

## Impact of Nutritional Supplements on Health of Pregnant Women and New Born

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### **Abstract**

*The present article reviews the effects of maternal anemia and iron deficiency on the pregnancy outcome. During pregnancy the fetal demand for iron increases daily maternal iron requirements. This demand by the developing fetus may cause anemia in mother due to iron deficiency and lowers the level of hemoglobin because of dilution effect (more circulating fluids dilute the RBCs). Low hemoglobin in pregnancy indicates iron deficiency and anemia which is associated with the risk of preterm labor (<37 weeks), low birth weight (<2.5 kg) and even growth restriction in babies. The present study shows the benefits of daily material iron or folic acid supplementation along with routine diet has maintained normal hemoglobin level in mother, improved development of her child during pregnancy, ultimately enhanced birth weight and progressive neonatal development.*

## Introduction

During pregnancy a woman's body undergoes many changes in order to provide for the needs of her growing baby. Some of these physical changes are very obvious, such as changes in body shape and size, while some changes are much apparent. Changes in the mother's blood is one of these less noticeable, but important changes. Most anemia during pregnancy results from an increased need for iron. It is estimated that women will need approximately 50% more iron during pregnancy, increasing from 18 to 27 milligrams (mg) per day <sup>(1)</sup>. A mother and baby need more iron for a few different reasons. AS the mother's body grows, the amount of blood in her body also grows, especially in the last 3 months of pregnancy. During this time she will have as much as 50% more blood in her body. To produce more red blood cells, the mother's body will need additional iron to make hemoglobin, the part of the red blood cell that carries oxygen. Also, the growing baby takes all the iron it needs from mother, regardless of how much she has available in her system. Towards the end of pregnancy the baby will be storing iron for his or her first six months of life. Because of these change and other changes like these some women may develop anemia during their pregnancy.

The consequences of anemia during pregnancy extend beyond simply feeling tired and weak. Pregnant women who are anemic have an increased risk for problems when their baby is born particularly if they are

anemic in the first trimester. Babies born to mothers suffering from anemia may not be able to store enough iron before birth, are more likely to be born prematurely and have lower birth weights. This lack of stored iron may continue in baby's first year of life. Because so many women do have low stored iron, it has become standard practice to be evaluated for anemia at your first prenatal appointment.

During pregnancy, it is extremely important to eat a well balanced meal. Even then it is difficult to get the recommended 27 mg. of iron a day since even nutrition diets only provide you with about few mg of iron. In order to avoid iron deficiency, it is often necessary for pregnant women to take iron supplements.

## Maternal Anemia and Birth Weight:

The relation between maternal anemia and birth weight has been reviewed more extensively. It several studies, a U-shaped association was observed between maternal hemoglobin concentrations and birth weight. Abnormally high hemoglobin concentrations usually indicate poor plasma volume expansion, which is also a risk for low birth weight. Lower birth weights in anemic women have been reported in several studies. Trials that include large number of iron deficient women showed that iron supplementation improved birth weight.

## Method

Twenty anemic ( $Hb \leq 11.0$  g/dl) and non anemic ( $Hb \geq 11.0$  g/dl) pregnant women were selected from Urban region who are

non-alcoholic, non-smoking. The gestational age of the new born was calculated by using maternal menstrual dates. Hemoglobin percentage was determined on conformation of pregnancy and all the subjects were given a dose of 200 mg of Iron and Folic Acid Tablet per day throughout their pregnancy under the guidance of medical officer, hemoglobin percentage and weight of the subjects was

noted at three trimesters. After the delivery the weight of the new born was observed.

### Result

Anemic and non anemic pregnant women showed an increase in hemoglobin concentration and body weight at the end of their pregnancy and Weight of the new born was also  $\geq 2.5$  kg.

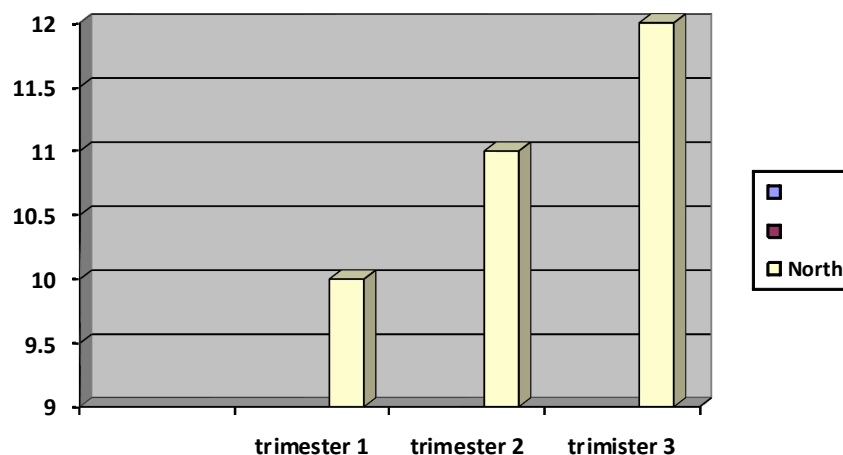
**Table: 1**

The following table illustrates the age, hemoglobin concentrations, weights, conceiving date, delivery date, number of iron and folic acid tables per month and weight of the new born.

AGE	NO OF IFA TABLETS PER MONTH	CONCEIVE DATE	DELIVERY DATE	HAEMOGLOBIN IN GRAMS				WEIGHT OF NEWBORN	WEIGHT OF WOMEN			
				Initial	1st Trimester	2nd Trimester	3rd Trimester		Initial	1st Trimester	2nd Trimester	3rd Trimester
20		3/6/2016	10/3/2017	9.5	10.2	11	12	2.7	51	55	58	61
20	30	5/5/2016	12/2/2017	10.5	11	12.5	13	3.1	51	54	60	62
23	30	21/6/2016	28/3/2017	10	11	11.5	13	3.1	40	43	46	49
24	30	1/5/2016	20/2/2017	10.5	11	12	12.5	3.1	46	49	52	55
24	30	22/5/2016	6/2/2017	10.5	11	11.5	13	3.2	48	51	54	58
26	30	18/6/2016	25/3/2017	10	11	11.5	12	3.1	46	48	53	58
19	30	10/6/2016	17/3/2017	8	9	10	12	3.2	50	54	57	61
18	30	29/5/2016	1/2/2017	7	8	9	12	3	48	51	55	60
23	30	25/6/2016	2/4/2017	9	12	12.5	13	3	52	55	59	63
24	30	8/6/2016	15/3/2017	11	12	13	13.5	3.1	50	53	57	61
22	30	9/6/2016	16/3/2017	10.5	11	12	13	3	53	56	60	64
20	30	11/6/2016	13/3/2017	8.5	9	9.5	12.5	3	55	59	63	67
21	30	14/6/2016	21/3/2017	8	9.5	10.5	12	3	49	53	57	61
21	30	12/5/2016	19/2/2017	9	10	11.5	13	3.2	51	55	58	62
23	30	14/6/2016	16/3/2017	8	8.5	10	11	2.5	60	63	67	71
32	30	6/6/2016	13/3/2017	8.5	9	10	11.5	2.7	80	82	85	87
20	30	23/6/2016	30/3/2017	9	10	10.5	12	3.1	48	53	57	62
19	30	13/6/2016	17/3/2017	8	9	10	11	2.5	55	58	62	66
20	30	1/6/2016	8/3/2017	9	10.5	11	12.5	3.1	48	52	56	61
24	30	2/6/2016	9/3/2017	11	12	12.5	13	3	56	60	64	68

**Graph: 1**

The following graph illustrates the concentration of hemoglobin of pregnant women at three trimesters. Mean average value of Hemoglobin (on Y-axis) of all the subjects was taken at 3 trimesters (on X-axis).



**Discussion**

There is substantial evidence that maternal iron deficiency anemia increases the risk of preterm delivery and subsequent low birth weight, and accumulating information suggests an association between maternal iron status in pregnancy and the iron status of infants postpartum. Certainly, iron supplements improve the iron status of mother during pregnancy and during the post partum period, even in women who enter pregnancy with reasonable iron stores. The

advisability of routine iron supplementation during pregnancy regardless of whether the mother is anemic, has been heavily debated in the United States and routine supplementation is not universally practiced in all industrial countries. In my opinion, the mass of evidence supports the practice of routine iron supplementation during pregnancy, although iron supplementation is certainly most important for those pregnant women who develop anemia.

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