SECTION – III

Results

(Tables & Figures)

Patients were classified into three groups according to the type of feeding introduced during the period of admission inside NICU as follow;

Group I: Exclusively breast milk fed infants (EBM) = 20 cases.

Group II: partially breast milk fed (PBM) = 20 cases; which were subdivided into low partial category (<20% human milk), medium partial category (20-79% human milk) and high partial category (80-99% human milk).

Group III: Formula fed infants (FF) = 20 cases

ROP changes were classified according to the international classification of ROP into:

- **Stage I:** Demarcation line
- **Stage II:** Ridge
- **Stage III:** Ridge with extra-retinal fibro-vascular proliferation.
- **Stage IV:** Subtotal retinal detachment
  - A- Extra-foveal
  - B- Including fovea.
- **Stage V:** Total retinal detachment.

The infant's data were edited into tables with the following results:

Table (III-1a): Compares the various demographic data among the studied groups regardig birth weight, gestational age, gender, mode of delivary, and presence of multiple births. There was no statistically significant difference between the variables under study (P>0.05).

Table (III-1b&c): Compares the neonatal clinical and therapeutic interventions in the three study groups. There was no significant difference between neonatal variables of the studied groups except for the duration of IPPV which has a significant difference (Although group I has significantly more days of M.V.

than either group II or group III, while groups II and III do not differ significantly).

Table (III-1d): Compares various maternal variables among the studied groups. There was no statistically significant difference between various maternal variables among the studied groups (P>0.05).

Table (III-2a): Shows the overall incidence of ROP detected in the cases of the study. ROP changes were found in (35) cases out of all the study population (60 cases) with an incidence of (58%), while (25) cases out of (60) cases had no ROP changes with an incidence of (42%) i.e. (Non ROP = 42%). This is also shown in **(chart III-1)**.

Table (III-2b): Shows the overall incidence of different stages of ROP detected in the cases of the study. ROP positive cases (35) were classified according to the international classification of ROP into: 37%, 31.5%, 23%, 5.5% 3%, corrosponding to stage I, II, III, IV, V respectively. Most of these cases were found to have mild disease (Stage I, and Stage II = 37 + 31.5 = 68.5%), so the incidence of occurrence of mild disease was higher than the incidence of occurrence of severe disease (stage IV, and stage V = 5.5 + 3 = 8.5%). This is also shown in **(chart III-2)**.

Table (III-2c) Compares the severity of cases that were categorized by the most severe stage of acute ROP that developed in either eye prior to treatment or prior to spontaneous regression according to the Cryo-ROP cooperative group. These categories were: Non ROP in either eye which represent 42% (25 cases out of 60 cases); less than prethreshold which represents 10% (6 cases out of 60 cases) and threshold which represents 6% (4 cases out of 60 cases). The progression of ROP occurred only in 4 (four) cases out of 35 (thirty five) cases of ROP positive cases (6.5%). Two cases out of these 4 (four) cases were treated by Cryotherapy for threshold ROP, one case had developed retinal detachment and died before doing vitrectomy, while the other case developed retinal detachment and vitrectomy was done. Spontaneous regression occurred in the remaining 31 cases (93.5%). This is also shown in **(chart III-2')**.

Table (III-2d): Compares the incidence and severity of ROP changes among the different categories of group II according to the amount of human milk supplied to them during their stay inside the NICU. The incidence of ROP was 75% among those infants who were supplied with human milk < 20% in relation to the total amount of milk given during the infant stay inside the NICU (3 cases had +ve ROP changes out of total 4 cases who were supplied with human milk < 20%).While the incidence of ROP changes was 60% among infants who were supplied with human milk in a percentage of 20-79% of the total milk amount given their stay inside the NICU (6 cases had +ve ROP changes out of total 10 cases who were supplied with human milk 20-79%). The incidence of ROP changes was 33% among infants who were supplied with human milk in a percentage of 80-99% of the total milk amount given their stay inside the NICU

(2 cases had +ve ROP changes out of total 6 cases who were supplied with human milk 80-99%).As regard the severity of ROP changes among the different categories of group III according to the amount of human milk supplied during their stay inside the NICU, it was found that ROP +ve cases (3 cases) in the first category (supplied with human milk < 20%) were mostly severe stages (1 case stage II and 2 cases stage III), while in the second category (supplied with human milk 20-79%) it was found that ROP +ve cases (6 cases) were less severe stages (3 cases stage I and 3 cases stage II),and in the third category (supplied with human milk 80-99%) it was found that ROP +ve cases (2 cases) were stage I. So, human milk had been associated with less severe forms of ROP changes.

Table (III-3a): Compares between type of feeding and the incidence of retinopathy of prematurity (ROP) in all M.V.–VLBW neonates. The incidence of ROP was (75%) among infants of group III (i.e. 15 cases out of 20 cases showed positive ROP changes), while it was (55%) among infants of group II i.e. (11 cases out of 20 cases showed positive ROP changes) and it was (45%) among infants of group I; i.e. (9 cases out of 20 cases showed positive ROP changes). So the incidence was higher in group III > group II > group I. This is also shown in **(chart III-3).**

Table (III-3b): Shows categorization of ROP +ve cases according to the stages of ROP in between the studied groups. The severe forms of ROP (stages III&IV&V) were 11 cases that were distributed as follow; 6 cases out of 20 cases = (30%) in group III, 3 cases out of 20 cases = (15%) in group I, and 2 cases out of 20 cases = (10%) in group II. So, severe forms were found more among infants of group III (6cases) than among those of group I (3cases) and group II (2cases).

Table (III-4a): Shows the overall incidence of Candidemia. Candidemia was found in (9) cases out of (60) cases with an incidence of (15%), while (51) cases out of (60) cases had no Candidemia with an incidence of (85%). This is also shown in **(chart III-4).**

Table (III-4b): Compares between type of feeding and the incidence of Candidmeia between the studied groups. Candidemia positive cases (9) cases with the following distribution between the studied groups; (3) cases in group I, (1) case in group II, and (5) cases in group III, with an incidence of 15, 5, and 25% respectively This is also shown in **(chart III-4').**

Table (III-5): Compares between the incidence of Candidemia and birth weight categories among all M.V. – VLBW neonates. Statistically significant differences ($P<0.01$) were present between the percent distributions of Candidemia +ve and Candidemia -ve between Birth weight categories. Seven (7) cases showed positive blood culture for Candida out of 17cases = (41%) who were ≤ 1250gm

birth weight, while 2 cases showed positive blood culture for Candida out of 43 cases = 5%, who were > 1250gm. So, Candidemia was more prevalent among infants with birth weight ≤ 1250 gm. This is also shown in **(chart III-5)**.

Table (III-6): Compares between the incidence of Candidemia and Gestational Age categories among all M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of Candidemia +ve and Candidemia -ve in gestational age categories. Eight (8) cases showed positive blood culture for Candida out of 19cases = 42% who were ≤ 30 weeks of gestation, while 1 cases showed positive blood culture for Candida out of 41 cases = 2%, who were > 30 weeks of gestation, So Candidemia was more prevalent among infants with gestational age ≤ 30 weeks. This is also shown in **(chart III-6)**.

Table (III-7): Compares between candidemia and exposure to neonatal complications and procedures. There is a high prevalence of some neonatal complications like (sepsis, HF, NEC, TPN, catheter, and long stay inside the NICU), among infants with positive Candidemia. Eight (8) cases were found to have Neonatal sepsis out of the total Candidemia positive 9 (nine) cases with a percentage of (89%). Seven cases were found to have heart failure out of nine Candidemia positive cases with a percentage of (78%). Five cases had received TPN out of nine Candidunia positive cases with a percentage of (56 %). Four cases were found to have NEC with a percentage of (45%), three cases were found to have HIE with a percentage of (34%), five cases were found have undergo exchange transfusion with a percentage of (56%). So Candidemia positive infants were having many complications.

Table (III-8): Compares between blood culture for Candidemia and the incidence of ROP among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP with or without Candidemia. Twenty eight (28) cases (8,10,10 in group I,II,III respectively) showed positive ROP changes out of 51 cases who had negative blood culture for Candida (55%), while seven (7) cases (1,1,5 in group I,II,III respectively) showed positive ROP changes out of 9 cases who had positive blood culture for Candida (78%). This is also shown in **(chart III-7)**. Severity is also shown in **(Table xx)**; in which severe forms were prevalent among artificially-fed Candidemia +ve infants.

Table (III-9): Compares between the incidence of ROP and birth weight categories among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in the two birth weights. Seventeen (17) cases showed positive ROP changes out of 17 cases who were ≤ 1250gm (100%), while eighteen (18) cases

showed positive ROP changes out of 43 cases who were > 1250gm. (42%). So ROP was more prevalent among infants with birth weight ≤ 1250 gm. (100%), than among infants with birth weight > 1250gm. (42%). This is also shown in **(chart III-8 & 8')**, and is also shown in **(Figure III-13)** in all the study population, and in **(Figures III-1&5&9)** in between the study groups I, II and III respectively. Severity is also shown in **(Table xxi)**; in which severe forms were prevalent among infants with birth weight ≤ 1250gm.

Table (III-10): Compares between the incidence of ROP and gestational age categories among the three groups of M.V. – VLBW neonates. Statistically significant differences (P< 0.01) were present between the percent distribution of ROP and Non-ROP in the two periods of gestation. Seventeen (17) cases showed positive ROP changes out of 19 cases who were ≤ 30 weeks (89%), while 18 cases showed positive ROP changes out of 41 cases who were > 30 weeks (44%). So ROP was more prevalent among infants with gestational age ≤ 30 weeks (89%), than among infants with gestational age > 30 weeks (44%). So ROP was more prevalent among infants with GA ≤ 30 weeks (89%), than among infants with GA > 30 weeks (44%). This is also shown in **(chart III-9 & 9')**, and is also shown in **(Figure III-13)** in all the study population, and in **(Figures III-1&5&9)** in between the study groups I, II and III respectively. Severity is also shown in **(Table xxii)**; in which severe forms were prevalent among infants with GA ≤ 30 w.

Table (III-11): Compares between the incidence of ROP and duration of stay inside NICU (Initial fundus examination) among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and the duration of stay inside the NICU. Seventeen (17) cases showed positive ROP changes out of 17 cases stayed > 30 days inside the NICU (100%), while 18 cases showed positive ROP changes out of 43 cases stayed ≤ 30 days inside the NICU (42%). So ROP was more prevalent among infants with their initial fundus examination was inside the NICU i.e. long period of stay inside the NICU > 30 days, than among those infants with initial fundus examination done outside the NICU i.e. their period of stay was ≤ 30 days inside the NICU. So ROP was more prevalent among infants whose stay was prolonged >30 days inside the NICU and subsequently had their initial fundus examination inside the NICU. This is also shown in **(Chart III-10)**. Severity is also shown in **(Table xxiii)**; in which severe forms were prevalent among infants with NICU stay > 30 days.

Table (III-12): Compares between the incidence of ROP and the mean duration of the mechanical ventilation among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in both durations of mechanical ventilation.

Seven (7) cases showed positive ROP changes out of 25 cases whose mean duration of IPPV was ≤ 4 days (28%), while 28 cases showed positive ROP changes out of 35 cases whose mean duration of IPPV was > 4 days (80%). So ROP was more prevalent among infants whose mean duration of IPPV was > 4 days (80%), than among infants whose mean duration of IPPV was ≤ 4 days (28%). So ROP was more prevalent among infants with longer duration of IPPV > 4 days (80%), than among those with IPPV duration ≤ 4 days (28%). %). This is also shown in **(Chart III-10)**, and is also shown in **(Figure III-14)** in all the study population, and in **(Figures III-2&6&10)** in between the study groups I, II and III respectively. Severity is also shown in **(Table xxiv)**; in which severe forms were prevalent among infants with IPPV mean duration > 4 days.

Table (III-13): Compares between the incidence of ROP and highest FiO_2 used during the period of (IPPV) among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in the three periods of FiO_2. Three (3) cases showed positive ROP changes out of 12 cases exposed to Fio2 ≤ 40% (25%), while 14 cases showed positive ROP changes out of 28 cases exposed to Fio2 40-70% (50%), and 18 cases showed positive ROP changes out of 20 cases exposed to Fio2 > 70% (90%), So ROP was more prevalent among infants exposed to Fio2 > 70% (90%), than those exposed to Fio2 41-70% (50%), and those exposed to Fio2 ≤ 40% (25%). This is also shown in **(Chart III-12)**. Severity is also shown in **(Table xxv)**; in which severe forms were prevalent among infants with high Fio2 concentration >70%.

Table (III-14): Compares the highest MAP and the incidence of ROP among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in the two groups of MAP. Thirteen (13) cases showed positive ROP changes out of 30 cases exposed to MAP ≤ 9 (43%), while 22 cases showed positive ROP changes out of 30 cases exposed to MAP > 9 (73%), So ROP was more prevalent among infants exposed to MAP > 9 (73%), than those exposed to MAP ≤ 9 (43%). This is also shown in **(Chart III-13&13')**, and is also shown in **(Figure III-15)** in all the study population, and in **(Figures III-3&7&11)** in between the study groups I, II and III respectively. Severity is also shown in **(Table xxvi)**; in which severe forms were prevalent among infants exposed to high MAP > 9.

Table (III-15): Compares between the incidence of ROP and the highest O_2 index among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in the two groups of O_2 index. Eleven (11) cases showed positive ROP changes out of 29 cases exposed to O2 index ≤ 500 (38%), while 24 cases

showed positive ROP changes out of 31 cases exposed to O2 index > 500 (77%), So ROP was more prevalent among infants exposed to O2 index > 500(77%), than those exposed to O2 index ≤ 500 (38%). %). This is also shown in **(Chart III-14&14')**, and is also shown in **(Figure III-16)** in all the study population, and in **(Figures III-4&8&12)** in between the study groups I, II and III respectively. Severity is also shown in **(Table xxvii)**; in which severe forms were prevalent among infants with high O2 index > 500.

Table (III-16): Compares between the incidence of ROP and the highest pressure (PIP) among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in the three categories of the highest pressure (PIP). Nine (9) cases showed positive ROP changes out of 12 cases exposed to PIP 15-20 (43%), while 18 cases showed positive ROP changes out of 31 cases exposed to PIP 21-25 (58%), 8 cases showed positive ROP changes out of 8 cases exposed to PIP 26-30 (100%). So ROP was more prevalent among infants exposed to PIP > 25 (100%), than among those exposed to PIP 21-25 (58%), and also more than those infants exposed to PIP 15-20 (43%). Severity is also shown in **(Table xxviii)**; in which severe forms had no significant difference between higher PIP and the occurrence of severe forms of ROP.

Table (III-17): Compares between the incidence of ROP and PEEP among the three groups of M.V. – VLBW neonates. No statistically significant differences (P>0.05) were present between the percent distribution of ROP and Non-ROP in the two categories of PEEP. Twelve (12) cases showed positive ROP changes out of 32 cases exposed to ventilator PEEP ≤ 4 (53%), while 18 cases showed positive ROP changes out of 28 cases exposed to ventilator PEEP > 4 (64%), So ROP incidence was not related to PEEP either > or ≤ 4. Severity is also shown in **(Table xxix)**; in which severe forms had no significant difference between higher PEEP and the occurrence of severe forms of ROP.

Table (III-18): Compares between and the incidence of ROP and Ventilator Rate/minute among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in the two categories of Rate. Eighteen (18) cases showed positive ROP changes out of 38 cases exposed to ventilator rate ≤ 40/minute (47%), while 17 cases showed positive ROP changes out of 22 cases exposed to ventilator rate > 40/minute (77%), So ROP was more prevalent among infants exposed to ventilator rate > 40 (77%), than among those exposed to ventilator rate ≤ 40/min. (47%).

Table (III-19): Compares between the incidence of ROP and the duration of CPAP among the three groups of M.V. – VLBW neonates. Statistically

significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in both durations of CPAP. Eighteen (18) cases showed positive ROP changes out of 36 cases exposed to CPAP mean duration ≤ 2 days (50%), while 17 cases showed positive ROP changes out of 24 cases exposed to CPAP mean duration > 2 days (71%), So ROP was more prevalent among infants exposed to CPAP mean duration > 2 days (71%), than among those exposed to CPAP mean duration ≤ 2 days (50%). Severity is also shown in **(Table xxx)**; in which severe forms were prevalent among infants with CPAP mean duration > 2 days.

Table (III-20): Compares between the incidence of ROP and the total O_2 supplementation duration among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in the three durations of total O_2 supplementation. Thirteen (13) cases showed positive ROP changes out of 38 cases exposed to total oxygen duration < 15 days (35%), while 18 cases showed positive ROP changes out of 18 cases exposed to total oxygen duration 15-28 days (100%), and 4 cases showed positive ROP changes out of 4 cases exposed to total oxygen duration > 28 days, So ROP was more prevalent among infants exposed to total O2 supplementation duration > 15 days (100%), than among those exposed to total O2 supplementation duration < 15 days (35%). This is also shown in **(Chart III-15)**. Severity is also shown in **(Table xxxi)**; in which severe forms were prevalent among infants exposed to total O2 supplementation duration > 15 days.

Table (III-21): Compares between the incidence of ROP and HB values among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in the two categories of hemoglobin content (HB gram %). Twenty two (22) cases showed positive ROP changes out of 28 cases who had HB ≤ 11gm% (79%), while 13 cases showed positive ROP changes out of 32 cases who had HB > 11 gm% (41%), So ROP was more prevalent among infants exposed to anemia (HB ≤ 11 gm%) with an incidence of (79%), than among those not exposed to anemia with an incidence of (41%). Severity is also shown in **(Table xxxii)**; in which severe forms were prevalent among infants exposed to anemia.

Table (III-22): Compares between the incidence of ROP and blood transfusion among the three groups of M.V. – VLBW neonates. Statistically significant differences (P<0.01) were present between the percent distribution of ROP and Non-ROP in having blood transfusion or not. Twenty two (22) cases showed positive ROP changes out of 28 cases exposed to blood transfusion (79%), while 13 cases showed positive ROP changes out of 32 cases not exposed to blood transfusion (41%), So ROP was more prevalent among infants exposed to

blood transfusion (79%), than among those not exposed to blood transfusion (41%). Severity is also shown in **(Table xxxiii)**; in which severe forms were prevalent among infants exposed to blood transfusion.

Table (III-23): Compares between the incidences of ROP and Exchange transfusion among the three groups of M.V. – VLBW neonates. Statistically significant differences ($P<0.01$) were present between the percent distribution of ROP and Non-ROP in relation to exchange transfusion. Seven (7) cases showed positive ROP changes out of 8 cases exposed to exchange transfusion (88%), while 28 cases showed positive ROP changes out of 52 cases not exposed to exchange transfusion (54%), So ROP was more prevalent among infants exposed to exchange transfusion (88%), than among those not exposed to exchange transfusion (54%). Severity is also shown in **(Table xxxiv)**; in which severe forms were prevalent among infants exposed to exchange transfusion.

Table (III-24): Compares between the incidence of ROP and sepsis among the three groups of M.V. – VLBW neonates. Statistically significant differences ($P<0.01$) were present between the percent distribution of ROP and Non-ROP in sepsis/no sepsis. Twenty four (24) cases showed positive ROP changes out of 36 cases exposed to sepsis (67%), while 11 cases showed positive ROP changes out of 24 cases not exposed to sepsis (46%), So ROP was more prevalent among infants exposed to neonatal sepsis (67%), than among those not exposed to neonatal sepsis (46%). Severity is also shown in **(Table xxxv)**; in which severe forms were prevalent among infants exposed to neonatal sepsis.

Table (III-25): Compares between the incidences of ROP and NEC among the three groups of M.V. – VLBW neonates. Statistically significant differences ($P<0.01$) were present between the percent distribution of ROP and Non-ROP in relation to NEC. Five (5) cases showed positive ROP changes out of 6 cases exposed to NEC (83%), while 30 cases showed positive ROP changes out of 54 cases not exposed to NEC (56%), So ROP was more prevalent among infants exposed to NEC (83%), than among those not exposed to NEC (56%). Severity is also shown in **(Table xxxvi)**; in which severe forms were prevalent among infants exposed to NEC.

Table (III-26): Compares between the incidences of ROP and TPN among the three groups of M.V. – VLBW neonates. Statistically significant differences ($P<0.01$) were present between the percent distribution of ROP and Non-ROP in relation to TPN. Twelve (12) cases showed positive ROP changes out of 13 cases exposed to TPN (92%), while 23 cases showed positive ROP changes out of 47 cases not exposed to TPN (49%), So ROP was more prevalent among infants exposed to TPN (92%), than among those not exposed to TPN (49%).

Severity is also shown in **(Table xxxvii)**; in which severe forms were prevalent among infants exposed to TPN.

Table (III-27): Compares between the incidences of ROP and heart failure among the three groups of M.V. – VLBW neonates. Statistically significant differences ($P<0.01$) were present between the percent distribution of ROP and Non-ROP in relation to neonatal heart failure (HF). Twenty four (24) cases showed positive ROP changes out of 25 cases exposed to neonatal HF (96%), while 11 cases showed positive ROP changes out of 35 cases not exposed to neonatal HF (31%), So ROP was more prevalent among infants exposed to neonatal HF (96%), than among those not exposed to neonatal HF (31%). Severity is also shown in **(Table xxxviii)**; in which severe forms were prevalent among infants exposed to neonatal HF.

Table (III-28): Compares between HIE and the incidence of ROP among the three groups of M.V. – VLBW neonates. Statistically significant differences ($P<0.01$) were present between the percent distribution of ROP and Non-ROP in relation to hypoxic ischemic encephalopathy (HIE). Twelve (12) cases showed positive ROP changes out of 14 cases exposed to HIE (86%), while 23 cases showed positive ROP changes out of 46 cases not exposed to HIE (50%), So ROP was more prevalent among infants exposed to HIE (86%), than among those not exposed to HIE (50%). Severity is also shown in **(Table xxxix)**; in which severe forms were prevalent among infants exposed to HIE.

Table (III-29): Demonstrates the course of ROP changes among all studied cases. Progression occurred only in four (4) cases out of thirty five (35) ROP positive cases while spontaneous regression occurred in the remaining 31 cases. Two (2) cases out of these four (4) cases- were treated by Cryotherapy for threshold ROP, one case developed retinal detachment and vitrectomy was done, while the last (one) case had developed retinal detachment and died before doing vitrectomy. This is also shown in **(Chart III-16)**.

Table (III-30): Demonstrates through multiple logistic regression analysis of the significant risk factors for the development of ROP showed that birth weight, gestational age, duration of mechanical ventilation, O_2 index & FiO2 concentration, total oxygen supplementation duration, and blood transfusion were found to be Statistically significant ($P<0.01$). Type of feeding, neonatal sepsis, HF, and exchange transfusion, were found to be significant. So this reflects the fact that ROP occurs principally in a sick preterm, after controlling for the influence of gestational age, birth weight, IPPV, MAP and O_2 index ,Chi square for the difference between full model and reduced model.

Table (III-1a): Comparison of demographic data of studied neonates by type of feeding in studied groups.

Discrete Variables	Group I (n=20)		Group II (n=20)		Group III (n=20)		Total (n=60)		Chi square (p)
	No	%	No	%	No	%	No	%	
Gender (M:F)	7	(35)	5	(25)	7	(35)	19	(32)	0.63*
	13	(65)	15	(75)	13	(65)	41	(68)	
Mode of delivery (CS : NVD)	5	(25)	5	(25)	8	(40)	18	(30)	0.95*
	15	(75)	15	(75)	12	(60)	42	(70)	
Multiple birth (Yes:No)	6	(30)	4	(20)	8	(40)	18	(30)	0.94*
	14	(70)	16	(80)	12	(60)	42	(70)	

Neonatal variables (mean± standered deviation)	Group I	Group II	Group III	Total	P (F test)
Gestational Age (weeks)	31.3±1.12	30.8±0.97	30.6±0.99	30.9±1.04	----*
Birth Weight (grams)	1346±112.8	1304±95.2	1367±96.3	1339±103	----*

* P >0.05

Table (III-1b): Comparison of clinical variables in-between the studied groups.

Discrete Variables	Group I		Group II		Group III		Total		Chi square (*p*)
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	
Sepsis	12	(60)	11	(55)	13	(65)	36	(60)	0.39 NS
Sepsis No	8	(40)	9	(45)	7	(35)	24	(40)	
Heart failure	5	(25)	10	(50)	10	(50)	25	(42)	1.37 NS
Heart failure No	15	(75)	10	(50)	10	(50)	35	(58)	
Convulsions	9	(45)	7	(35)	8	(40)	24	(40)	0.42 NS
Convulsions No	11	(55)	13	(65)	12	(60)	36	(60)	
HIE	3	(15)	4	(20)	7	(35)	14	(23)	1.30 NS
HIE No	17	(85)	16	(80)	13	(65)	46	(77)	
NEC	2	(10)	0		4	(20)	6	(10)	2.22 NS
NEC No	18	(90)	20	(100)	16	(80)	54	(90)	
Blood transfusion	10	(50)	9	(45)	9	(45)	28	(47)	0.27 NS
Blood transfusion No	10	(50)	11	(55)	11	(55)	32	(53)	
Exchange trans	3	(15)	3	(15)	2	(10)	8	(13)	0.59 NS
Exchange trans No	17	(85)	17	(85)	18	(90)	52	(87)	
Barbiturate	10	(50)	9	(45)	9	(45)	28	(47)	0.27 NS
Barbiturate No	10	(50)	11	(55)	11	(55)	32	(53)	
TPN	6	(30)	0		7	(35)	13	(22)	2.56 NS
TPN No	14	(70)	20	(80)	13	(65)	47	(78)	
Lasix	8	(40)	14	(70)	12	(60)	34	(57)	1.36 NS
Lasix No	12	(60)	6	(30)	8	(40)	26	(43)	
Fundus exam inside NICU	6	(30)	4	(20)	8	(40)	17	(28)	1.15 NS
Fundus exam outside NICU	14	(70)	16	(80)	12	(60)	43	(72)	

NS: Non-Significant Chi Square ($p>0.05$) indicating no significant differences between the percent ratios of the three groups.

Table (III-1c): Comparison of mean and SD of neonatal variables related to oxygen therapy among the study groups.

Neonatal variables (mean± standered deviation)	Group I (n=20)	Group II (n=20)	Group III (n=20)	Total (n=60)	P (F test)
IPPVduration (days)	9.15±3.22	4.13±6.47	5.55±4.56	6.28±5.29	<0.0**
FiO_2 <40% duration(days)	n=6 3.00±2.10	n=3 3.33±2.08	n=3 2.00±1.32	n=12 2.83±1.84	NS
FiO_2 <40-70% duration(days)	n=9 3.61±2.06	n=7 5.57±1.48	n=12 4.50±2.62	n=28 4.48±2.26	NS
FiO_2 <40->70% duration(days)	n=5 6.50±5.07	n=10 13.35±6.71	n=5 10.2±6.27	n=20 10.85±6.59	NS
CPAPduration(days)	2.70±2.18	2.10±1.19	3.03±2.80	2.60±2.15	NS
H. box duration	5.15±1.23	5.05±1.64	6.15±2.89	5.45±2.07	NS
TotalO_2duration (days)	12.00±5.12	16.28±8.13	15.53±8.63	14.60±7.57	NS
Highest FiO2 (%)	60.00±18.71	68.75±21.84	64.00±16.27	64.25±19.10	NS
Highest PIP	22.20±2.35	23.10±2.51	22.75±4.12	22.68±3.07	NS
Highest PEEP	4.10±0.60	4.01±0.60	4.07±0.58	4.06±0.58	NS
Highest Rate/min.	41.15±11.73	38.60±11.49	37.35±10.78	39.03±11.26	NS
Highest TI	0.41±0.04	0.41±0.03	0.41±0.03	0.41±0.03	NS
Highest MAP	9.25±1.86	9.16±1.98	9.11±2.73	9.17±2.19	NS
Highest O_2 index	575.3±266.48	660.2±325.19	609.9±319.21	615.2±301.6	NS
HB (gms %)	11.17±1.60	11.32±1.48	11.19±1.53	11.22±1.51	NS

NS = Non-significant F ratio in the analysis of variance, indicating no significant differences among the three groups.

**: Significant Chi Square at 1% probability level ($p<0.01$) indicating the existence of highly significant differences.

The analysis of variance revealed significant F ratio at 1% probability level ($p<0.01$) indicating the existence of highly significant differences between the means of IPPV in the three groups (Group I has significantly more days of M.V. than either Group II or Group III, while Groups II and III do not differ significantly).

Table (III-1d): Comparison of maternal socio-demographic data in-between different study groups.

Discrete Variables	Group I		Group II		Group III		Total		Chi square (*p*)
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	
Mother age ≤ 30years	14	(70)	13	(65)	13	(65)	40	(67)	0.23 NS
Mother age > 30years	6	(30)	7	(35)	7	(35)	20	(33)	
Multi-Parity	10	(50)	13	(65)	12	(60)	35	(58)	0.68 NS
Multi-Parity No	10	(50)	7	(35)	8	(40)	25	(62)	
Mother's work Yes	4	(20)	5	(25)	7	(35)	16	(27)	0.84 NS
Mother's work No	16	(80)	15	(75)	13	(65)	44	(73)	
Consanguity +ve	3	(15)	4	(20)	3	(15)	10	(17)	0.48 NS
Consanguity -ve	17	(85)	16	(80)	17	(85)	50	(83)	
Cardiac mother Yes	1	(5)	0		2	(10)	3	(5)	2.10 NS
Cardiac mother No	19	(95)	20	(100)	18	(90)	57	(95)	
Antipartum hem. Yes	2	(10)	1	(5)	0		3	(5)	2.10 NS
Antipartum hem.No	18	(90)	19	(95)	20	(100)	57	(95)	
Preeclampsia Yes	7	(35)	4	(20)	2	(10)	13	(22)	1.58 NS
Preeclampsia No	13	(65)	16	(80)	18	(90)	47	(88)	
PROM Yes	14	(70)	12	(60)	8	(40)	34	(57)	1.36 NS
PROM No	6	(30)	8	(40)	12	(60)	26	(43)	

NS: Non-Significant Chi Square ($p>0.05$) indicating no significant differences between the percent ratios of the three groups.

Table (III-2a): Overall incidence of ROP.

Overall incidence of ROP.

	No	%
Non ROP	25	42
ROP	35	58
TOTAL	60	100

Chart (III-1):

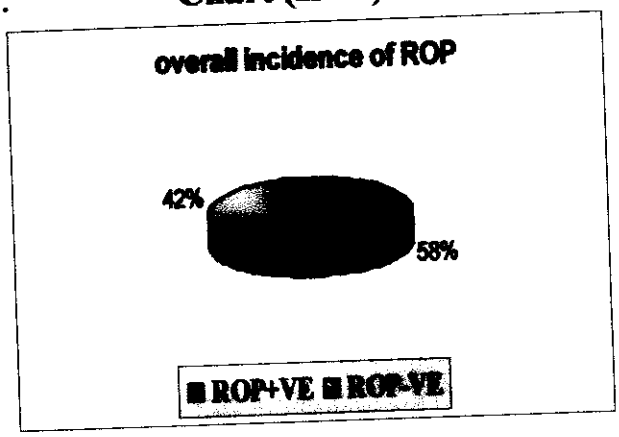

Table (III-2b): Overall severity of ROP changes.

ROP stages	No	%
Stage I	13	37
Stage II	11	31.5
Stage III	8	23
Stage IV	2	5.5
Stage V	1	3

Table (III-2c): Distribution of ROP severity among the total studied cases

ROP severity	No	%
ROP -ve	25	42%
Less than prethreshold	25	42 %
Prethreshold	6	10%
Threshold	4	6%

Chart (III-2): Overall severity of ROP.

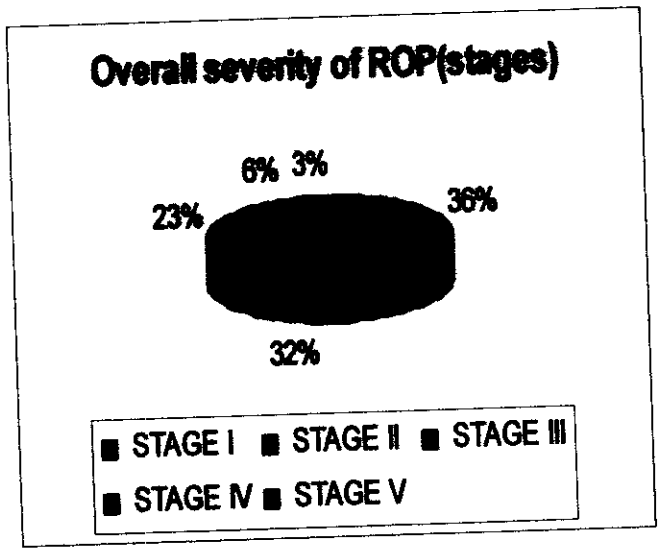

Chart (III-2'): Severity of ROP in all population.

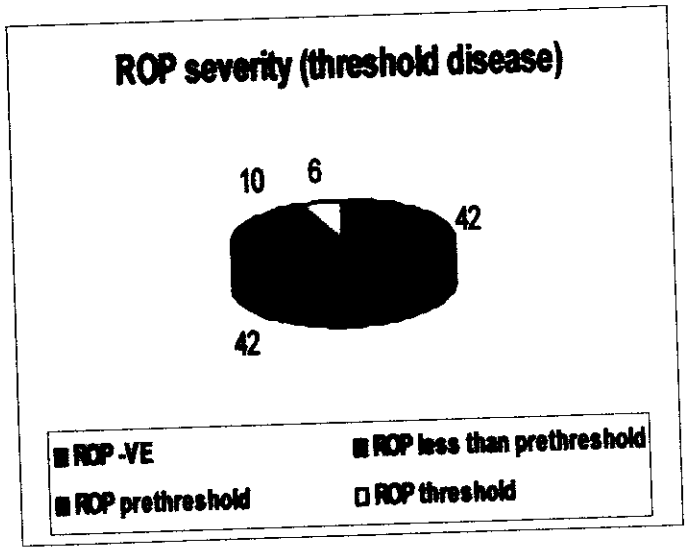

Table (III-2d): Severity of ROP among the different categories of group II according to the amount of human milk supplied.

Human milk supplementation ratio relative to total milk supply	ROP stages				
	Stage I	Stage II	Stage III	Stage IV&V	Total ROP
< 20% (total cases = 4 cases)	0	1 (25%)	2 (50%)	0	3 (75%)
20-79% (total cases= 10 cases)	3 (30%)	3 (30%)	0	0	6 (60%)
80-99% (total cases= 6 cases)	2 (33%)	0	0	0	2 (33%)

Figures in parenthesis are (%) values.

Table (III-3a): Comparison between type of feeding and the incidence of retinopathy of prematurity (ROP) in all M.V.–VLBW neonates.

ROP incidence	Type of feeding						Overall incidence		Chi square
	Group I		Group II		Group III				
	No	(%)	No	(%)	No	(%)	No	(%)	
ROP-VE	11	(55)	9	(45)	5	(25)	25	(42)	χ^2 = 19.1 **
ROP+VE	9	(45)	11	(55)	15	(75)	35	(58)	
Total cases	20	(100)	20	(100)	20	(100)	60	(100)	

**: ($p<0.01$)

Chart (III-3): Incidence of ROP in comparison to type of feeding.

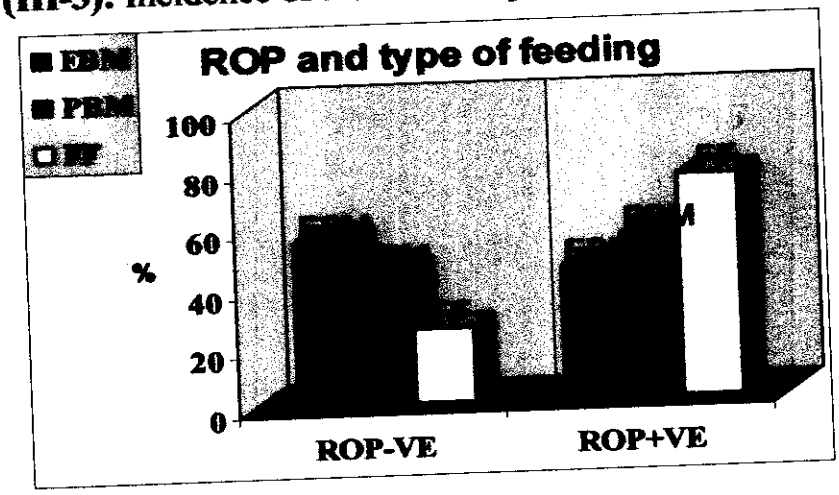

Table (III-3b): Categorization of ROP +ve cases according to the stages of ROP in between the studied groups.

Type of Feeding	ROP Severity									
	Stage I		Stage II		StageIII		Stages IV+V		Total ROP	
	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)
Group I (EBM)	3	(33)	3	(33)	3	(33)	0		9	(100)
Group II (PBM)	5	(45)	4	(36)	2	(18)	0		11	(100)
Group III (FF)	5	(33)	4	(27)	3	(20)	3	(20)	15	(100)
Total cases	13	(37)	11	(31)	8	(23)	3	(9)	35	(100)

Table (III-4a): Overall incidence of Candidemia

Candidemia	C. albicans	C. tropicalis	C. glabrata	Total No	Total %
+ve	7 (76%)	1 (12%)	1 (12%)	9	15
-ve	0	0	0	51	85
TOTAL				60	100

Figures in parenthesis are (%) values.

Chart (III-4): Overall incidence of Candidemia.

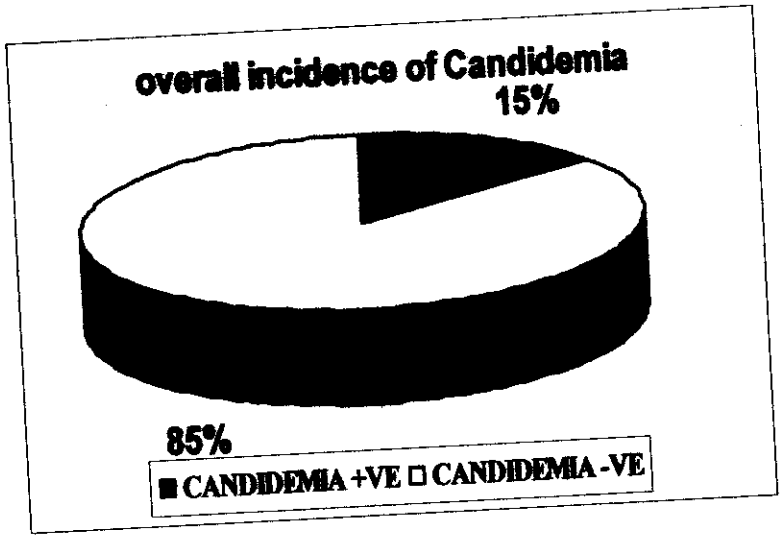

Table (III-4b): Comparison between type of feeding and the incidence of Candidmeia between the studied groups.

Candidemia	Type of feeding						Overall incidence		Chi square
	Group I		Group II		Group III		No	(%)	
	No	(%)	No	(%)	No	(%)			
+VE	3	(15)	1	(5)	5	(25)	9	(15)	χ^2 = 29.1 **
-VE	17	(85)	19	(95)	15	(75)	51	(85)	
Total	20	(100)	20	(100)	20	(100)	60	(100)	

**: ($p<0.01$)

Chart (III-4'): Incidence of Candidemia in comparison with type of feeding.

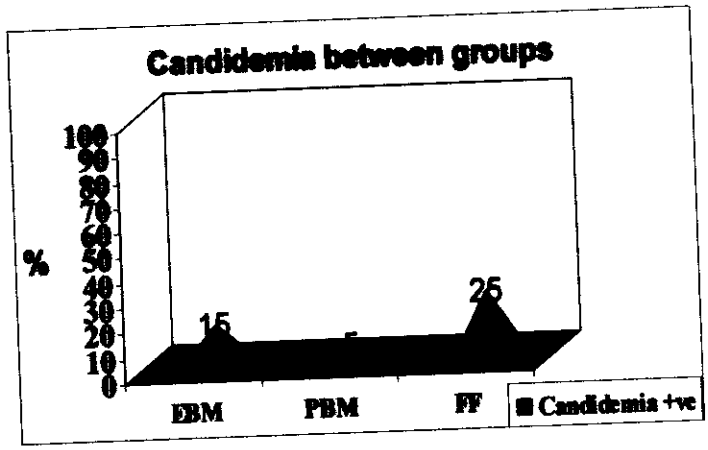

Table (III-5): Comparison between the incidence of Candidemia and birth weight categories among all M.V. – VLBW neonates.

BI culture for Candidemia	Birth Weight			
	≤1250 gm		>1250 gm	
	No	(%)	No	(%)
Candida +ve	7	(41)	2	(5)
Candida –ve	10	(59)	41	(95)
Total	17	(100)	43	(100)
Chi square	χ^2 = 36.6 **			

Chart (III-5):
Incidence of Candidemia in comparison to BW.

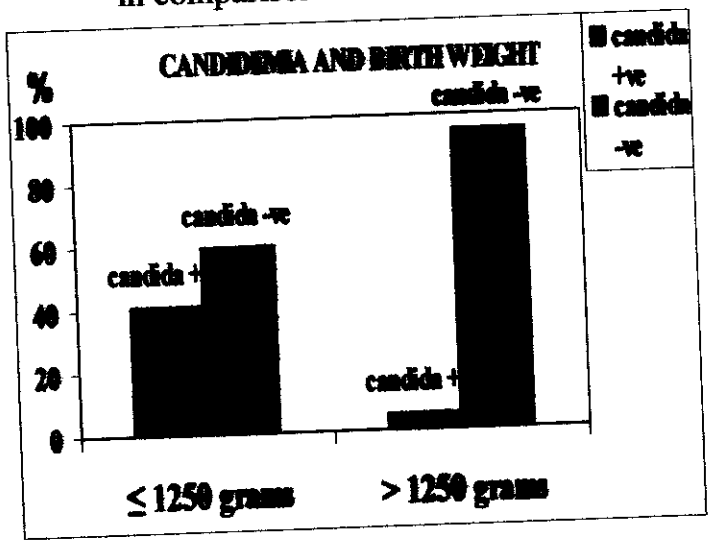

Table (III-6): Comparison between the incidence of Candidemia and Gestational Age categories among all M.V. – VLBW neonates.

BI culture for Candidemia	Gestational Age (weeks)			
	≤30 weeks		>30 weeks	
	No	(%)	No	(%)
Candida +ve	8	(42%)	1	(2 %)
Candida –ve	11	(58%)	40	(98%)
Total	19	(100%)	41	(100%)
Chi square	$\chi^2 = 46.6$ **			

Chart (III-6): Incidence of Candidemia in comparison to GA.

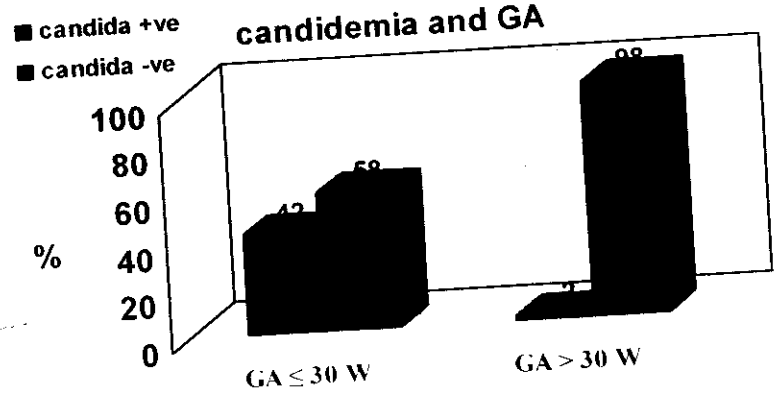

Table (III-7): Comparison between candidemia and exposure to neonatal complications and procedures.

Neonatal complications	+ve complications		-ve complications		Total candida +ve cases
	No	%	No	%	No (100%)
Sepsis	8	(89)	1	(11)	9
H.F.	7	(78)	2	(22)	9
TPN	5	(56)	4	(44)	9
NEC	4	(45)	5	(56)	9
HIE	3	(33)	6	(67)	9
Exchange transfusion	5	(56)	4	(44)	9
Blood transfusion	6	(67)	3	(33)	9
NICU stay > 30 days	9	(100)	0	0	9
Catheter (urinary, umbilical, and CVP)	9	(100)	0	0	9

Figures in parenthesis are (%) values.

Table (III-8): Comparison between Blood culture for Candidemia and the incidence of ROP among the three groups of M.V. – VLBW neonates.

BI Culture	Types of feeding								Grand Total
	GI		GIII		GII		Total		
	ROP-VE	ROP+VE	ROP-VE	ROP+VE	ROP-VE	ROP+VE	ROP-VE	ROP+VE	
No Candidemia	9 (53)	8 (47)	9 (33)	10 (67)	5 (47)	10 (53)	23 (45)	28 (55)	51 (100)
With Candidemia	2 (67)	1 (33)	0	1 (100)	0	5 (100)	2 (22)	7 (78)	9 (100)
Total	11(55)	9(45)	9(45)	11(55)	5(25)	15(75)	25(42)	35(58)	60(100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 13.0 **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Chart (III-7): Incidence of ROP in comparison with Candidemia.

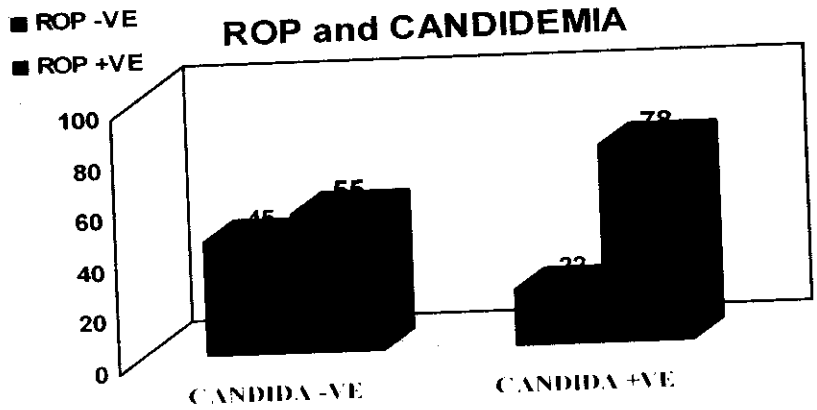

Table (III-9): Comparison between the incidence of ROP and birth weight categories among the three groups of M.V. – VLBW neonates.

Birth weight (grams)	Types of feeding						Total		Grand Total
	GI		GII		GIII				
	Non-ROP	ROP	Non-ROP	ROP	Non-ROP	ROP	Non-ROP	ROP	
≤ 1250	0	5 5	0	5 5	0	7 7	0	17 (100)	17 (100)
> 1250	11	4 15 (27)	9	6 15 (40)	5	8 13 (61)	25 (58)	18 (42)	43 (100)
Total	11(55)	9(45)	9(25)	11(75)	5(45)	15(55)	25(42)	35(58)	60(100)
Chi square of ROP vs. Non-ROP distribution in total cases							$\chi^2 = 81.6$ **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Chart (III-8): Incidence of ROP in comparison to BW.

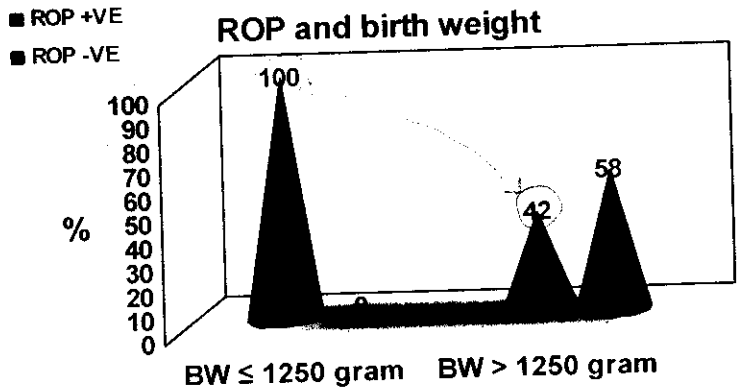

Chart (III-8'): Incidence of ROP in comparison to BW and type of feeding.

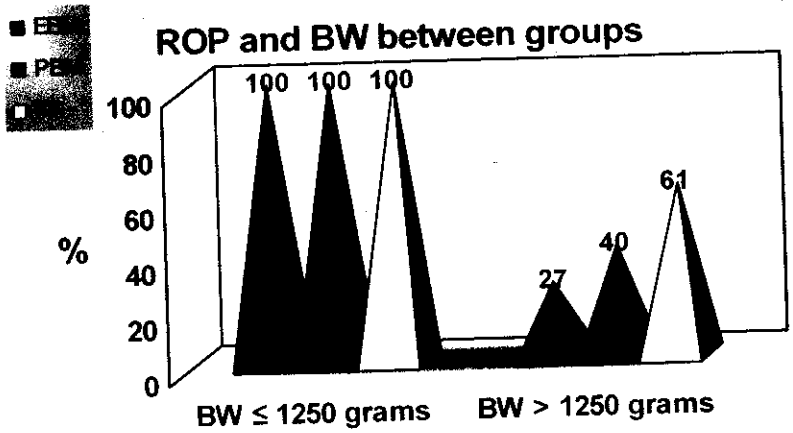

Table (III-10): Comparison between the incidence of ROP and gestational age categories among the three groups of M.V. – VLBW neonates.

GA in weeks	Types of feeding								Grand Total No (%)
	GI		GII		GIII		Total		
	ROP-ve No (%)	ROP+ve No (%)	ROP-ve No (%)	ROP+ve No (%)	ROP-ve No (%)	ROP+ve No (%)	ROP-ve No (%)	ROP+ve No (%)	
≤ 30w	0	3 (15)	2 (10)	6 (32)	0	8 (43)	2 (11)	17 (89)	19 (100)
> 30w	11 (27)	6 (15)	7 (17)	5 (12)	5 (12)	7 (17)	23 (56)	18 (44)	41 (100)
Total	11 (55)	9 (45)	9 (45)	11 (55)	5 (25)	15 (75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							$\chi^2 = 43.6$ **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Chart (III-9): Incidence of ROP in comparison to GA.

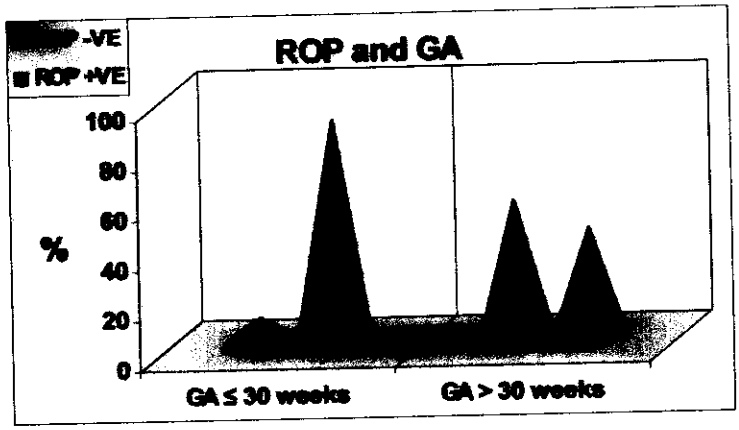

Chart (III-9'): Incidence of ROP in comparison to GA and type of feeding.

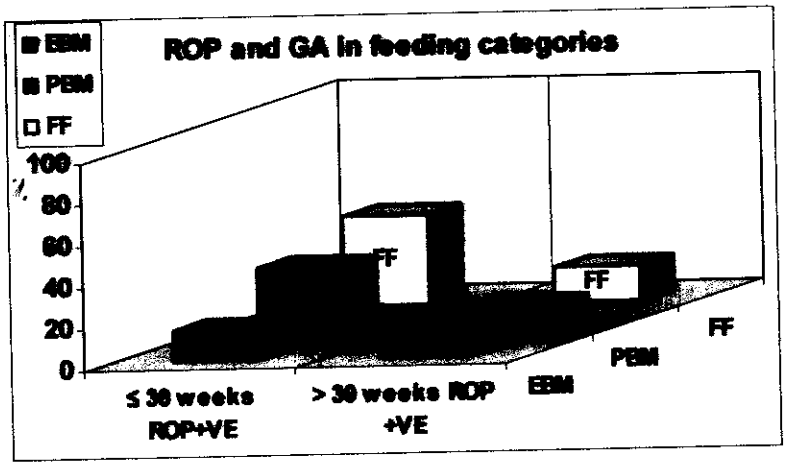

Table (III-11): Comparison between the incidence of ROP and duration of stay inside NICU (Initial Fundus Examination) among the three groups of M.V. – VLBW neonates.

Initial Fundus Examination	Types of feeding												Total				Grand Total	
	G I – ROP				G II - ROP				G III -ROP									
	-ve		+ve		-ve		+ve		-ve		+ve		-ve		+ve			
	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)	No	(%)
Inside NICU (stay >30 days)	0		4	(23)	0		8	(47)	0		5	(30)	0		17	(100)	17	(100)
Outside NICU (stay ≤ 30 days	11	(26)	5	(12)	5	(12)	7	(16)	9	(21)	6	(14)	25	(58)	18	(42)	43	(100)
Total	11	(55)	9	(45)	5	(25)	15	(75)	9	(45)	11	(55)	25	(42)	35	(58)	60	(100)
Chi square of ROP vs. Non-ROP distribution in total cases													$\chi^2 = 81.6$ **					

**: ($p<0.01$)

Table (III-12): Comparison between the incidence of ROP and the mean duration of the mechanical ventilation among the three groups of M.V. – VLBW neonates.

Days to IPPV	Types of feeding						Total ROP		Grand Total
	GI - ROP		GII - ROP		GIII - ROP				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
≤ 4 days	9 (82)	2 (18)	4 (100)	0	5 (50)	5 (50)	18 (72)	7 (28)	25 (100)
> 4 days	2 (22)	7 (78)	5 (31)	11 (69)	0	10 (100)	7 (20)	28 (80)	35 (100)
Total	11 (55)	9 (45)	9 (45)	11 (55)	5 (25)	15 (75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							$\chi^2 = 63.2$ **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Chart (III-10): Incidence of ROP in comparison to NICU stay duration.

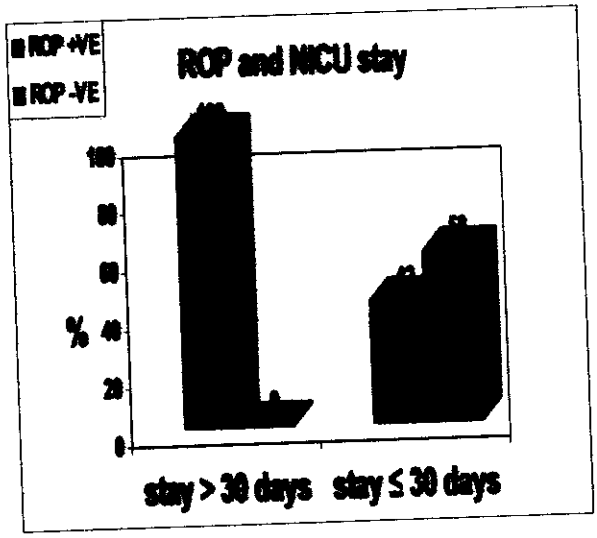

Chart (III-11): Incidence of ROP in comparison to IPPV duration.

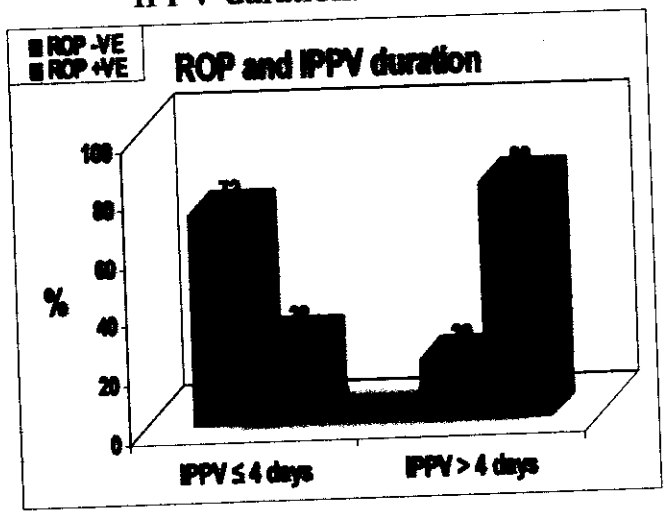

Table (III-13): Comparison between the incidence of ROP and highest FiO_2 used during the period of (IPPV) among the three groups of M.V. – VLBW neonates.

Highest FiO_2 (<40->70)	Types of feeding								Grand Total No (%)
	GI – ROP No (%)		GII – ROP No (%)		GIII – ROP No (%)		Total –ROP No (%)		
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
1st period to O2 ≤ 40%	4 (67)	2 (33)	3 (100)	0	2 (67)	1 (33)	9 (75)	3 (25)	12 (100)
2nd period 41-70%	5 (55)	4 (45)	6 (86)	1 (14)	3 (25)	9 (75)	14 (50)	14 (50)	28 (100)
3st period to O2 > 70%	2 (40)	3 (60)	0	10 (100)	0	5 (100)	2 (10)	18 (90)	20 (100)
Total	11 (55)	9 (45)	9 (45)	11 (55)	5 (25)	15 (75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							$\chi^2 = 86.8$ **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Chart (III-12): Incidence of ROP in comparison to FiO2 concentration.

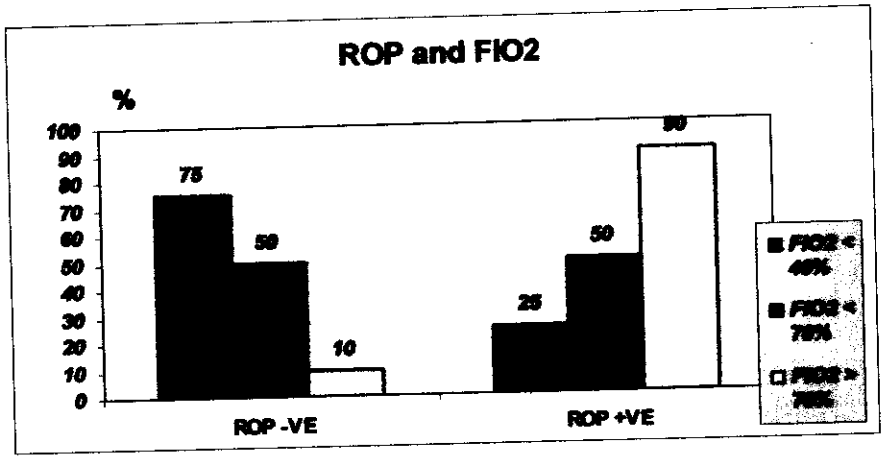

Table (III-14): Relationship between the highest MAP and the incidence of ROP among the three groups of M.V. – VLBW neonates.

MAP	Types of feeding								Grand Total
	GI – ROP No (%)		GII – ROP No (%)		GIII – ROP No (%)		Total – ROP No (%)		
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
≤ 9	6/9	3/9 (33)	7/11	4/11 (36)	4/10	6/10 (60)	17 (57)	13 (43)	30 (100)
> 9	5/11	6/11 (54)	2/9	7/9 (78)	1/10	9/10 (90)	8 (27)	22 (73)	30 (100)
Total	11 (55)	9 (45)	9 (45)	11 (55)	5 (25)	15 (75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 18.4 **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Chart (III-13): Incidence of ROP in comparison to MAP.

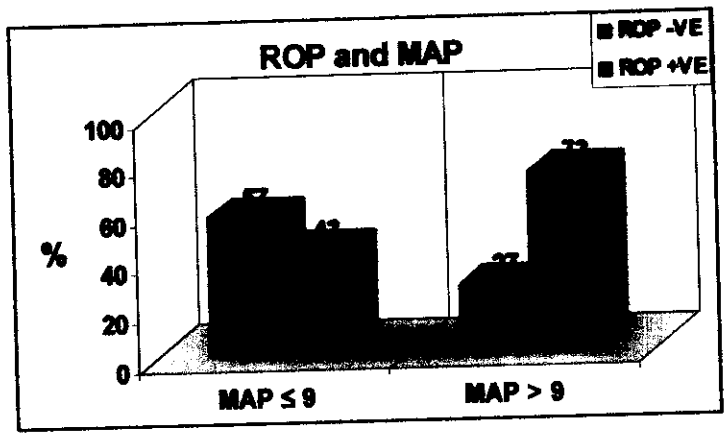

Chart (III-13'): Incidence of ROP in comparison to MAP and type of feeding.

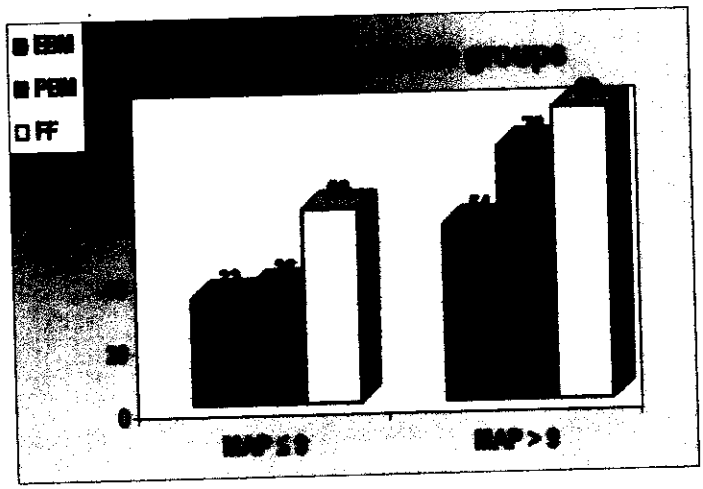

Table (III-15): Comparison between the incidence of ROP and the highest O_2 index among the three groups of M.V. – VLBW neonates.

O_2 index	Types of feeding								Grand Total No (%)
	GI – ROP No (%)		GII – ROP No (%)		GIII – ROP No (%)		Total No (%)		
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
≤ 500	6/11	5/11 (45)	7/8	1/8 (13)	5/10	5/10 (50)	18 (62)	11 (38)	29 (100)
> 500	5/9	4/9 (44)	2/12	10/12 (83)	0	10/10 (100)	7 (23)	24 (77)	31 (100)
Total	11 (55)	9 (45)	9 (45)	11 (55)	5 (25)	15 (75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 18.4 **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Chart (III-14): Incidence of ROP in comparison Oxygen Index.

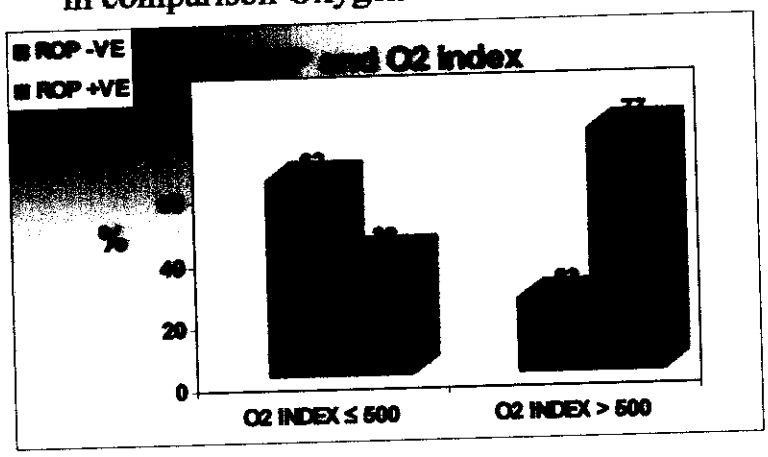

Chart (III-14'): Incidence of ROP in comparison to Oxygen Index and type of feeding.

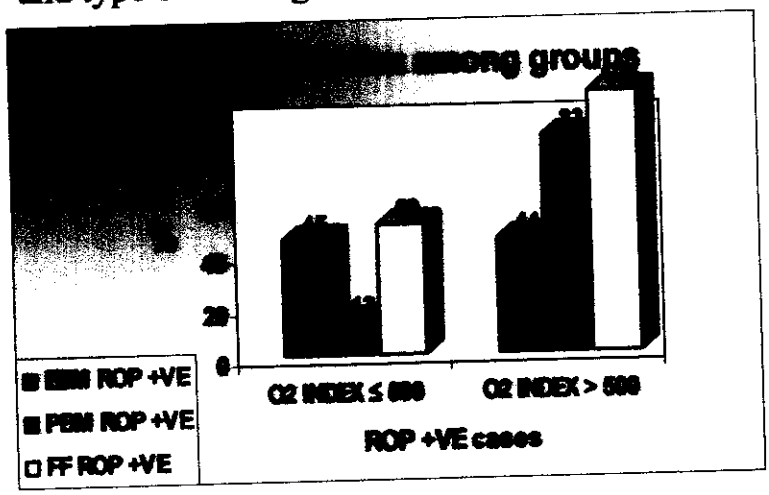

Table (III-16): Comparison between the incidence of ROP and the highest pressure (PIP) among the three groups of M.V. – VLBW neonates.

Highest PIP	Types of feeding						Total		Grand Total
	GI - ROP		GII - ROP		GIII - ROP				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
15 – 20	5	2	4	6	3	1	12 (57)	9 (43)	21 (100)
21 – 25	6	7	1	4	6	7	13 (42)	18 (58)	31 (100)
26 - 30	0	0	0	5	0	3	0 (00)	8 (100)	8 (100)
Total	11 (55)	9 (45)	5 (25)	15 (75)	9 (45)	11 (55)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 78.8 **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Table (III-17): Comparison between the incidence of ROP and PEEP among the three groups of M.V. – VLBW neonates.

PEEP	Types of feeding						Total No (%)		Grand Total No (%)
	GI – ROP No (%)		GII – ROP No (%)		GIII – ROP No (%)				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
≤ 4	5	4	7	6	3	7	15 (47)	17 (53)	32 (100)
> 4	6	5	2	5	2	8	10 (36)	18 (64)	28 (100)
Total	11 (55)	9 (45)	9 (45)	11 (55)	5 (25)	15 (75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 2.0 NS		

NS: Non-Significant Chi Square ($p>0.05$)
Figures in parenthesis are (%) values.

Table (III-18): Comparison between and the incidence of ROP and Ventilator Rate/minute among the three groups of M.V. – VLBW neonates.

Rate /minute	Types of feeding						Total		Grand Total
	GI - ROP		GII – ROP		GIII - ROP				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
≤ 40	7	3	8	4	5	11	20 (53)	18(47)	38 (100)
> 40	4	6	1	7	0	4	5 (23)	17(77)	22 (100)
Total	11(55)	9 (45)	9 (45)	11(55)	5 (25)	15(75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 19.0 **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Table (III-19): Comparison between the incidence of ROP and the duration of CPAP among the three groups of M.V. – VLBW neonates.

Days to CPAP	Types of feeding						Total No (%)		Grand Total No (%)
	GI – ROP No (%)		GII – ROP No (%)		GIII – ROP No (%)				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
≤ 2 days	7/10	3/10	7/14	7/14	4/12	8/12	18 (50)	18 (50)	36 (100)
> 2 days	4/10	6/10	2/6	4/6	1/8	7/8	7 (29)	17 (71)	24 (100)
Total	11 (55)	9 (45)	9 (45)	11 (55)	5 (25)	15 (75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							$\chi^2 = 8.4$ **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Table (III-20): Comparison between the incidence of ROP and the total O_2 supplementation duration among the three groups of M.V. – VLBW neonates.

Total O2 days	Types of feeding						Total No (%)		Grand Total No (%)
	GI – ROP No (%)		GII – ROP No (%)		GIII – ROP No (%)				
	-ve	+ve	-ve	+ve	-ve	+ve	-ve	+ve	
< 15 days	11 (73)	4 (27)	9 (75)	3 (25)	5 (45)	6 (55)	25 (65)	13 (35)	38 (100)
15-28 days	0	5 (100)	0	5 (100)	0	8 (100)	0	18 (100)	18 (100)
> 28 days	0	0	0	3 (100)	0	1 (100)	0	4 (100)	4 (100)
Total	11 (55)	9 (45)	9 (45)	11 (55)	5 (25)	15 (75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							$\chi^2 = 164.1$ **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Chart (III-15): Incidence of ROP in comparison to total O2supplementation duration.

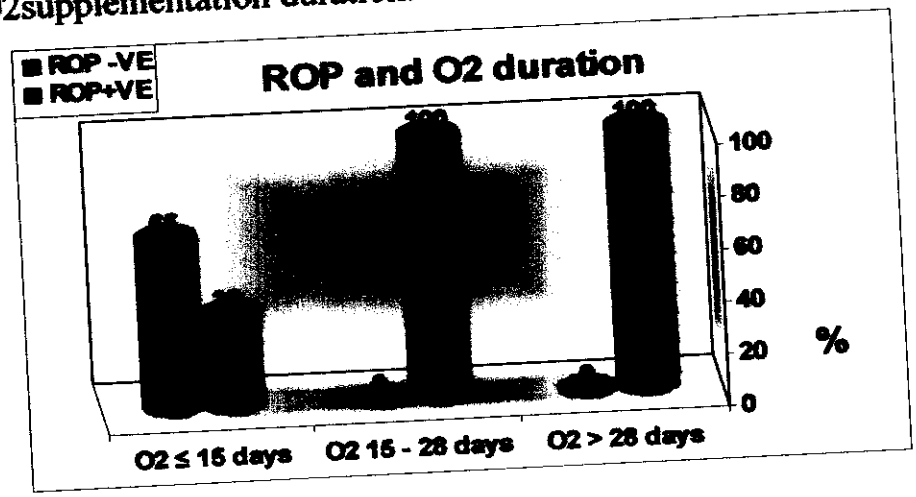

Table (III-21): Comparison between the incidence of ROP and HB values among the three groups of M.V. – VLBW neonates.

HB (gram %)	Types of feeding						Total No (%)		Grand Total No (%)
	GI – ROP No (%)		GII – ROP No (%)		GIII – ROP No (%)				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
< 11	4	6	1	8	1	8	6 (21)	22(79)	28 (100)
> 11	7	3	8	3	4	7	19 (59)	13(41)	32 (100)
Total	11(55)	9 (45)	9 (45)	11(55)	5 (25)	15(75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 30.0 **		

**: (p<0.01) Figures in parenthesis are (%) values.

Table (III-22): Comparison between the incidence of ROP and blood transfusion among the three groups of M.V. – VLBW neonates.

Blood transfu-sion	Types of feeding						Total No (%)		Grand Total No (%)
	GI – ROP No (%)		GII – ROP No (%)		GIII – ROP No (%)				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
Yes	4	6	1	8	1	8	6 (21)	22(79)	28 (100)
No	7	3	8	3	4	7	19 (59)	13(41)	32 (100)
Total	11(55)	9 (45)	9 (45)	11(55)	5 (25)	15(75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 30.0 **		

**: (p<0.01) Figures in parenthesis are (%) values.

Table (III-23): Comparison between the incidences of ROP and Exchange transfusion among the three groups of M.V. – VLBW neonates.

Exchange transfusion	Types of feeding						Total No (%)		Grand Total No (%)
	GI - ROP No (%)		GII - ROP No (%)		GIII - ROP No (%)				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
Yes	1\3	2\3	0	3\3	0	2\2	1 (12)	7 (88)	8 (100)
No	10\17	7\17	9\17	8\17	5\18	13\18	24(46)	28(54)	52 (100)
Total	11(55)	9 (45)	9 (45)	11(55)	5 (25)	15(75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 28.0**		

**: (p<0.01) Figures in parenthesis are (%) values.

Table (III-24): Comparison between the incidence of ROP and sepsis among the three groups of M.V. – VLBW neonates.

Sepsis	Types of feeding						Total No (%)		Grand Total No (%)
	G I - ROP No (%)		G II – ROP No (%)		G III – ROP No (%)				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
Yes	5	7	4	7	3	10	12 (33)	24(67)	36 (100)
No	6	2	5	4	2	5	13 (54)	11(46)	24 (100)
Total	11(55)	9 (45)	9 (45)	11(55)	5 (25)	15(75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 9.8 **		

Figures in parenthesis are (%) values.

Table (III-25): Comparison between the incidences of ROP and NEC among the three groups of M.V. – VLBW neonates.

NEC	Types of feeding						Total No (%)		Grand Total No (%)
	G I - ROP No (%)		G II – ROP No (%)		G III – ROP No (%)				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
Yes	1	1	0	0	0	4	1 (17)	5 (83)	6 (100)
No	10	8	9	11	5	11	24 (44)	30(56)	54 (100)
Total	11(55)	9 (45)	9 (45)	11(55)	5 (25)	15(75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 16.0 **		

Figures in parenthesis are (%) values.

Table (III-26): Comparison between the incidences of ROP and TPN among the three groups of M.V. – VLBW neonates.

TPN	Types of feeding						Total No (%)		Grand Total No (%)
	G I - ROP No (%)		G II – ROP No (%)		G III – ROP No (%)				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
Yes	1	5	0	0	0	7	1(8)	12(92)	13(100)
No	10	4	9	11	5	8	24(51)	23(49)	47(100)
Total	11(55)	9(45)	9(45)	11(55)	5(25)	15(75)	25(42)	35(58)	60(100)
Chi square of ROP vs. Non-ROP distribution in total cases							χ^2 = 46.0 **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Table (III-27): Comparison between the incidences of ROP and heart failure among the three groups of M.V. – VLBW neonates.

HF	Types of feeding						Total No (%)		Grand Total
	G I - ROP No (%)		G II – ROP No (%)		G III – ROP No (%)				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
Yes	0	5	1	9	0	10	1 (4)	24(96)	25 (100)
No	11	4	8	2	5	5	24(69)	11(31)	35 (100)
Total	11(55)	9 (45)	9 (45)	11(55)	5 (25)	15(75)	25 (42)	35 (58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							$\chi^2 = 88.8$ **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Table (III-28): Comparison between HIE and the incidence of ROP among the three groups of M.V. – VLBW neonates.

HIE	Types of feeding						Total No (%)		Grand Total No (%)
	G I - ROP No (%)		G II – ROP No (%)		G III – ROP No (%)				
	-VE	+VE	-VE	+VE	-VE	+VE	-VE	+VE	
Yes	0	3	1	3	1	6	2 (14)	12(86)	14 (100)
No	11	6	8	8	4	9	23(50)	23(50)	46 (100)
Total	11(55)	9 (45)	9 (45)	11(55)	5 (25)	15(75)	25 (42)	35(58)	60 (100)
Chi square of ROP vs. Non-ROP distribution in total cases							$\chi^2 = 29.6$ **		

**: ($p<0.01$) Figures in parenthesis are (%) values.

Table (III-29): Course of ROP changes among all studied cases

	No	%
Progressive	4	11%
Regressive	31	89%
Total	35	100%

Chart (III-16): Course of ROP in all population.

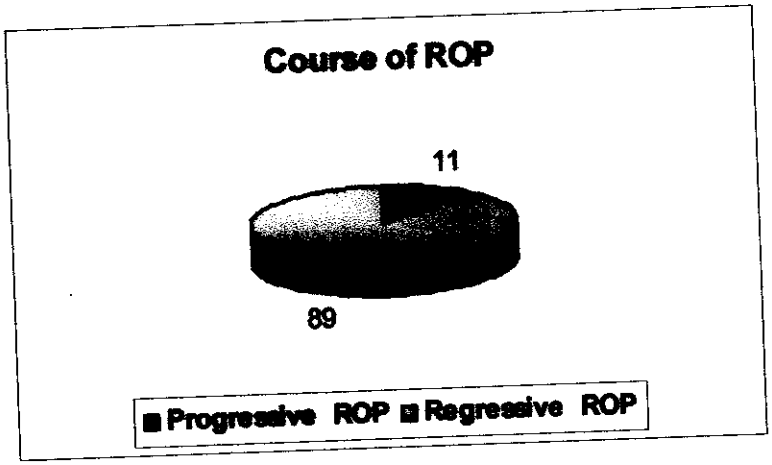

Table (III-30): Multiple logistic regression analysis to evaluate ROP (Stage 3 or more) for the total sample of 60.

Neonatal Factors	Regression coefficient	Standard Error	Odds ratio	95%Confidence Interval	*p* value	*significance*
Gestational Age	0.65	0.94	1.91	0.30-11.98	0.49	Highly significant
Birth Weight	-0.01	0.01	0.99	0.96-1.02	0.63	Highly significant
IPPV duration	-0.45	0.38	0.64	0.31-1.34	0.24	significant
Total O^2 duration	0.31	0.29	1.37	0.77-2.43	0.28	significant
Highest FiO^2	-0.19	0.23	0.83	0.53-1.30	0.41	Highly significant
MAP	-2.14	1.70	0.12	0.01-3.31	0.21	significant
O^2 INDEX	0.03	0.02	1.03	0.98-1.08	0.25	significant
HB & blood transfusion	0.27	0.71	1.31	0.33-5.27	0.70	Highly significant

Table (III-31): Univariate analysis between different neonatal factors and ROP incidence and severity in M.V – VLBW neonates.

Neonatal Factors		Total Cases No	(%)	Non-ROP No	(%)	ROP No	(%)	Chi square of ROP vs. Non-ROP percent distribution
Sex	M	41	(100)	13	(32)	28	(68)	$\chi^2 = 18.0$ **
	F	19	(100)	12	(63)	7	(37)	
Lasix	Y	34	(100)	5	(15)	29	(85)	$\chi^2 = 77.2$ **
	N	26	(100)	20	(77)	6	(23)	
TI	≤0.4	44	(100)	21	(48)	23	(52)	$\chi^2 = 12.4$ **
	>0.4	16	(100)	4	(25)	12	(75)	
Convulsions	Y	24	(100)	8	(33)	16	(67)	$\chi^2 = 4.0$ *
	N	36	(100)	17	(47)	19	(53)	
Barbiturate	Y	28	(100)	9	(32)	19	(68)	$\chi^2 = 6.68$ **
	N	32	(100)	16	(50)	16	(50)	
Xanthin	Y	13	(100)	7	(54)	6	(46)	$\chi^2 = 5.2$ *
	N	47	(100)	18	(38)	29	(62)	

**: ($p<0.01$)

Table (III-32): Univariate analysis between different maternal factors and ROP incidence and severity in M.V – VLBW neonates.

Maternal Factors		Total Cases No	(%)	Non-ROP No	(%)	ROP No	(%)	Chi square of ROP vs. Non-ROP percent distribution
Mother Age	≤ 27	36	(100)	12	(33)	24	(67)	χ^2 = 9.8 **
	> 27	24	(100)	13	(54)	11	(46)	
Consanguity	Y	10	(100)	3	(30)	7	(70)	χ^2 = 4.2 *
	N	50	(100)	22	(44)	28	(56)	
Mode of Delivery	C.S.	18	(100)	7	(39)	11	(61)	χ^2 = 0.4 NS
	NVD	42	(100)	18	(43)	24	(57)	
Multiple Birth	Y	18	(100)	7	(39)	11	(61)	χ^2 = 0.4 NS
	N	42	(100)	18	(43)	24	(57)	
Parity	Y	35	(100)	9	(26)	26	(74)	χ^2 = 29.0 **
	N	25	(100)	16	(64)	9	(36)	
Hemorrhage	Y	3	(100)	0	(00)	3	(100)	χ^2 = 56.4 **
	N	57	(100)	25	(44)	32	(56)	
Cardiac Mother	Y	3	(100)	2	(67)	1	(33)	χ^2 = 13.6 **
	N	57	(100)	23	(40)	34	(60)	
Pre Eclampsia	Y	13	(100)	4	(31)	9	(69)	χ^2 = 4.0 *
	N	47	(100)	21	(45)	26	(55)	
PROM	Y	34	(100)	10	(29)	24	(71)	χ^2 = 18.2 **
	N	26	(100)	15	(58)	11	(42)	

**: ($p<0.01$)

Table (III-33a): Mortality rate with Candidemia but without completing ROP screening.

Total study population before exclusion = 120 cases			
Total 108 cases undergo blood culture			
+ve blood culture		-ve blood culture	
No	(%)	No	(%)
15	(14%)	93	(86%)
Mortality		Mortality	
(died)	(not)	(died)	(not)
7 (54%)	6 (46%)	44 (47%)	51 (53%)

Table (III-33b): Mortality rate with Candidemia with completing ROP screening.

Total cases completing fundus examination and undergo blood culture for Candida = 60			
+VE blood culture for Candida		-VE bloodculture for Candida	
No	(%)	No	(%)
9	(15%)	51	(85%)
Mortality		Mortality	
(died)	(not)	(died)	(not)
1(15%)	8(85%)	0	51(100%)

Table (III-33c): Candida incidence in excluded cases.

Cases undergo blood culture for Candida but did not complete follow-up fundus examination = 48			
+ve blood culture		-ve blood culture	
No	(%)	No	(%)
6	(13%)	42	(87%)

Figure (III-1): Three dimensional correlation among infants in group I with significant (r2) = 0.81, which shows that there was a highly significant correlation between birth weight, gestational age, and ROP changes.

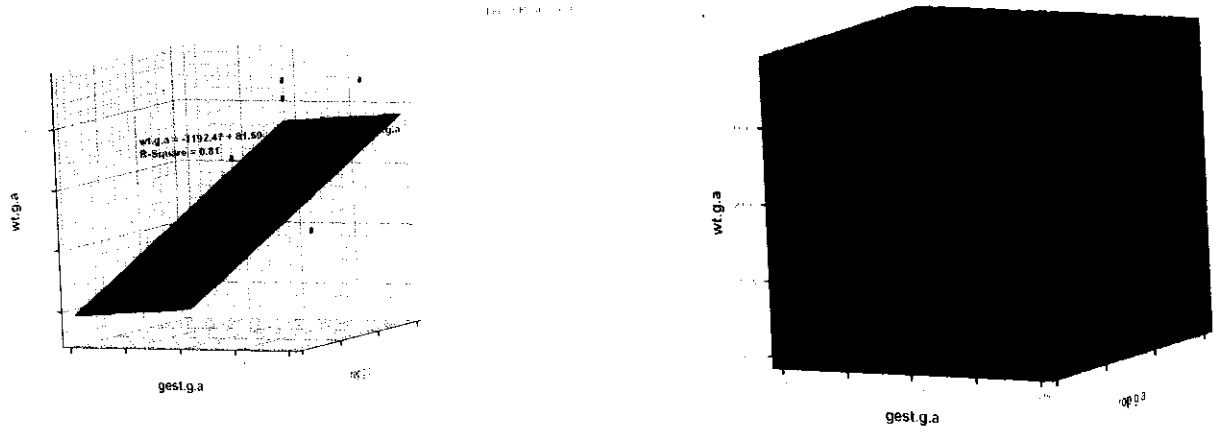

Figure (III-2): Three dimensional correlations among infants in group I with less significant (r2) = 0.04, which shows that there was a less significant correlation between birth weight, IPPV, and ROP changes.

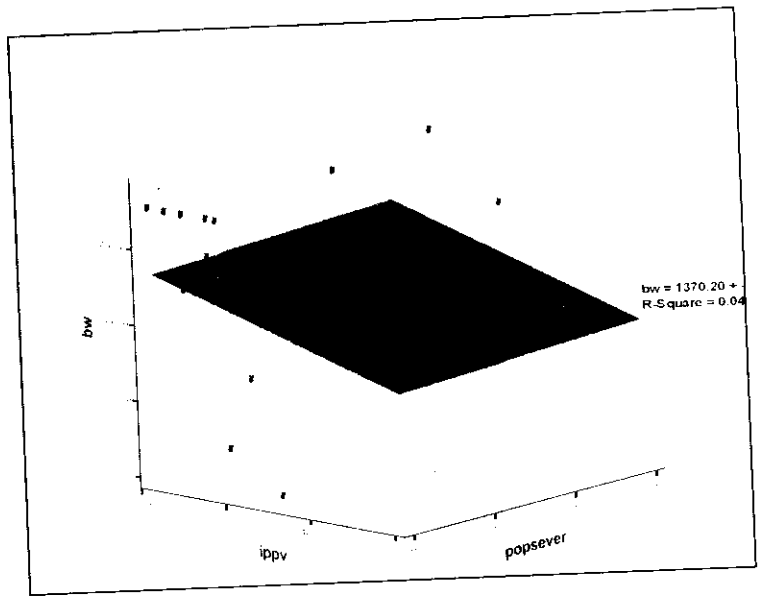

Figure (III-3): Three dimensional correlations among infants in group I with a slightly significant (r2) = 0.05, which shows that there was a significant correlation between birth weight, MAP, and ROP changes.

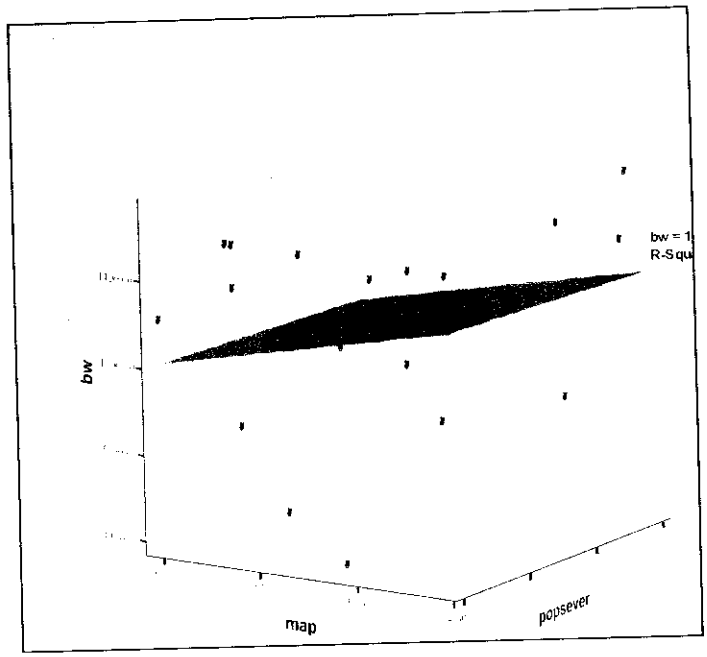

Figure (III-4): Three dimensional correlations among infants in group I with a significant (r2) = 0.15, which shows that there was a significant correlation between birth weight, O2 index, and ROP changes.

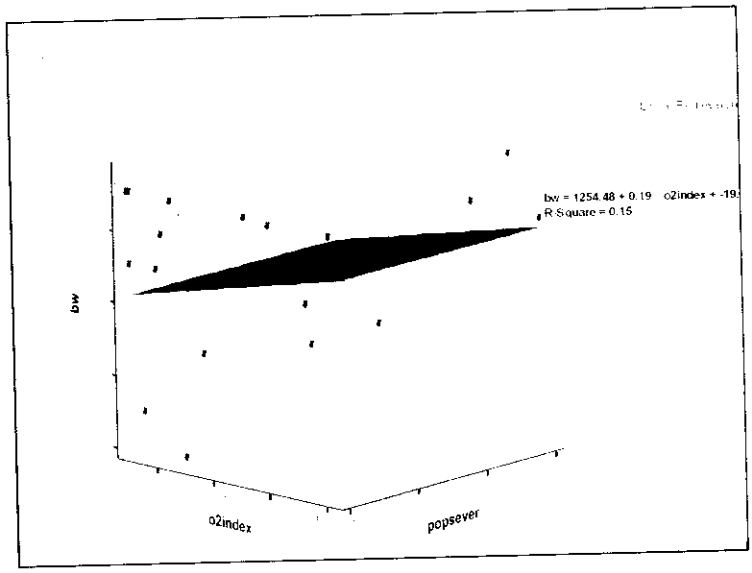

Figure (III-5): Three dimensional correlations among infants in group II with a significant (r2) = 0.80, which shows that there was a very highly significant negative correlation between birth weight, gestational age, and ROP changes.

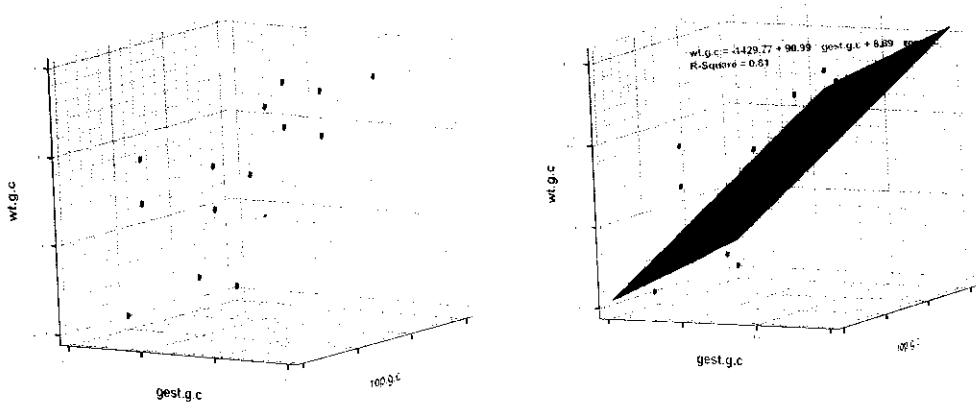

Figure (III-6): Three dimensional correlations among infants in group II with a significant (r2) = 0.11, which shows that there was a significant negative correlation between birth weight, IPPV duration, and ROP changes.

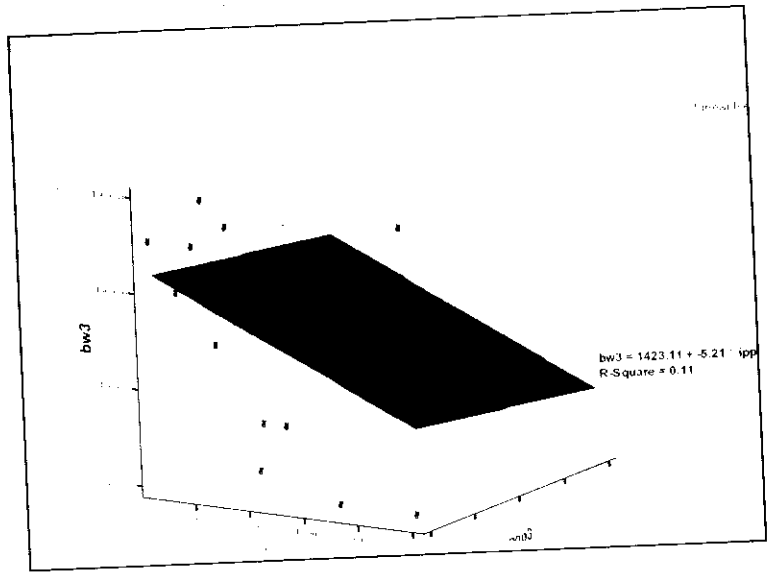

Figure (III-7): Three dimensional correlations among infants in group II with a significant (r2) = 0.01, which shows that there was a slightly significant negative correlation between birth weight, MAP, and ROP changes.

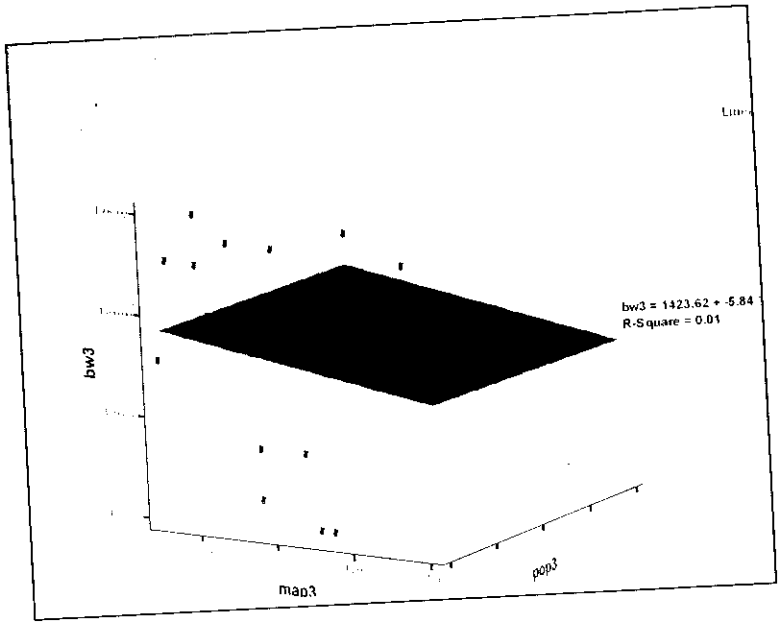

Figure (III-8): Three dimensional correlations among infants in group II with a significant (r2) = 0.08, which shows that there was a significant negative correlation between birth weight, O2 index, and ROP changes.

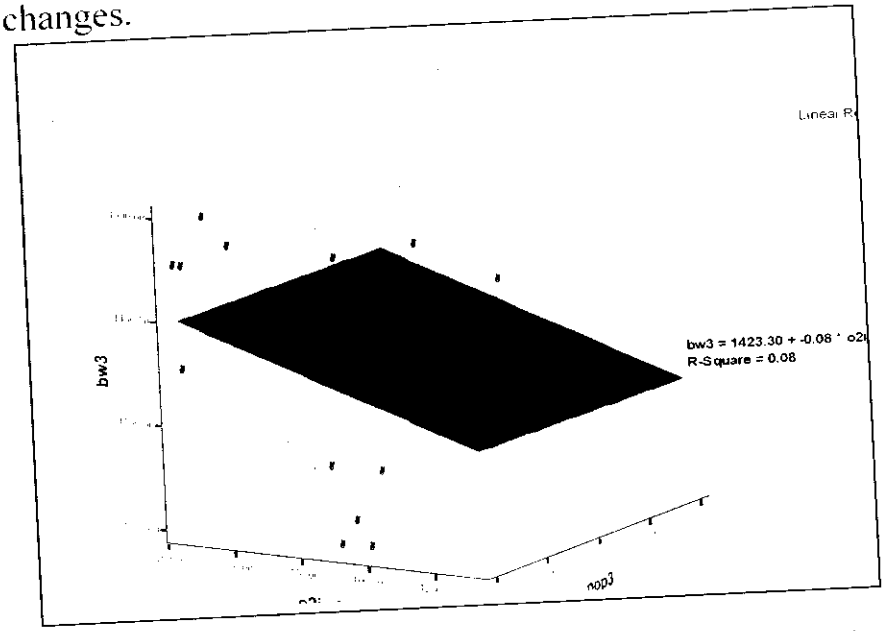

Figure (III-9): Three dimensional correlations among infants in group III with a significant (r2) = 0.84, which shows that there was a highly significant correlation between birth weight, gestational age, and ROP changes.

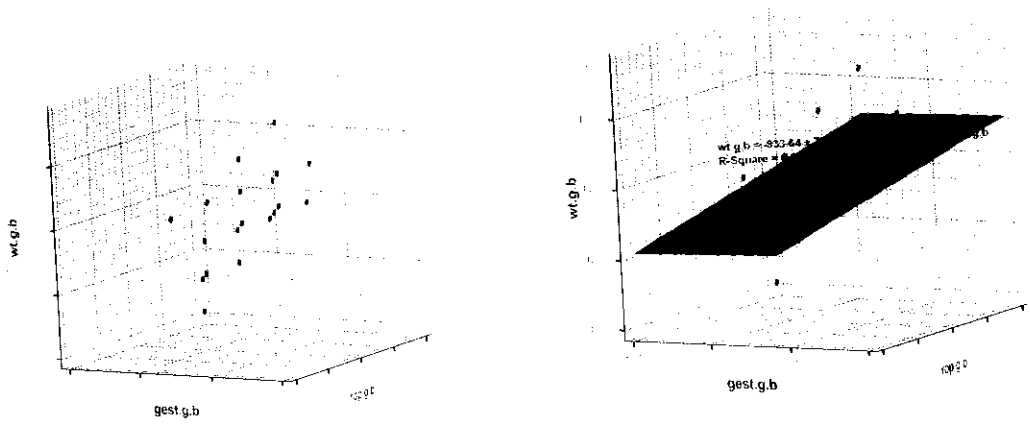

Figure (III-10): Three dimensional correlations among infants in group III with a significant (r2) = 0.61, which shows that there was a very highly significant negative correlation between birth weight, IPPV duration, and ROP changes.

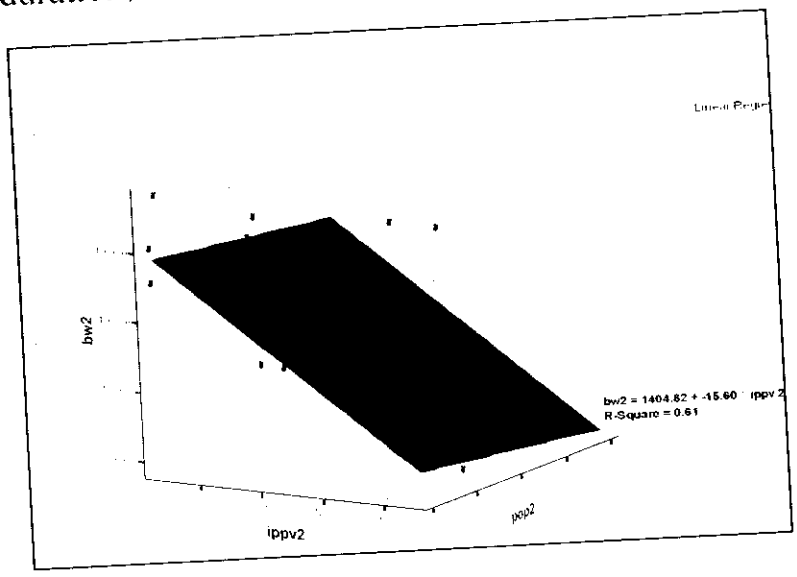

Figure (III-11): Three dimensional correlations among infants in group III with a significant (r2) = 0.28, which shows that there was a very highly significant negative correlation between birth weight, MAP, and ROP changes.

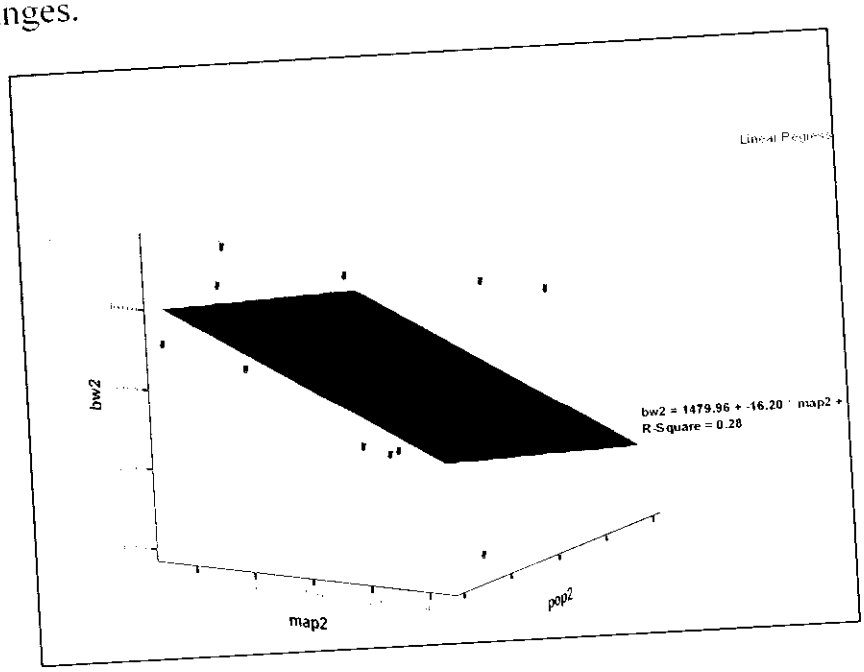

Figure (III-12): Three dimensional correlations among infants in group III with a significant (r2) = 0.33, which shows that there was a very highly significant negative correlation between birth weight, O2 index, and ROP changes.

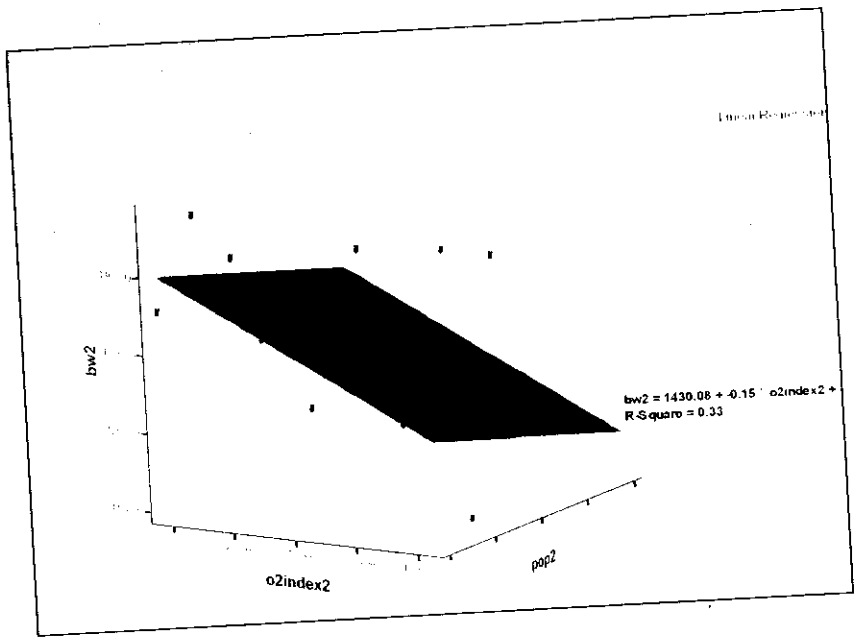

Figure (III-13): Three dimensional correlations among all studied infants with a significant (r2) = 0.72, which shows that there was a highly significant negative correlation between birth weight, gestational age, and ROP changes.

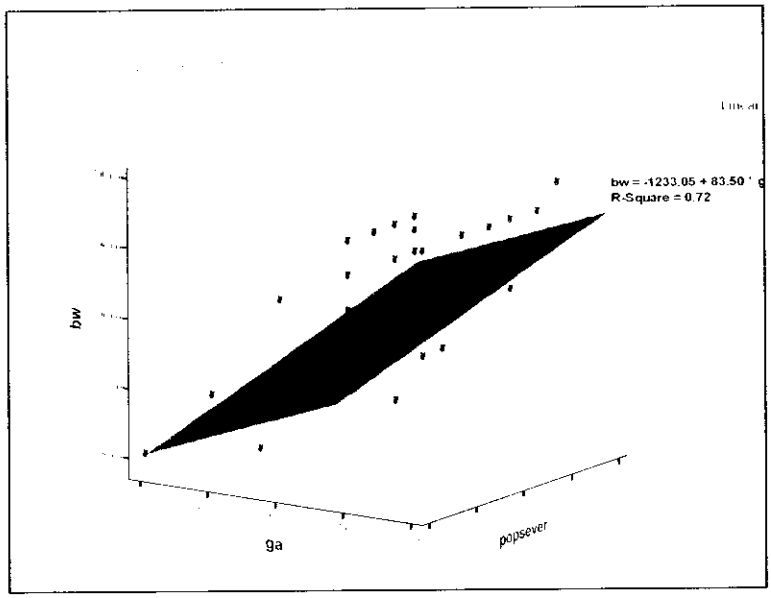

Figure (III-14): Three dimensional correlations among all studied infants with a significant (r2) = 0.11, which shows that there was a significant negative correlation between birth weight, IPPV, and ROP changes.

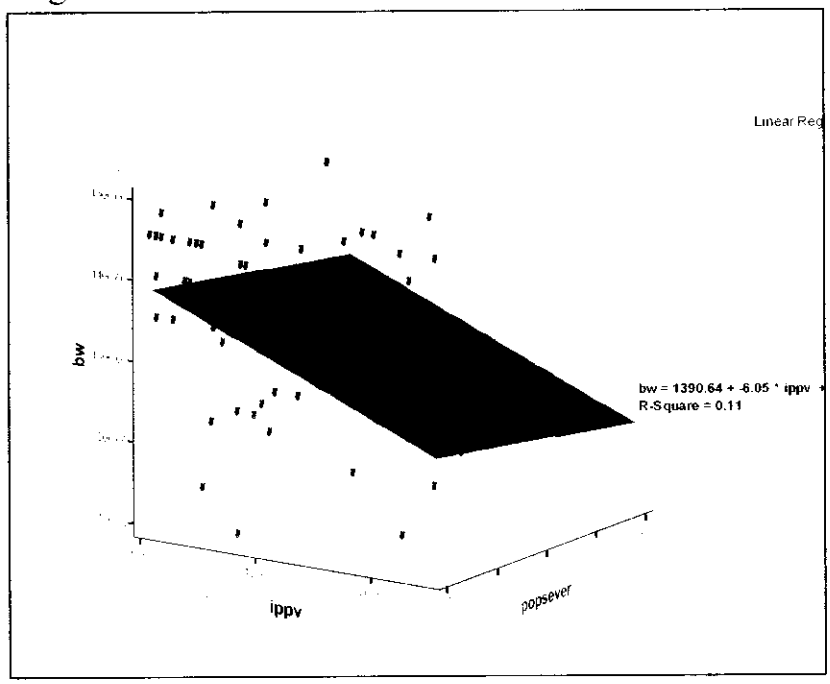

Figure (III-15): Three dimensional correlations among all studied infants with a significant (r2) = 0.03, which shows that there was a less significant negative correlation between birth weight, MAP, and ROP changes.

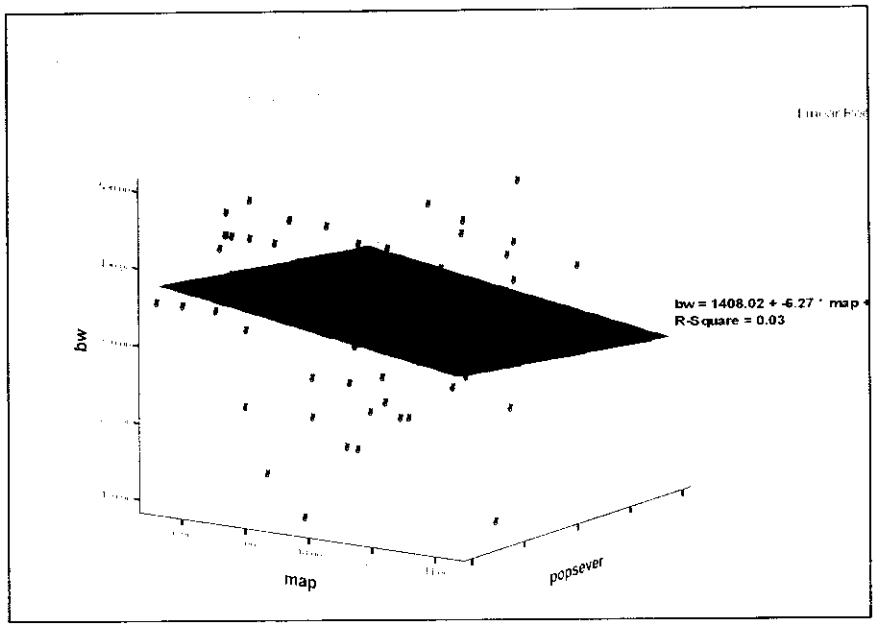

Figure (III-16): Three dimensional correlations among all studied infants with a significant (r2) = 0.03, which shows that there was a less significant negative correlation between birth weight, O2 index, and ROP changes.