

Prevalence of Anaemia During Pregnancy

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INTRODUCTION

Pregnancy is a state of physiological stress characterised by profound metabolic changes that serve to meet the demand of the rapidly growing foetus. As the infant receives its nutrition from the mother, good maternal nutrition play an import role in improving the foetal growth and development of women. During pregnancy there is an increasing demand for almost all the nutrients. Low intake of nutrients in the diet during this period can lead to anaemia, low birth weight of infants etc.

Anaemia is an important nutritional problem affecting all segment of the population in general and children, adolescent girls and pregnant women in particular. Anaemia is associated with a decrease either in the number and size of red blood cells or haemoglobin content or a defect in their synthesis (Rajalakshmi, 1991).

Anaemia due to iron-deficiency is the commonest malnutrition disorder seen throughout the world and in India influencing high rates of maternal mortality (Anonymous, 1986). The single most important cause for the widespread occurrence of iron-deficiency anaemia in our country is inadequate iron intake in the habitual diets coupled with poor bioavailability of dietary iron. A study related to this problem was conducted in the area of Palampur sub-division of Himachal Pradesh in order to assess the degree and prevalence of anaemia during different trimesters of pregnancy.

MATERIALS AND METHODS

Thirty healthy pregnant women from each trimester of pregnancy (total 90) in the 20-30 years of age were selected as experimental subjects. Majority of them belonged to rural areas having family income between Rs. 1000-1500 per month. The area under study was located at an altitude of about 1200 – 1500 m above men sea level. An additional group of similar socio-economic status constituted thirty normal fe-

males (non-pregnant, non-lactating) as control.

Anti-coagulated blood of expectant mothers was analysed for haemoglobin, haematocrit and red blood cell count as peer standard methods. Mean cell volume (MCV), mean cell haemoglobin (MCH) and mean cell haemoglobin concentration (MCHC) were calculated by the following expressions as given by Mukherjee (1992).

$$\text{MCV (fl)} = \frac{\text{Faematocrit (\%)}}{\text{RBC counts in millions}} \times 100$$

$$\text{MCH (pg)} = \frac{\text{Haemoglobin}}{\text{RBC counts in millions}} \times 100$$

$$\text{MCHC} = \frac{\text{Haemoglobin (g / dl)}}{\text{Haematocrit (\%)}} \times 100$$

Diagnosis of Anaemia

Morphological classification of anaemia was used for its diagnosis as suggested by Penington et al. (1986). The subjects were diagnosed for below listed types of anaemia according to the following criteria:

1) Hypochromic Microcytic Anaemia

- a) Blood examination
 - MCH: less than 27 pg
 - MCHC: less than 30 pg/dl
- b) Biochemical findings
 - Plasma iron: less than 60 ug/dl

2) Physiological Anaemia of Pregnancy

Hb: less than 11g/dl

Statistical Analysis: Data analysis was done using standard statistical methods. For comparing the treatments, the analysis of variance test was undertaken using completely randomized design. Difference within and between each group was tested through least significant difference value. The significance level was kept constant at 5 per cent ($P < 0.05$).

RESULTS AND DISCUSSION

a. *Hypochromic Microcytic Anaemia:* This is commonly associated with iron deficiency and

is the most commonest cause of anaemia in pregnancy. The blood picture shows low mean cell haemoglobin (MCH) and mean cell haemoglobin concentration (MCHC). The cells are usually microcytic as well as hypochromic. Many cells often the majority are smaller than normal, and a few are tiny microcytes. The biochemical findings shows reduced plasma iron concentration (less than 60 µg/dl).

Percentage of anaemia subjects detected for control group and during three trimester of pregnancy were 36.70, 23.30, 20.00 and 40.00 (based on MCH) 26.70, 10.00, 13.30 and 13.30 (based on MCHC) and 76.60, 30.00, 30.00 and 63.30 (based on plasma iron concentration) which shows that pregnant women of third trimester group were suffering from this form of anaemia next to control group (Fig. 1). Iron deficiency anaemia seemed to be a relatively minor problem during first half. The most important causes of iron deficiency during pregnancy are increased blood loss due to systemic or intestinal parasitism, ii) increased iron requirements for foetal growth or impaired iron absorption or both, iii) low iron intake and low physiological availability of dietary iron and iv) too frequent pregnancies with consequent inability of the body to make up the blood losses on short periods (Penington et al., 1986).

For its treatment, there are two essential principles in the management of iron deficiency anaemia a) the correction of the disorder causing anaemia b) the administration of iron under which consideration should be given to restore the haemoglobin level of the blood to normal and to replenish the exhausted tissue iron stores.

Although, most of the pregnant women were consuming haematinic supplements orally, but did not result in a gratifying response. This can be due the reason that they may be consuming irregular doses of supplement or they need more of the elemental iron than prescribed for them. None of the control subjects were taking any supplements which resulted in their higher percentage. Next to this, inadequate iron intake due either to poor diet, anorexia (during pregnancy) or impaired absorption may act as a contributing factor (Penington et al. 1986). Thus, iron deficiency anaemia is more common in women of low socio-economic group due to the inadequate intake of foods rich in iron such as meat, egg and green leafy vegetables, which are relatively expensive.

b) Physiological Anaemia of Pregnancy: During the course of normal pregnancy, the haemoglobin values of most women fall, occasionally to below 11 g/dl. This fall has been named as physiological anaemia of pregnancy. Following this criteria 23.30 per cent, 26.70 and 43.30 per cent of the subjects during first, second and third trimesters were suffering from this type of anemia (Fig. 2). The figure further reveals an increase in percentage over the course of pregnancy. This has been attributed to haemodilution, which occurs in pregnancy because of disproportionate increase in plasma volume, and also due to iron deficiency, which thus results in a fall of haemoglobin value.

Hence, administration of iron is needed for eradication of anaemia. It therefore, seems that these pregnant women require more dosage of supplements than prescribed or they need proper

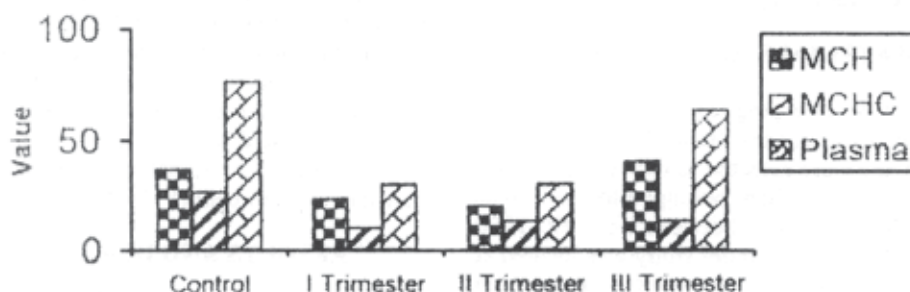


Fig. 1. Hypochromic microcytic anaemia in control and pregnant subjects

nutrition education regarding the increase in nutritional requirements during the pregnancy period. Considering the WHO standard 11 g/dl of Hb for detection of anaemia, 63.60 per cent of control women can be classified as anaemic which is higher than the percentage of pregnant women. Thus, it also stresses the need to improve the nutritional status of adolescent girls and women of this area.

CONCLUSIONS

Maintenance of optimum nutritional status of expectant mothers is of utmost importance because the overall development of a child is determined to a great extent by the type of nourishment it receives right from conception. The diet, which is marginal with regard to quality protein, minerals and other accessory food factors, can hardly be conducive to the maintenance of good nutritional status.

In our earlier studies, per day mean nutrient intake of pregnant subagents were calculated which showed that no difference existed trimesterwise (Gupta and Kalia, 1998). The diets were deficient in important nutrients. Their dietary pattern comprised meals subsisting mainly on cereal-pulse diet. Lukjan et al. (1966) showed incorrect nutritional habits to be one of the main causes of anaemia and reduced value of iron. Cobiac and Baghurst (1993) also considered insufficient dietary iron as a major fac-

tor contributing to high rates of iron-deficiency anemia in adolescent girls and of women of childbearing age. Hence, growing children, pregnancy women and anemic individuals have higher rate of absorption than healthy ones. Hence, the diets of expectant mothers should be supplemented with protective foods to make the diet more balanced and adequate in all the nutrients.

It was also observed during the study that the pregnant women were not aware of the nutritional needs during this period, hence nutritional education during antenatal visits should also be considered as an important activity in providing antenatal care.

KEY WORDS Anaemia. Expectant Mothers. Nutrition.

ABSTRACT Thirty pregnant women (20-30 years) from each trimester of pregnancy were diagnosed for different types of anaemia. An additional group of thirty normal healthy females (non-pregnant, non-lactating) of similar age were also selected as control. The study revealed that pregnant women of third trimester group were suffering from hypochromic microcytic anaemia and physiological anaemia as compared to other groups. In comparison to pregnant subjects, the control group recorded higher percentage of anaemic subjects. Thus, it stresses the need to improve the nutritional status of adolescent girls and pregnant women of this area.

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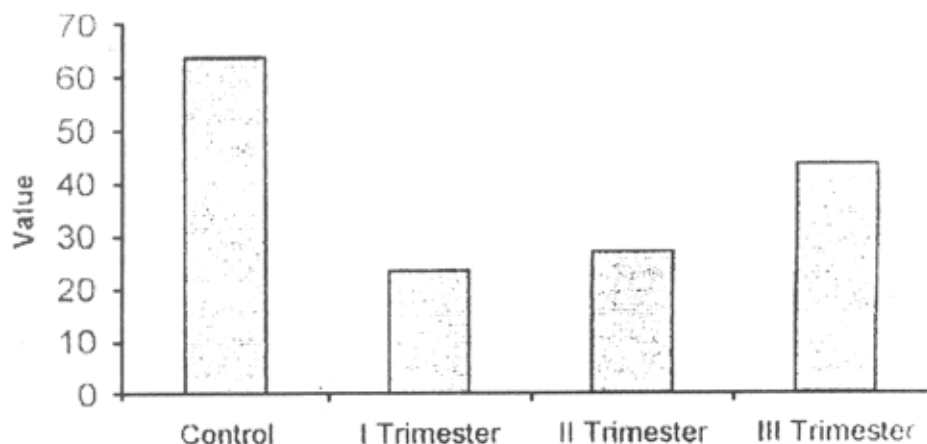


Fig. 2. Physiological anaemia of pregnancy

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