Results

RESULTS

Our results from one hundred random parturients show that 46% of women were anaemic (Haemoglobin less than 11 gm/dl.).

The mean haemoglobin level in all women was 10.8 gm/dl. (S.D. ± 1.4), ranging from 6.7 to 14 gm/dl.

The range and mean haemoglobin levels in gm/dl. in non anaemic and anaemic women is shown in Table (1).

TABLE [1]

	Non anaemic women	**Anaemic women**
No.of women	54	46
Haemoglobin gm/dl.		
. Range	11-14	6.7-10.9
. Mean	11.8	9.5
. S.D.	± 0.7	±0.9

$P < 0.01$

According to haemoglobin level the women are classified into 3 groups:

Group I : Haemoglobin $\geq$ 11 gm/dl.

Group II : Haemoglobin between 10 to 10.9 gm/dl.

Group III : Haemoglobin $<$ 10 gm/dl.

The mean red blood cell count of all women was 4150000/mm^3 (S.D. $\pm$ 500000), ranging from 3100000 to 5440000/mm^3. The difference in the red blood cell count /mm^3 in the 3 groups of women is shown in Table (2).

TABLE [2]

	GROUP I Haemoglobin ≥ 11 gm/dl.	GROUP II Haemoglobin 10-10.9gm/dl.	GROUP III Haemoglobin < 10 gm/dl.
No.of women	54	16	30
Red blood cell count/mm^3			
* Range	3570000 - 5440000	3160000 - 4640000	3100000 - 4710000
* Mean	4265000	4184000	3516000
* S.D.	± 500000	± 300000	± 500000

Group I versus group II : P > 0.05

Group I versus group III: P < 0.01

Group II versus group III: P < 0.01

THIS TABLE SHOWS THAT:

- The mean red blood cell count is lower in group II compared to group I and in group III compared to group II.
- The mean red blood cell count is below the normal value only in group III (Barnes (1976), put the value 3800000/mm^3 as the lowest normal).
- The difference between the mean red blood cell count between group I and II is statistically not significant, while that between group I and III, group II and III is statistically highly significant.

The mean packed cell volume was 34.2% (S.D. ± 4.7), ranging from 21.8 to 42.6%. The difference in the packed cell volume % in the 3 groups of women is shown in Table (3).

TABLE [3]

	GROUP I Haemoglobin ≥ 11 gm/dl.	GROUP II Haemoglobin 10-10.9gm/dl.	GROUP III Haemoglobin < 10gm/dl.
No.of Women	54	16	30
Packed Cell Volume %:			
* Range	31.2-42.6	30.8-36.9	21.8-36.2
* Mean	36.9	33.9	29.4
* S.D.	± 3.4	± 2.3	± 3.6

Group I versus group II : $P < 0.01$
Group I versus group III: $P < 0.01$
Group II versus group III: $P < 0.01$

THIS TABLE SHOWS THAT:

- The mean packed cell volume is lower in group II compared to group I and in group III compared to group II.
- The mean packed cell volume is below the normal level only in gorup III (Barnes [1976], put the value 33% as the lowest normal).
- The difference in the mean packed cell volume between the 3 groups is statistically highly significant.

The mean of the mean corpuscular volume (M.C.V.) was 82 μ^3 (S.D. $\pm$ 9), ranging from 59 to 98 μ^3. The mean of the mean corpuscular haemoglobin (M.C.H.) was 26.1 pg.(S.D. $\pm$ 3.8), ranging from 18 to 35.4 pg. . The mean of the mean corpuscular haemoglobin concentration was 31.5% (S.D. $\pm$ 2.5), ranging from 25.3 to 37.8%.

The changes in the red cell indices in the 3 group of women are shown in Tables (4,5 and 6).

TABLE [4] MEAN CORPUSCULAR VOLUME.

	GROUP I Haemoglobin $\geq$ 11 gm/dl.	GROUP II Haemoglobin 10-10.9gm/dl.	GROUP III Haemoglobin < 10gm/dl.
M.C.V./μ^3			
* **Range**	76 - 98	74 - 96	59 - 92
* **Mean**	86	81	75
* **S.D.**	$\pm$ 6	$\pm$ 6	$\pm$ 9

Group I versus group II: $P < 0.01$
Group I versus group III: $P < 0.01$
Group II versus group III: $P < 0.01$

TABLE [5]: MEAN CORPUSCULAR HAEMOGLOBIN.

	GROUP I Haemoglobin ≥ 11 gm/dl.	GROUP II Haemoglobin 10-10.9gm/dl.	GROUP III Haemoglobin < 10gm/dl.
M.C.H.in pg.			
* Range	23.3 - 35.4	22.9-29.7	18-29.8
* Mean	28	25.1	23
* S.D.	± 3.1	± 2.1	± 3.3

Group I versus group II: $P < 0.01$

Group I versus group III: $P < 0.01$

Group II versus group III: $P < 0.01$

TABLE [6] MEAN CORPUSCULAR HAEMOGLOBIN CONCENTRATION.

	GROUP I Haemoglobin ⩾ 11 gm/dl.	GROUP II Haemoglobin 10-10.9gm/dl.	GROUP III Haemoglobin < 10gm/dl.
M.C.H.C.%			
* Range	28.7-37.8	28.7-35.4	25.3-35.4
* Mean	32.2	30.9	30.5
* S.D.	± 2.7	± 1.5	± 2.2

Group I versus group II : $P < 0.05$
Group I versus group III: $P < 0.01$
Group II versus group III: $P > 0.05$

TABLES 4,5 And 6 SHOW THAT:

- The means of red cell indices are lower in group II compared to group I and in group III compared to group II.
- The mean M.C.H. is the only index which is lower than normal value in group II and III (Donald [1979], put the level 27 pg as the lowest normal).
- The differences in the means M.C.V.and the meansM.C.H.between the 3 groups are statistically highly significant.
- The difference in the mean M.C.H.C. between group I and II is statistically significant and between group I and III is statistically highly significant, while between group II and III is not significant.

The mean maternal serum iron level of all women was 64.8 µgm/dl. (S.D. ± 20.6), ranging from 29 to 112 µgm/dl. The mean of the total iron binding capacity was 426 µgm/dl. (S.D. ± 63.7), ranging from 306 to 548 µgm/dl. The transferrin saturation of all women was ranging from 5.3 to 37.7% and the mean was 16.2 (S.D. ± 7.6).

The differences in serum iron, total iron binding capacity and transferrin saturation levels between non anaemic and anaemic women are shown in tables (7,8 and 9).

TABLE [7] SERUM IRON.

	Non Anaemic Women	Anaemic Women
No.of Women	54	46
Serum Fe µgm/dl		
* Range	63-112	29-65
* Mean	80.3	46.5
* S.D.	± 13.7	± 9.1

P < 0.01

THIS TABLE SHOWS THAT:

- The mean serum iron level is lower in anaemic women as compared to non anaemic women. The difference is statistically highly significant.
- The mean serum iron level in anaemic women is below the normal value (McFee [1979], put the value 60 µgm/dl. as the lowest normal).

TABLE [8]: SERUM TOTAL IRON BINDING CAPACITY.

	Non Anaemic Women	Anaemic Women
No.of Women	54	46
T.I.B.C in µgm/dl		
* Range	306-459	398-548
* Mean	382.4	477.6
* S.D.	± 44.8	± 39.5

$P < 0.01$

THIS TABLE SHOWS THAT:

- The mean serum total iron binding capacity is higher in anaemic women as compared to non anaemic women. The difference is statistically highly significant.
- The mean serum total iron binding capacity in anaemic women is above the normal value (Donald [1979], put the value 400 µgm/dl.as the highest normal)

TABLE [9]: TRANSFERRIN SATURATION.

	Non Anaemic Women	Anaemic Women
No.of Women	54	46
Transferrin sat.%		
* Range	15-37.7	5.3-14.2
* Mean	21.6	9.9
* S.D.	± 6.2	± 2.4

$P < 0.01$

THIS TABLE SHOWS THAT:

- The mean transferrin saturation is lower in anaemic women as compared to non anaemic women. The difference is statistically highly significant.

- The mean transferrin saturation in anaemic women is below the normal value (McFee [1979], put the value 16% as the lowest normal).

The mean age of all women was 25.4, ranging from 15 to 40 years. The number and percentage of non anaemic and anaemic women according to their age are shown in Table (10).

TABLE [10]

AGE	No of women	Non anaemic women		Anaemic women	
		No.	%	No.	%
15-19	18	10	55.6%	8	44.4%
20-24	28	18	64.3%	10	35.7%
25-29	26	16	61.5%	10	38.5%
30+	28	10	35.7%	18	64.3%
TOTAL	**100**	**54**		**46**	

$P > 0.05$

This table shows that the % of anaemic women is higher in women 15 to 19 years old and those above 30 years old. The difference between the groups is statistically insignificant.

Thirty one women were primigravidae, 56 were multiparae (Para 1-4) and 13 were grandmultiparae (Para 5 or more). The number and percentage of non anaemic and anaemic women according to parity is shown in Table (11).

TABLE [11]:

PARITY	No of women	Non anaemic women		Anaemic women	
		No.	%	No.	%
PG.	31	20	64.5%	11	35.5%
Para 1-4	56	30	53.5%	26	46.5%
Para 5+	13	4	30.7%	9	69.3%
TOTAL	**100**	**54**		**46**	

$P > 0.05$

This table shows that the percentage of anaemic women increased with increased parity. However, the difference is statistically insignificant.

The mean fetal weight was 3284 gm.(S.D ± 505), ranging from 2400 to 4500 gm. The relation between fetal birth weight and maternal haemoglobin level is shown in Table (12).

TABLE [12]:

MATERNAL Hb. LEVEL	GROUP I Haemoglobin ≥ 11gm/dl.	GROUP II Haemoglobin 10-10.9gm/dl	GROUP III Haemoglobin <10 gm/dl.
No. of women	54	16	30
FETAL BIRTH WEIGHT:			
* Range	2400-4500	2500-4500	2400-3500
* Mean	3442	3343	2966
* S.D.	± 464	± 610	± 379

Group I versus group II: P > 0.05
Group I versus group III: P < 0.01
Group II versus group III: P < 0.05

THIS TABLE SHOWS THAT:

- The mean fetal birth weight is lower in group II compared to group I and in group III compared to group II.
- The difference between the mean fetal birth weight between group I and II is statistically insignificant. But, the difference in the mean fetal birth weight between group I and group III is highly significant and that between group II and III is also significant.

The mean cord blood haemoglobin level was 14.3 gm/dl. (S.D ± 0.8) ranging from 13.2 - 16 gm/dl. The relation between cord blood haemoglobin level of non anaemic and anaemic women is shown in Table (13).

TABLE [13]:

	Non anaemic women		Anaemic women	
No.of women	54		46	
	Mat. Hb.	Cord Hb.	Mat. Hb.	Cord Hb.
Hb.ingm/dl.				
* Range	11-14	13.4-16	6.7-10.9	13.2-15.6
* Mean	11.8	14.5	9.5	14.05
* S.D.	± 0.7	± 0.8	± 0.9	± 0.6

$P < 0.01$

THIS TABLE SHOWS THAT:

- The mean cord blood haemoglobin level is higher than the mean maternal haemoglobin level.
- The mean cord blood haemoglobin level of fetuses of anaemic women is lower than that of fetuses of non anaemic women. Although the difference is slight, yet it is statistically highly significant.

The relation between cord blood haemoglobin level in different groups according to maternal haemoglobin level is shown in Table (14).

TABLE [14]:

MATERNAL Hb. LEVEL	GROUP I Haemoglobin ⩾11gm/dl.		GROUP II Haemoglobin 10-10.9gm/dl		GROUP III Haemoglobin <10 gm/dl.	
No. of women	54		46		30	
	Mat.Hb.	Cord Hb.	Mat.Hb.	Cord Hb.	Mat.Hb	CordHb.
Hb.in gm/dl.						
* Range	11-14	13.4-16	10-10.9	13.2-15.6	6.7-9.9	13.3-14.8
* Mean	11.8	14.5	10.5	14.3	9	13.9
* S.D.	± 0.7	±0.8	±0.3	±0.7	±0.9	±0.6

Group I versus group II: P > 0.05
Group I versus group III: P < 0.01
Group II versus group III: P >0.05

THIS TABLE SHOWS THAT:

- The mean cord blood haemoglobin level is lower in group II women compared to group I, and in group III compared to group II.
- The difference in the mean cord blood haemoglobin level between group I and III women is statistically highly significant. The difference between group I and II, II and III are not significant.

The mean cord serum iron level was 118.5 µgm/dl. (S.D ± 25.9), ranging from 82 to 175 µgm/dl. The relation between cord serum iron level of non anaemic and anaemic women is shown in Table (15).

TABLE [15]:

	Non anaemic women		Anaemic women	
No.of women	54		46	
	Mat.serum Fe.	**Cord serum Fe.**	**Mat. serum Fe.**	**Cord serum Fe.**
Serum iron µgm/dl.				
* **Range**	63-112	98-175	29-65	82-126
* **Mean**	80.4	135.6	46.5	98.3
* **S.D.**	± 13.7	± 21.7	± 9.1	± 12.5

$P < 0.01$

THIS TABLE SHOWS THAT:

- The mean cord serum iron level is higher than the mean maternal serum iron level.
- The mean cord serum iron level of fetuses of anaemic women is lower than the mean cord serum iron level of fetuses of non anaemic women. The difference is statistically highly significant.

The relation between cord serum iron level in different groups according to maternal haemoglobin level is shown in Table (16).

TABLE [16]:

MATERNAL Hb. LEVEL	GROUP I Haemoglobin ≥11gm/dl.		GROUP II Haemoglobin 10-10.9gm/dl		GROUP III Haemoglobin <10 gm/dl.	
No. of women	54		16		30	
Serum Fe.in µgm/dl.	Mat. Serum Fe.	Cord Serum Fe.	Mat. Serum Fe.	Cord Serum Fe.	Mat. Serum Fe.	Cord Serum Fe.
* Range	63-112	98-175	48-65	85-126	29-52	82-118
* Mean	80.4	135.6	55.1	106.8	41.7	93.7
* S.D.	± 13.7	± 21.7	± 6.4	±12.7	± 6.6	±10.0

Group I versus group II: $P < 0.01$
Group I versus group III: $P < 0.01$
Group II versus group III: $P < 0.01$

THIS TABLE SHOWS THAT:

- The mean cord serum iron level is lower in group II compared to group I women and in group III compared to II.
- The difference in the mean cord serum iron level between the 3 groups is statistically highly significant.

The relation between the mean maternal and mean cord serum iron levels is shown in Table (17).

TABLE [17]:

Range of Maternal Serum iron in µgm/dl.	20-39	40-59	60-79	80-99	>100
Mean maternal serum iron	35.2± 3.7	47.9±3.9	68.8±5.7	87.6±4.7	104±4.9
Mean cord serum iron	86.2±2.3	99.4±9.9	120.1±12.3	148.6±12.9	165.7±9.5

This table shows that there is a direct relation between the mean maternal and mean cord serum iron levels. The higher the mean maternal serum iron level, the higher is the mean cord serum iron level.