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Serum Iron Level in The First Trimester of Pregnancy among Women Visiting a Tertiary Care Hospital in Bangladesh

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Abstract

Background: Iron plays a vital role in the development of fetus. Requirements of nutrition are increased during pregnancy for proper fetal growth and development along with the change in maternal metabolism. Thus the study was undertaken to assess hemoglobin and serum iron level in the first trimester of pregnancy with aim to focus the needs for a sustainable strategy to improve maternal and fetal micronutrition to prevent the adverse pregnancy outcome.

Materials and methods: This study was a hospital based cross sectional observational study comprising 100 pregnant women who were recruited during their first antenatal visit in the first trimester of pregnancy, while attending the Outdoor of Gynaecology and Obstetrics, Chittagong Medical College Hospital and 50 non-pregnant women as control. Serum iron and hemoglobin level were evaluated in the Department of Biochemistry, Chittagong Medical College.

Results: In this study, of 100 cases, anaemia was detected (Hb<11gm/dl) in fifty- three (53% of cases) pregnant women. However, iron deficiency (S. iron<50µg/dl) was seen in forty-two (42% of cases) pregnant women.Haemoglobin level and serum iron were significantly decreased in pregnant women in first trimester than that of non-pregnant healthy women as $p<0.05$. There were no significant differences for age, BMI, parity, hypertension and diabetes mellitus with these levels. Low Hb% and serum iron were significantly associated with the low socioeconomic condition of cases. Hb% level was significantly higher in pregnant women with diabetes mellitus.

Conclusion: This study may give baseline information to detect hidden iron deficiency in early pregnancy in developing countries like Bangladesh where nutritional deprivation is more prevalent.

Key words: First trimester of pregnancy; Hemoglobin; Serum iron.

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Introduction

Adequate maternal nutrition is essential during pregnancy. Requirements for both micro and macronutrients are increased during pregnancy for support of fetal growth and development[1]. Increments of nutrition are also important for mother to cope up with alterations in maternal tissues and metabolism during pregnancy.[1]

Undernutrition is one of the main underlying causes of death, thus causes physical and mental impairments which leaves bad impact along the whole life.[2] Deficiencies of maternal micronutrients are result of the faulty dietary practices, high fertility rate, repeated pregnancy, short pregnancy interval and increased physiological requirements.[3] These conditions are worsened by the inadequate accessibility and affordability to antenatal care facility, low socioeconomic status as well as by various cultural factors like early marriage, lack of nutrition education and several traditional cooking practices[3]. Concurrent deficiencies of micronutrients among pregnant women in low and moderate income countries are due to inadequate intake of balanced diet, high price of animal source foods, high amounts of phytates and polyphenols in the diet that limit the absorption of micronutrients.[4] Phytate inhibits the absorption of iron from the diet of all the pregnant women.[5]

Iron deficiency is the most common cause of anaemia in pregnant women.[1] Anaemia in the first trimester of pregnancy contribute to about 50% greater risk of inadequate weight gain for gestation.[6] It is associated with poor pregnancy outcome, low birth weight and preterm delivery.[7] Maternal micronutrients have influence on various hormonal regulatory pathways in the developing foetus as well as neonate such as iron deficiency,