FREQUENCY AND SEVERITY OF IRON DEFICIENCY ANEMIA IN FEMALES OF CHILDBEARING AGE

NAZIA AHMAD[1], AYESHA GONDAL[2], HAFIZA FAJAR SHABBIR[3], TOOBA FATEEN[4], MUHAMMAD RIZWAN[5]

[1-3,5]Lahore Medical & Dental College, Lahore, [4]Allama Iqbal Medical College, Lahore

ABSTRACTS

Background: Anemia is a condition which develops either due to decrease in the number of red blood cells or low hemoglobin concentration. Hemoglobin is oxygen transport protein in red blood cells. Young children, anorexic teenagers, females of reproductive age group, pregnant females and malnourished females are at greater risk of developing anemia.

Objectives: The objective of this study was to find out the frequency and severity of anemias in child bearing females.

Methods: This descriptive retrospective study was conducted in Ghurki Trust Teaching hospital Lahore from January 2022 to December 2023. Total of 2000 females of child bearing age, who ranged between 20-40 years were included. First group had ranged of age between 21 to 30 years whereas the second had ranged of age between 31 to 40 years. Data were entered and analysis by using SPSS version 22.

Results: Out of a total of 2000 cases, 713 (35.6%) had a normal hemoglobin level, whereas 1,287 (64.35%) had a decreased hemoglobin level. In present study, we found 41.05% females with mild, 18.6% cases of moderate anemia, whereas only 4.75% cases presented with severe degree of anemia.

Conclusion: Females presenting with symptoms of fatigue, tiredness and palpitations, anemia should be considered as one of the causes of this presentation of anemia.

Key Words: Anemia, reproductive age group, red blood cells

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Correspondence to: *Nazia Ahmad*
Associate Professor Hematology,
Lahore Medical & Dental College, Lahore, Pakistan.

Email: *naziaahmadnaeem@gmail.com*

INTRODUCTION

Anemia is a condition which develops either due to decrease in the number of red blood cells or concentration of hemoglobin is not adequate in the red cells to provide oxygen to body tissues.[1]

The functional and basic component of blood are red blood cells (erythrocytes) which are responsible for the transportation of gases and nutrients throughout the human body. Mature Erythrocytes appear to be biconcave in shape and anucleated.[2] The biconcave shape gives flexibility which is required in the cardiovascular system and it also increases surface area which helps in adequate gas exchange and allows the cell to perform its function properly. Erythrocyte membrane is phospholipid bilayer in appearance which provides a structure frame to the unique cell and is sustained by a network of proteins that make up the cytoskeleton.[3]

Hemoglobin is an iron-containing oxygen transport protein in red blood cells and is required for effective transmission of oxygen. Iron associated with heme has a strong bond with oxygen. Red blood cells are primary cells which carry oxygen from our lungs to the rest of body and take carbon dioxide back to lungs to be exhale. Young children, anorexic teenagers, females of reproductive age group, pregnant females and

malnourished ladies are at greater risk of developing anemia.[4,5]

According to World Health Organization (WHO), anemia is considered as a hemoglobin (Hb) count of less than 12 g/dL in non-pregnant women, less than 11 g/dL in pregnant women and the elderly and, less than 13g/dL in men. This concentration is different in different age groups, sex, and geography[2].

In the past decades, the significant complications of anemia in females of child bearing age group are increased risk of pregnancy loss, fetal death, prematurity, and low birth weight.[6] Additionally, a high percentage of perinatal mortality and maternal mortality in developing countries is considered to be due to iron deficiency as compared to developed countries.[7] According to an estimate, out of total population of females of Pakistan, 28.5 million females are of reproductive age group, it means nearly 46 percent of total female population.[8] Therefore, this study was conducted with objective to find out the frequency and severity of anemias in child bearing females.

METHODS

The study is descriptive and retrospective in nature. The study was conducted in the Pathology Department of Lahore Medical & Dental College at Hematology laboratory. Most of the cases were referred from Gynecology Department of GTTH Lahore. Clinical samples were received in the laboratory from Gurki Trust and Teaching Hospital (GTTH) which is a tertiary care hospital affiliated with Lahore Medical and Dental College. This study was spread over a period of two years of duration between January 2022 to December 2023. Total of 2000 cases were selected in this study. The age was ranged between 20 to 40 years, which is further divided into two sub-groups. First group had ranged of age between 21 to 30 years whereas the second had ranged of age between 31 to 40. Patients visiting Gynecology department of Gurki Hospital for routine antenatal checkup were included in our study. Those who presented with various comorbidities, e.g Hypertension, Diabetes Mellitus, Ischemic Heart disease, asthmatic and smokers were excluded. A total of 2000 blood samples were collected in this study to find out the hemoglobin levels in females of reproductive age group (20 to 40 years). Data was collected and analyzed using SPSS 22. Hemoglobin was assessed by Sysmex machine. Anemia was defined on the basis on Hb conc of 10.1 to 12g/dl, moderate anemia with Hb level of 8.1 to 10g/dl and severe anemia was defined with Hb less than 8g/dl.

RESULTS

Out of a total of 2000 cases, 713 (35.6%) had a normal hemoglobin level, whereas 1,287 (64.35%) had a decreased hemoglobin level. In present study, we found 41.05% females with mild, 18.6% cases of moderate anemia, whereas only 4.75% cases presented with severe degree of anemia. (Table 1). Table 2 shows age stratification and degree of anemia.

Table1: Distribution of cases by Degree of anemia (n= 2000)

Type of Anemia	Total Nos. of Cases	Percentage %
Normal Haemoglobin	713	35.6
Mild Anemia	849	41.05
Moderate Anemia	372	18.6
Severe Anemia	95	4.75
Total	2000	100

Table: 2: Distribution of cases by Age Groups (n=1287)

Age Groups (Years)	Mild Anemia n(%)	Moderate Anemia n(%)	Severe Anemia n(%)	Total Cases
21-30	526 (40.96%)	256 (19.93%)	63 (4.9%)	845
31-40	294 (22.8%)	116 (9.1%)	32 (2.5%)	442
Total	820(63.6%)	372 (29%)	95(7.4%)	1287

DISCUSSION

Anemia in females of reproductive age group is common worldwide. Its incidence is more common in Asian as compared to Western countries. According to an estimate, anemia effected 1.9 million people which is approximately 27% of world population. Hence, anemia is a main community health matter, and is more common in underprivileged and middle income countries. According to another evaluation ,93% of all cases of anemia occur in third world countries.[9]

A study conducted in Pakistan in year 2023 showing number of cases 1702 in child bearing age females[18] similarly another study was conducted in population of Thatha District in Pakistan in year 2020 by Ali SA et al for anemia in child bearing age group females with number of cases 157.[11] Another study conducted in middle income countries in 2018 with similar age group of child bearing age.[17] Our study had comparable age

group with these studies being conducted at local level as well as internationally

We had 713 patients (35.6%) with normal hemoglobin level, whereas 1,287 (64.3%) had a decreased hemoglobin level labelled as anemic. A study conducted in Lahore in 2019 had a total of 57.7% of participants who were found anemic.[14] One study reported in Thattha Pakistan 61.3% anemic amongst childbearing non pregnant age group females.[11] Similarly another study published the results regarding the south Asian countries published 41.8% anemic cases in Bangladesh, 58.5% in Maldives and 40.6% in Nepal.[12] In 2019, the worldwide prevalence of anemia among expecting females was collected to be 36.5%. The highest prevalence of anemia (56%) was found among pregnant women in low- and middle-income countries (LMICs), and the lowermost (24.1%) was reported among expecting women in South America.[6,7] Among World Health Organization (WHO) regions, Africa has the uppermost prevalence of anemia in pregnancy (57%), followed by South-East Asia (48%).[10]

If we compare the incidence of anemia with other Asian countries, the results show that the incidence is high in other Asian countries as compared to Pakistan. The overall prevalence of anemia in Bangladesh was 41.8%, in Maldives, 58.5%, whereas in Nepal, it was 40.6%.[12] In another study, in India, showed the highest burden of anemia among females of reproductive age group i.e. 65-70% as compared to other southeast countries.[13]

Other parts of Southeast Asia showed variable prevalence of anemia in different countries as follows, about 77% in Bangladesh, it was about 63.5 and 65% in Indonesia and Nepal respectively. In Maldives it was 68%, in Myanmar 58% and in Sri-Lanka 60-70%. The reason for this variation among different countries mainly depends upon socio-cultural, economic and geographical conditions.[13]

In our study categorization amongst the anemic patients was done into mild, moderate and severe. We found 41.05% females with mild, 18.6% cases of moderate anemia, whereas only 4.75% cases presented with severe degree of anemia in our study. Meanwhile a study conducted in Mali declared 24.9% mild, 34.3% moderate and 4.3% severely anemic.[19] This showed that severely anemic cases were comparable. Similarly a study published in SAGE having mild anemia 7.6 to 18.7%.[16] Another study done in Lahore in 2019 reported a total of 57.7% as anemic with categorization into mild anemic as 34.4% and 23.3% as moderately anemic.[14] A study conducted in sub Saharan African countries had reported mild anemia 23.45%, moderate 17.05% and severe anemia as 1.24%.[20] All these results were comparable to our study.

Another study done in America in 2015 showed that the frequency of anemia was with minor category with frequency from 7.6% to 18.7% in some areas while moderate ranging from 21.4% to 38.3% and anemia was measured as a severe community health issue in different countries.[16]

In our study the age range was between 20 to 40 years which was further categorized into two sub-groups. One group had age range between 21 to 30 and second group had an age range between 31 to 40. A study conducted in Quetta categorized the patients into different age groups and published the results.[21]

The Limitations of the study are that patient do not come for follow-up and have no other preliminary tests done other than CBC which is required for further diagnosis like Serum iron, serum ferritin levels, Serum Transferrin and Total Iron Binding capacity test. That's why I have to limit my parameters. It should be mandatory to perform these test for final diagnosis and further classification of anemia.

CONCLUSION

Anemia is an important community health problem in females during their reproductive age period. females presenting with symptoms of fatigue, tiredness and palpitations, anemia should be considered as one of the causes of this presentation of anemia.

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AUTHOR'S CONTRIBUTIONS

NA: Concept, manuscript writing, data analysis
AG: Introduction writing, data analysis
HFS: Data collection, result compilation
TF: result compilation
MR: Assisted in methodology