemia among this group is still prevalent and dietary intakes need to be further augmented to address the problem.*
Key Words: *Anemia, Reproductive age, Females, Retrospective, Hemoglobin.*

I. Introduction

Anaemia is one of the most common nutritional disorders and it has public health importance in developing countries like India where it is the most widespread nutritional problem. Prevalence of anemia in South Asia is among the highest in the world, mirroring overall high rates of malnutrition.[1] The prevalence of anemia in Indian females is approximately, 52%. Fifteen percent of these women are classified as moderately anemic (Hb7.0–9.9g/dl) and 2% as severely anemic (Hb <7.0g/dl). While there are regional differences, prevalence rates across the states are remarkably similar, reflecting underlying determinants that include diets low in heme-iron and high in phytates, high levels of malaria and other infectious diseases, and frequent reproductive cycling that depletes iron stores.[2, 3]

Well-documented consequences of anemia include diminished learning ability, reduced work capacity, increased morbidity from infections, and greater risk of death associated with pregnancy and childbirth.

As defined, anemia is a condition characterized by a decrease in the concentration of hemoglobin in the blood. Hemoglobin is necessary for transporting oxygen to tissues and organs in the body. Hemoglobin testing is the primary method of anemia diagnosis. [4] Based on concentration of hemoglobin in the blood, anemia is classified into three groups as mild, moderate or severe.

Mild anaemia:
Mild anemia corresponds to a level of hemoglobin concentration of 9.0-10.9 gm/dl for pregnant women and 9.0-11.9 gm/dl for non- pregnant women.

Moderate anaemia:
Moderate anaemia corresponds to a level of 7.0-9 gm/dl; women with moderate anaemia have substantial reduction in work capacity and may find it difficult to cope with household chores and child care.

Available data from India and elsewhere indicate that maternal morbidity rates are higher in women with Hb below 8 gm/dl. They are more susceptible to infections and recovery from infections may be prolonged. Premature births are more common in women with moderate anaemia. They deliver infants with lower birth weight and perinatal mortality is higher in these babies.[5, 6]

Severe anaemia:
Severe anaemia (<7.0 gm/dl) is dangerous because it indicates that there may be one or more serious nutritional deficiencies or an underlying medical problem that requires thorough assessment and treatment.[7]
Most studies of IDA (Iron deficiency anemia) have been undertaken in pregnant females or in adolescent females. Evaluation of women in their reproductive years irrespective of their pregnancy status provides a critical development of effective intervention strategies to curb anemia related complications. Further, very limited data is available on the prevalence of anemia in the reproductive age group.
The aim of the present study was to analyze the retrospective data to establish the prevalence of anemia among the female patients in the reproductive age group(18-42years) attending the gynecology OPD of Ajmal Khan Tibbiya College, AMU Aligarh.

II. Material & Methods
Study setting: Study was conducted at Gynecological OPD, Department of *Amraze Niswan Wa Atfal* (Gynecology and Obstetrics), Ajmal Khan Tibbiya College AMU, Aligarh India.

Study period: Data regarding the anemic patients in the reproductive age group was collected and analyzed from 1st January 2017 to 31st December 2017 over 15 days period from 1st January to 15th January, 2018.

Study design: It is a retrospective record based study. The study included female patients (aged 18-42 years) attending gynecological OPD and referred to the *Amraze Niswan* post graduate laboratory for routine examination for the estimation of Hb levels by Sahli's method/ acid hematin method.[8]

Sample size: Cases registered from 1st January 2017 to 31st December 2017 were included in the study.

Data collection: Permission for conducting the study was taken from concerned authorities. Data regarding the patients attending the gynecological O.P.D was taken from the OPD record register. Hemoglobin level was taken from the laboratory records and was classified as mild (9.0-11.9 gm/dl), moderate (7.0-9 gm/dl) and severe (<7.0gm/dl) based on WHO classification.

Data analysis: The Data was analyzed through percentage analysis.

III. Results
Table 1: Age distribution of patients studied:

Age in years	No. of patients	%
18-26	4709	54.0
27-34	2241	25.6
35-42	1792	20.4
Total	8742	100.0

The total no. of patients in the age group of 18-42 years was found to be 8742. The ANC cases were 731 (Table 2). Hence, the females in the reproductive age group who were non-pregnant were 8011, and therefore the data was analyzed for them.

Table 2: **Age distribution of pregnant and non-pregnant patients:**

Patients	18-26 years	27-34 yrs	35-42yrs	Total
ANC cases	295	409	27	731
Non-pregnant females	4,414	1832	1765	8011

Table 3: Patients found to be anemic in the pregnant group:

Age in year	Mild	Moderate	Severe	Total
18-26	38	14	4	56
27-34	28	16	8	52
35-42	1	0	0	1

Table 4: Percentage analysis in the pregnant anemic females:

Age group	Percentage analysis	Total %age
18-26yrs	**M**-(38/295) x 100= 12.88% **Mo**-(14/295) x 100= 4.74% **S**-(4/295) x 100= 1.35%	14.22%
27-34yrs	**M**-(28/409) x100= 6.84% **Mo**-(16/409) x 100= 3.91% **S**-(8/409) x 100= 1.95%	12.52%
35-42yrs	**M**-(1/27) x 100= 3.70% **Mo**-(0/27) **S**-(0/27)	3.70%

Table 5: Age distribution in Mild, Moderate and Severe anemia in non-pregnant patients:

Age in year	Mild	Moderate	Severe	Total
18-26	414	224	49	687
27-34	216	73	21	310
35-42	178	64	18	260

Table 6: Percentage analysis in the three Age groups of Non-Pregnant anemic females.

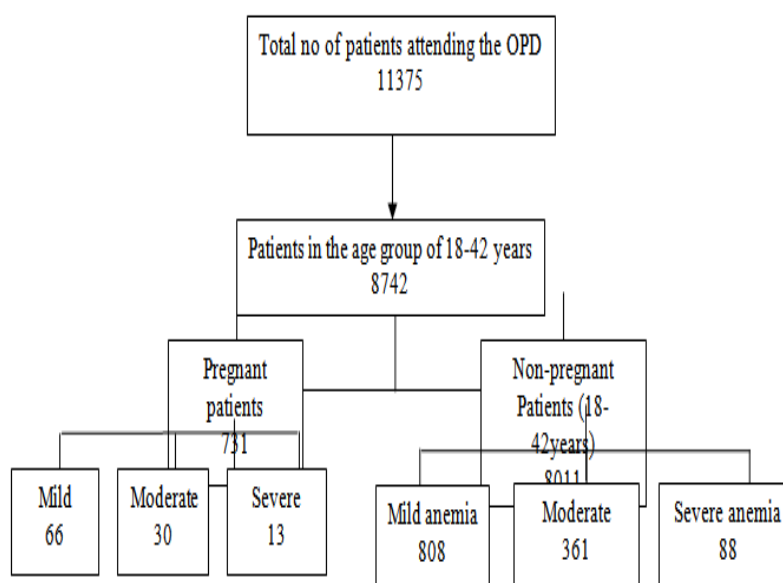| Age Group	Percentage analysis	Total %age
18-26yrs	**M**- (414/4414) X 100= 9.37% **Mo**- (224/4414) X 100 = 5.07% **S**- (49/4414) X 100 = 1.11%	15.55%
27-34yrs	**M**- (216/1832)= 11.79% **Mo**- (73/1832) =3.98% **S**- (21/1832) X 100 = 1.15%	16.92%
35-42yrs	**M**-(178/1765)X 100= 10.08% **Mo**-(64/1765)X 100 = 3.62% **S**-(18/1765) X 100 = 1.01%	14.71%

Figure1: Flowchart showing the patients evaluated for prevalence of anemia.

IV. Discussion

Our study is one of the hospitals based and retrospective study which indicates that anemia is a serious health problem. The study population comprised of total 8742 female patients of reproductive age. There were 8011 female patients who were non-pregnant and 731 patients were found to be ANC cases. The overall prevalence of anemia among reproductive age females was 47.81% whereas the prevalence in the pregnant group was 14.9%.

In the present study maximum number of cases was observed between 18-34 years accounting for 32.47 %. This correlated closely with the study of Ahmad N, 2011 whose study observed 51%.[9] This signifies that adolescent age and the young middle age group is more prone to develop anemia and thereby is more vulnerable to its sequelae.

Similarly, in the pregnant group of females maximum number of cases belongs to the 18-34 years age group accounting for 26.74%.

Improper Antenatal care and pre-pregnancy deficiency of iron can further deplete iron stores in pregnant females. This deficiency would then result in conditions such as abortions, premature birth, post partum hemorrhage (PPH), low birth weight (LBW), malnourished fetuses giving rise to high risk pregnancies.[10]

In this study we tried to rule out retrospectively the percentage prevalence of Iron deficiency anemia in reproductive age females in the different age groups.

Iron deficiency usually develops in a sequential manner over a period of negative iron balance, such as periods of blood loss and/or prolonged iron-deficient diet, accelerated growth in children and adolescents as well as during pregnancy and lactation. [11] Further research is recommended to identify the specific risk factors for anaemia. It may be helpful to implement measures to improve nutritional knowledge and awareness among mothers and health workers. Finally, nutrition education and intervention programs should address anaemia with a focus on both the dietary quantity.[12] Intervention programs based on food diversification, food fortification, iron supplementation and controlling infectious disease should be considered. Periodic deworming and oral iron supplementation are primary courses for prevention and cure of anemia on immediate measures.[13]

Inference:

Present study undertaken among females of reproductive age group to detect prevalence of anemia brings out the fact that iron deficiency anemia among this group is still prevalent and dietary intakes need to be further augmented to address the problem. Further some other factors like heavy menstrual blood loss and parity levels may account for such an effect. Hence, health education, improved dietary intake, particularly among female of reproductive age would help in addressing the important preventable disorder, which has a bearing on mother and child health.

Limitations of the study:

- This was a retrospective study; hence much data cannot be extracted such as the cause of anemia in reproductive age group was not ruled out.
- The socioeconomic and the dietary status of the females attending the OPD could not be accessed through the records and hence the two most important risk factors were not associated to the cause of anemia.

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