

A Comparative Study to Assess the Fetal and Placental Outcome among Anaemic and Non-Anaemic Mothers of Selected Hospital of District Mohali, Punjab, India

Anupama Sharma^{1*}, Madan Lal¹, Vill Malehri¹ and P.O. Dangar²

¹Mata sahib kaur College of nursing, Mohali, Punjab, India

²The-Ghumarwin, Dist-Bilaspur H.P.174023, India

*Corresponding author

ABSTRACT

Anaemia is a pathological condition in which the oxygen carrying capacity of red blood cells is insufficient to meet body's needs, which leads to problems to mother and poor fetal and placental outcome. The aim of the study was to compare the fetal and placental outcome among Anaemic and non- anaemic mothers of selected hospital of district Mohali, Punjab. A quantitative research approach with comparative design was adopted. Total 100 mothers out of which 50 anaemic and 50 non-anaemic were taken by using non probability, purposive sampling technique to identify the fetus and placental outcome difference in anaemic and non-anaemic mothers. Tool was made up of protocol to assess fetal outcome and protocol to assess placental outcome. Collected data was analyzed by descriptive and inferential statistics. The analyzed data out of 100 mothers majority of the anaemic mothers 74% were in the age group of 21-30 years and in non-anaemic 86% were in age group of 21-30 years, 66% anaemic mothers were from joint family and 52% nuclear family and in non-anaemic 71% were from nuclear family, most of the anaemic mothers 48% of mothers had 5001-10000 family income and in non-anaemic mothers 66% had 5001-10000, maximum 44% anaemic mothers had Sikh religion and in non-anaemic 58% also from Sikh religion, 46% of anaemic mothers had primary and 32% of non-anaemic mothers had secondary education, 78% of anaemic mothers and 66% of non-anaemic mothers were home maker, 54% of anaemic mothers were vegetarian and 66% of non-anaemic mothers were non-vegetarian, 58% of anaemic mothers were from rural and 60% of non-anaemic mothers were from urban area. Fetal outcome the 28.0% anaemic and 72.0% non-anaemic mothers had good fetal outcome and 68.0% anaemic and 32.0% non-anaemic mothers had poor fetal outcome. Placental outcome the 18.0% anaemic and 82.0% non-anaemic mothers had good placental outcome and 46.0% anaemic and 54.0% non-anaemic mothers had poor placental outcome. χ^2 value showed that there was statistically no significant association with demographic variables of anaemic and non-anaemic mothers.

Keywords

Anaemic, Non-anaemic, Hb level, Fetal outcome, Placental outcome.

Article Info

Accepted:

26 August 2017

Available Online:

10 September 2017

Introduction

Pregnancy is the period from conception to birth. Pregnancy begins with fertilization of ovum, a sperm and subsequent implantation of the egg that leads to the conception.

Pregnancy may be determined by cessation of menses, enlarged uterus and positive results of pregnancy are the pregnancy test. High risk pregnancy one of the greater risk to the

mother and on her baby. The risk is complicated by factors that adversely affect the pregnancy outcome. Some of the high risk factors in reproductive history are Anaemia, Pre-eclampsia, Eclampsia, Grand multi parity, medical surgical disorders associated with pregnancy, previous still birth and previous preterm labour etc.¹

In pregnancy, anaemia is a condition in which the haemoglobin level is lower than the one third of normal level. Anaemia is not a specific disease but a sign of underlying disorders. It is of two type- Hypoproliferative anaemia: in this the bone marrow cannot produce adequate number of erythrocytes.

It may results from bone marrow damage due to side effect of any medication or lack of factors like iron, folic acid etc.

Haemolytic anaemia: premature destruction of erythrocytes result in the liberation of haemoglobin from the erythrocyte destruction in to the plasma²

During antenatal period mother needs an extra attention about her diet to get healthy baby. If any alterations in health of mother like minor disorders like nausea, vomiting and other

minor illnesses may lead to anaemia. Anaemia is not disease but it is clinical condition characterized by deficiency of nutrients especially iron and vitamins that requires immediate attention by the health personnel to reduce morbidity and mortality rate of mother and fetus. Hence it is considered as a life threatening condition.³

Anaemia during pregnancy is most common and considerable health problem in developing countries, despite the fact that most of anaemia cases seen in pregnancy and it is largely preventable and easily cured if detected in time it still continue to be a

common cause of mortality and morbidity in India. Factors that are often reported to influence maternal anaemia are low socio-economic status, less mother's age, multiple pregnancy, pre-pregnancy underweight, faulty dietetic habit, faulty absorption mechanism, increased iron loss (through sweat, repeated pregnancies, excessive blood loss during menstruation) inadequate supply of nutrients like iron, folic acid and vitaminB₁₂, proteins, amino acids, vitamins A, C and other vitamins of B-complex group.⁴

Anaemia affects placenta and fetal outcome dreadfully. Placenta is a developing organ during pregnancy for providing nutrition, oxygen supply for the fetus and to eliminate excretory wastes, acts as protective barrier.

The placental outcome in healthy mother are as follows the timing for delivery of placenta is within 15 minutes, weight of placenta is 500 gm, shape of placenta is oval in shape, diameter is 15cm, thickness is 1.5cm, number of cotyledons is 2, colour is thick white and red, length of umbilical cord is 50 cm, vessels are three 2 arteries and one vein and insertion of the cord on the fetal surface is central insertion.

If the placenta has affected due to anaemia, it adversely effects on the growth of the fetus. Neonates can be having pathological conditions like, birth asphyxia, prematurity, IUGR, low birth weight and also the placenta varies in its measures that includes its weight, morphometry, number of cotyledons and its thickness.

The normal parameters of healthy new-born is the APGAR score is 7-10, weight is 2.6-3.1 kg, temperature is 99.5⁰F, crown-heel length is 50cm, crown-rump length is 35cm, head circumference is 33-35 cm, chest circumference is 30-33 cm and all the reflexes like rooting, glabellar, grasp, moro, suckling

and swallowing should be present in normal newborn.⁵ Hence a good fetal outcome depends on mothers health and her diet during antenatal period.

The aim of the study is to compare the fetal and placental outcome among Anaemic and non- anaemic mothers of selected hospital of district Mohali, Punjab, India.

The Objectives of this study to assess the fetal outcome in anaemic and non-anaemic mothers. The placental outcome in anaemic and non-anaemic mothers. To compare the fetal outcome and placental outcome in anaemic and non-Anaemic mothers. Also determine association between fetal outcome and placental outcome with selected demographic variables in both anaemic and non-anaemic mothers.

Assumption

There will be significant difference between fetal and placental outcome among anaemic and non-anaemic mothers at selected hospital district Mohali, Punjab.

Delimitations

The present study is delimited to the mothers who are:

This study is delimited to selected hospital of Mohali.

This study is delimited to anaemic and non-anaemic mothers.

Materials and Methods

In present study, a quantitative approach with comparative research design was adopted. By Purposive sampling technique 100 mothers (50 anaemic 50 non-anaemic) were selected. Data was collected by protocol to assess the fetal and placental outcome in anaemic and

non-anaemic mothers. Analysis of data was done using descriptive and inferential statistics. A study was conducted in the month of March 2016 Formal written permission was obtained from the SMO of civil hospitals of Mohali and Kharar. After discussing the purpose and objectives of the study. Analysis and interpretation of data was done according to objectives of the study by using descriptive and inferential statistics.

Ethical consideration

With the view of ethical consideration the researcher has taken permission from Principal of Mata Sahib Kaur College of nursing Mohali. After that the researcher has discussed the type and purpose of the study with the SMO of civil hospitals of Mohali and Kharar and written permission were obtained. Also the mothers were explained about the purpose of the study and verbal consent was taken from them for their participation in study. They were explained about the right to refuse from participating in the study.

Results and Discussion

Major findings of the study

Section I: Findings related to socio demographic variables

The majority of the anaemic mothers 74% were in the age group of 21-30 years and in non-anaemic 86% were in age group of 21-30 years, 66% anaemic mothers were from joint family and 52% nuclear family and in non-anaemic 71% were from nuclear family, most of the anaemic mothers 48% of mothers had 5001-10000family income and in non-anaemic mothers 66% were 5001-10000, maximum 44%anaemic mothers belong to Sikh religion and in non-anaemic 58% also from Sikh religion, 46% of anaemic mothers had primary and 32% of non-anaemic

mothers had secondary education, 78% of anaemic mothers and 66% of non-anaemic mothers were home maker, 54% of anaemic mothers were vegetarian and 66% of non-anaemic mothers were non-vegetarian, 58% of anaemic mothers were from rural and 60% of non-anaemic mothers were from urban area (Table 1).

Section II: Findings related to clinical variables

The majority all anaemic mothers 100% had <10 gm% and all non-anaemic mothers 100% had ≥ 10 gm%, 54% anaemic mothers and 50% non-anaemic mothers were multigravida, 52% anaemic mothers and 62% non-anaemic mothers had girl boy, 74% anaemic mothers and 88% non-anaemic mothers had at-term delivery (Table 2).

Section III: Findings related to fetal outcome

The majority, it was found that 80% of anaemic mothers and 96% non-anaemic mother's baby had no depression, 68% anaemic mothers and 96% non-anaemic mothers had baby weight 2.5-3.1 kg, 94% anaemic mothers baby had 96.8-97.7⁰F and 96% non-anaemic mothers baby had temperature 96.8 - 97.7⁰F, 68% anaemic and 96% non-anaemic mother's baby had crown-heel length 50-52c.m, 70% anaemic and 94% non-anaemic mother's baby had head-circumference 33-35 c.m, 92% anaemic and 90% non-anaemic mother's baby had chest-circumference 30-33c.m, 100% anaemic and non-anaemic mother's baby had no congenital malformation, 52% anaemic and 52% non-anaemic mothers had girl baby (Table 3).

Section IV: Findings related to placental outcome

The majority, it was found that 90% anaemic and 100% non-anaemic mothers delivered their placenta at 5-20 minutes, 50% anaemic and 80% non-anaemic mothers had 500 gm placental weight, 88% anaemic and 96% non-anaemic mothers had discoid shape placenta, 76% anaemic and 92% non-anaemic mothers had 15-20c.m diameter of placenta, 72% anaemic and 90% non-anaemic had 3c.m thickness of placenta, 100% anaemic and 100% non-anaemic mothers had 15-20 lobes in their placenta, 72% anaemic and 92% non-anaemic mothers placenta had complete placenta, 90% anaemic mothers and 94% non-anaemic mothers had dull red and grayish colour of their placenta, 100% anaemic and non-anaemic mothers had normal placenta, 90% anaemic and 96% non-anaemic mothers had length of umbilical cord normal, 100% anaemic and non-anaemic mothers had presence of Wharton's jelly in their cord, 100% anaemic and non-anaemic mothers had two arteries and one vein in the vessels of umbilical cord, 96% anaemic and 100% non-anaemic had central insertion of cord on fetal surface (Table 4).

Section V: Findings related to the comparison

In anaemic mothers out of 50 mothers 28.0% had good fetal outcome and 72.0% had poor fetal outcome and in non-anaemic mothers out of 50 mothers 68.0% had good fetal outcome and 32.0% had poor fetal outcome.

Table.1 Frequency and percentage distribution of anaemic and non-anaemic mothers according to their socio-demographic variables

N=100

S. No	Socio demographic variables	Anaemic (n ₁ =50)		Non-anaemic (n ₂ =50)		χ ² , df, p-value
		f ₁	%	f ₂	%	
1.	Age(in years)					.56 ^{NS} , 4,.96
	≤20	11	22	03	06	
	21-30	37	74	43	86	
	≥31	02	04	04	08	
2.	Type of family					.25 ^{NS} , 1,.61
	Nuclear	17	34	26	52	
	Joint	33	66	24	48	
3.	Total family income per month					1.93 ^{NS} , 6,.92
	≤5000	20	40	07	14	
	5001-10000	24	48	33	66	
	10001-15000	5	10	10	20	
	≥15001	01	02	00	00	
4.	Religion					3.10 ^{NS} , 9,.96
	Hindu	11	22	17	34	
	Sikh	22	44	29	58	
	Muslim	11	22	03	06	
	Christian	02	04	01	02	
	Others	04	08	01	02	
5.	Educational status of mother					7.9 ^{NS} , 9,.63
	No formal education	16	32	15	30	
	Primary education	23	46	14	28	
	Secondary education	09	18	16	32	
	Sen. Sec. and above	02	04	05	10	
6.	Occupation					3.78 ^{NS} , 9,.92
	Private job	07	14	11	22	
	Government job	02	04	03	06	
	Home maker	39	78	33	66	
	Own business	02	04	03	06	
7.	Dietary habits					3.62 ^{NS} , 1,.057
	Vegetarian	27	54	17	34	
	Non-vegetarian	23	46	33	66	
8.	Residence					.055 ^{NS} , 1,.8
	Rural	29	58	20	40	
	Urban	21	42	30	60	

(NS-non significant, *significant at p<0.05)

Table.2 Frequency and percentage distribution of anaemic and non-anaemic mothers according to their clinical variables

N= 100

S.No	Clinical variables	Anaemic (n ₁ =50)		Non-anaemic (n ₂ =50)		X ² , df, p-value
		f ₁	%	f ₂	%	
1.	HB level of mother					-
	<10gm %	50	100	00	00	
	≥10 gm%	00	00	50	100	
2.	Gravida of mother					23.2, 1,.000*
	Primigravida	23	46	25	50	
	Multigravida	27	54	25	50	
3.	Sex of the newborn					.074 ^{NS} , 1,.78
	Boy	24	48	24	48	
	Girl	26	52	26	52	
4.	Type of delivery					9.94, 2,.04*
	Pre-term delivery	11	22	02	04	
	Post-term delivery	02	04	04	08	
	At-term delivery	37	74	44	88	

(NS-non significant, *significant at p<0.05)

Table.3 Frequency and percentage distribution of fetal outcome among anaemic and non-anaemic mothers

N=100

S. No	Fetal outcome	Anaemic (n ₁ =50)		Non-anaemic (n ₂ =50)		χ ² , df, p-value
		f ₁	%	f ₂	%	
1.	APGAR score					12.79, 2,.002*
	No depression	40	80	48	96	
	Mild depression	07	14	02	04	
	Severe depression	03	06	00	00	
2.	Weight of newborn					16.01, 2,.000*
<2.5 kg	13	26	01	02		
2.5 to 3.1 kg	34	68	48	96		
>3.1 kg	03	06	01	02		
3.	Temperature of newborn (axillary)					3.34 ^{NS} , 4,.502
<96.8 F	03	06	01	02		
96.8 - 97.7 ⁰ F	47	94	48	96		
>97.7 ⁰ F	00	00	01	02		
4.	Crown-heel length of newborn					18.02, 1,.004*
<50 cm	16	32	01	02		
50 to 52 cm	34	68	48	96		
>52 cm	00	00	03	06		
5.	Head-circumference of newborn					.98 ^{NS} , 2,.78
<35 cm	04	08	02	04		
33 to 35 cm	46	92	45	90		
>35 cm	00	00	03	06		
6.	Chest-circumference of newborn					.90 ^{NS} , 4,.92
<30 cm	06	12	02	04		
30 to 33 cm	43	86	45	90		
>33 cm	01	02	03	06		
7.	Congenital malformation					-
Yes, specify.....	00	00	00	00		
No	50	100	50	100		
8.	Genitalia of newborn					1.119 ^{NS} , 2,.57
	Girl baby					
	Labia is covered with labia majora	00	00	00	00	
	Labia minora is visible	26	52	26	52	
	Clitoris is not visible	00	00	00	00	
	Boy baby					
	Testis are not palpable	00	00	00	00	
	Scrotum is big and testis are palpable	24	48	24	48	

(NS-non significant,*significant at p<0.05)

Table.4 Frequency and percentage distribution of placental outcome among anaemic and non-anaemic mothers

N=100						
S.No	Placental outcome	Anaemic (n ₁ =50)		Non-anaemic (n ₂ =50)		χ ² , df, p-value
1.	Timing for delivery of placenta	f ₁	%	f ₂	%	3.86 ^{NS} , 2, 1.45
	<5 minutes	05	10	00	00	
	5-20 minutes	45	90	50	100	
	>20 minutes	00	00	00	00	
2.	Weight of placenta					3.07, 2, .004*
	<500 gm	21	42	02	04	
	500 gm	26	52	40	80	
	>500 gm	03	06	08	16	
3.	Shape of placenta					.28 ^{NS} , 2, .86
	Dome shape	04	08	00	00	
	Oval shape	02	04	02	04	
	Discoid	44	88	48	96	
	Any other	00	00	00	00	
4.	Diameter of placenta					.70 ^{NS} , 2, .005
	<15c.m	12	24	02	04	
	15-20c.m	38	76	46	92	
	>20c.m	00	00	02	04	
5.	Thickness of placenta					2.52, 4, .004*
	<3cm	12	24	02	04	
	3c.m	36	72	45	90	
	>3cm	02	04	03	06	
6.	Maternal surface lobes					-
	<15 lobes	00	00	00	00	
	15-20 lobes	50	100	50	100	
	>20 lobes	00	00	00	00	
7.	Condition of placenta					1.5, 1, .02*
	Complete	36	72	46	92	
	Incomplete	14	28	04	08	
8.	Colour of placenta					.35 ^{NS} , 4, .98
	Lighter in colour than red	03	06	01	02	
	Pallor of maternal surface	00	00	00	00	
	Dull red and grayish	45	90	47	94	
	Green colour fetal surface	02	04	02	04	
	Discolored or foul smelling	00	00	00	00	
9.	Type of placenta					-
	Normal	50	100	50	100	
	Circumvallete	00	00	00	00	
	Battledore	00	00	00	00	
	Velamentous	00	00	00	00	
10.	Length of umbilical cord					.48 ^{NS} , 4, .97
	Short cord	05	10	02	04	
	Normal	45	90	48	96	
	Long cord	00	00	00	00	
11.	Wharton's jelly in cord					-
	Present	50	100	50	100	
	Not present	00	00	00	00	
12.	Vessels of umbilical cord					-
	Two arteries one vein	50	100	50	100	
	One artery one vein	00	00	00	00	
	Two arteries two vein	00	00	00	00	
	One artery two vein	00	00	00	00	
13.	Insertion of cord on fetal surface					.087 ^{NS} , 1, .76
	Lateral	00	00	00	00	
	Central	48	96	50	100	
	Marginal	02	04	00	00	
	In the membranes	00	00	00	00	

(NS-non significant, *significant at p<0.05)

Table.5 To compare the findings of fetal outcome of anaemic and non-anaemic mothers

N=100

Group	Fetal outcome				χ^2 , df, p-value
	Good		Poor		
	n ₁	%	n ₂	%	
Anaemic (50)	14	28.0	36	72.0	14.463,1,.000*
Non-anaemic (50)	34	68.0	16	32.0	

(NS-non significant,*significant at p<0.05)

Table.6 To compare the findings of placental outcome of anaemic and non-anaemic mothers

N = 100

Group	Placental outcome				χ^2 , df, p-value
	Good		Poor		
	n ₁	%	n ₂	%	
Anaemic	9	18.0	41	82.0	7.767, 1,.005*
Non-anaemic	23	46.0	27	54.0	

(NS-non significant,*significant at p<0.05)

Table.7 Association of fetal outcome in anaemic and non-anaemic mothers with selected socio-demographic variables

N=100

s.no	Socio-demographic variables	Anaemic mothers (n ₁ =50)				Non-anaemic mothers (n ₂ =50)			
		Good		Poor		Good		Poor	
1)	Age (in years)	f ₁	%	f ₂	%	f ₁	%	f ₂	%
	≤20	04	36.4	07	63.3	02	66.7	01	33.3
	21-30	09	24.3	28	75.7	29	67.4	14	32.6
	≥31	01	50	01	50	03	75	01	25
χ^2 ,df,p-value-1.110 ^{NS} , 2,,574						.099 ^{NS} ,2,,952			
2)	Type of family								
	Nuclear	03	17.6	14	82.4	17	65.4	09	34.6
	Joint	11	33.3	22	66.7	17	70.8	07	29.2
χ^2 ,df,p-value-.702 ^{NS} ,1,,402						.012 ^{NS} , 1,,913			
3)	Total family income per month								
	≤5000	02	10	18	90	02	28.6	05	71.4
	5001-10000	10	41.7	14	58.3	23	69.7	10	30.3
	10001-15000	01	20	04	80	09	90	01	10
	≥15001	01	100	00	00	00	00	00	00
χ^2 ,df,p-value-8.168 ^{NS} , 3,,043						7.269 ^{NS} , 2,,026			
4)	Dietary habits								
	Vegetarian	05	18.5	22	81.5	13	76.5	04	23.5
	Non-vegetarian	09	39.1	14	60.9	21	63.6	12	32
χ^2 ,df,p-value-1.695 ^{NS} , 1,,193						.362 ^{NS} , 1,,547			
5)	Residence								
	Rural	09	31	20	69	12	60	08	40
	Urban	05	23.8	16	76.2	22	73.3	08	26.7
χ^2 ,df,p-value-.059 ^{NS} , 1,,808						.463 ^{NS} , 1,,496			

NS-non significant; p>0.05

Table.8 Association of placental outcome in anaemic and non-anaemic mothers with selected socio-demographic variables

N=100

s.no	Socio-demographic variables	Anaemic mothers (n ₁ =50)				Non-anaemic mothers (n ₂ =50)			
		Good		Poor		Good		Poor	
1)	Age (in years) f ₁	%	f ₂ %	f ₁	%	f ₂	%		
	≤20	01	09.1	10	90.9	03	100	00	00
	21-30	08	21.6	29	78.4	18	41.9	25	58.1
	≥31	00	00	02	100	02	50	02	50
χ^2 ,df,p-value-1.359 ^{NS} , 2,,507						3.844 ^{NS} , 2,,146			
2)	Type of family								
	Nuclear	03	17.6	14	82.4	09	34.6	17	65.4
	Joint	06	18.2	27	82	14	58.3	10	41.7
χ^2 ,df,p-value-.000 ^{NS} ,1, 1,000						1.952 ^{NS} , 1,,462			
3)	Total family income per month								
	≤5000	05	25	15	75	09	18	04	57.1
	5001-10000	04	16.7	20	83.3	3	42.9	19	57.6
	10001-15000	00	00	05	100	14	42.4	04	40
	≥15001	00	00	01	100	06	60	00	00
χ^2 ,df,p-value-2.010 ^{NS} , 3,,570						.987 ^{NS} , 2,,677			
4)	Dietary habits								
	Vegetarian	06	22.2	21	77.8	07	41.2	17	51.5
	Non-vegetarian	03	13	20	87	16	48.5	27	54
χ^2 ,df,p-value-.223 ^{NS} , 1,,636						.037 ^{NS} , 1,,848			
5)	Residence								
	Rural	02	06.9	27	93.1	05	25	15	75
	Urban	07	33.3	14	66.7	16	60	12	40
χ^2 ,df,p-value-4.115 ^{NS} , 1,,016						4.593 ^{NS} , 1,,032			

NS-non significant; p>0.05

In anaemic mothers out of 50 mothers 18.0% had good placental outcome and 82.0% had poor placental outcome and in non-anaemic mothers out of 50 mothers 46.0% had good placental outcome and 54.0% had poor placental outcome (Tables 5 and 6).

Section VI: Findings related to the association with demographic variables

Calculated χ^2 value showed that

There was no significant association between fetal outcome and placental outcome according to the age of mothers, type of family, total family income per month, dietary habits and residence of mothers.

To compare the fetal outcome and placental outcome in anaemic and non-anaemic mothers.

Based on the objective of the study in anaemic mothers out of 50 mothers, 28.0% had good fetal outcome and 72.0% had poor fetal outcome and in non-anaemic mothers out of 50 mothers 68.0% had good fetal outcome and 32.0% had poor fetal outcome.

Based on the objective of the study, in anaemic mothers out of 50 mothers, 18.0% had good placental outcome and 82.0% had poor placental outcome and in non-anaemic mothers out of 50 mothers 46.0% had good placental outcome and 54.0% had poor placental outcome.

The present study findings were supported with the comparative study to assess placental weight and fetal outcome among normal and anaemic mothers. Purposive sampling technique was used, sample size was 20 normal and 20 anaemic mothers who are

admitted in labour room for the delivery at selected hospitals of Bijapur.

The study was completed in 6-7 weeks and it showed that 67% anaemic mothers had less placental weight and fetal outcome and 92% normal had good placental weight and good fetal outcome (Tables 7 and 8).

In present study, Fetal outcome were poor APGAR score, Weight of new-born, crown-heel length and Poor Placental outcome were weight of placenta, thickness of placenta, condition of placenta present in the anaemic mothers baby and placenta.

The findings of study revealed that there is need to enhance knowledge regarding importance of diet during antenatal time.

There are many MCH programs are organised by Government of India regarding prevention of anaemia and ASHA workers are also there who provide health related information to the mothers and regular visit to hospital reduces

the risk of anaemia. It was enlighten study experience.

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How to cite this article:

Anupama Sharma, Madan Lal, Vill Malehri and Dangar, P.O. 2017. A Comparative Study to Assess the Fetal and Placental Outcome among Anaemic and Non-Anaemic Mothers of Selected Hospital of District Mohali, Punjab, India. *Int.J.Curr.Microbiol.App.Sci*. 6(9): 2814-2823. doi: <https://doi.org/10.20546/ijcmas.2017.609.346>