

Chapter 20

Neonatal Iron Status and Body Composition as Influenced by Mother's Anaemia

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ABSTRACT

Iron is a micronutrient which is crucial for growth of fetus during pregnancy, and maternal iron is the major source of fetal iron. As the demand of iron increases during pregnancy, it becomes difficult to ensure sufficient maternal iron stores. Literature suggests that maternal iron deficiency anaemia might influence the iron reserves of newborns and also affect growth and development of fetus and newborns after birth. The aim of this chapter is to examine the association between maternal anaemia and newborn anthropometric parameters, namely haemoglobin and iron reserves after birth. This 18-month research was a cross-sectional analysis of data from a large hospital. Blood samples were taken from both the mother and the newborn to analyse haemoglobin and serum ferritin levels during the initial stage of labour. The mean age of enrolled pregnant women was 25.81 ± 4.67 years and most of them belonged to 21-30 years of age (72.32%).

1. INTRODUCTION

Fetal iron is mostly derived from maternal iron, as iron is a vitamin that is crucial for the growth of the foetus throughout pregnancy. Keeping up with the increased iron needs of a pregnant woman is no easy feat. According to the available literature, a mother's iron deficiency anaemia may impair her newborn's iron stores, as well as the fetus's and newborn's growth and development after delivery (Baker & Greer, 2010). This was cross-sectional research carried out over the course of 18 months at a major teaching hospital. There was a total of 112 pregnant women enrolled in the study, all of whom had been diag-

DOI: 10.4018/979-8-3693-1301-5.ch020

nosed with iron deficiency anaemia and were stratified according to the severity of their anaemia as determined by WHO criteria. The World Health Organization classifies pregnant women as anaemic if their haemoglobin is 11 g/dL or below at any moment throughout their pregnancies. The infants of the women who participated in the study were also included to examine the relationship between their iron status at birth and other anthropometric variables (Gupta, et al., 2013). The widespread belief that an inadequate amount of iron is present during pregnancy and in neonates, which stunts their development, is based on this fact (Camaschella, 2019).

Because it affects around one-third of the world's population, anaemia is one of the most serious health disorders that may be found anywhere in the world. This blood illness affects a significant number of young children (42 percent of those 5 years old or younger) as well as pregnant women (40 percent of the world's total). According to the fourth iteration of the Indian National Family Health Survey (NFHS-4), conducted in 2015–2016, anaemia affects 53% of Indian women between the ages of 15 and 49. (Garzon et al., 2020). The percentage of women who are anaemic differs according to whether or not they are pregnant or breastfeeding: anaemia affects 58% of women who are breastfeeding, 50% of women who are pregnant, and 52% of women who are neither pregnant nor breastfeeding. There could be other factors at play, but research suggests that iron deficiency is responsible for more than half of all episodes of anaemia (Parks et al., 2019).

Overall, 75% of all cases of anaemia in pregnant women are caused by a lack of iron, whether they live in a rich country or a poor one. Physiological changes during pregnancy raise the average daily iron need by 4.4 mg, which is often not enough to fulfil the maternal demand imposed by pregnancy and leads to the development of IDA in pregnant women (Tandon et al., 2018). The World Health Organization classifies pregnant women as anaemic if their haemoglobin is 11 g/dL or below at any moment throughout their pregnancies. However, iron levels and needs change during pregnancy. Negative prenatal and postnatal effects for mother and child might result from IDA going undiagnosed and untreated. Pallor, shortness of breath, palpitations, hair loss, headache, vertigo, leg cramps, cold intolerance, disorientation, and irritability are all possible symptoms of IDA in pregnant women. Perinatal infections, preeclampsia, heart failure, hemorrhagic complications, and even mortality is all more likely to occur in pregnant women with IDA. If IDA continues after giving birth, a woman may have fatigue, lowered work capacity, impaired attention, decreased breast milk supply, and an increased risk of postpartum depression. Recent meta-analyses have linked maternal anaemia to a 20% increase in maternal mortality and an 18% increase in perinatal mortality in South Asian countries like India (Terefe et al., 2015).

Iron is one of the most vital elements for foetal development since its need is so high throughout development, and foetal growth and development in the uterus are critical for a child's general development and well-being. Iron is essential for the fast proliferation of cells and for normal brain development throughout embryonic development. It's vital for a kid's brain and body to grow and develop, as well as for the formation of new red blood cells (RBC), muscle cells, and myoglobin. Thus, low birth weight and height, as well as neonatal anaemia, correspond with an inadequate amount of iron in the foetus and newborn. If a newborn's iron levels are low, doctors need to treat him or her right away so that he or she doesn't suffer from high blood pressure, impaired cognitive development, and a weakened immune system as an adult.

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