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RESEARCH ARTICLE
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PREVALENCE OF ANEMIA AMONGST NON-PREGNANT FEMALES VISITING GYNAECOLOGY OPD IN A TERTIARY CARE TEACHING HOSPITAL IN NORTH INDIA (NORTH WEST UTTAR PRADESH).

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Abstract:
Background: Anemia is a major health problem worldwide, especially in developing countries like India. The most important cause of anemia is iron deficiency, which can be prevented by early oral iron supplementation.
Methods: This cross-sectional study was conducted in the department of Gynaecology of our tertiary care teaching institution for a period of 6 months. 132 women attending to the Gynaecology OPD were screened for anemia. Pregnant females were excluded. Each patient was interviewed using a structured interview schedule and the data obtained was evaluated.
The present study has been designed as a cross-sectional study in NCRIMS, Meerut from 1 May 2022 – 31 October 2022.
RESULTS: A total number of 132 patients of iron deficiency anaemia aged between 10- 60 years were identified during the course of this study. Iron deficiency anaemia was most commonly seen in the reproductive age group (15-49 years)
CONCLUSIONS: To effectively control anaemia, a comprehensive and multi-sectoral approach will have far-reaching consequences. Supporting women will not only improve their nutritional status and reduce their nutrition-related anaemia risk, but will improve the overall household income and promote empowerment of women. Among urban women and women with higher socioeconomic status, food-based interventions such as dietary diversification and fortification of staple foods would reduce nutrition-related anaemia as well as other micro-nutrient deficiencies.

Keywords: Anemia, Haemoglobin, Iron supplementation, Iron deficiency

INTRODUCTION:

Anemia is a global health problem affecting both developed and developing countries with severe consequences on health as well as social and economic development[1]. WHO reports that 35% to 75% of pregnant women in developing countries and 18% of women in developed countries are

anemic[2]. According to the World Health Organization (WHO), anaemia is considered to exist at haemoglobin levels lower than 11g/dl in women. There is significant variation in the distribution of normal haemoglobin and this depends factors such as environment, sex, race, culture and physiological status[3]. New lower limits of normal haemoglobin values have been suggested, according to ethnicity, gender, and age. Anaemia is often multi factorial and is not an independent phenomenon[4.]

According to WHO, anemia is classified into mild, moderate and severe categories depending on the Hb levels (mild anemia Hb levels 9-11 gm%, moderate anemia Hb level 7-9 gm %, & severe anemia Hb level < 7 gm% respectively).

Iron deficiency is act on the commonest nutritional deficiency worldwide, with physical squeal and symptoms depending on duration and severity. Although countries with chronic malnutrition have a high prevalence of iron-deficiency anemia (50%-80%), it is also frequently found in countries with normal nutrition (prevalence up to 20%)[5]. In the reproductive age women have 10 times higher iron deficiency compared to men of the same age. The reason for this is regular blood / iron loss during menstruation with concomitant insufficient intake.[6,7]

Anemia and iron deficiency cause fatigue, lethargy and impair physical capacity and work performance. It leads to impaired health and quality of life of millions of women worldwide and generations of children to impaired development and learning. It leads to impaired economic productivity and development of communities and nations. Iron deficiency (due to nutritional deficiency, blood loss and helminthic infestations), nutritional deficiencies (folate and vitamins B12, A and C), teenage pregnancy and malaria are the primary causative factors for anemia.

Measurement of the serum ferritin level has the highest sensitivity and specificity for detecting iron deficiency. Ferritin levels 20 ng/ml are diagnostic of iron deficiency, regardless of the haemoglobin concentration. Ferritin levels between 20-50 ng/ml are regarded as a grey area (normal range 20-50 ng/ml). Iron deficiency anemia can be virtually ruled out, unless a concomitant active infection or other inflammatory process is present.

Gynaecological bleeding caused by diseases such as adenomyosis, uterine fibroids, or endometrial hyperplasia including recurrent hypermenorrhea, menorrhagia, or metrorrhagia frequently results in considerable iron-deficiency anemia. They all come under the heading of heavy uterine or menstrual bleeding. It has been known that the incidence of anemia significantly increases menstrual blood loss. If menstrual blood loss is 61 to 80 ml per cycle, the frequency of anemiais 10.3%, and it increases up to 50% with menstrual blood loss between 151 and 240 ml. Published evidence reports show that if haemoglobin 12 g/dl and a ferritin level ,16 ng/ml, the prevalence of iron-deficiency anemia is 0% with blood loss of 20 ml; if blood loss is 60 to 80 ml, the prevalence is 17%, and with blood loss 100 ml the prevalence is 26%. The amount of blood loss correlated well with low haemoglobin and ferritin levels.[8]

Iron deficiency (ID)

ID develops when dietary iron intake cannot meet iron needs over a period of time, especially during periods of life when iron requirements are particularly high (e.g., during periods of rapid growth and development, such as infancy and pregnancy) or when iron losses exceed iron intake. ID typically evolves in three stages: storage iron depletion, iron-deficient erythropoiesis, and IDA (defined as concomitant ID plus anemia).[9] The WHO recommends assessing iron status using serum ferritin or soluble Transferrin Receptor (sTfR).[10, 11] Serum ferritin, a measure of body storage iron and a sensitive measure of ID, is elevated by the acute phase response; sTfR levels when high indicate tissue ID, but sTfR may also be affected by inflammation and other causes of

erythropoiesis. Because of the effect of inflammation on many biomarkers of iron status, acute phase proteins (e.g., C Reactive Protein (CRP) and alpha-1-acid glycoprotein (AGP)) should be assessed whenever possible.

Estimates from the late 1990s placed the number of individuals affected by ID at 2 billion, and ID has long been assumed to contribute to approximately 50% of anemia cases globally.[12,13] A recent systematic analysis of global anemia data that calculated cause-specific attribution for 17 conditions related to anemia ranked ID as the most common cause in almost all global regions examined. The WHO used the change in Hb concentration from iron supplementation studies to estimate the "proportion of all anemia amenable to iron" as 50% of anemia among nonpregnant and pregnant women, and 42% of anemia in children.[14] Another study that assessed the role of ID in anemia burden among PSC and nonpregnant WRA, across a range of countries with varying rankings on the Human Development Index, showed that between approximately a quarter to a third of anemia among PSC and WRA was associated with ID. In countries where the prevalence of anemia was greater than 40% and in countries where inflammation levels were high, ID played a much smaller role. Thus, while ID remains a primary cause in many settings, the proportion of anemic individuals with ID varies by contextual factors and poor iron nutrition cannot be assumed to be the primary cause in all cases. Yet, iron interventions (e.g., supplementation, fortification, and dietary interventions) are central to most anemia control programs. Given the complex etiology of anemia, the extent to which ID accounts for the anemia burden continues to be investigated.

This study was conducted with the objective of evaluating prevalence of anaemia in the non-pregnant females visiting Gynaecology OPD in our tertiary care hospital. This research paper seeks to provide a comprehensive overview of anemia in non-pregnant females from its underlying causes, and prevalence of its far-reaching health implication and potentials interventions.

METERIALS AND METHODS:

This cross-sectional study was conducted in the department of Obstetrics and Gynaecology of our tertiary care teaching institution Santosh Medical College & Hospital, Ghaziabad with the Collaboration of NCR Institute of Medical Sciences, Meerut for a period of six months 1 May 2022 – 31 October 2022.

Inclusion criteria

•Non Pregnant females
• Hb% less than 11 gm%.

Exclusion criteria

• Pregnant females
• Hb above 12 gm%.

Study population

132 Nonpregnant females attending Gynaecology OPD and diagnosed with anaemia were included in this study.

Approval was obtained from the Institutional Ethics Committee prior to the commencement of the study. Each participant was explained in detail about the study and written informed consent was obtained prior to the data collection. Each patient was interviewed using a structured interview schedule to obtain information regarding the age, parity, educational and socio-economic status. The severity of anemia was estimated and the intake of iron supplementation by the patient was also studied.

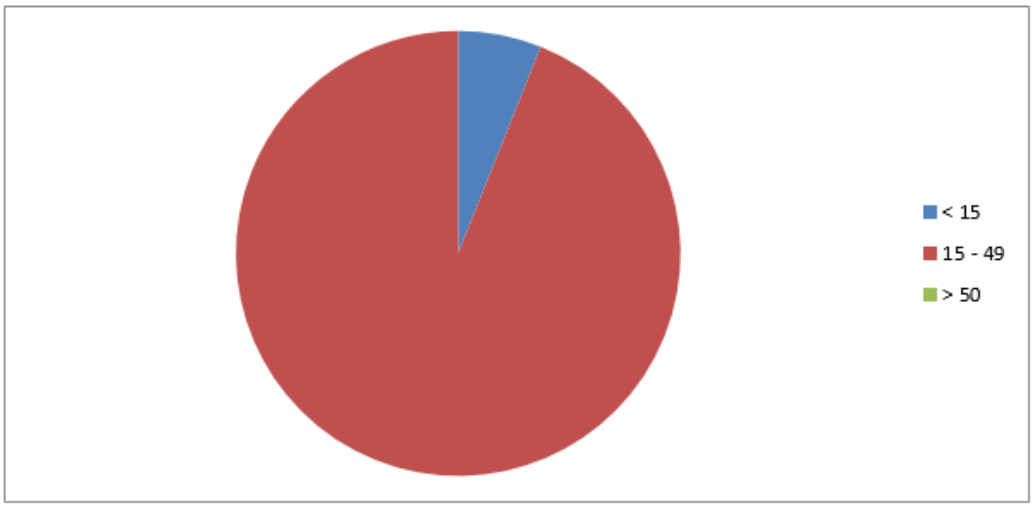
Statistical analysis

Statistical analysis is done by simple proportions using Microsoft excel & SPSS. Data was entered and analysed using Microsoft Excel spreadsheet.

Results

1. Distribution of Anaemia According to Age Group. (Table1; Fig.1)

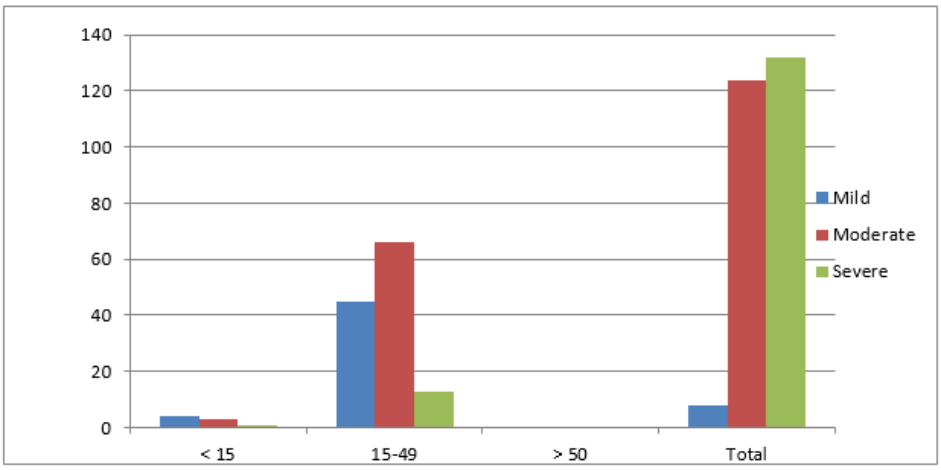
Age	Anaemia
< 15	8 (6.06%)
15 - 49	124 (93.93%)
> 50	0
Total	132



A total number of 132 patients aged 12-60 years were included in this study. In total number 132 patients of iron deficiency anaemia attending the gynaecology OPD. In reproductive age group of 15-49 most of patients found 124 patients or 93.93% patients were found in this age group who not take iron properly and heavy menstrual cycle. In the age group less than 15 only 8 (6.06%) patients were found and these patients are come in menarche age group and not taken proper healthy food and iron properly. Largest patients 64 were found in this age group 15-20 with the history of irregular and heavy menstrual cycle. Second largest patients were found in the age group 21-25 with the history of irregular and heavy menstrual history.

2. Distribution of Anaemia According to anemia category. (Table 2, Fig. 2)

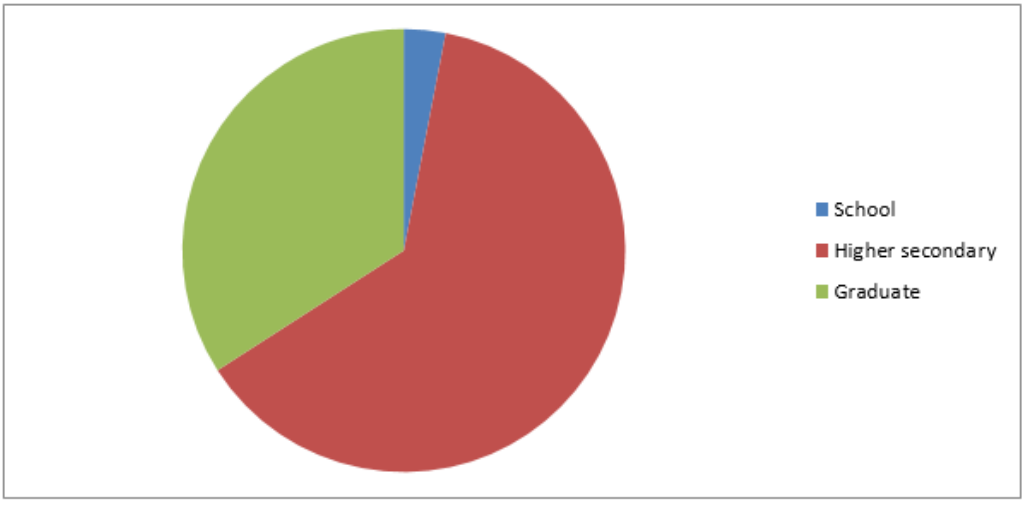
Age	< 15	15-49	> 50
Mild	4 (50%)	45 (36.29%)	0
Moderate	3 (37.5%)	66 (53.22%)	0
Severe	1 (12.5%)	13 (10.48%)	0
Total	8	124	132



A total number of 132 patients aged 12-60 years were divided basis (Hb levels) severity of the anemia into mild, moderate and severe. In the age group of < 15 years, numbers of patients with anemia were 8 (6.06%). Of these 8 patients, 4 had mild anemia (50%),3 had moderate anemia (37.5%) & 1 patient (12.5%) had severe anemia. In the age group of 15-49 number of patients with anemia were 124 (93.93%).Of these 124 patients, 45 patients had mild anemia (36.29%), 66 had moderate anemia (53.22%) & 13 patient (10.48%) had severe anemia. In the age grout of > 50 years no patient of anemia was found.

3. Distribution of patients According to Education. (Table 3, Fig. 3)

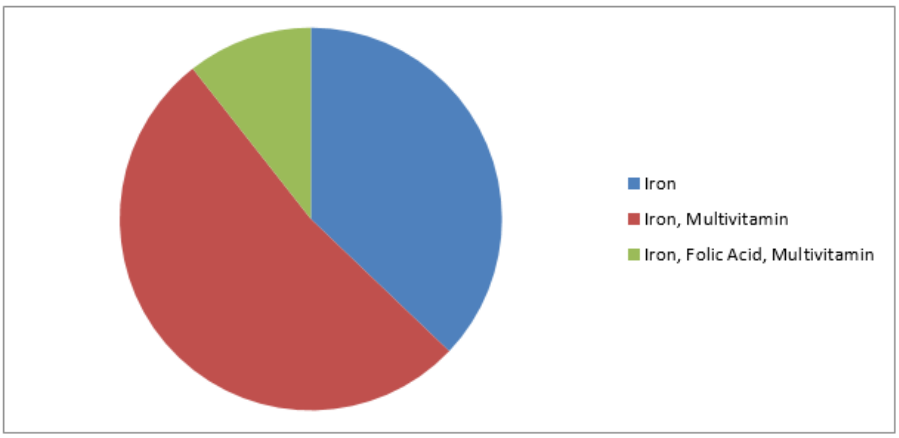
Education	Number of Patients
School	4 (3.03%)
Higher secondary	83 (62.87%)
Graduate	45 (34.09%)
Total	132



A total number of 132 patients aged 12-60 years were divided basis education into school, higher secondary and graduate. Most of the patients were (83; 62.87%) higher secondary educated, second largest numbers of patients (45; 34.09%) were graduates. Only few (4; 3.03%) patients were still pursuing school education.
All patients were unemployed.

4. Distribution of treatment according to anemia Category. (Table 4, Fig. 4)

S.No.	Medication	Number of patients
1	Iron	49
2	Iron, Multivitamin	69
3	Iron, Folic Acid, Multivitamin	14



Iron was given all patients; iron along with multivitamin was given in 69 patients. Iron was given with Folic acid and multivitamin in 14 patients.

DISCUSSION:

ID remains a primary cause of anemia in most regions; however, recent studies advocate complex & context specific etiology of anemia. Efforts are needed to further understand how the principal causes of anemia, including ID and other nutritional deficiencies, disease, and Hb disorders, contribute to anemia so that appropriate interventions in specific settings can be implemented.

In this present study the percentage and severity of anemia in non-pregnant females was analysed. The severity of anemia was graded as per WHO classification of anemia. A total of 132 anemic females were identified. Of these 132 patients, 37.12% were mild, 52.27% were moderate and 10.60% were severe patients of anemia respectively. Similar, results were obtained by Singh P et al.[15] Our study found that anemia was most prevalent (93.93%) in reproductive age group. This finding is almost the same as Gaurah et al (77.9%) and Shwetha et al (70%).[16,17] Regarding educational qualification anemia was more prevalent in higher secondary and graduate level 62.87% and 34.09% respectively. This finding contrary with that of Ahmad N et al.[18] In our study of job category status anemia is more common in school girls and who do not any work 52.27% and after this in housewife 46.96%.

In studies by Bison et al and Sowmya et al, they have also reported the same distribution (50%).[19,20] All anemic patients were treated with iron tablets orally, and folic acid with combination was given in moderate anemia, folic acid and multivitamin combination was given in severe anemia. Employing the benchmark of 12.0g/dl prescribed by the World Health Organization, the incidence of anaemia in this study is 93.93% and this is consistent with the reports by other authors [3,21] but was higher than the reports by other researchers [22.]

The combination of no transfusion undertaken at haemoglobin level 10–12g/dl. This study demonstrated that anemia in the nonpregnant women followed by the < 15 years age group and reproductive age group (15-49 years), in this study anemia is found maximum reproductive age group with the heavy menstrual cycle and low intake of the iron supplements. This is so because these conditions are associated with rapid haemorrhage.

CONCLUSIONS:

In the realm of women's health anemia has emerged a pervasive and multifaceted concern, impacting the live countless nonpregnant women around the world. This comprehensive exploration of anemia's various dimensions has illuminated its significances, underlying causes, clinical manifestations, diagnostic approaches and treatment modalities. Anemia is a complex condition that demands a multidisciplinary approaches and continued research to enhance our understanding and management of its implications. Anaemia continues to be a widespread and significant global health problem that remains to be adequately addressed, particularly in low or middle income countries where progress has been slow and uneven. Though intellectual disability remains a primary cause of anaemia in most regions, recent work suggests that anaemia etiology is complex and context specific. Efforts are needed to further understand how the principal causes of anaemia, including intellectual disability and other nutritional deficiencies, disease, and Hb disorders, contribute to anaemia so that appropriate interventions in specific settings can be implemented. This work will require including biochemical measures of micronutrient status (iron and vitamins) and markers of inflammation, in addition to haematological indices when assessing anaemia clinically and in populations.

This study provides several insights into the population burden of anaemia among less well-studied groups and indicates that there may be risks associated with higher socioeconomic status and urban living. To effectively control anaemia, a comprehensive and multi-sectoral approach will have far-reaching consequences. Supporting women will not only improve their nutritional status and reduce their nutrition-related anaemia risk, but will improve the overall household income and promote empowerment of women. Among urban women and women with higher socioeconomic status, food-based interventions such as dietary diversification and fortification of staple foods would reduce nutrition-related anaemia as well as other micro-nutrient deficiencies.

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