Original Article

Incidence of Anemia in Pregnancy. A Randomized Study at PMC Hospital Nawabshah

1. Nazir Ahmad Solangi 2. Naseer Ahmed Baloch 3. Sadaf Adeel 4. Qaiser Hussain Naqvi 5. Sirajul Haque

1. Prof. of Pharmacology, LNMC, Karachi 2. Asstt. Prof. of Clinical Anatomy, LNMC, Karachi. 3. Dept. of Physiology, Altamash Institute of Dental Medicine Karachi 4. Asstt. Prof. of Pathology, PMC, Nawabshah 5. Medical Officer, PCSIR Labs., Karachi

ABSTRACT

Background: In this part of the world anemia is one of the major public health problems especially in pregnant women. In our country the most important cause of anemia is poor diet repeated pregnancies and lack of awareness about contraception. Anemia can easily be managed with well nourish diet, with supplements of iron folic acid and multivitamin tablets. In our areas socio-economic problem is one of the causes which can be cope with help of Government and Non- Governmental Organizations by providing iron tablets and iron fortified foods to the population as a prophylaxis. To improve their health, pregnant women should regularly visit the clinics of Obs & Gynae and follow instructions of attending doctors and practice birth spacing in between the pregnancies.

Object: To determine the incidence of anemia in pregnant women in different socioeconomic classes in rural areas.

Study Design: Cross-sectional observational study.

Place and Duration of Study: This study was conducted at the Department of Gynae & Obs, Peoples Medical College Nawabshah, and Sindh Pakistan from 1st March 2009to 30th June 2009.

Patients and Methods: 850 pregnant ladies were included in the study who came to attend the antenatal clinic; where their history and clinical examination were recorded on a Performa. The ladies were divided into three socioeconomic classes, the higher, middle and lower class. 3ml of blood sample was taken from all the ladies for hemoglobin estimation and other necessary Lab test

Results: A total number of 850 participants were included in this study, out of those 329 pregnant women were having hemoglobin (Hb) below 9 gm/dl, declared as anemic, the incidence as observed was 38.77 % and the highest incidence was found in lower socioeconomic class.

Conclusion: It can be concluded from this study that anemia is one of the major problem in pregnant women of rural areas. The incidence observed was 38.77% which was least (0.6%) in higher class and was highest (60.2%) in lower socioeconomic class.

Key Words: Anemia, Pregnancy. Socioeconomic Classes, Hemoglobin Estimation.

INTRODUCTION

Anemia of pregnancy directly or indirectly contributes to a significant proportion of maternal death, according to the world health organization. The prevalence of anemia in women indicates that about half of pregnant women in the world suffer from nutritional anemia [1]. There are marked physiological changes in the composition of the blood in healthy pregnant women mainly to combat risk of hemorrhage at delivery plasma volume & red cell mass increase by 50% and 18.25% respectively, resulting in dilution of blood, decrease in Hb concentration called physiological anemia of pregnancy [2]. Anemia of pregnancy is often of multiple etiologies Iron and folic acid deficiency are the most important etiological factors. Malaria and worm infestation are other cause of anemia. Anemia is a common complication of pregnancy during which developing fetus may deplete the maternal iron stores [3] severe anemia can lead to cardiac failure in pregnancy, while lesser degree of severity are associated with maternal morbidity like hemorrhage infection and poor healing wound. It also contributes to prenatal morbidity and mortality by increasing the risk of intrauterine growth restriction and premature delivery'[4]. Anemia is public health problem worldwide. Anemia can be caused by innumerable factors, the most common being deficiency of essential elements for hemoglobin synthesis (i.e. Iron, Vitamin B12 and folic acid), blood loss, repeated pregnancies in female of reproductive age, worm infestation. hemolysis due to known or unknown causes and bone marrow conditions causing suppression of red blood cell synthesis. Chronic ailments like chronic renal failure, rheumatoid arthritis and tuberculosis are also known causes. In elderly female genital blood loss due to pelvic malignancies and in both sexes gastrointestinal blood loss is an important cause of anemia[5,6].

Globally, the most common cause of anemia is believed to be the iron deficiency due to inadequate dietary iron intake, physiologic demands of pregnancy and rapid growth and iron losses due to parasitic infestation[7]. Iron deficiency anemia is still a major nutritional and public health problem in developing countries including Pakistan it is estimated that 50'% of pregnant women in developing countries and up to 80% in South Asia have iron deficiency. Menstruating women present a large healthy population in which iron deficiency anemia

(IDA) is common, occurring in 5 — 10%. Menstrual loss, especially menorrhagia, pregnancy and breast feeding are usually responsible for anemia[8].

PATIENTS AND METHODS

The study was conducted in Gynae & Obs out Patient Department of PMC Hospital Nawabshah. This study was performed on 850 pregnant women of age ranging between 18- 40 years and having gestational age between 8 wks to 40 wks (Table-1). History and clinical examination was carried from all patients. Performa which include Name, age, occupation, address, gestational age, Hb estimation and prescribed treatment are to be filled. 3ml of blood samples taken for Hb% estimation and for other Lab tests. A cut of value of < 9.Ogm/dl of hemoglobin was used to define anemia.

Inclusion Criteria: All those pregnant women at their regular antenatal checkup.

Exclusion Criteria: Those pregnant women, having any co-morbidity like heart disease, liver disease. Thalassemia & hemolytic anemia were excluded from this study.

RESULTS

In the current study, a comprehensive scheme for collection and compilation of data was adopted by selecting a systematic random sampling of 850 pregnant ladies. Total number of 850 cases were included in the study; out of which 329 patient were detected as anemic having hemoglobin level below 9.0 gm/dl, the incidence is 3 8.77%, which is lowest in high socioeconomic class and highest in lower socioeconomic class as shown in the table-2.

Table No.1: Demographic Data

Number of cases	850
Age (years)	18-40
Mean age (years)	28
Gastational Age (weeks)	8-40

Table No.2: Cases of anemia according to different socioeconomic classes (n-329)

Socioeconomic Class	No of Cases	Hemoglobin Level			
		8-9 gm/dl	7-8 gm/dl	6-7 gm/dl	< 6.0 gm/dl
High	02 (0.6%)	02	--	--	--
Middle	129 (39.2%)	63	34	28	04
Low	198 (60.2%)	78	56	38	26
Total	329	143	90	66	30

DISCUSSION

Iron deficiency is generally recognized as the most common nutritional deficiency worldwide[9]. Nutritional anemia is a condition in which the hemoglobin content of the blood is lower than normal as a result of a deficiency of one or more essential nutrients, regardless of the cause of such deficiency[10.] Nutritional iron deficiency is highest in population segments that are at peak rates of growth. namely infants, young children and pregnant women. Pregnancy is a time in which the risk for developing iron deficiency anemia is highest. because iron requirement are substantially greater than average absorbable iron intake. Anemia is considered one of the main nutritional deficiency disorders affecting a large fraction of the population not only in developing but also in developed countries. Poverty, gender bias and lack of education about the importance of intake of balanced and iron-rich diet contribute to it[11]. In pregnant women nutritional anemia is often a serious refractory problem. It has been associated with a range of adverse consequences including poor mental development. reduced productivity, maternal mortality, and low birth weight. Iron deficiency is considered the main cause of anemia, especially among young children and pregnant women, who are at increased risk due to their increased requirements. Iron deficiency anemia has been eliminated from the developed world due to improved antenatal care and prophylactic iron therapy. It confirms to be a major problem in anemia of child bearing age in the developing world. The hemoglobin concentration hematocrit and red cells mass fall during pregnancy because expansion of plasma volumes is greater than that of red cell mass. The lowest normal Hb% level in non pregnant women is I 2gm/dI. The Hb% level in pregnant women is 11 .O gm/dI which acceptable to the world health organization'.

Incidence of anemia range from *35* to 90% among the pregnant women[12]. The estimated prevalence of anemia in middle income patient is 20 to *30%* whereas the corresponding figure among pregnant in lower income group is 60 to 70%. The main etiological factor of anemia may include poor nutrition, increase demand or loss. repeated pregnancies and lack of contraception[13] . In current study anemia was present in only 0.6% of cases in high socioeconomic class, 39.2% in middle class & 60.2% in lower socioeconomic class, such difference may be due to poor diet repeated pregnancies and lack of contraception. Anemia in pregnancy is an important preventable cause of maternal and parental morbidity; mortality. Anemia is a condition of low circulating hemoglobin in which the HB concentration has fallen below a threshold lying at two standard deviations below the median of a healthy population of the same, age, sex and stage of pregnancy[14]. The overall prevalence of anemia is estimated to be about 40% of the world population. The prevalence is 35% for non-pregnant women and *51%* for pregnant women globally, and tend to be 3 to 4 times higher in non-industrialized than in industrialized countries. Anemia affect about I 8% of women during pregnancy while in

non-industrialized countries prevalence varies between 35-*75°/s* with the average being 56%. The incidence is very high in Central Asia it may reach up to 8O%. The situation is particularly severe in Asia where three quarters pregnant women are anemic. The incidence of anemia varies in certain countries 49% in Bangladesh and 84% in Uganda. In Gilgut prevalent ratio is 43.17%. Routine antenatal care service provide particularly during second and third trimester of pregnancy when the demand of iron increase for the mother & developing fetus. Pregnant women are particularly vulnerable to anemia due to increase iron demand of pregnancy.[15]

Pregnancy heightens iron needs to accommodate the 40% increase in blood volume, and to supply the iron demands required for the growth of the fetus, placenta, and other maternal tissues. Iron absorption increases during pregnancy, although the majority of women are still unable to meet their iron needs without supplementation especially during the 2nd trimester of pregnancy [16&17]. During the second trimester. iron requirements begin to increase and continue to do so throughout the remainder of pregnancy. The increase in oxygen consumption of both mother and fetus is associated with major hematologic changes. During pregnancy. the fetal demand for iron increases maternal daily iron requirements from < I to *2.5* mg/d in early pregnancy and 6.5 mg/d in the third trimester[18]

CONCLUSION

It can be concluded from this study that anemia is one of the major problem in pregnant women of rural areas. The incidence observed was 38.77% which was least (0.6%) in higher class and was highest (60.2%) in lower socioeconomic class which may be due to poor nutrition, increase demand or loss. repeated pregnancies and lack of contraception in this class.

Recommendations:

Anemia can fairly be managed with diet, iron folic acid, multivitamin and good family planning education. In our areas socio-economic problem is one of the causes which can partly be managed with the addition of prophylaxis, iron supplement free of cost in public general hospital and iron fortified foods to the population[19]. So for improving the condition of pregnant women they regularly visit the OPD & follow their instruction and birth spacing in between the pregnancies.

A recent critical review of the scientific evidence indicated that the biological effect of iron deficiency anemia on work capacity is sufficiently strong to justify improving iron status among adult women[20]. Iron supplementation is one of the recommended strategies to improve iron status in the vulnerable groups. Several forms of iron salt are used to treat iron deficiency remarkably; however, the treatment used by the 19th century's French physician Blaud (ferrous sulfate) is still as effective as any other oral therapy.

The WHO recommends large-scale programs of daily iron supplementation to reduce the prevalence of anemia in high risk areas. The center for disease control and prevention and the American College of Obstetricians and Gynecologists recommend a daily iron supplement (30mg) as prophylaxis for iron deficiency during pregnancy.

Acknowledgments:

The authors are grateful to Dr. Farida wagan Associate Professor gynae & Obs. PMC for facilitating in collection of data.

Note. The author was working as Professor at PMC Nawabshah ;when this study was carried out.

REFERENCES

1. Hayhoe FGJ, Flemans RJ. Haematological cytology. 3rd ed. Wolfe Medical Publications: Chicago;1992.p.14-4.
2. Perez-Exposito AB, Villalpando S. Rivera JA. Fernws sulphate is more Bioavailable among preschoolers than other forms of iron in a Milk—based wearing food distributed by Progresa. a National Program on Mexico. J Nutr 2005;135(1): 64-9.
3. van den Broek NR, Leisky EA. Etiology of anemia in pregnancy in South Malawi. Am J Clin Nutr 2000; 72: 247S-56S.
4. Ramakrishnan U, Neufeld LM.Gonzalez-Cossio, et al. Multiple micronutrient supplements during pregnancy. Do. Not reduce anemia or improve iron status compared to iron only supplements in semi rural Mexico. J Nutr 2004;134:898-903.
5. Stoltzfus RJ. Iron Deficiency anemia: Reexamining the Nature and Magnitude of the Public Health Problem. Defining Iron Deficiency anemia in Public Health Terms: A Time for Reflection. J Nutr 2001;13:5655-75.
6. Dreyfuss ML, Stoltzfus RJ, Shrestha JB, et al. Hookworms, malaria and vitamin A deficiency contribute to anemia and iron deficiency among pregnant women in the plains of Nepal. J Nutr 2000;130:2527-36.
7. Godard AF, Mcintyre AS, Scott BB. Guidelines for the management of iron deficiency anemia. Gut 2000; 46:1-5.
8. Suharno DC, West CE, Logman MMH, et al. Cross—sectional study on the iron and vitamin a status of Pregnant women in West Java. Indonesia. Am J Clin Nutr 1992; 56:988-93.
9. Bothwell TH. Iron requirement during pregnancy and strategies to meet them. Am J Clin Nutr 2007; 72(25):264-75.

10. John S. Progress in Obstetric Gyneacology. 1st ed. Chirchill Livingstone: London;2003.p.104-12.
11. Stoltzfus RJ. Iron Deficiency anemia: reexamining the nature and magnitude of the public health problem. Summary: implications for research and programs. J Nutr 2001;131:697S-701S.
12. Tolentino K, Friedman JF. An update on Anaemia in less developed countries. Am J Trop Med Hyg 2007;77:45–51.
13. Galloway R, Dusch E, Elder L, Achadi E, Grajeda R, Hurtado E. Women's perceptions of iron deficiency and anaemia prevention and control in eight developing countries. Soc Sci Med 2002; 55:529-44.
14. Sungthong R. Mo-Sunwan. Chongsuvivatwong V. Once weekly and 5-days a week iron supplementation diftI.rentially affect cognitive function But not School performance in Thai children. J Nutr 2004;134:2349-55.
15. Tomashek KM, Bradley A, Woodryff et al. Randomized intervention study comparing several regimens for the treatment of moderate anemia among refuge children in Kigoma region. Tanzania Ami. Trop Med Hyg 2001;64(3,4):164-71.
16. Steer PJ. Maternal hemoglobin concentration and birth weight. Am J Clin Nutr 2000;71:12855-75.
17. Ramarkrishnan U. Neufeld LM. Ganzalez-Cossio et al. Multiple micronutrient supplements during pregnancy. Do. Not reduce anemia or improve iron status compared to iron only supplements in semirural Mexico. J Nutr 2004:134:898-903.
18. Sharma JB, Jam S, Mallika V, et al. A prospective, partially randomized Study of pregnancy outcome and hematological responses to oral and intramuscular iron treatment in moderately anemic pregnant women. Am J Clin Nutr 2004; 79:116-22.
19. Mumtaz Z, Shahab S, Bu UN, et al. Daily iron supplementation is more effective than twice weekly iron supplementation in pregnant women in Pakistan in a Randomized Double-Blind Clin Trial. J Nutr 2000;130:2697-702.
20. Awan MA, Aakbar MA, Khan M. A study of anemia in pregnant women of Raiksay Colony Multan. Pakistani Med. Res 2004;43:11-4.

Address for Corresponding Author:
Dr. Nazir Ahmad Solangi,
Professor & Chairman,
Pharmacology Department,
LNMC, Karachi
Cell # 0300-333 1300
Email; snaiqra@ hotmail.com