Results

RESULTS

This study included sixty primigravidae from nearly the same socio-economic class with normal blood pressure from about twentieth week of gestation and with positive roll over test and high MAP i.e. all of them were liable for pregnancy induced hypertension (P.I.H).

Primigravidae were divided equally into two groups, each consisted of 30 women.

Group I (calcium supplemented group): They were supplemented by 60 ml of calcium syrup (Sandoz) (4 teasponsful daily.

Group II (control group): They recieved placebo.

All women were followed-up every two weeks till delivery. In each visit, they were examined for weight, oedema and blood pressure. Abdominal examination was done for assessment of foetal growth. Urine samples were examined for albumin and sugar by tape method. Serum creatinine and packed corpuscular volume (P.C.V) were also evaluated.

TABLE (1): BASE LINE DATA OF EACH GROUP OF STUDY WITH STATISTICAL COMPARISON BETWEEN THE 2 GROUPS.

Item	Supplements		Non supplements		Comparison	
	Mean	S.D	Mean	S.D	t-Value	p-Value
Age (Years)	22.23	3.53	22.9	3.49	0.734	N.S
Weight (Kg)						
Rollover test						
Systolic lat	99.66	8.08	104.83	10.21	3.173	N.S
Sup	129.33	7.39	131.00	9.77	0.745	N.S
Diastolic lat	71.50	8.00	74.83	7.59	1.654	N.S
Sup	91.00	7.14	94.83	9.60	0.839	N.S

The committe on terminology of the American College of Obstetricians and Gynecologists suggested the following definitions and classifications of hypertension that developed during pregnancy (Hughes, 1912).

Hypertension is defined as a diastolic blood pressure of at least 90 mmHg or systolic pressure of at least 140 mmHg or a rise in the former of at least 15 mmHg or in later of 30 mmHg.

Preeclampsia is the development of hypertention with proteinuria, oedema or both induced by pregnancy after the 20th week of gestation.

Eclampsia is the occurrence of conclusion, not caused by any coincidental neurologic disease such as epilepsy in a woman whose condition also fulfille the criteria for preeclampsia.

Preeclampsia is further classified as mild, moderate or severe according to frequency and intensity of diastolic blood pressure, proteinuria, headach, upper abdominal pain, serum creatin, fetal growth retardation. It is considered mild if diastolic blood pressure below 100 mmHg, with tract to 1+ proteinuria and abscence of any of other

abnormalities, moderate if diastolic blood pressure between 100 mmHg-110 mmHg, with 2+ proteinuria and severe if diastolic blood pressure more than 110 mmHg, proteinuria more than 3+ or presence of other abnormalities.

According to this classification the results of this thesis show that, from the supplements group, there were four primigravidae who developed hypertension, and six of them developed mild preeclampsia. On the other hand, from the non supplemented group there were three primigravidae who developed hypertension, eleven developed mild preeclampsia and four developed moderate preeclampsia.

The results of these thesis were statistically evaluated and under 2 headings:

[1] Clinical results.

[2] Laboratory findings.

[1] CLINICAL RESULTS:

Table (1) shows the Means and Standard deviations (SD) of age in each group, and the results of roll-over test as base-line measurements of blood pressure in the two studied

groups (30 subjects each). There were no statistically significant differences between the two groups.

A) SYSTOLIC BLOOD PRESSURE:

Descriptive statistics of systolic blood pressure for both groups are shown in tables (2a),and (2b) The tables show the mean blood pressure and its standard deviation, and the minimum and maximum values (in mmHg) measured in each group during the 2-week follow-up intervals. the postpartum statistics are also presented in the tables.

The changes in systolic blood pressure relative to initial in both supplemented and non supplemented group are shown in (fig 1 & 2) in which mean systolic blood pressure at different points of pregnancy are presented.

Results of statistical comparison of systolic blood pressure between the two groups are shown in table (3) at different points of gestation. Comparison between the two groups showed nonsignificant differences till the 24th week of gestation. Starting from the 26th week of gestation, there were sgnificant differences between the two groups of study. Differences became hgihly significant, starting from the 32nd week till delivery. Post-partum systolic blood

pressure (2 weeks after delivery) showed non significant difference between the two groups.

TABLE(2a):DISCRIPTIVE STATISTICS OF SYSTO. LIC BLOOD PRESSURE IN SUPPLEMENTED GROUP.

Week Of gest	No.	Min.	Max.	Mean	S.D
20	30	90	120	99.66	8.08
22	30	90	120	107.33	9.07
24	30	100	120	108.66	7.30
26	30	90	120	109.33	9.07
28	30	90	130	113.33	10.28
30	30	90	130	116.66	9.49
32	30	100	130	117.83	7.62
34	30	100	130	115.50	7.46
36	30	100	130	112.00	8.15
38	30	100	130	111.83	7.00
P.P.	30	90	120	109.33	8.68

TABLE(2b):DISCRIPTIVE STATISTICS OF SYSTOLIC BLOOD PRESSURE IN NON SUPPLEMENTED GROUP.

Week Of gest.	No.	Min.	Max.	Mean	S.D
20	30	90	120	104.83	10.21
22	30	90	130	109.33	11.12
24	30	90	130	112.66	10.80
26	30	90	140	116.33	10.66
28	30	90	140	118.66	11.05
30	30	90	160	122.16	15.29
32	30	100	150	129.33	12.08
34	30	110	160	136.33	12.45
36	30	110	160	138.00	13.49
38	30	110	160	136.33	14.01
P.P.	30	90	130	105.00	9.50

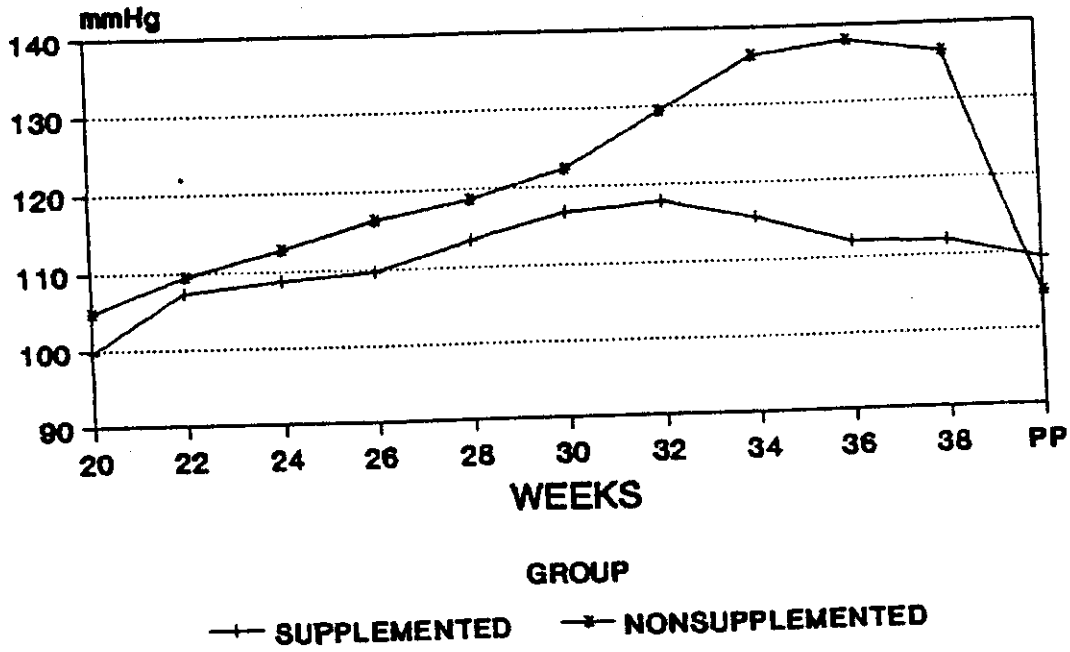

FIG.1: CHANGE IN SYSTOLIC BLOOD PRESSURE IN THE 2 STUDIED GROUPS

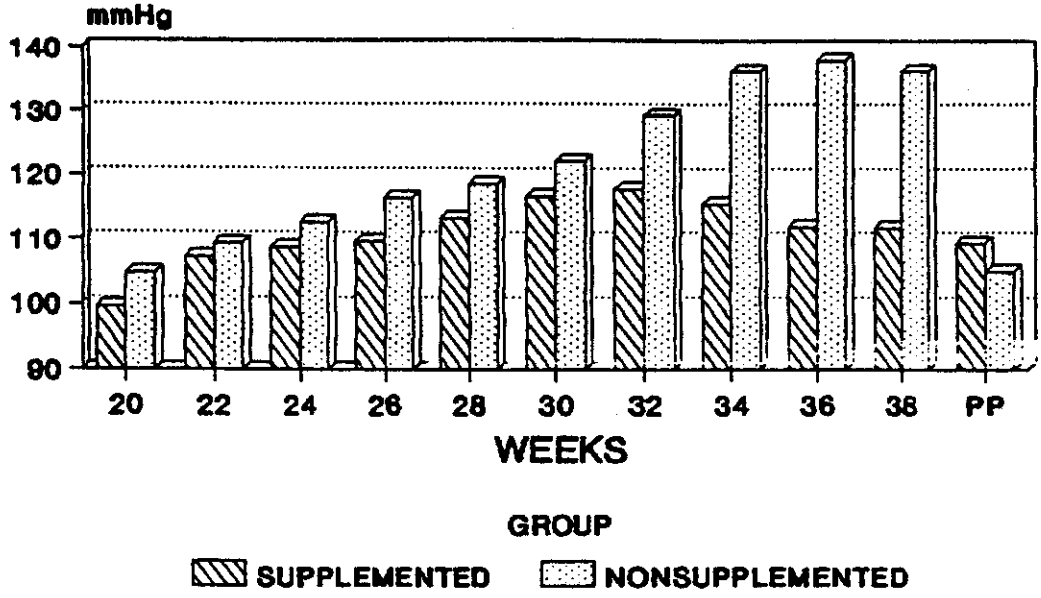

FIG.2: MEAN SYSTOLIC BLOOD PRESSURE IN THE 2 STUDIED GROUPS DURING THE FLOOW-UP

TABLE (3): STATISTICAL COMPARISON BETWEEN SYSTOLIC BLOOD PRESSURE OF TWO STUDIED GROUPS.

Week Of gest.	No.	Supplemented		Non supplemented		Comparison	
		Mean	S.D	Mean	S.D	t-Value	p-Value
20	30	99.66	8.08	104.83	10.21	0.749	N.S
22	30	107.33	9.07	109.33	11.12	0.763	N.S
24	30	108.66	7.30	112.66	10.80	1.679	N.S
26	30	109.33	9.07	116.33	10.66	2.738	<0.05
28	30	113.33	10.28	118.66	11.05	1.934	<0.05
30	30	116.66	9.49	122.16	15.29	1.673	<0.05
32	30	117.83	7.62	129.33	12.08	4.408	<0.001
34	30	115.50	7.46	136.33	12.45	7.858	<0.001
36	30	112.00	8.15	138.00	13.49	9.031	<0.001
38	30	111.83	7.00	136.33	14.01	8.563	<0.001
P.P		109.33	8.68	105.00	9.50	1.631	N.S

B) DIASTOLIC BLOOD PRESSURE:

Descriptive statistics of diastolic blood pressure are shown in tables (4a) and (4b). These tables show the mean blood pressure and standard deviations, and the minimum and maximum values (in mmHg) measured in each group during the 2-week follow-up intervals. the postpartum statistics are also presented in the tables.

The changes in diastolic blood pressure relative to intial in both groups are shown in (Fig.3 & 4) in which mean & SD of diastolic blood pressure at different points of pregnancy are presented.

Results of statistical comparison of the diastolic blood pressure between the two groups are shown in table (5) at different points of gestation in both supplemented and non supplemented groups. Comparison between these two groups showed nonsignificant differences till the 26th week of gestation.

Significant differences between the two groups started at the end of the 28th week. Differences became highly significant starting from the 32nd week till delivery. There

was no difference between post-partum diastolic blood pressure of both groups two weeks after delivery.

TABLE(4a):DESCRIPTIVE STATISTICS OF DIASTOLIC BLOOD PRESSURE IN SUPPLEMENTED GROUP

Week of gest.	No.	Min.	Max.	Mean	S.D
20	30	60	90	70.20	4.00
22	30	60	90	77.33	8.27
24	30	70	90	78.33	6.98
26	30	60	100	79.33	9.80
28	30	60	100	81.66	9.49
30	30	60	110	85.00	9.82
32	30	70	100	84.50	6.99
34	30	70	100	82.66	7.95
36	30	70	95	80.66	7.19
38	30	70	100	79.00	6.48
P.P.	30	60	90	77.83	7.62

TABLE(4b):DESCRIPTIVE STATISTICS OF DIASTOLIC BLOOD PRESSURE IN NON SUPPLENENTED GROUP

Week of gest.	No.	Min.	Max.	Mean	S.D
20	30	60	90	74.83	7.59
22	30	60	100	78.33	10.85
24	30	70	100	79.33	15.29
26	30	60	100	83.66	11.21
28	30	60	100	88.16	11.02
30	30	60	110	89.50	11.77
32	30	70	110	97.33	9.803
34	30	80	110	99.33	8.973
36	30	80	110	99.00	8.740
38	30	70	110	97.33	11.04
P.P.	30	60	100	74.66	8.99

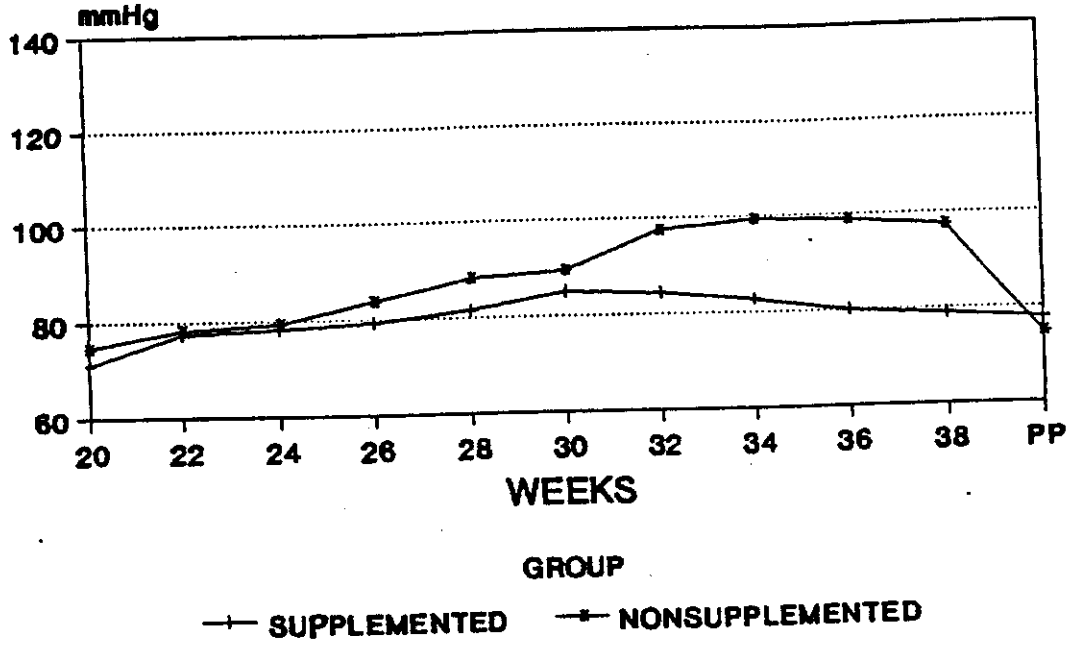

FIG.3: CHANGE IN DIASTOLIC BLOOD PRESSURE IN THE 2 STUDIED GROUPS

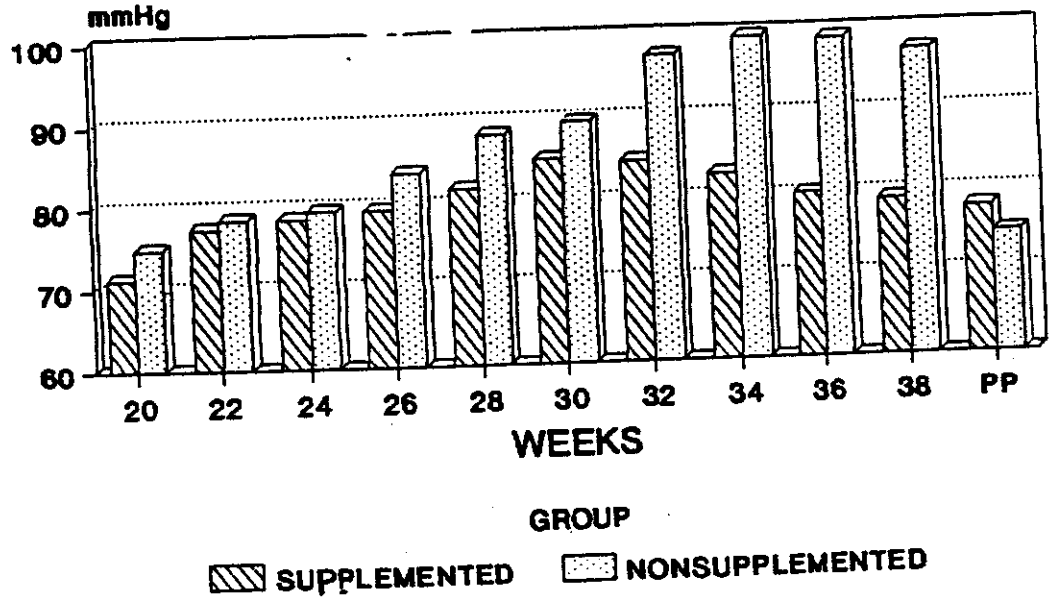

FIG. 4: MEAN DIASTOLIC BLOOD PRESSURE IN THE 2 STUDIED DURING THE FOLLOW-UP PERIOD

TABLE (5): STATISTICAL COMPARISON BETWEEN DIASTOLIC BLOOD PRESSURE OF TWO STUDIED GROUPS.

Week of gest	No.	Supplements		Non supplements		Comparison	
		Mean	S.D	Mean	S.D	t-Value	p-Value
20	30	70.20	8.00	74.83	7.59	1.654	N.S
22	30	77.33	8.27	78.33	10.85	0.401	N.S
24	30	78.33	6.98	79.33	15.29	0.325	N.S
26	30	79.33	9.80	83.66	11.21	1.593	N.S
28	30	81.66	9.49	88.16	11.02	2.446	<0.05
30	30	85.00	9.82	89.50	11.77	1.607	<0.05
32	30	84.50	6.99	79.33	9.80	5.837	<0.001
34	30	82.66	7.95	99.33	8.97	7.609	<0.001
36	30	80.66	7.19	99.00	8.74	9.188	<0.001
38	30	79.00	6.48	97.33	11.04	8.784	<0.001
P.P		77.83	7.62	74.66	8.99	1.471	N.S

C) OEDEMA:

No oedema was observed in any subject in both groups till the 24th week of gestation. Table (6) shows the number of subjects who developed oedema and its degree starting from the 26th week of gestation in both groups.

Fig. (5) shows the frequency of oedema in the two studied groups during the follow-up period. The frequency of oedema was much higher in the non-supplemented compared to the supplemented group.

TABLE(6): NO OF SUBJECTS WHO DEVELOPED OEDEMA.AT DIFFERENT POINTS OF GESTATION

Week Of gest.	Group (1) n = 30			Group (2) n = 30		
	+	++	+++	+	++	+++
26 th	0	0	0	4	0	0
28 th	4	0	0	8	2	0
30 th	4	0	0	8	3	0
32 th	4	0	0	12	3	0
34 th	4	1	0	11	4	0
36 th	4	1	0	11	4	1
38 th	5	1	0	11	4	1

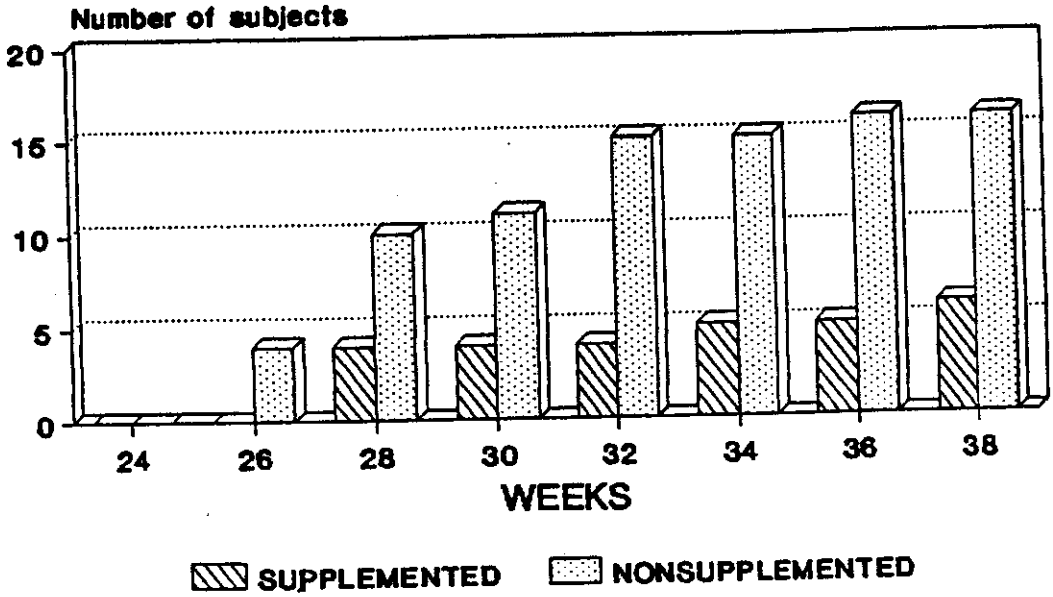

FIG.5: FREQUENCY OF OEDEMA IN THE 2 STUDIED GROUPS DURING THE FOLLOW-UP PERIOD

D) FOETAL WEIGHT: APGAR SCORING.

At full term, all women delivered spontaneously within average time of 2nd and 3rd stage of labor of primigravidae with no need for neither induction nor use of ventouse or forceps.

Foetal weight ranged from 2700 gm to 3300 gm with a mean of 2947 ± 191 gm in the non-supplemented group. In the supplemented group, the foetal weight ranged from 2800 gm to 3500 gm with a mean of 3163 ± 177 gm (Table 7 and Fig. 6).

Table (7) and Fig. (7) show APGAR scoring in both groups of study. The score ranged from 6 to 9 in the non-supplemented group (mean = 7.7 ± 0.8) while it ranged from 7 to 9 in the supplemented group (mean: 8.3 ± 0.8).

The statistical comparison of the two groups is shown in (table 7). Significant lower foetal, and APGAR scoring were noticed in the non supplemented group.

TABLE (7): STATISTICAL COMPARISON BETWEEN THE TWO GROUPS AS REGARD F.W,AND APGAR SCORING

Item	Supplemented group Mean S.D	Non-Supplemented group Mean S.D	Comparison t-Value	p-Vale
Foetal Weight (gm)	3163.33 ± 177.10	2946.66 ± 190.70	4.5598	<0.05
APGAR Scoring	8.33 ± 0.75	7.70 ± 0.79	3.1591	<0.05

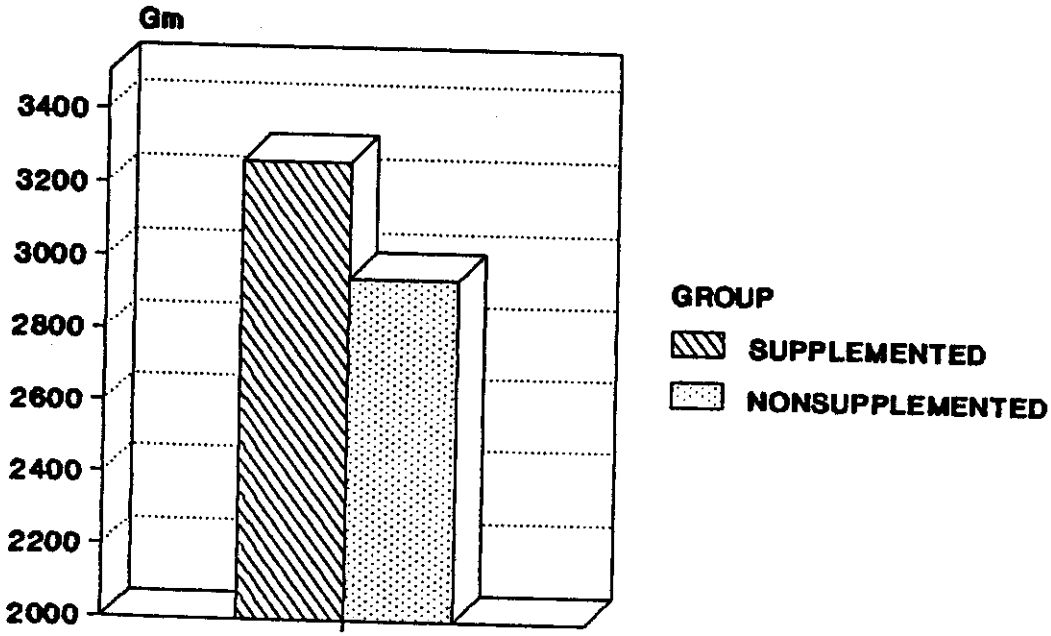

FIG. 6: FOETAL WEIGHT IN THE 2 STUDIED GROUPS

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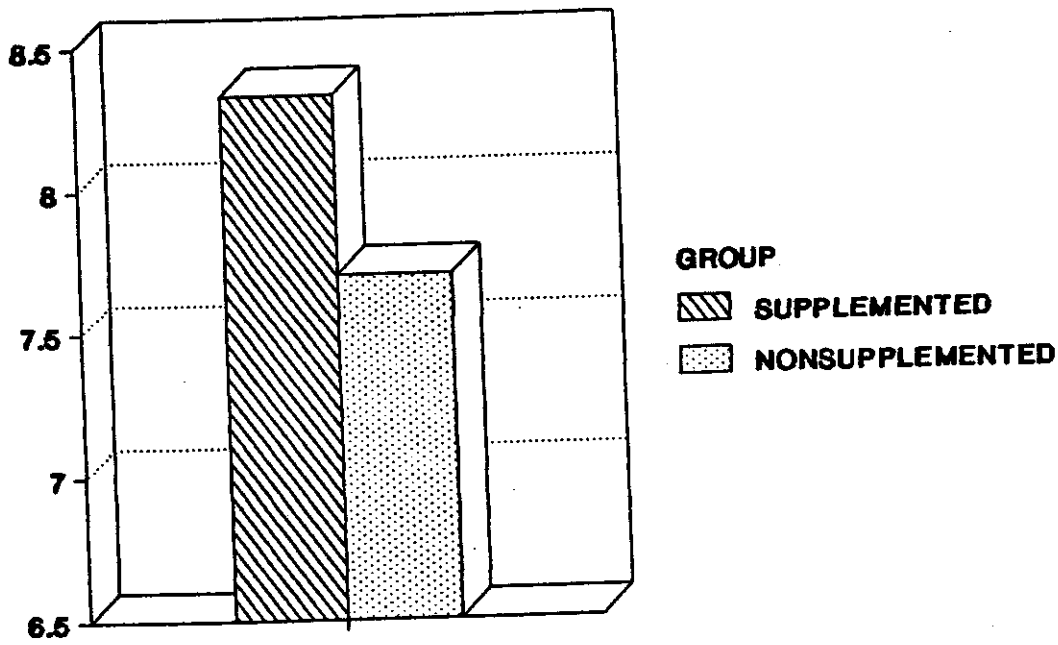

FIG. 7: MEAN APGAR SCORE IN THE 2 STUDIED GROUPS

[2] LABORATORY RESULTS

[A] Albumin in urine:

Table (8) shows the number of primigravidae who developed albuminuria in both supplemented and non supplemented groups and its degree and progress along the course of gestation. No subject developed albuminuria up to the 24th week of gestation in both groups.

Fig (8) shows the frequency of albuminuria which was much higher in the non supplemented group compared to supplemented one.

[B] Sugar in urine:

Only three primigravidae showed glucose in urine by tape and it is not more than + all through the course of pregnancy.

TABLE (8): NUMBER OF SUBJECTS AND DEGREE OF ALBUMINURIA

Week Of gest.	Supplemented group (n = 30)			Non-Supplemented group (n = 30)		
	+	++	+++	+	++	+++
24 th	0	0	0	0	0	0
26 th	2	0	0	7	0	0
28 th	4	1	0	6	1	0
30 th	4	1	0	5	3	0
32 th	4	1	0	9	3	0
34 th	4	1	0	13	3	0
36 th	6	1	0	8	7	1
38 th	5	1	0	4	10	1

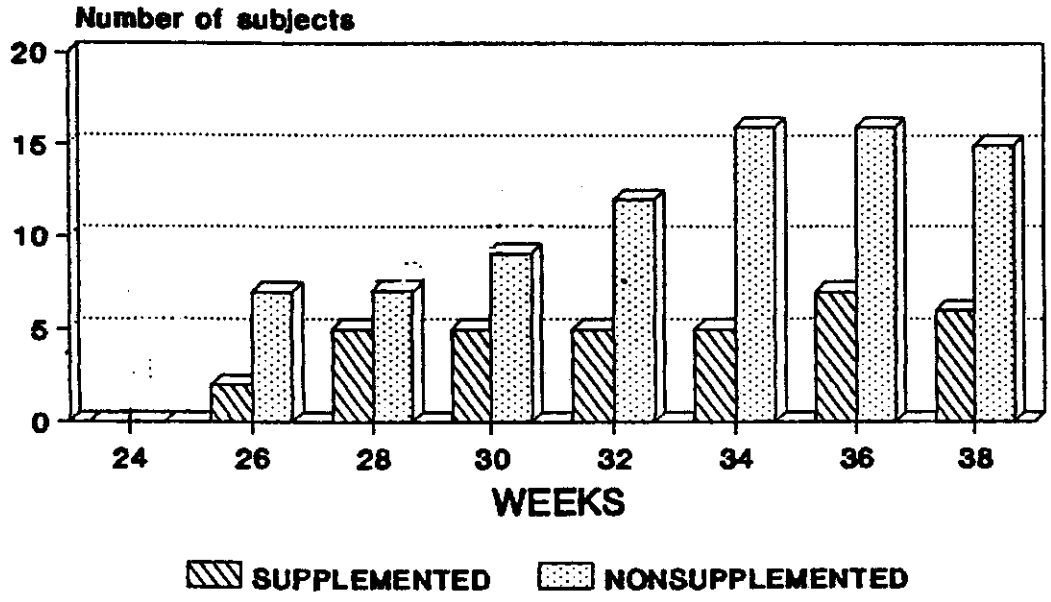

FIG. 8: FREQUENCY OF ALBUMINURIA IN THE 2 STUDIED GROUPS DURING THE FOLLOW-UP PERIOD

[C] Serum creatinine:

(Table 9 a & b) show descriptive statistics of serum creatinine levels in both the supplemented and the control group at different points of gestation.

Changes in serum creatinine levels relative to initial in both supplemented and control group are shown in figure (9) & (10). The non-supplemented control group showed gradual rise till 30th week. The supplemented group showed lower level than the control group.

Table (10) shows means, SD of serum creatinine of each group of study at different points of gestation with statistical comparison between the two groups of the study.

The comparison between these two groups showed non significant difference at the start point of the study then significant difference started from the 22th week of gestation till delivery but within the normal range in normal pregnant women.

TABLE(9a):DESCRIPTIVE STATISTICS OF SERUM CREATININE IN SUPPLEMENTED GROUP

Week of gest.	No.	Min.	Max.	Mean	S.D
20	27	0.50	0.90	0.72	0.9
22	28	0.50	0.90	0.69	0.10
24	30	0.50	0.90	0.71	0.10
26	29	0.40	0.90	0.63	0.9
28	26	0.50	0.90	0.61	0.11
30	28	0.40	0.80	0.69	0.11
32	26	0.50	0.80	0.61	0.09
34	28	0.50	0.80	0.69	0.09
36	30	0.40	0.80	0.66	0.11
38	27	0.50	0.80	0.72	0.14

TABLE(9b):DESCRIPTIVE STATISTICS OF SERUM CREATININE IN NON SUPPLEMENTED GROUP

Week of gest.	No.	Min.	Max.	Mean	S.D
20	27	0.60	1.20	0.82	0.15
22	27	0.60	1.20	0.87	0.11
24	26	0.70	1.10	0.86	0.11
26	26	0.60	1.20	0.91	0.14
28	24	0.70	1.20	0.92	0.12
30	28	0.80	1.20	0.96	0.11
32	29	0.70	1.30	0.98	0.13
34	27	0.70	1.20	0.91	0.12
36	26	0.80	1.20	0.97	0.13
38	27	0.80	1.20	0.94	0.14

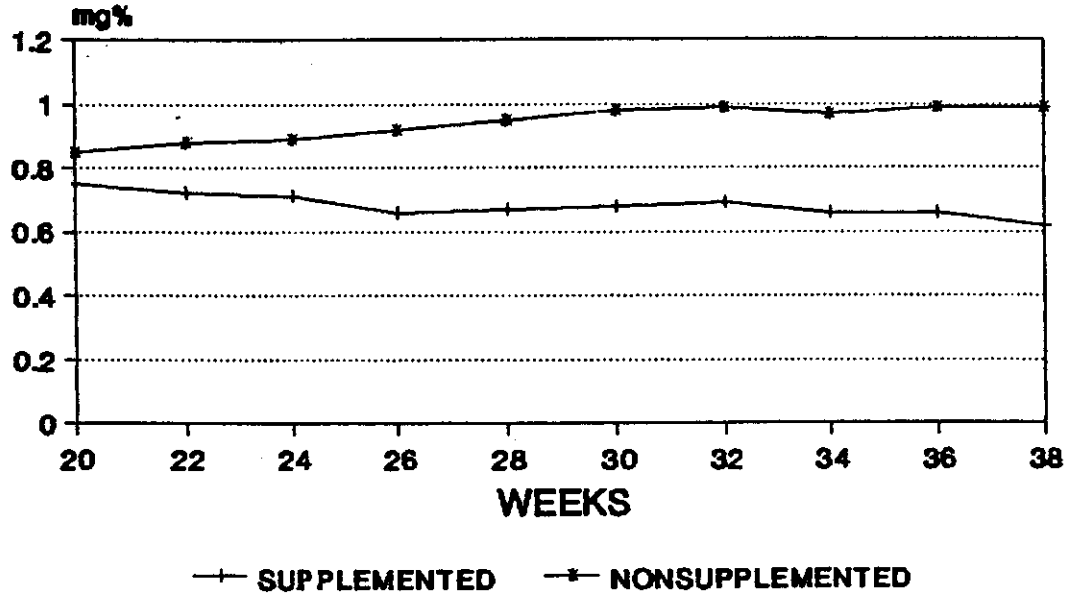

FIG. 9: CHANGE IN CREATININE LEVEL IN THE 2 STUDIED GROUPS DURING THE FOLLOW-UP PERIOD

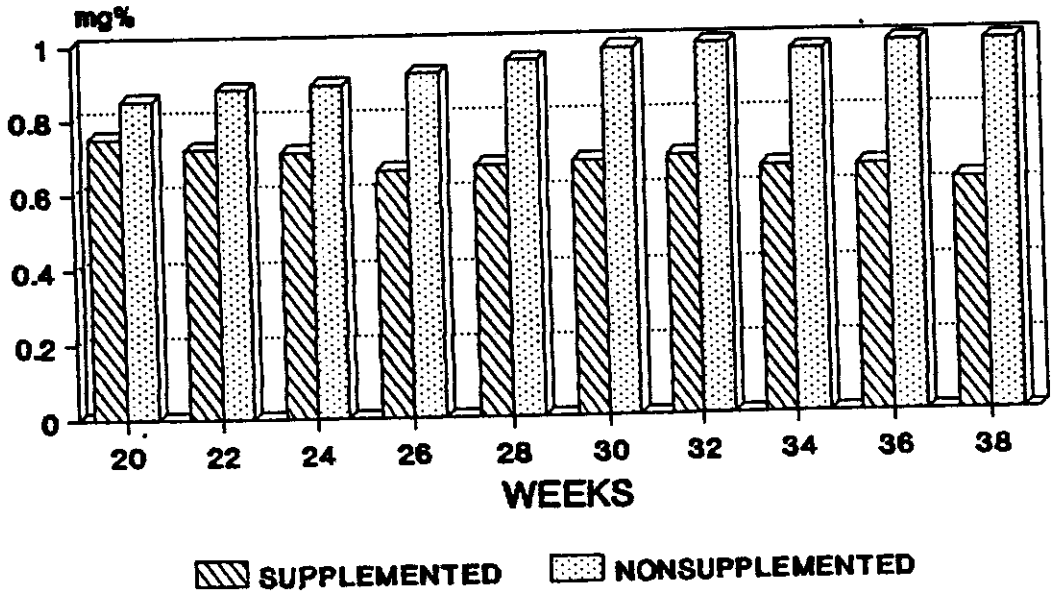

FIG. 10: MEAN CREATININE LEVEL IN THE 2 STUDIED GROUPS DURING THE FOLLOW-UP PERIOD

TABLE (10):STATISTICAL COMPARISON BETWEEN THE 2 GROUPS IN SERUM CREATININ LEVEL

Week Of gest.	Supplements		Non supplements		Comparison	
	Mean	S.D	Mean	S.D	t-Value	p-Value
20	0.72	0.09	0.82	0.15	2.970	<0.0001
22	0.69	0.10	0.87	0.11	6.354	<0.0001
24	0.71	0.10	0.86	0.11	5.344	<0.0001
26	0.63	0.09	0.91	0.14	8.802	<0.0001
28	0.61	0.11	0.92	0.12	9.531	<0.0001
30	0.69	0.11	0.96	0.11	9.184	<0.0001
32	0.61	0.09	0.98	0.13	12.133	<0.0001
34	0.69	0.09	0.91	0.12	7.710	<0.0001
36	0.66	0.11	0.97	0.13	9.667	<0.0001
38	0.72	0.14	0.94	0.14	5.773	<0.0001

[D] Paked corpuscular volume:

Table 11a,11b show the descriptive statistics of P.C.V% for both supplemented and control groups at different points of gestation.

Changes in P.C.V% level at different points of gestation during pregnancy in relation to initial level are shown in Fig (11 & 12). The non-supplemented control group showed slight increase in P.C.V% level above normal pregnant level. The supplemented group showed a decrease in P.C.V% level indicating normal haemodilation with pregnancy specially after 30th week of gestation.

Table (12) shows the statistical comparison between the two groups of study. The differnece was significant starting from the 22nd week of gestation that became highly significant starting from 26th week of gestation.

[E] Ultrasonography:

At 37th week of gestation the ultrasonography study show no significant difference between the two groups studied as regard foetal growth and well being.

TABLE(11b):DESCRIPTIVE STATISTICS OF PACKED CARPUSCULAR VOLUME % IN THE SUPPLEME-SUPPLEMENTED GROUP

Week of gest.	No.	Mean	S.D.	Min.	Max.
20	27	34.20	1.44	31.00	39.00
22	26	33.53	2.20	31.00	40.00
24	26	33.50	1.93	32.00	39.00
26	24	35.50	1.97	32.00	39.00
28	28	34.43	1.78	32.00	38.00
30	29	35.63	1.83	32.00	39.00
32	27	33.70	1.72	33.00	39.00
34	26	33.90	1.79	33.00	39.00
36	28	33.80	1.63	33.00	39.00
38	27	35.73	1.63	33.00	39.00

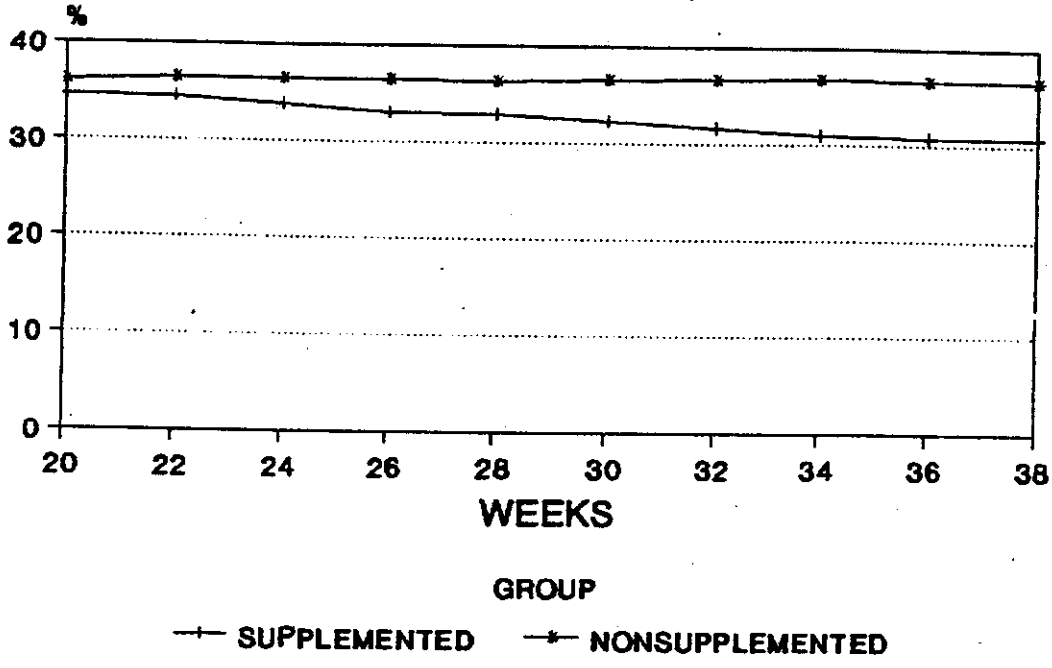

FIG. 11: CHANGE IN PCV IN THE 2 STUDIED GROUPS

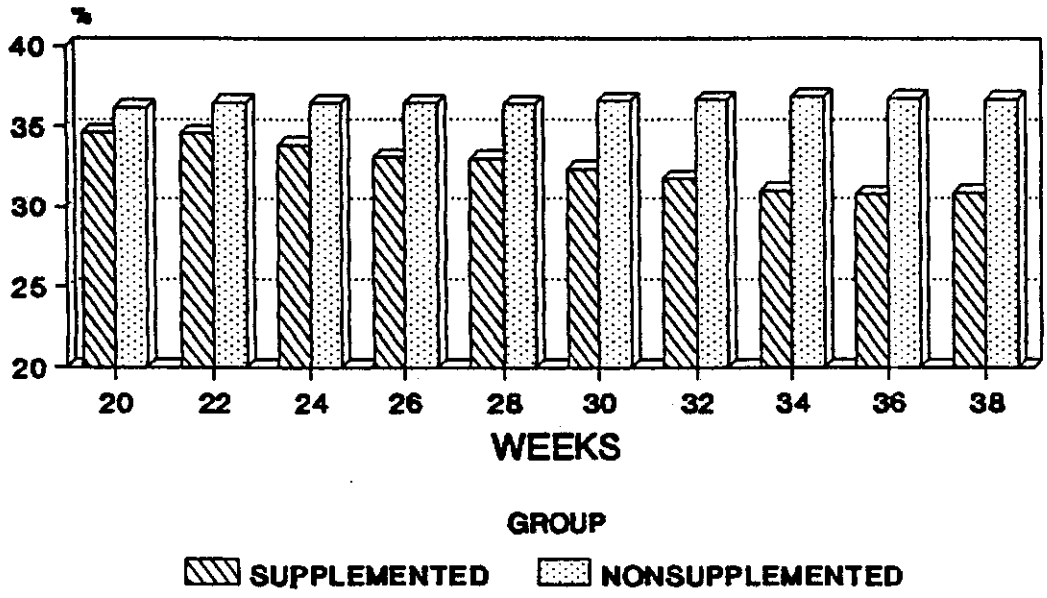

FIG. 12: COMPARISON OF PCV IN THE 2 STUDIED GROUPS DURING THE FOLLOW-UP PERIOD

TABLE (12):STATISTICAL COMPARISON OF PACKED CORPUSCULAN VOLUME MEAN , S.D IN EACH GROUP

Week Of gest.	Supplements		Non supplements		Comparison	
	Mean	S.D	Mean	S.D	t-Value	p-Value
20	34.60	2.10	34.20	1.44	0.820	N.S
22	31.60	1.80	33.53	2.20	3.539	<0.0001
24	30.86	1.51	33.50	1.93	5.737	<0.0001
26	30.10	1.63	35.50	1.97	10.924	<0.0001
28	33.00	1.37	34.43	1.78	3.289	<0.0001
30	31.36	1.40	35.63	1.83	9.868	<0.0001
32	30.73	1.10	33.70	1.72	7.456	<0.0001
34	30.00	0.73	33.90	1.79	10.622	<0.0001
36	33.76	0.71	33.80	1.63	0.122	N.S
38	33.83	0.73	35.73	1.63	5.528	<0.0001