

Original Research Article

## Assessment of Placental Weight, Newborn Birth Weight in Normal Pregnant Women and Anemic Pregnant Women: A Correlation and Comparative Study

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Received: 26/08/2016

Revised: 20/09/2016

Accepted: 22/09/2016

### ABSTRACT

**Introduction:** Pregnancy is a joyful experience most of the times but it can also be a time of unknowns. Anemia is such a condition in which there is utero-placental insufficiency leads to poor placental and neonatal outcome. There is a dearth of research literature in the area of comparative study in Indian setting. Hence it was felt necessary to compare the changes in normal and anemic pregnant women.

**Materials and methods:** Non experimental, descriptive approach was used and Study was conducted in Maternity ward of Guru Gobind Singh Medical Hospital, Faridkot, (Punjab). Through purposive sampling 30 normal pregnant women and 30 anemic pregnant women and self structured tool was used for collection of data.

**Results:** The mean placental weight in 30 normal pregnant women was 521.00gms, Mean Placental weight in anemic pregnant women was 553.00gms. There is statistically no difference in placental weight in both groups. The mean birth weight in 30 normal pregnant women was 3152gms, Mean Placental weight in mild, moderate, severe anemic pregnant women was 3100 gms, 2800 gms, 2930gms. There was positive correlation between placental weight and baby's weight at p value 0.05 level of significance.

**Conclusion:** The findings of the study provides us with the evidence that decrease or increase in maternal Haemoglobin levels leads to changes in the placental weight and due to alteration in placental weight it affects the birth weight. There is positive correlation between placental and birth weight.

**Key words:** Placental weight, Birth weight, pregnant women, Anemic, Normal, Newborn.

### INTRODUCTION

A woman is the mother of mankind. Pregnancy is one of the nutritional demanding times in women's life. <sup>(1)</sup> Most prevalent nutritional deficiency during pregnancy is Anemia. <sup>(2)</sup> Anemia in pregnancy is characterized by a reduction in the concentration of haemoglobin in the blood. Anemia in pregnancy is present in very high percentage of pregnant women in India. <sup>(2)</sup>

In pregnancy, anemia has a tremendous effect on placenta.

The placenta is an organ that connects the developing fetus to the uterine wall to allow nutrient uptake, waste elimination, and gas exchange via the mother's blood supply. Placental volume has been taken as an indicator of placental function. <sup>(3)</sup> Maternal anemia causes the development of a big placenta. <sup>(4)</sup> An increase in placental volume in case of maternal anemia has frequently been interpreted as evidence of compensatory hypertrophy for reduced oxygen supply. The placental weight increased according to the birth weight. <sup>(5)</sup>

This study helps to describe the findings of placenta in case of anemia, so that the researcher can easily compare the anemic and normal placenta. Although not many studies were done, but out of all studies few studies showed increase placental weight and few showed decrease

placental weight in anemia. This study was selected get to know the real facts about placental changes and birth weight changes in normal pregnant women and anemia pregnant women. Conceptual framework of general system theory was used in the study (Figure1).

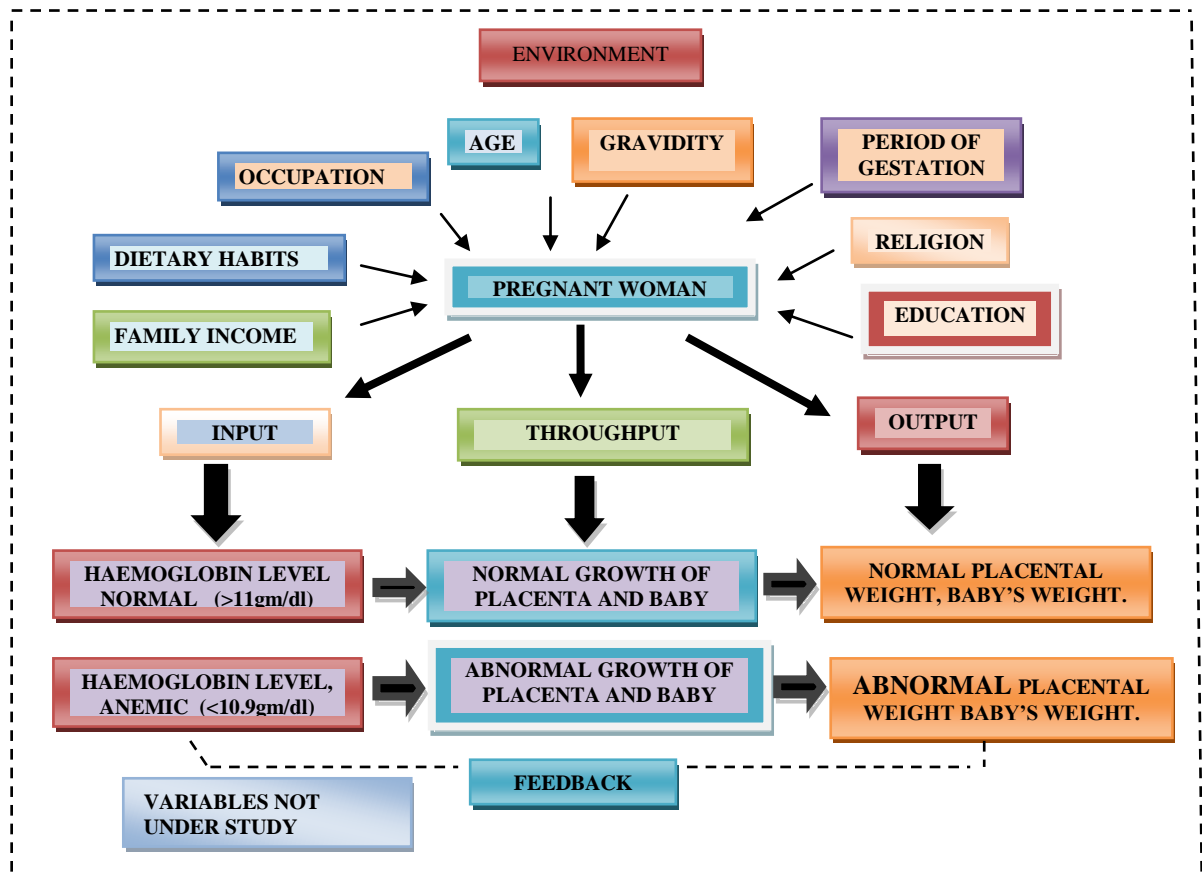


Figure 1: Conceptual Framework By Ludwig Von Bertalanffy: General System Theory

### Objectives of the Study

- To assess the placental weight in normal and anemic pregnant women.
- To assess the Birth weight in normal and anemic pregnant women
- To compare the placental weight and Birth weight among normal and anemic pregnant women.
- To co-relate the placental weight with baby's weight.

### MATERIALS AND METHODS

Study was conducted in Maternity ward of GGSMC&H, Faridkot (Punjab). Non-experimental descriptive (comparative) approach and purposive sampling technique

was used to select 60 (30 in anemic and 30 in normal group) sample. Data was collected from all the selected subjects who fulfilled the inclusion and exclusion criteria. Researcher obtained written informed consent from all subjects.

#### Inclusive Criteria

- Normal and anemic pregnant women admitted in maternity ward for delivery.
- Women who were willing to participate in the study.
- Singleton pregnancy.

#### Exclusive Criteria

- Women who were having any medical complication.
- Women having multiple pregnancies.

- Women having high risk pregnancy

**Ethical Consideration**

This study had been approved by the ethical committee of University College of Nursing and Baba Farid University of Health Sciences, Faridkot with approval no. BFUHS/2k13/p-TH/3531.

**Selection and Development of the Tool**

Tool was selected and developed by keeping in mind the objectives of the study reviewing theoretical sources, previous studies, internet and thorough discussion with the guide and co guide.

**Part I:** - It consists of Socio demographic profile.

**Part II:** - Placental weight.

**Part III:** - Birth weight.

**Part I:** - Socio demographic profile.

The socio demographic profile which was structured interview schedule was filled by investigator. It consists of age, gravidity, haemoglobin level, period of gestation (in weeks), education, religion, family income, dietary habits, occupation.

**Part II:**

Placental weight: ..... (gms)

**Part III:**

Birth weight..... (gms)

**RESULTS**

**Table 1: Placental weight in Normal and anemic pregnant women N: 60**

	Mean (gms)	Std deviation	t test	Sig p
Anemic group	553.3	118.88	1.39	0.169NS
Normal group	521.0	44.825		

NS Non significant at 0.05 levels

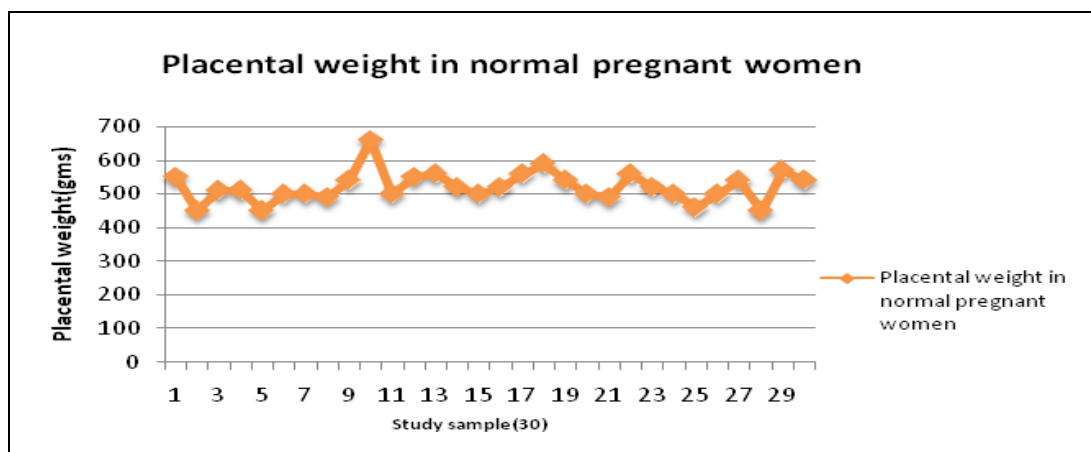


Figure 2: Distribution of placental weight in normal pregnant women

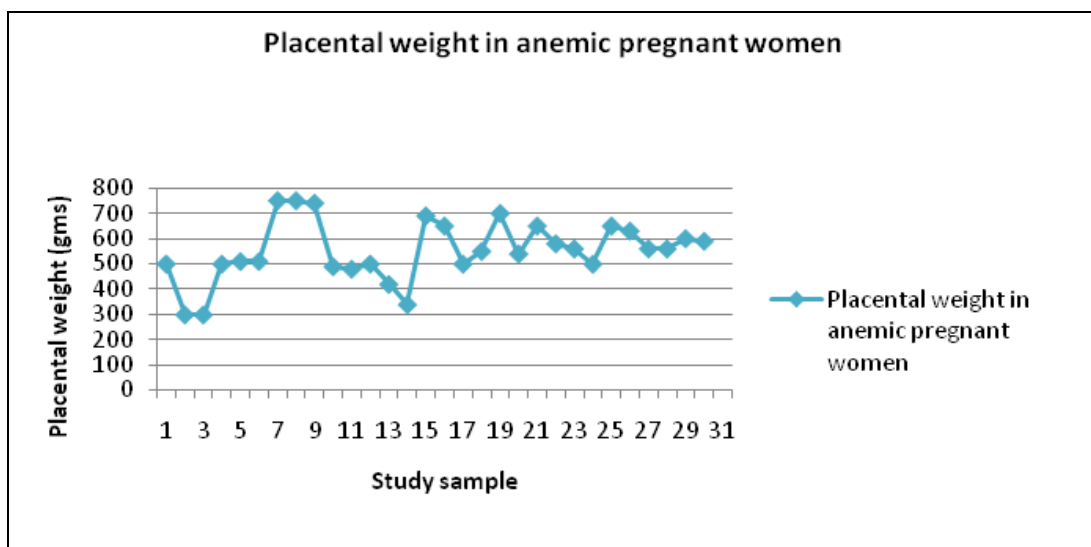


Figure 3: Distribution of placental weight in anemic pregnant women

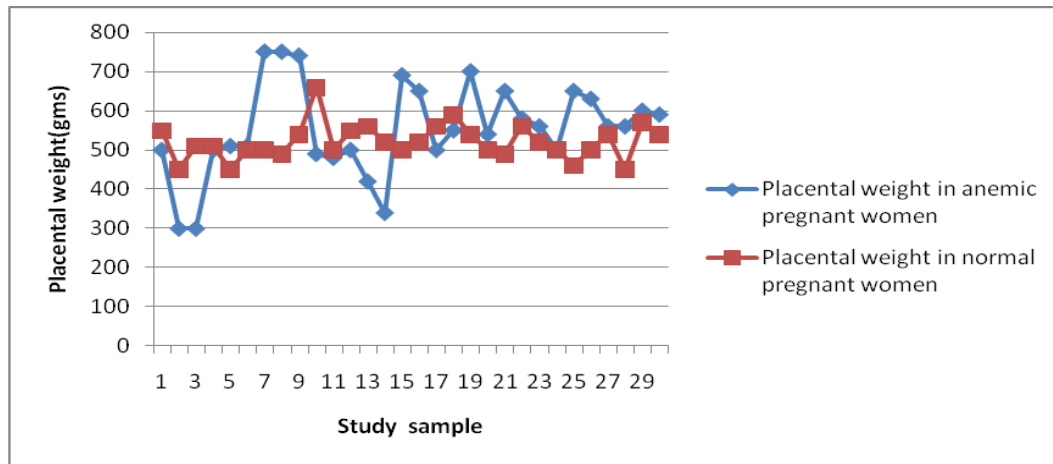


Figure 4: Distribution of placental weight in anemic and normal pregnant women.

Table 1 and figure 2,3,4 depicts the comparison of placental weight in normal pregnant women and anemic pregnant women as per t- test the comparison was found Non- Significant at p value of 0.16 and hence concluded that there is no difference in placental weight of normal

pregnant women and anemic pregnant women.

Table 2: Birth weight in Normal and anemic pregnant women N: 60

	Mean (gms)	Std deviation	t test	Sig p
Normal group	3152	0.425	2.6	0.012 **
Mild	3100	0.0		
Moderate	2800	0.08		
Severe	2930	0.22		

\*\*significant at 0.05 level

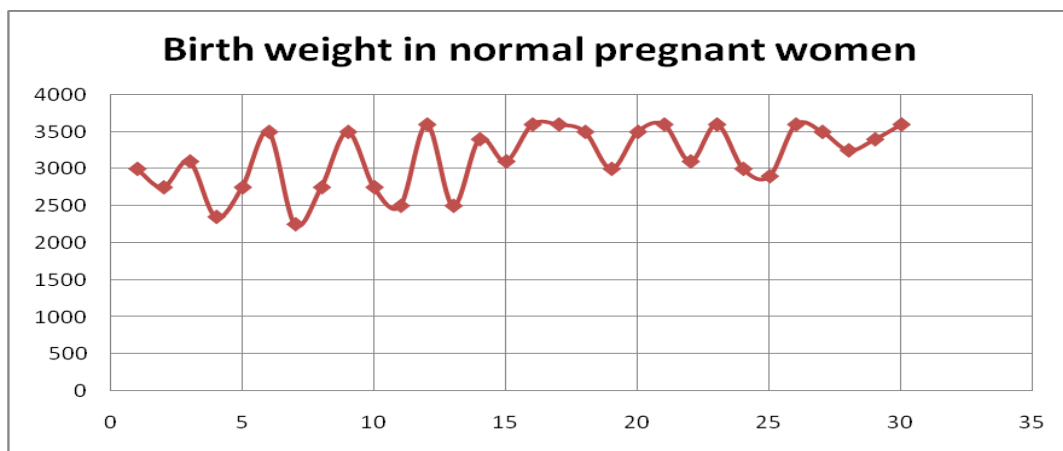


Figure 5: Distribution of Birth weight in normal pregnant women

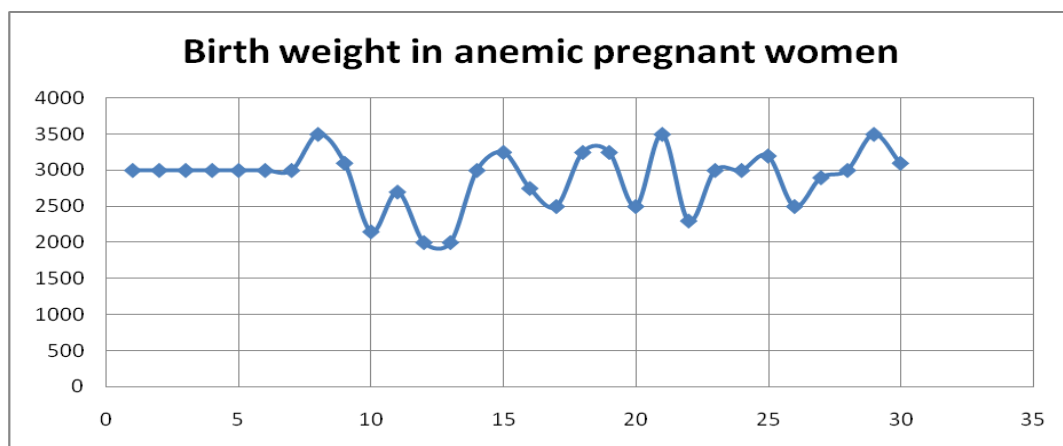


Figure 6: Distribution of Birth weight in anemic pregnant women

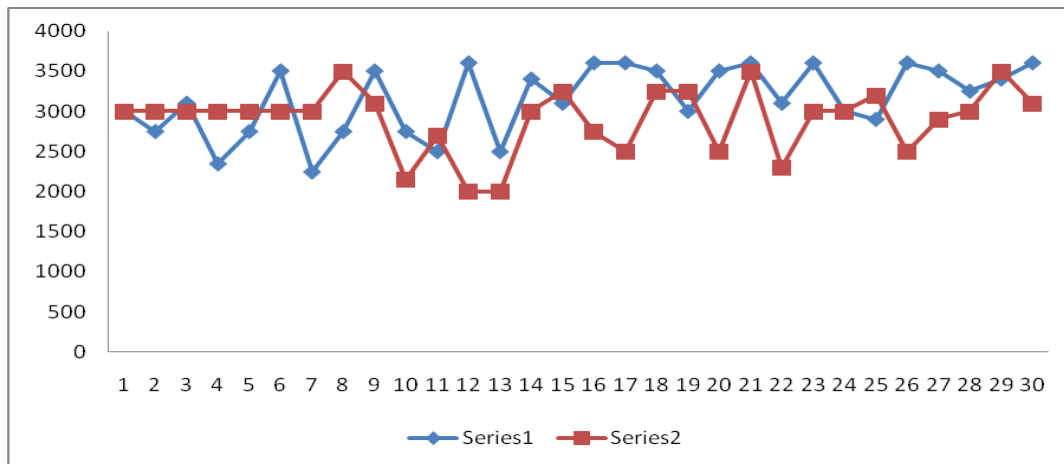


Figure 7: Distribution of Birth weight in anemic and normal pregnant women. Series 1 :-normal pregnant women; Series 2: anemic pregnant women.

Table 2 and figure 5,6,7 depicts the comparison of Birth weight in normal pregnant women and anemic pregnant women as per t- test the comparison was found Significant at p value of 0.012 and hence concluded that there is difference in Birth weight of normal pregnant women and anemic pregnant women.

Table 3: Correlation of placental weight with Birth weight N: 30

Placental weight Birth weight	r	"p" value
Sample of 60	0.291	0.024**
Anemic pregnant women(30)	0.514	0.004***
Normal pregnant women (30)	0.14	0.461 <sup>NS</sup>

\*\*significant at 0.05 level,\*\*\*highly significant at 0.05 level, NS Non significant at 0.05 level

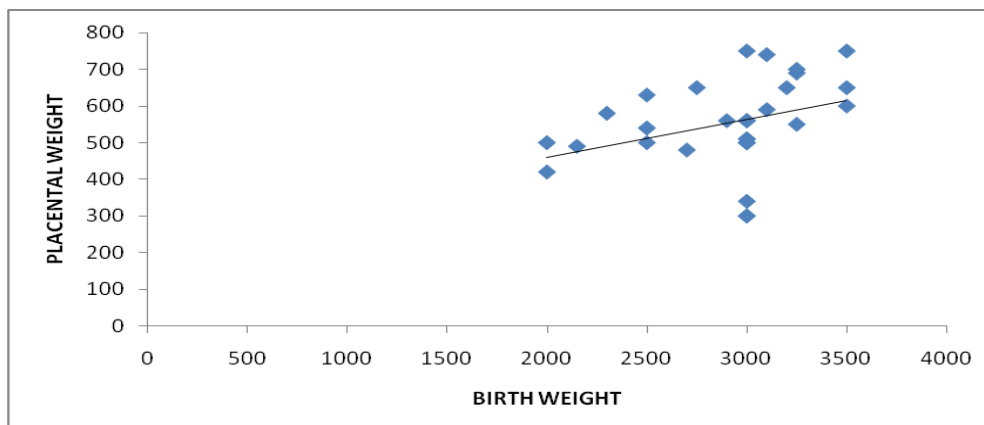


Figure 8: Correlation of placental weight with birth weight in anemic pregnant women and normal pregnant women.

Table 3 and figure 8 shows the correlation of placental weight with birth weight in normal pregnant women and anemic pregnant women at 0.05 level of significant. It can be concluded that there is weak positive correlation between placental weight and baby's weight.

## DISCUSSION

The finding of present study revealed that placental weight in normal pregnant women is 521.00 gms while placental weight in anemic pregnant women

is 553.33 gms. Placental weight was more in anemic pregnant women as compared to normal pregnant women. These findings are consistent with other studies, such as Chinchpure Supriya <sup>(6)</sup> that placental weight in normal pregnant women was 485.5 and in anemic pregnant women were 544.8. Begum Mahamuda et.al <sup>(7)</sup> reported that mean volume of placenta in normal group, Mild anemic group and moderate anemic group were 444.00±38.37, 472.59±17.34 and 485.38±24.62 respectively. Kesha Baptiste Roberts <sup>(8)</sup> findings suggested that

the placenta had compensatory responses to anemia. A disproportionately heavy placenta in anemia, suggestive of placental hypertrophy, may indicate an adaptive response to an adverse intrauterine environment. Levario-Carrillo M et.al. <sup>(9)</sup> Showed that placenta weight in the group of women with anemia was 558+/-105 g and in the group of women without this diagnosis 527+/-107 g. Godfrey KM, Redman CW, Barker DJ, Osmond C. <sup>(10)</sup> showed that Large placental weight was associated with a low maternal hemoglobin. Lao TT, Wong WM <sup>(11)</sup> reported that as Compared to the control group, the iron deficiency group had higher placental weight (P = 0.001) and placental ratio (P < 0.001). The findings were inconsistent with Dr. Adil <sup>(12)</sup> findings that showed placental weight in anemic group was 446.96 gms and in normal group was 472.68 gms.

The finding of present study revealed that birth weight in normal pregnant women is 3152 gms while birth weight in Mild anemic pregnant women is 3100 gms, in Moderate Anemic pregnant women is 2800gms while in severe anemic pregnant women is 2930 gms; it is significant at 0.05 levels. These findings are consistent with other studies, such as Ahmad Muhammad Owais. at el <sup>(13)</sup> Study result showed an association of maternal anemia in pregnancy with increased risk of LBW babies, Ervasti M, Sankilampi U, Heinonen S, Punnonen K <sup>(14)</sup> showed that hypochromic red blood cells indicating the lowest iron status was associated with a high birth weight and a long duration of pregnancy. Menendez C. et al <sup>(15)</sup> concluded that anemia is associated with reduced birth weight, which was thought to be effected through placental insufficiency. Lao TT, Tam KF <sup>(11)</sup> showed that there was an associated with an increased placental weight/birth weight ratio in anemia. Sifakis S, Pharmakides G <sup>(16)</sup> reported that Prematurity, spontaneous abortions, low birth weight, and fetal deaths were complications of severe maternal anemia.

In present study findings showed the

Correlation of placental weight with birth weight in normal pregnant women and anemic pregnant women, there was positive correlation between placental weight and birth weight. These findings were consistent with the Chinchpure Supriya <sup>(6)</sup> that showed placental weight and birth weight had significant positive correlation that as the placental weight increases the birth weight also increases. Also supported by Ervasti M et.al. <sup>(14)</sup> that the lowest iron status of mother was associated with a high birth weight. Findings were also compared with Akhter S et.al. <sup>(17)</sup> that showed Maternal [Hb] and serum ferritin showed a highly significant positive with placental weight, birth weight. Findings were further supported by Asgharnia. M et al. <sup>(18)</sup> there were statistically significant relationship between placental weight and birth weight ( $\alpha = 0.05$ ) And Manop Janthanaphan MD <sup>(19)</sup> reported that the placental weight increased according to the birth weight ( $r = 0.450, p < 0.005$ ).

## CONCLUSION

The findings of the study provides us with the evidence that decrease or increase in maternal Haemoglobin levels leads to changes in the placental weight and due to alteration in placental weight it affects the birth weight. This study shows the positive correlation of placental weight with birth weight and suggests for prompt importance should be given to preconception counseling, early registration of cases, with identification of risk factors or complications and prompt treatment is necessary. The placenta is a mirror which reflects the intrauterine status of the fetus.

## ACKNOWLEDGEMENT

“In three words I can sum up everything I've learned about life: it goes on.”  
- Robert Frost

The present study is the end product of teamwork. I have been fortunate indeed to have the valuable guidance, help and support of our advisors and experts. A lot of thanks are due to a lot of people therefore, I convey personal and individual thanks to all those who have been

associated with my present study. And I deeply appreciate their untiring and outstanding contribution in correcting each sentence of this thesis. Above all, I am grateful to Almighty Shri Guru Granth Sahib Ji for His never failing, loving care and tender mercies.

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How to cite this article: Kaur D. Assessment of placental weight, newborn birth weight in normal pregnant women and anemic pregnant women: a correlation and comparative study. *Int J Health Sci Res*. 2016; 6(10):180-187.

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