

STUDY OF RELATIONSHIP BETWEEN MATERNAL ANEMIA AND LOW BIRTH WEIGHT AT COMMUNITY HEALTH CENTRE KOTKHAJ, SHIMLA¹Poonam Kanwar and ^{2*}Nitesh Kanwar¹MD Pediatrics CHC Kotkhaj.²MD Medicine CHC Kotkhaj.***Corresponding Author: Nitesh Kanwar**

MD Medicine CHC Kotkhaj.

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ABSTRACT

A retrospective analysis of all low birth weight cases admitted to CHC Kotkhaj from Jan 2018 to Dec 2020 was done to study the relation between maternal anaemia and low birth weight. Low birth weight is a global challenging public health problem. It is the major predictor of infant morbidity and mortality. Infant low birth weight is one of the major problems in different societies. Different reports have different results regarding relationship between maternal anaemia and low birth weight. Anaemia has been a very important nutritional disorder in the world. India has a big chunk of population suffering from anaemia. India has reported high prevalence of anaemia in pregnancy. In one of the studies conducted on a large population, it was estimated that 87% of the Indian pregnant women are anaemic.^[1] This figure is the highest among the neighbouring South East Asian countries. Anaemia in pregnant women has been regarded as detrimental to the foetal growth and pregnancy outcome. Low birth weight and preterm delivery have been persistently linked to anaemia in pregnancy. The foetal growth occurs in various phases, and most of the micronutrient related issues occur in the third trimester.

KEYWORDS: Low birth weight is a global challenging public health problem.**INTRODUCTION**

The World Health Organization (WHO) defined low birth weight (LBW) as weight less than 2500 g at birth. Low birth weight contributes to a variety of pitiable health outcomes. Most of the low birth weight in low income countries is due to IUGR and the causes of IUGR includes poor nutritional status of the mother at conception, low weight gain during pregnancy due to insufficient dietary intake, short maternal height due to under nutrition and infections, anaemia, acute and chronic infections could result in under nutrition and hence poor pregnancy outcome including low birth weight.

Low birth weight is a most important risk factor which leads to mortality of 15 to 20% of newborns across the globe. An infant is likely to have stunting in childhood and develop markers of metabolic risk factors at his later age. According to the data collected from the Centre for Disease Control in 1989, if haemoglobin level in the first and the second trimester of pregnancy is less than 11 g/dL and is less than 10.5 g/dL in the third trimester, this condition is considered anaemia. According to the recommendations of World Health Organization (WHO) in 1972, a pregnant woman is diagnosed with anaemia when the haemoglobin level is below 110 g/l. Based on this report, more than 50% of women who do not take supplements suffer anaemia. Statistics show that 14-62%

of women in developing countries, and 16-29% in developed countries are suffering from anaemia.^[2] LBW infants are more vulnerable and exposed to different health problems and complications compared with infants with normal weight. The relationship between maternal anaemia and LBW in the first trimester of the pregnancy is significant. Maternal anaemia causes LBW in the first trimester of the pregnancy. However, this relationship was not significant for the second and third trimesters of the pregnancy. Nowadays, maternal anaemia is considered as a public health problem in the world, especially in developing countries.

A study in 2013 showed that anaemia is more prevalent in developing countries (43%) than developed countries (9%).^[3] Previous studies have reported that the prevalence of anaemia in pregnancy varies in women with different socio-economic conditions, lifestyles, or health-seeking behaviours across different cultures.

Anaemia is one of the most prevalent complications during pregnancy. It is commonly considered a risk factor for poor pregnancy outcomes and can result in complications that threaten the life of both mother and foetus, such as preterm birth, low birth weight, foetal impairment, and maternal and foetal deaths. Physiologically, plasma volume expands by 25-80% of pre-pregnancy volumes between the second trimester and

the middle of the third trimester of pregnancy.^[4] This induces a modest decrease in Hb levels during pregnancy. Previous studies show that the best time to investigate any risk factors associated with anaemia may be up until 20 weeks of gestation.

METHODOLOGY

The present retrospective study was conducted by department of Medicine and Pediatrics from Jan 2018 to Dec 2020. Data was collected from all the low birth weight babies born to mothers with anemia presenting at CHC Kotkhai. Information was collected into a performa on the severity of anemia, trimester of pregnancy, maternal nutrition and socioeconomic status were noted from records for each case and analyzed.

Inclusion criteria

All pregnant women who came for delivery in our institute were included.

Exclusion criteria

Pregnant women with one of the following at booking were excluded.

1. Diabetes mellitus.
2. Hypertension (including pregnancy-induced hypertension).
3. Toxoplasmosis, Rubella, Cytomegalovirus, Herpes infection.
4. Diagnosed renal or cardiac illness.
5. Smoker or alcoholic.
6. Hemoglobinopathies (e.g. thalassemia).
7. Multiple gestation.

Sampling

This study was done over a period of 2 years. The pregnant females meeting any one of the exclusion criteria were excluded. This exercise was continued till the required sample size was achieved. Recruitment for the study was later stopped. A total of 85 mothers were included for the study.

RESULTS

In our study there were total of 85 pregnant females brought to CHC Kotkhai, of whom the data were collected during the study. More than 50% of the mothers were anaemic at some point of time during their pregnancy and 39% of the mothers were anaemic throughout. Mean birth weight of babies born to anaemic mothers was marginally lower compared to that of babies born to non anaemic mothers. This difference was statistically significant. There was 6.5% increase in the incidence of low birth weight babies and 11.5% increase in preterm deliveries in mothers who were anaemic in their third trimester. 90% pregnant women belonged to low socioeconomic status and 10% pregnant women belonged to high socioeconomic status. Our study also showed that prevalence of anaemia increased with the progress of pregnancy. Also the study revealed that the rate of anaemia was found to be reduced in females who consumed iron supplementation as per supervision and

hence rate of low birth weight, preterm labour and post partum anaemia were reduced significantly from 38% to 29% which is similar to the study done in rural Nepal where Folic acid-iron increased mean birth weight by 37 g and reduced the percentage of low birth weight babies (<2500 g) from 43% to 34%.

DISCUSSION

Anaemia is one of the most common complications during pregnancy and could cause adverse pregnancy outcomes. It is a public health problem not only in developing but also in industrialized countries. The change in the haemoglobin level during the second trimester may be related to physiological changes during pregnancy, which is due to plasma dilution. In the third trimester, physiologically, the increased plasma volume velocity slows down and women may undergo routine antenatal care and iron supplementation, which will elevate the Hb level. However, we found an increased prevalence in the third trimester, which may have been due to inadequate iron supplementation.

Considering the degree of anaemia, Desalegn *et al.* reported that of 66 anaemic pregnant women, 40.92% had mild, 54.54% had moderate, and 4.54% had severe anaemia.^[5] Another study showed that among 224 pregnant women, 37% women had anaemia (26% mild and 11% moderate). It has been suggested that anaemia in pregnancy is associated with an increased risk of adverse pregnancy outcomes, such as preterm birth, hypertensive disorders, and low birth weight. Preterm labour and low birth weight have been reported to be suboptimal pregnancy outcomes of anaemia in previous studies. This may be due to the higher prevalence of preterm birth and low birth weight in anaemic women than non-anaemic women.

This study holds important implications for public health and highlights the high prevalence of low birth weight babies in mothers with anaemia in CHC Kotkhai. However their remains limitation due to the retrospective study, moreover due to the small sample size and since CHC receives patients from low income group, this may not represent the true statistics of the area of our study and can not be generalised for the whole population.

CONCLUSION

This study showed that anaemia in pregnancy continues to be a health problem in District Shimla, and economic factors may contribute to the situation. Therefore, we should vigorously promote early prenatal care for these at-risk pregnant women. This would allow for iron and folic acid supplementation during pregnancy, which would potentially reduce the prevalence of anaemia. Given the multifactorial nature of this disease, correcting anaemia often requires an integrated approach. In order to effectively combat it, the contributing factors must be identified and addressed.

In settings where iron deficiency is the most frequent cause, additional iron intake is usually provided through iron supplements to vulnerable groups; in particular pregnant women and young children. In settings where iron deficiency is not the only cause of anaemia, approaches that combine iron interventions with other measures are needed.^[6] Strategies should include addressing other causes of anaemia and should be built into the primary health care system and existing programmes. These strategies should be tailored to local conditions, taking into account the specific etiology and prevalence of anaemia in a given setting and population group.

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