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Original Article

Iron Deficiency Anemia Among Women in Skardu, Gilgit-Baltistan

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ABSTRACT

Objective: To determine the frequency of iron deficiency anemia among women in Skardu, Gligit-Baltistan.
Study Design: Cross-sectional study.
Place and Duration of Study: Combined Military Hospital, Skardu, Pakistan, from Dec 2021 to May 2022.
Methodology: A total of 202 women were selected through consecutive sampling from General Medical OPD of Combined Military Hospital, Skardu, Pakistan. Hemoglobin globin levels (Hb gram/deciliter), mean corpuscular volume (MCV fL) and red cell distribution width (RDW%) were determined for all enrolled patients.
Results: Mean age of participants in this study was 34.46±10.93 years. Reduced Hb was observed in 62(30.69%) women with a mean hemoglobin level of 9.48±1.59 gl/deciliter and mean corpuscular volume of 79.97±10.7d fL. Among these women, 5(2.47%) were severely anemic (6.56±0.39 gl/deciliter), 28(13.86%) moderately anemic (8.51±0.83 gl/deciliter) while 29(14.35%) were mildly anemic (10.92±0.48 gl/deciliter). Women of younger age group, between18-35 years, were found to suffer more from iron deficiency anemia (39.14%) with mean hemoglobin levels of 11.31±1.80 and mean corpuscular volume of 79.34±10.86 fL.
Conclusion: Iron Deficiency Anemia is present in female population of Gilgit-Baltistan in general and woman of childbearing age in particular. Emergency measures for awareness and fortification of basic food items with iron should be undertaken at large scale.

Keywords: Community health, Hemoglobin, Iron deficiency anemia, Reproductive medicine.

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INTRODUCTION

Gilgit Baltistan (GB) is situated in the north of Pakistan, with an estimated population of 1.8 million while Skardu, has a population of 214,8481 with an overall poverty rate of 29.5% and doctor to population ratio of,[1] :4100, leading to dismal state of health care in the region.[2] Anemia has become a major concern for public health as it affects approximately 1.6 billion people globally and as per World Health Organization (WHO), the prevalence of anemia is estimated to be 24.8%, with 9% reported in developed countries and 43% in developing countries.[3] Anemia can be diagnosed in any age group and impacts quality of life, especially in female population of child bearing age.[4] In vulnerable individuals, this may impair cognitive and physical development,causing an increase morbidity and mortality in these patients particularly as Iron Deficiency Anemia (IDA) occurs in approximately 27% of world population.[5]

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As per WHO, 50% of anemic patients may indeed be suffering from IDA,[6] leading to compromised productive output of daily life tasks as well as reproductive capabilities in women.[7] This impairment will further affect not only the quality of life of the woman but her family as well. In South-East Asia, 41.9% women of reproductive age suffers from IDA whereas only 2-5% of women in Europe are reported as anemic. Similar to other low- and middle-class economies, very high ratio of anemia is reported in Pakistan, as per National Nutrition Survey, among woman of childbearing age, 41.7% are anemic and in rural areas this is even more prevalent (44.3%) than urban (40.2%) and linked to severe health hazards.[8] Anemia is an important modifiable risk factors that is potentially modifiable for better birth outcomes in rural Pakistani women.[9] While healthy individuals can maintain iron stores and cope with this increased demand, pregnant woman cannot quickly replenish their iron stores.[10] This study was, therefore, planned to update the data regarding IDA in women of Gilgit Baltistan to be able to improve the health status of this segment of our population.

METHODOLOGY

The cross-sectional study was conducted at General Medical OPD of Combined Military Hospital (CMH), Skardu, Pakistan, from December 2021 to May 2022 after gaining approval from the Ethics Review Committee board (IRB - S.No 00011/22). The sample size of 202 was calculated using WHO sample size software with the prevalence of iron deficiency anemia as 25%.[8] Non-probability consecutive sampling was done.

Inclusion criteria: All women, pregnant and non-pregnant, aged 18 to 70 years were included.

Exclusion criteria: Women with history of blood transfusions during the last 6 months, comorbidities or malignancies, were excluded.

Non pregnant women having hemoglobin less than 11.0 gram per deciliter (g/dl) with Mean Corpuscular Volume (MCV) below 80 Fl and/or Serum ferritin level below 15 µg/L were labelled as having IDA along with pregnant women, with hemoglobin levels less than 12.0 g/dl with Mean Corpuscular Volume (MCV) below 70 fL and/or Serum ferritin level below 15 µg/dL. Anemia was classified as mild, moderate or severe as per concentration of hemoglobin in the blood, with mild as hemoglobin levels between 10-10.9 g/dl for pregnant women, 10-11.9 for non-pregnant women, moderate with hemoglobin between 7-9.9 g/dl and severe with levels less than 7 g/dl. Data regarding different variables including age, pregnancy and sampling for hematology tests were taken by trained hospital staff. The variables relating to hematology like hemoglobin level (Hb gm/dl), red cell distribution width (RDW %) and mean corpuscular volume (MCV) were determined by using cell counter (CELL-DYN Emerald 09H39-01, made in France).

Statistical Package for Social Sciences (SPSS) version 25.0 was used for data analysis. Quantitative variables with normal distribution were expressed as Mean±SD and qualitative variables were expressed as frequency and percentages.

RESULTS

The mean age of participants was 34.35±10.87 years, out of which, 32(15.84%) were pregnant. Out of a total of 202 participants, 62(30.7%) had IDA while 140(69.3%) had no IDA based on their hemoglobin levels (Hb) and Mean Corpuscular Volume (MCV) as shown in Table-I.

Further analysis of these 62 anemic patients revealed the frequency and percentage of severely anemic, moderately anemic and mildly anemic patients, as listed in Table-II.

Occurrence of IDA related to age groups of these patients was done with further analysis, revealing that although anemia was present in all age groups, it was more common in the younger age group of 18-35 years, as shown in Table-III.

Table-I: Distribution of Patients Diagnosed with Iron Deficiency Anemia (n =202)

Parameters	Iron Deficiency Anemia n=62	No Iron Deficiency Anemia n=140	Total n=202
Hb (Mean±SD) g/dL	9.47±1.59	12.41±0.72	11.51±1.72
MCV (Mean±SD) fL	69.46±6.00	84.61±8.88	79.96±10.7

Table-II: Distribution of Patients Per Status of Anemia (n=202)

Parameters	Mild n=29	Moderate n=28	Severe n=05	Total n=62
Anemia (%age)	29(46.77)	28 (45.16%)	5(8.07%)	62 (100%)
Hb levels (Mean±SD) g/dl	10.91±0.39	8.50±0.83	6.56±0.39	9.47±1.59
MCV (Mean±SD) fL	71.86±4.92	68.71±6.15	59.8±1.78	69.46±6.00

Table-III: Distribution of Patients According to Age Groups (n=202)

Characteristics	Age Group 18-35 (yrs) n=119	Age Group 36-50(yrs) n=66	Age Group 51-70(yrs) n=17	Total n=202
Frequency of IDA (%age)	40(34.19%)	19(27.94%)	3(17.64%)	62(30.69%)
Hb levels (Mean±SD) g/dl	11.31±1.80	11.64±1.69	12.37±0.86	11.51±1.72
MCV levels (Mean±SD) fL	79.33±10.86	80.27±10.65	83.17±9.63	79.96±10.70

DISCUSSION

As revealed by global data, women belonging to reproductive age are increasingly affected by IDA however this is becoming more prevalent in developing countries. In one study, the frequency of iron deficiency anemia was 25% among women from urban Quetta District, Pakistan.[11] Similar data was presented by another study,[12] which reported higher number of nutritionally anemic non-pregnant women belonging to reproductive age, as women belonging to

reproductive age suffers from erratic mealtimes, hectic schedules and prolonged working hours.[13] As reported by other researchers,[14-16] IDA was 37.3% in Jordan, 53.3% in India and 12% in Nepal as these populations have similar socioeconomic status and health services like ours. WHO reported that 50% of anemia belongs to iron deficiency.[17] The difference in anemia occurrence varies with geographical region as well as genetic background.[18] Along with differences in dietary pattern, culture, lack of awareness in the woman coupled with lack of education,[19] other risk factors can further worsen the situation including poor quality of diet, low intake of dietary iron and then its poor absorption from diet, impaired immune function, low BMI, low meat consumption, menstruation, high tea intake, blood and parasitic infection in intestine and intake of nonfood items like clay (PICA).[20-22] In India, as half of childbearing women had a birth before they had reached 20 years 23, mild anemia was more prevalent followed by moderate anemia and severe anemia in woman of reproductive age. Woman from younger age groups of less than 30 years were numerically more anemic than the others in another study. While healthy residents of high altitude adapt to maintain the iron stores, vulnerable individuals with increased demand of iron may not be able to replenish as fast, as observed in one study which showed lower Hb levels at high altitude compared to low altitude areas at sea level.[10]

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CONCLUSION

Iron Deficiency Anemia is present in female population of Gilgit-Baltistan in general and woman of childbearing age in particular. Emergency measures for awareness and fortification of basic food items with iron should be undertaken at large scale.

Conflict of Interest: None.

Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

QZ & IK: Conception, study design, drafting the manuscript, approval of the final version to be published.

MNA & AR: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

AA & AM: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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