INTRODUCTION
The global pregnancy related complications and thereby maternal mortality ratio (MMR) remains unacceptably high. Worldwide, nearly half a million women die each year from complications during pregnancy and childbirth. About 99 per cent of these women belong to the developing world, with over 90 per cent concentrated in Africa and Asia. The tragedy is that most death occurs due to unknown etiology.¹ Pregnancy is associated with physiological changes that results in increased plasma volume and red blood cells and decreased concentrations of circulating nutrient-binding proteins and micronutrients (examples, iron, folic acid, and vitamin B12). In many developing countries these physiological changes can be aggravated by malnutrition, leading to micronutrient deficiency states, such as anaemia.² Pregnancy is a time in which the risk for developing iron deficiency anaemia is highest, because iron requirements are substantially greater than average absorbable iron intakes.³ The amounts that can be absorbed from even an optimal diet, however, are less than the iron requirements in later pregnancy and a woman must enter pregnancy with iron stores equal to or greater than 300 mg if she is to meet her requirements fully.⁴ Pregnancy requires additional maternal absorption of iron.
Anaemia is the one most frequent complication related to pregnancy. All women during child bearing age are prone to develop iron deficiency but pregnant female are especially at risk. Increase requirements during pregnancy are due to fetal growth and expansion of red cell mass.⁵ Maternal iron status cannot be assessed simply from haemoglobin concentration because pregnancy produces increases in plasma volume and the haemoglobin concentration decreases accordingly.⁵ High haemoglobin concentrations are often mistaken as adequate iron status; however, high haemoglobin is independent of iron status and is often associated with poor health outcomes and an increased risk of poor pregnancy outcomes.⁶

MATERIAL AND METHOD

ABSTRACT:
BACKGROUND: The objective of this study is to shed light on the level of serum iron and serum transferrin saturation in normal pregnant women. The level of serum iron and serum transferrin saturation level in normal pregnant women were determined and compared to that of normal non pregnant women. MATERIAL AND METHOD: Serum samples of fifty normal pregnant women and fifty normal non pregnant were taken. Serum Iron and serum transferrin saturation were estimated by colorimeter method in fully automated Erba XL-640 analyser. RESULT: The results showed that serum iron level and serum transferrin saturation level of normal pregnant women were significantly lower as compared to the normal non pregnant women (p value<0.05). CONCLUSION: Decreased iron level and serum transferrin saturation level indicate iron deficiency anaemia in pregnancy. Serum iron and serum transferrin saturation levels are useful for diagnosis of iron deficiency anaemia in pregnancy and do possible intervention to prevent complication arise from this.

Key Words: Normal Pregnancy, Serum Iron, Serum transferrin saturation.
The cross sectional study was conducted in civil hospital, ahmedabad during february 2013 to decamber 2013. Fifty cases of normal pregnancy (n=50), their age range between 20-45 years participated in this study. Pregnant women, single/ multiple pregnancy, without any complication, without any disease were included in this study. The mean age of patients was found to be 31.44±6.28. Fifty normal Controls healthy non-pregnant women (n=50) aged 20-45 years were used as control. The mean age of control was found to be 31.42±7.02.

Venous blood samples were collected from patients with normal pregnant women and normal non-pregnant women and supernatant blood serum was used for the analysis of serum iron by colorimetric method in Erba XL-640 Fully Auto Analyser with following principal.

Iron is bound to Transferritin , is released in an acidic medium and the Ferric ions are reduce to Ferrous ions. The Fe(II) ion react with Ferrozine to form a violet coloured complex. Intensity of the complex formed is directly proportional to the amount of iron present in the sample. Serum transferrin saturation (the percent iron saturation of transferrin) is calculated from the following formula. Transferrin saturation (%) = 100× serum iron / TIBC

And results were analysed with Graphpad Instat software by using student’s t-test for statistical significance of 0.05.

RESULT
Table (1) showed the results of serum Iron and serum transferrin saturation expressed are as mean±standard deviation. Serum iron level of normal pregnant women are significantly lower (p<0.05) than the level in normal non-pregnant women. serum transferrin saturation level of normal pregnant women were significantly higher than normal non-pregnant women.

Table: 1 Level of Serum Iron and Serum Transferrin Saturation(%) in cases & controls.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Biological Reference Interval</th>
<th>Cases (Normal pregnant women) n=50</th>
<th>Controls (Normal nonpregnant women) n=50</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum Iron</td>
<td>100-150 µg/dl</td>
<td>74.38 ± 17.46</td>
<td>112 ± 18.61</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Serum Transferrin Saturation</td>
<td>20 % -45%</td>
<td>16.18 ± 5.54</td>
<td>35.92 ± 10.32</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

CONCLUSION
In our study we concluded that there is a significant decrease in serum iron level (74.38±17.46) in normal pregnant women as compare to serum iron level (112±18.61) in normal non-pregnant women. Also there is significantly decrease in serum transferrin saturation level (16.18 ± 5.54) in normal pregnant women as compare to serum transferrin saturation level (35.92 ± 10.32) normal non-pregnant women.

Our study correlate well with previous studies by Nuzat Raza et al 2011 and A.Veena et al 2013. Also serum iron level and serum transferring saturation findings match well with earlier studies by Mashael-all-taub et al 2006 , ML Segal et al 1979, Geeta A.K et al 1994. One possible explanation for these findings that during pregnancy, a woman...
undergoes dramatic physiological and hormonal changes. The large amounts of estrogen, progesterone, human placental lactogen and corticosteroids produced during pregnancy affect various metabolic, physiological, and endocrine systems. Maternal blood volume increases during pregnancy by an average of 45% . Plasma volume increases more rapidly than red blood cell mass; therefore, despite augmented erythropoiesis, the concentration of haemoglobin, the erythrocyte count, and the haematocrit decrease during normal pregnancy. Serum iron and transferrin saturation are better indicators of iron status in pregnancy, so should be done in all pregnant women during antenatal visit to rule out iron deficiency at the earliest and thus to prevent complication.

REFERENCES


15. Delmar’s Guide to Laboratory and Diagnostic Tests. 2nd Ed. 2010