

Prevalence of Nutritional Deficiency Anemia in Pregnant Females of Adilabad**Dr. K Rama¹, Dr. G Satyanarayana^{2*}**¹Assistant Professor, Department of Obstetrics and Gynecology Rajiv Gandhi Institute of Medical Sciences [RIMS], Adilabad, Telangana, India²Assistant Professor, Department of General Medicine, Rajiv Gandhi Institute of Medical Sciences [RIMS], Adilabad, Telangana, India***Corresponding author***Dr. G Satyanarayana***Article History***Received: 15.05.2018**Accepted: 27.05.2018**Published: 30.05.2018***DOI:**

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Abstract: The prevalence of nutritional deficiency especially the iron deficiency anemia is very common in pregnant females of developing countries, more so in the rural and tribal population. We in the present study tried to evaluate the prevalence of anemia in 300 females in 1st, 2nd and 3rd trimester attending ANC in Rajiv Gandhi Institute of Medical Sciences and Hospital [RIMS], Adilabad. The Institutional Ethical committee permission was obtained for the study. 100 patients in each of the three trimesters were included in the study all the pregnant ladies were healthy without any significant medical disorders. The blood samples were collected from the peripheral vein in 5ml vacutainer and send to the Department of Pathology for examination. The Department of Pathology, RIMS Adilabad uses 5 part hematology cell counter (Sysmex Xn 1000 manufactured by Sysmex India Pvt. Ltd Mumbai) to obtain all the hematological parameters. The mean levels of hemoglobin in n=100 patients of 1 trimester were 8.38 ± 1.5 gm/dl, the mean levels of Hb in n=100 patients of 2nd trimester was 8.34 ± 1.24 similarly the mean Hb levels of n=100 patients in the third trimester was 7.75 ± 1.02 . The hemoglobin levels of 10.0 – 10.9 gm/dl was classified as mild anemia in our study 10.83% of pregnant ladies had mild anemia. Between 7.0 – 10.0 it was classified as moderate 76.67% of pregnant ladies had moderate anemia, < 7.0 gm/dl was classified as severe 12.5% had severe anemia and < 4.0 gm/dl was classified as very severe (decompensated) anemia no case of very severe anemia was present in this study. The presence of nutritional deficiency anemia is very common in the tribal pregnant females of Adilabad. Although all the pregnant females receive duly the dose of iron and folic acid supplementations during the Antenatal care there needs to be good nutritional supplementation provided to reduce the burden of anemia in the pregnant females of this area.

Keywords: Anemia, Pregnant females, Adilabad.**INTRODUCTION**

The prevalence of anemia is most common during pregnancy especially in developing countries and it is a serious cause for concern as it may cause adverse effects on the mother and the fetus. It also contributes significantly to high maternal mortality and decreases the work capacity. It may also lead to complication like pre-eclampsia, low birth weight, prematurity and perinatal mortality [1]. It is estimated that 2 billion people around 30% of the world's population are anemic mainly due to iron deficiency [2]. In South Asian developing countries the amount of population with anemia is approximately 80%. According to World Health Organization estimates, up to 56% of all women living in developing countries are anemic [3]. In India, National Family Health Survey- 2 in 1998 to 99 shows that 54% of women in rural and 46% women in urban areas are anemic [4]. The relative prevalence of mild, moderate, and severe anemia is 13%, 57%, and 12% respectively in India. According

to WHO, hemoglobin level below 11gm/dl in pregnant women constitutes anemia and hemoglobin below 7gm/dl is severe anemia. The Center for Disease Control and Prevention 1990 defines anemia as less than 11gm/dl in the first and third trimester and less than 10.5 gm/dl in the second trimester [5, 6]. Serum Ferritin levels of 15 μ gm/L is associated with iron deficiency anemia [6, 7]. Anemia, as defined by low hemoglobin or hematocrit, is commonly used to assess the severity of iron deficiency in the population. The high physiological requirement of iron in pregnancy is often difficult to meet by most of the diets, especially in developing countries. Therefore the pregnant women should routinely receive iron supplementation at the dose of 60mg/day of iron for pregnant, non-anemic women for six months and an increased dose of 120 mg of iron daily if the duration of supplementation is shorter, if iron deficiency prevalence in women of a given country is high, and if pregnant women are anemic. This supplement should include 400 μ g of folic

acid or lower doses if this amount is not available [8]. The prenatal iron supplementation is not considered compulsory in many industrialized countries and the recommended dose is usually small 30mg/day [9]. There has also been a limited impact of iron supplementation in community settings owing to lack of compliance and other traditional beliefs. There was no data regarding the prevalence of anemia in pregnancy in the tribal Adilabad region. Therefore we in the present study tried to evaluate the prevalence of anemia in the pregnant females of Adilabad.

MATERIALS AND METHODS

This cross-sectional study was conducted on pregnant females in the Department of Obstetrics and Gynecology, Rajiv Gandhi Institute of Medical Sciences [RIMS] Adilabad. Institutional Ethical committee permission was obtained for the study. A total of (n=300) patients were included in the study. 100 patients in each of the three trimesters were included in the study all the pregnant ladies were healthy without any significant medical disorders. The blood samples were collected from the peripheral vein in 5ml vacutainer and send to the Department of Pathology for examination. The Department of Pathology, RIMS Adilabad uses 5 part hematology cell counter (Sysmex xn 1000 manufactured by Sysmex India Pvt. Ltd Mumbai) to obtain all the hematological parameters. Those samples identified as anemic samples a small drop of blood was used to make a slide and prepare a

peripheral smear and stained with Leishman's stain and observed under oil immersion microscope to determine the type of anemia. According to WHO, hemoglobin level below 11gm/dl in pregnant women constitutes anemia and hemoglobin below 7gm/dl is severe anemia. The ICMR has categorized the anemia into 4 types based on hemoglobin levels in pregnant ladies. The hemoglobin levels of 10.0 – 10.9 gm/dl was classified as mild anemia between 7.0 – 10.0 was classified as moderate, < 7.0 gm/dl was classified as severe and < 4.0 gm/dl was classified as very severe (decompensated) anemia. [10] Morphological classification of anemia was done by evaluating MCH the mean corpuscular hemoglobin levels normally between 24.1–29.4 pg MCV the cells with MCV between (80-100 fl) were classified as normocytic, those with MCV < 80 fl were classified as microcytic and most with MCV >100 fl were classified as macrocytic. The Mean Corpuscular Hemoglobin concentration [MCHC] was calculated and the values of MCHC between 31-37% were taken as normochromic and those with values < 31% were taken as hypochromic and the results obtained were tabulated and analyzed.

RESULTS

The mean levels of hemoglobin in n=100 patients of 1 trimester were 8.38 ± 1.5 gm/dl, the mean levels of Hb in n=100 patients of 2nd trimester was 8.34 ± 1.24 similarly the mean Hb levels of n=100 patients in the third trimester was 7.75 ± 1.02 shown in Table-1.

Table-1: showing the mean Hemoglobin levels in different trimesters of pregnancy

Pregnancy	Mean Hb levels gm/dl ± SD
1 Trimester	8.38 ± 1.5
2 trimester	8.34 ± 1.24
3 trimester	7.75 ± 1.02

Out of the 300 patients examined the anemia was found in 240 patients giving a prevalence of 80% of presence of anemia in the pregnant females. The anemias are classified based on the peripheral smear examinations and the cell counter reports. Most of the most common type of anemia prevalent in the pregnant

ladies was microcytic hypochromic in 50% of the population followed by normocytic hypochromic in 29.17 % of the population; normocytic normochromic in 10.83% and 10% had macrocytic hypochromic shown in Table-2.

Table-2: Morphological classification of anemia in different trimesters of pregnancy

Type of anemia	1 trimester	2 trimester	3 trimester	Total	Percentage
Normocytic-Normochromic	6	10	10	26	10.83
Normocytic Hypochromic	15	30	25	70	29.17
Microcytic Hypochromic	45	35	40	120	50
Macrocytic Hypochromic	8	5	11	24	10
Total	74	80	86	240	100

Grading of anemia was done based on the levels of hemoglobin as per the Indian Council for Medical Research Classification. The hemoglobin levels of 10.0 – 10.9 gm/dl was classified as mild anemia in our study 10.83% of pregnant ladies had mild anemia. Between 7.0 – 10.0 it was classified as

moderate 76.67% of pregnant ladies had moderate anemia, < 7.0 gm/dl was classified as severe 12.5% had severe anemia and < 4.0 gm/dl was classified as very severe (decompensated) anemia no case of very severe anemia was present in this study.

Table-3: Grades of anemia in different trimesters of pregnancy

Anemia	1 trimester	2 trimester	3 trimester	Total	Percentage
<i>Mild</i>	12	9	6	26	10.83
<i>Moderate</i>	70	63	51	184	76.67
<i>Severe</i>	8	10	12	30	12.5

DISCUSSION

The anemia can have varied effects on the pregnant females, whereas mild anemia may not have any effect on pregnancy and labor except that mother will have lower iron stores and may become moderately to severely anemic in subsequent pregnancies [11]. Moderate anemia may cause increase weakness lack of energy, fatigue and poor work performance [7]. Severe anemia, however, is associated with poor outcomes. The woman may have palpitations, tachycardia, breathlessness, increased cardiac output and cardiac failure which may become fatal [7, 10]. In the present study we found 10.83% of cases with mild anemia, 76.67% of cases with moderate anemia, and 12.5% of the cases with severe anemia. In a similar study by Prashant D *et al.*, studying the prevalence of anemia in pregnancy in South India found 3.0% of patients with severe anemia 51.2% of patients with moderate anemia and 45% of patients with mild anemia [12]. One of the major causes identified in this area is a poor dietary intake of iron-rich foods and probably poor utilization due to diseases such as malaria which is very common in this tribal population of Adilabad. Although all the pregnant women had satisfactory basic knowledge of anemia and the information was obtained through health clinics television and other programs despite this awareness woman were still anemic. The main reason was lack of economic access to appropriate foods. Although the causes and prevalence vary by age group and socioeconomic background the vast majority of cases appear to be due to iron deficiency as 50% of the patients in the study were having microcytic hypochromic anemia characteristic of iron deficiency anemia. In another study by Vemulapalli BK in Andhra Pradesh found 52.73% subjects demonstrated mild degree of anemia, 40.97% subjects have moderate anemia and 6.2% subjects had severe anemia [13]. In a similar study carried out in Aurangabad, Maharashtra the overall prevalence of anemia among pregnant women was found to be 87.2% compared to the present study where the prevalence was 80%. The prevalence of mild, moderate, severe anemia was observed as 24.7%, 54.5%, and 7.9%, respectively [14]. In both the studies we observed that prevalence of anemia was high and the prevalence of moderate anemia was high as compared to mild and severe forms it agrees with the results of our study which show a high prevalence of moderate anemia in this group of population.

CONCLUSION

Within the limitation of the present study, it can be concluded that the presence of nutritional deficiency anemia is very common in the tribal

pregnant females of Adilabad. Although all the pregnant females receive duly the dose of iron and folic acid supplementations during the Antenatal care there needs to be good nutritional supplementation provided to reduce the burden of anemia in the pregnant females of this area.

REFERENCES

- Murphy, J. F., Newcombe, R. G., O'riordan, J., Coles, E. C., & Pearson, J. F. (1986). Relation of haemoglobin levels in first and second trimesters to outcome of pregnancy. *The Lancet*, 327(8488), 992-995.
- World Health Organization. (2008). Micronutrient deficiencies. *Iron deficiency anaemia*.
- WHO, O. (1992). Prevalence of Anaemia in Women: A Tabulation of Available Information.
- Kennedy, E., & Meyers, L. (2005). Dietary Reference Intakes: development and uses for assessment of micronutrient status of women—a global perspective—. *The American journal of clinical nutrition*, 81(5), 1194S-1197S.
- Toteja, G. S., Singh, P., Dhillon, B. S., Saxena, B. N., Ahmed, F. U., Singh, R. P., ... & Sarma, U. C. (2006). Prevalence of anemia among pregnant women and adolescent girls in 16 districts of India. *Food and Nutrition Bulletin*, 27(4), 311-315.
- Centers for Disease Control (CDC). (1989). CDC criteria for anemia in children and childbearing-aged women. *MMWR. Morbidity and mortality weekly report*, 38(22), 400.
- Sharma, J. B. (2003). Nutritional anaemia during pregnancy in third world countries. *Progress in obstetrics and gynaecology*, 15, 103-122.
- Stoltzfus, R. J., & Dreyfuss, M. L. (1998). *Guidelines for the use of iron supplements to prevent and treat iron deficiency anemia* (Vol. 2). Washington, DC: Ilsi Press.
- Bothwell, T. H. (2000). Iron requirements in pregnancy and strategies to meet them—. *The American journal of clinical nutrition*, 72(1), 257S-264S.
- Vijayaraghavan, K., Brahmam, G. N. V., Nair, K. M., Akbar, D., & Rao, N. P. (1990). Evaluation of national nutritional anemia prophylaxis programme. *The Indian Journal of Pediatrics*, 57(2), 183-190.
- Sharma, J. B., & Shankar, M. (2010). Anemia in Pregnancy. *JIMSA*; 23 (4):253-60.
- Prashant, D., Jaideep, K. C., Girija, A., & Mallapur, M. D. (2017). Prevalence of anemia among pregnant women attending antenatal clinics in rural field practice area of Jawaharlal Nehru

Medical College, Belagavi, Karnataka, India. *International Journal Of Community Medicine And Public Health*, 4(2), 537-541.

13. Vemulapalli, B. (2014). Prevalence of anemia among pregnant women of rural community in Vizianagram, North coastal Andhra Pradesh, India. *Asian Journal of Medical Sciences (E-ISSN 2091-0576; P-ISSN 2467-9100)*, 5(2), 21-25.
14. Lokare, P. O., Karanjekar, V. D., Gattani, P. L., & Kulkarni, A. P. (2012). A study of prevalence of anemia and sociodemographic factors associated with anemia among pregnant women in Aurangabad city, India. *Annals of Nigerian Medicine*, 6(1), 30.