Table (1): Comparison *between Group I and Group III according to Birth weight.*

Studied groups Birth weight	Group I* (n= 150)	Group II** (n= 150)	Total (n=300)
Minimum	1150	1150	1150
Maximum	3150	5050	5050
Mean ± SD	2411 ±889.2	2454.3 ±856.3	2432.7 ±871.7
t	0.4		
p	>0.05		

* Group I: before application of infection control program
** Group II *: after* application of infection control program

This table shows that, the difference in the mean birth weight between the two groups is of no statistical significance
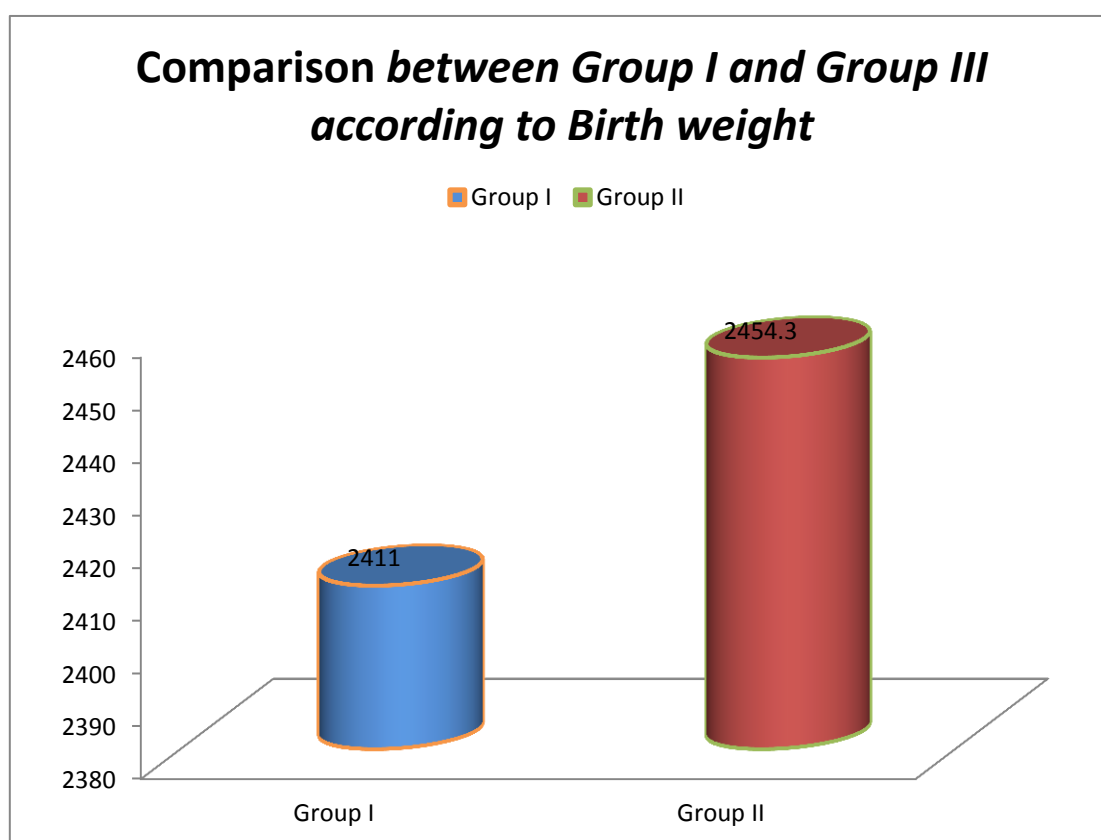

Comparison *between Group I and Group III according to Birth weight*

Group I Group II

Table (2): Comparison *between Group I and Group II according to Gestational age*:

Studied groups / Gestational age	Group I* (n= 150)	Group II** (n= 150)	Total (n=300)
Mean	36.2	36.9	36.5
Minimum	28	29	28
Maximum ±S D	40 ±3.9	40±3.1	40±3.5
t	1.7		
p	>0.05		

* Group I: before application of infection control program
** Group II *: after* application of infection control program

This table shows that, the difference in the mean *Gestational age* between the two groups is of no statistical significance
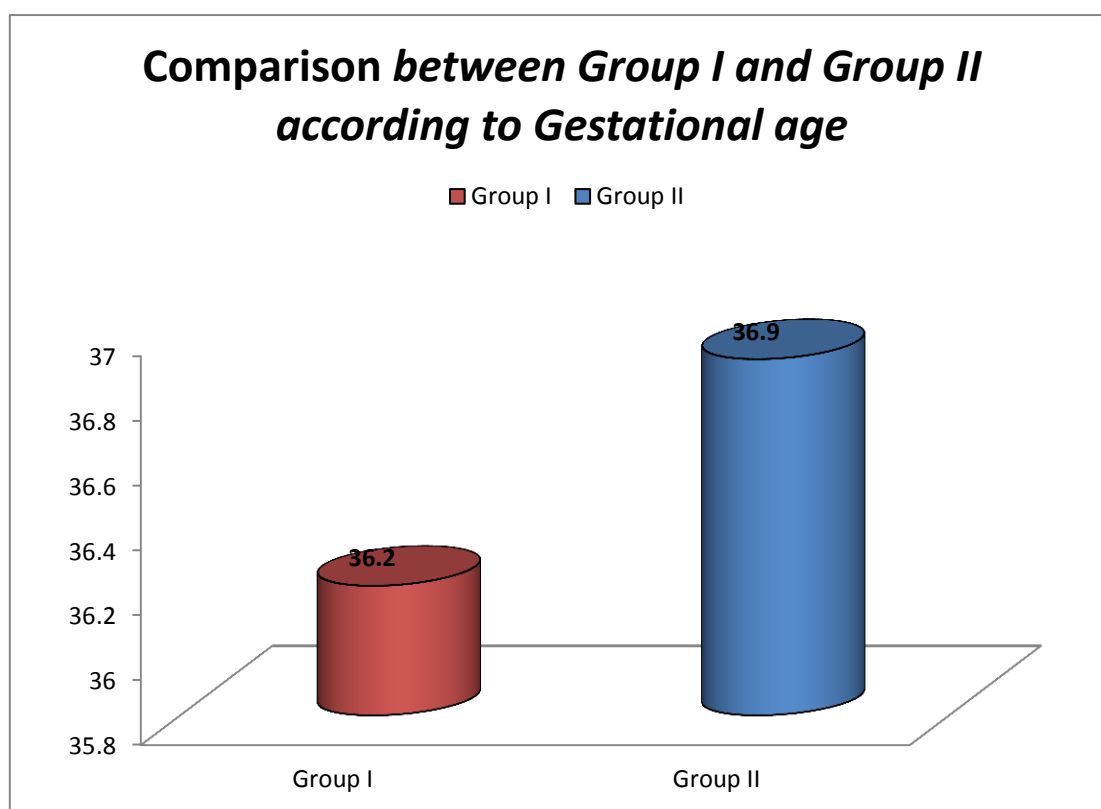

Comparison *between Group I and Group II according to Gestational age*

Table (3): Comparison between Group I and Group II according to Sex

Studied groups Sex	Group I* (n= 150)		Group II** (n= 150)		Total (n=300)	
	No.	%	No.	%	No.	%
Male	75	50%	90	60%	165	55%
female	75	50%	60	40%	135	45%
Total	150	100%	150	100%	300	100%

* Group I: before application of infection control program
** Group II *: after* application of infection control program

$$X^{2=}\ 2.6$$

$$p>0.05$$

This table shows that, male: female ratio is equal in group I (before application of infection control program), while the group II (after application of infection control program) shows male predominance, male: female ratio is 60% to 40%, the difference between the two groups is of no statistical significance
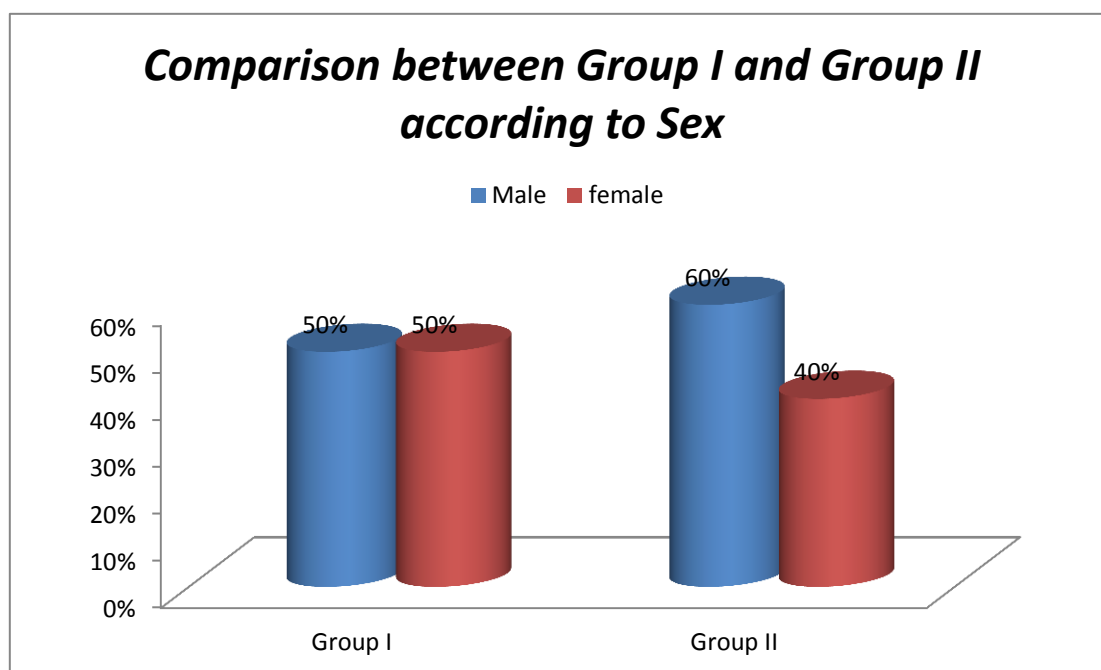
Table (4): Comparison between Group I and Group II according to Mother Education

Studied groups	Group I* (n= 150)		Group II** (n= 150)		Total (n=300)	
Mother Education	No.	%	No.	%	No.	%
Not educated	95	63.3%	90	60%	185	61.7%
educated	55	36.7%	60	40%	115	38.3%
Total	150	100%	150	100%	300	100%

* Group I: before application of infection control program
** Group II *: after* application of infection control program

$$X^{2=}\,0.2$$

$$p>0.05$$

This table shows that, the difference of the percentage of newborn belonging to educated mothers as well as non educated mothers in the two groups is of no statistical significance
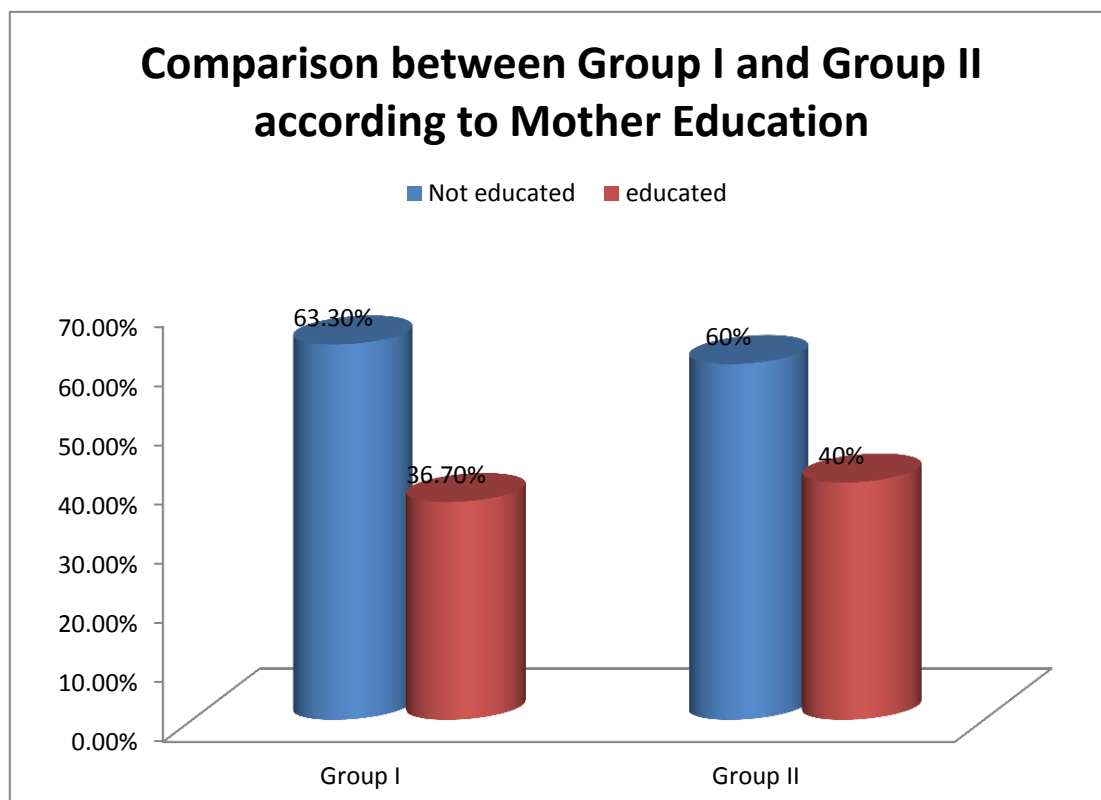

Comparison between Group I and Group II according to Mother Education

Table (5): comparison between Group I and Group II according to mode of delivery

Studied groups Mode of delivery	Group I* (n= 150)		Group II** (n= 150)		Total (n=300)	
	No.	%	No.	%	No.	%
NVD	110	73.3%	95	63.3%	220	73.3%
CS	40	26.7%	55	36.7%	80	26.7%
Total	150	100%	150	100%	300	100%

* Group I: before application of infection control program
** Group II *: after* application of infection control program

$$X^{2=}\ 3.02$$

$$p>0.05$$

This table shows that, the percentage of newborn delivered by NVD (normal vaginal delivery) and CS (caesarian section) in the group I is estimated to be 73.3% and 26.7% respectively. While percentage of the NVD and CS in the group II is estimated to be 63.3% and 36.7% respectively. These differences are of no statistical significance
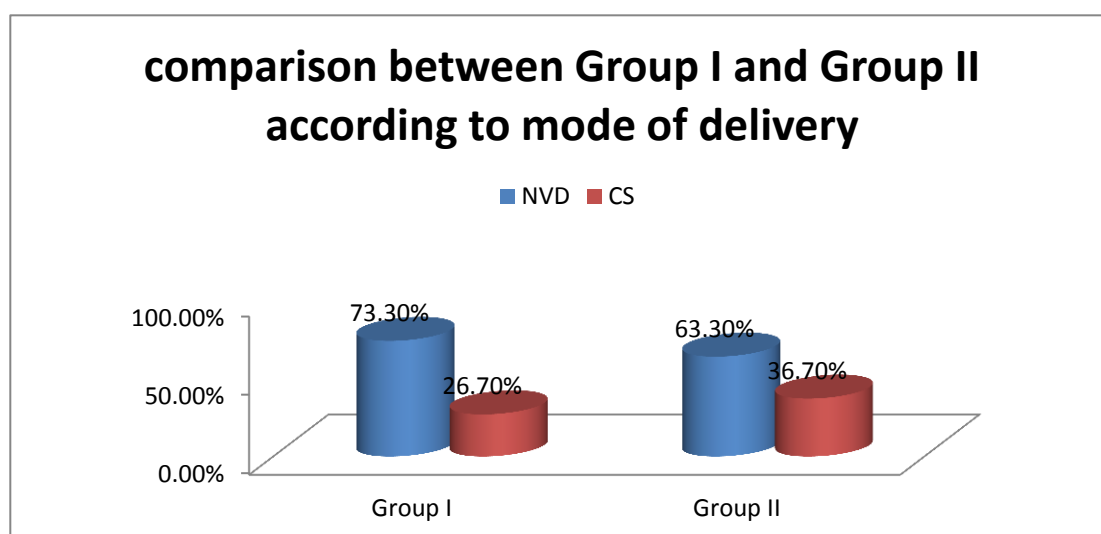

comparison between Group I and Group II according to mode of delivery

Table (6): Distribution of the studied neonates before application of infection control program as regards the presence of nosocomial infection

Studied gp. Presence of infection	Number	percent
Community Infection cases	40	26.7%
Nosocomial infection cases	50	33.3%
Free	60	40%
Total	150	100%

This table shows that, the percentage of infection in the studied group is 60%; nosocomial infection is diagnosed in 33.3 % of the studied neonates before application of infection control program. While, community acquired type is detected in 26.7% of cases

Distribution of the studied neonates before application of infection control program as regards the presence of nosocomial infection
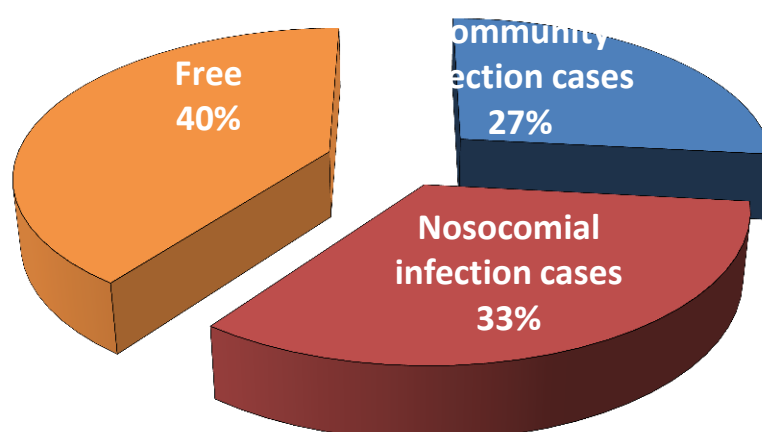
Table (7): Distribution of the studied neonates after application of infection control program as regard the presence of infection:

Studied gp. / Presence of infection	Number	percent
Community Infection cases	35	23.3%
Nosocomial infection cases	15	10%
Free	100	66.7%
Total	150	100%

This table shows that, the overall percentage of infectivity is 33.3%. Nosocomial infection is diagnosed in 10 % of the studied neonates after application of infection control program. While community acquired type is detected in 23.3% of cases.
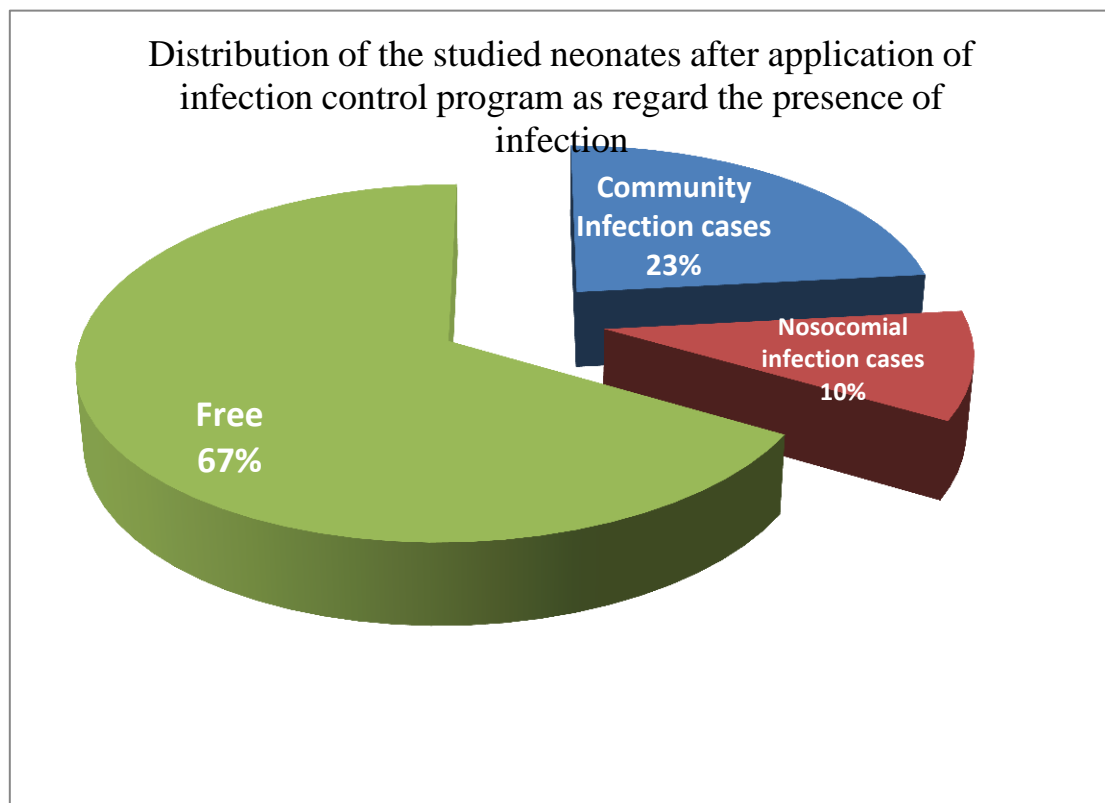

Distribution of the studied neonates after application of infection control program as regard the presence of infection

Community Infection cases 23%

Nosocomial infection cases 10%

Free 67%

Table (8): Comparison between Nosocomial infection rates before and after the application of infection control program.

Frequency / Group	No.	%
Group I (n=150)	50	33.3%
Group II (n=150)	15	10%
z	4.9	
p	<0.001	

This table shows that, the difference in the percentage of detection of nosocomial infection in group I (*before application of infection control program*) (33.3%)and in group II (*after application of infection control program*) (10%) is of statistical significance

Table (9): Distribution of neonate before application of infection control program according to prognosis.

Infection \\ Mortality	Nosocomial		Community		Free		Total	
	No.	%	No.	%	No.	%	No.	%
Lived	25	50%	30	75%	55	91.6%	110	73.3%
Died	25	50%	10	25%	5	8.4%	40	26.7%
Total	50	100%	40	100%	60	100%	150	100%

* Group I: before application of infection control program
** *Group II* : after *application of infection control program*

This table shows that, the highest percentage of deaths is encountered among neoborn diagnosed as having nosocomial infection (50%)
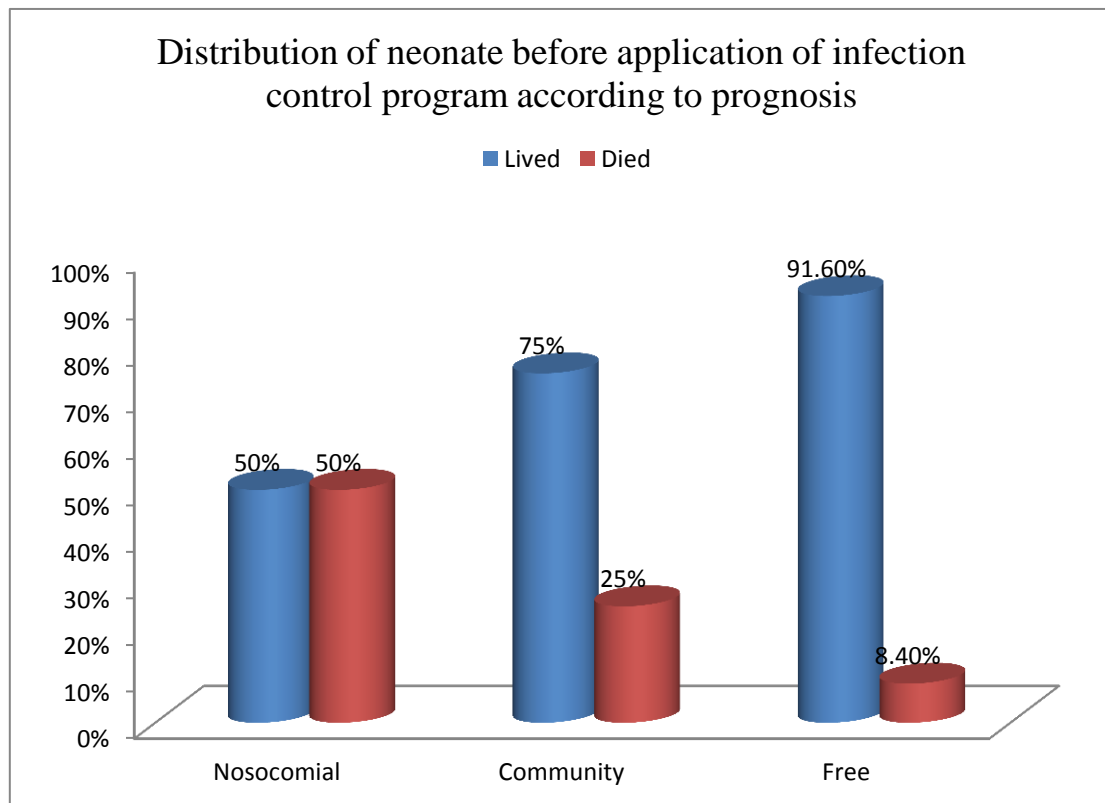

Distribution of neonate before application of infection control program according to prognosis

Table (10): Prognosis of studied neonates before and after application of infection control program**.**

	Group I* (n= 150)		Group II** (n= 150)		Total	
	No.	%	No.	No.	No.	%
Lived	110	73.3%	140	93.3%	250	83.3%
Died	40	26.7%	10	6.7%	50	16.7%
Total	150	100%	150	100%	300	100

* Group I: before application of infection control program
** Group II *: after* application of infection control program

$$X^2 = 20.2$$

$$p < 0.001$$

This table shows that the mortality rate in group I (before the application of the infection control program) is estimated to be 26.7%. While the mortality rate in group II (after application of infection control program) is 6.7%. The difference is of statistical significance.
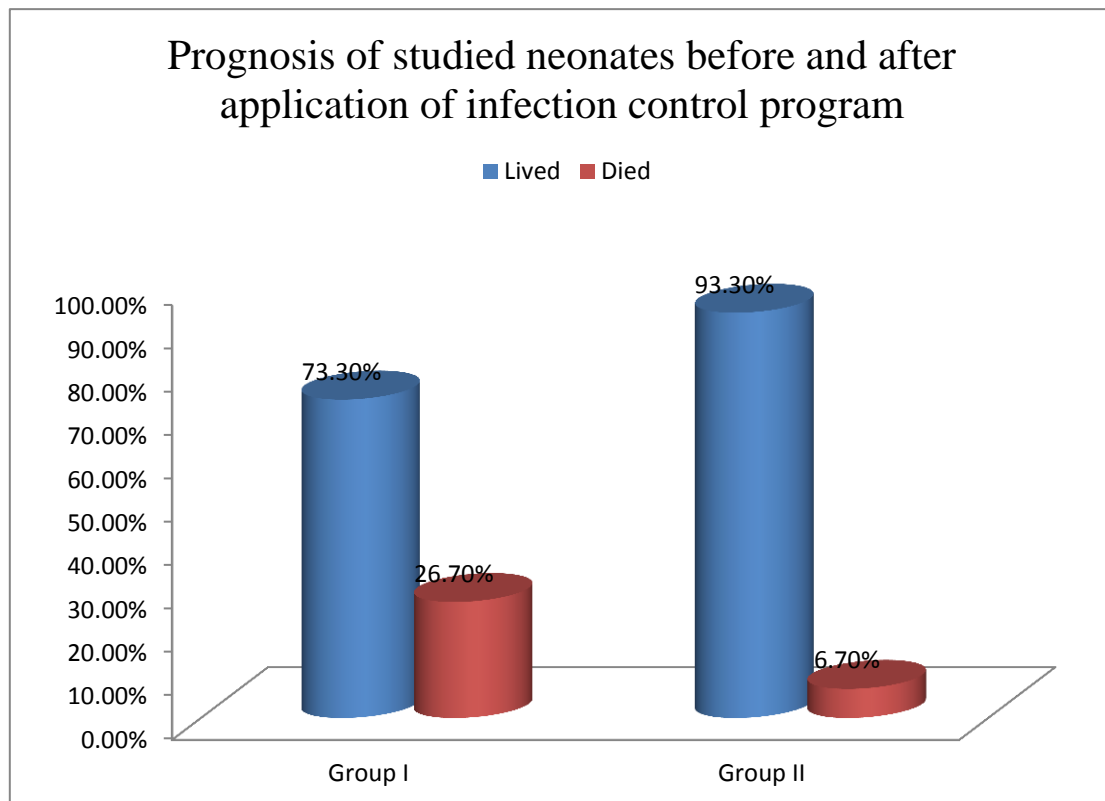
Prognosis of studied neonates before and after application of infection control program

■ Lived ■ Died

Table (11): Distribution of the studied groups according to the period of hospitalization:

St. group Period of hospital stay	Group I* (n=150)	Group II** (n=150)
$\overline{X} \pm SD$	7.9±7.1	7.1±5.02
t	1.2	
p	>0.05	

* Group I: before application of infection control program
** Group II *: after* application of infection control program

These table shows that, the mean Period of hospital stay in group I (before the application of the infection control program) is7.9±7.1 and that in group II (after application of infection control program) is 7.1±5.02. The difference is of no statistical significance.
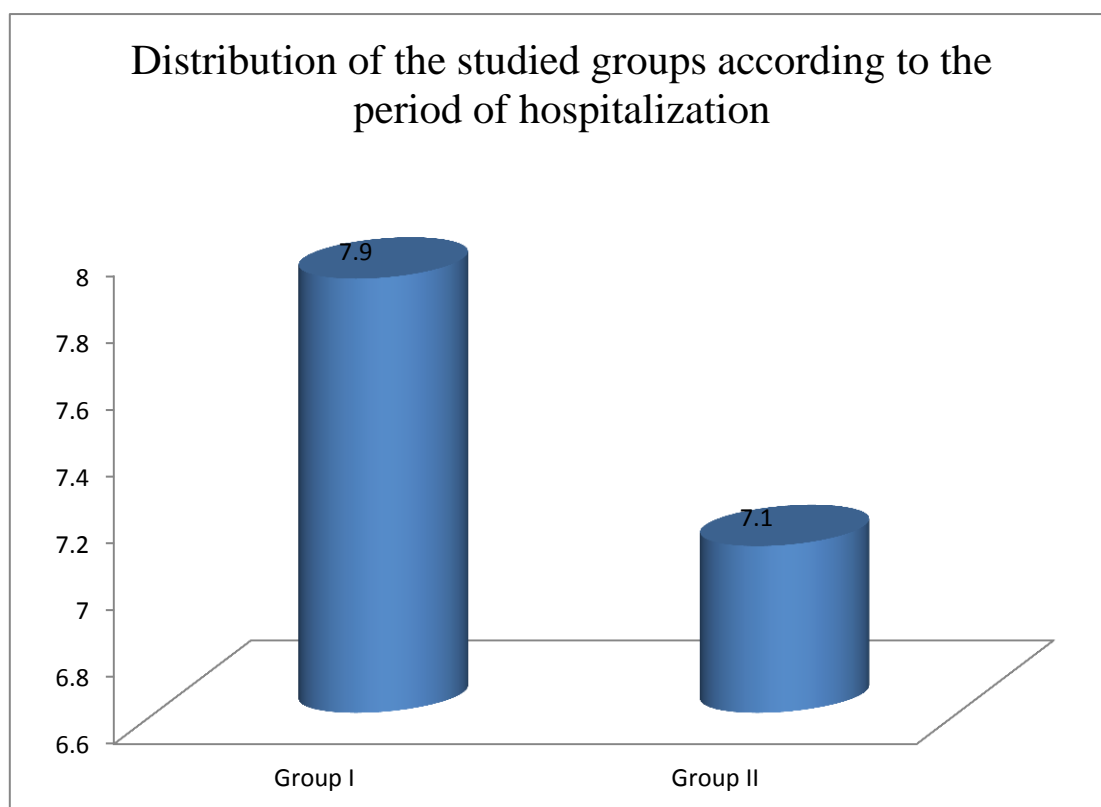

Distribution of the studied groups according to the period of hospitalization

Table (12): Isolated organisms from nosocomial cases in Group I & Group II:

Group Organism	Group I* (n= 150)		Group II** (n= 150)		Total	
	No.	%	No.	%	No.	%
Klebsiella	35	63.6%	5	33.3%	40	57.1
CONS	10	18.2%	10	66.7	20	28.6
Candida	10	18.2%	0	0%	10	14.3
Total***	55	100%	15	100%	70	100%

* Group I: before application of infection control program
** Group II *: after* application of infection control program
***The total strains in Group I (55) is > the total cases (50) due to 5 case of mixed infection.
This table shows that *Klebsiella pneumoniae* was the most predominant pathogen in Group I (63.6%). In Group III, however, CONS was the most predominant pathogen.

This table shows that the most frequent organism isolated is Klebsiella (57.1%) followed by CONS (18.2%) then candida (14.3%).
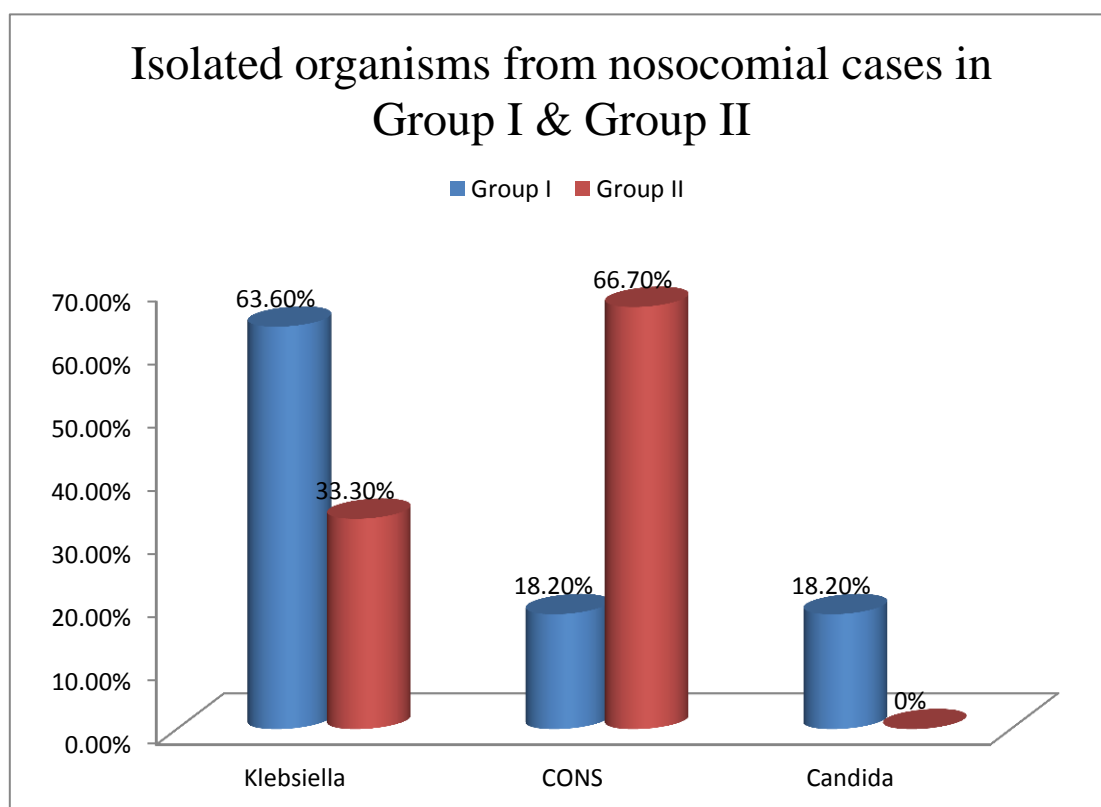

Isolated organisms from nosocomial cases in Group I & Group II

Table (13): Correlation between occurrences of Nosocomial infection with other variables.

Corr. Coefficient Variable	r	P Value
Mortality	0.5	<0.05
Period of hospital stay (in days)	0.3	<0.05
Artificial Respiration	0.4	<0.05
Peripheral venous catheter	0.4	<0.05
CVC/umbilical	0.5	<0.05
O2 box nasal-prongs	0.1	>0.05
BLOOD Transfusion.	0.4	<0.05
PROM	-0.09	>0.05
BIRTH Weight.	-0.4	<0.05
Gestational AGE	-0.5	<0.05
Mother Education	0.049	>0.05
Multiple pregnancy	0.094	>0.05

This table shows that nosocomial infection shows direct positive correlation of statistical significance with the increase in the hospital stay days, artificial respiration, peripheral venous catheter, CVC/umbilical, blood transfusion. It shows inverse correlation of statistical significance with birth weight and gestational age.

Table (14): Correlation between Community acquired infection with other variables:

Corr. Coefficient / Variable	r	P value
Mortality	- 0.05	>0.05
PROM	0.57	<0.05
BIRTH W.	-0.03	>0.05
GEST AGE	- 0.07	>0.05
Mother Education	-0.02	>0.05
Multiple gestation	-0.02	>0.05
Mode of delivery	0.08	>0.05
Place of birth	-0.04	>0.05

This table shows that that *Community acquired* infection shows direct correlation of statistical significance with premature rupture of membrane (PROM).

Table (15): Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to sex:

Sex / Nosocomial infection	Male		Female		Total
	No.	%	No.	%	
Absent	85	53.1	75	46.9	160
Present	35	53.9	30	46.1	65
Total	120	53.3	105	46.7	225

$$X^2 = 0.01$$

$$p > 0.05$$

This table shows that, the difference of nosocomial infection between males (53.9%) and females (46.1%), is of no statistical significance.
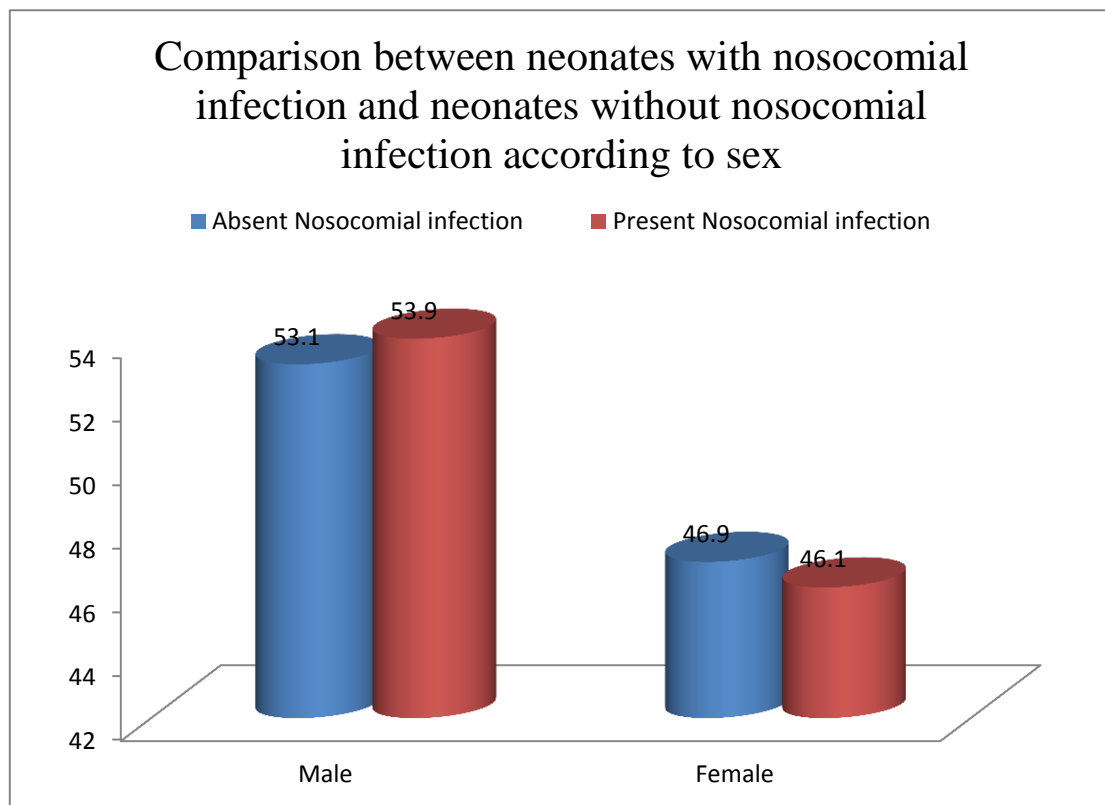

Table (16): Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to artificial respiration:

Artificial respiration	Artificial respiration		No artificial respiration		Total
Nosocomial infection	No.	%	No.	%	
Absent	10	6.3	150	93.7	160
Present	45	69.2	20	30.8	65
Total	55	24.4	170	75.6	225

$$X^2 = 95.9$$

$$p < 0.05$$

This table shows that artificial respiration is administered to 69.2% of neonates diagnosed as nosocomial infection. While artificial respiration is administered to 6.3% of those free of nosocomial infection. This difference is of statistical significance.
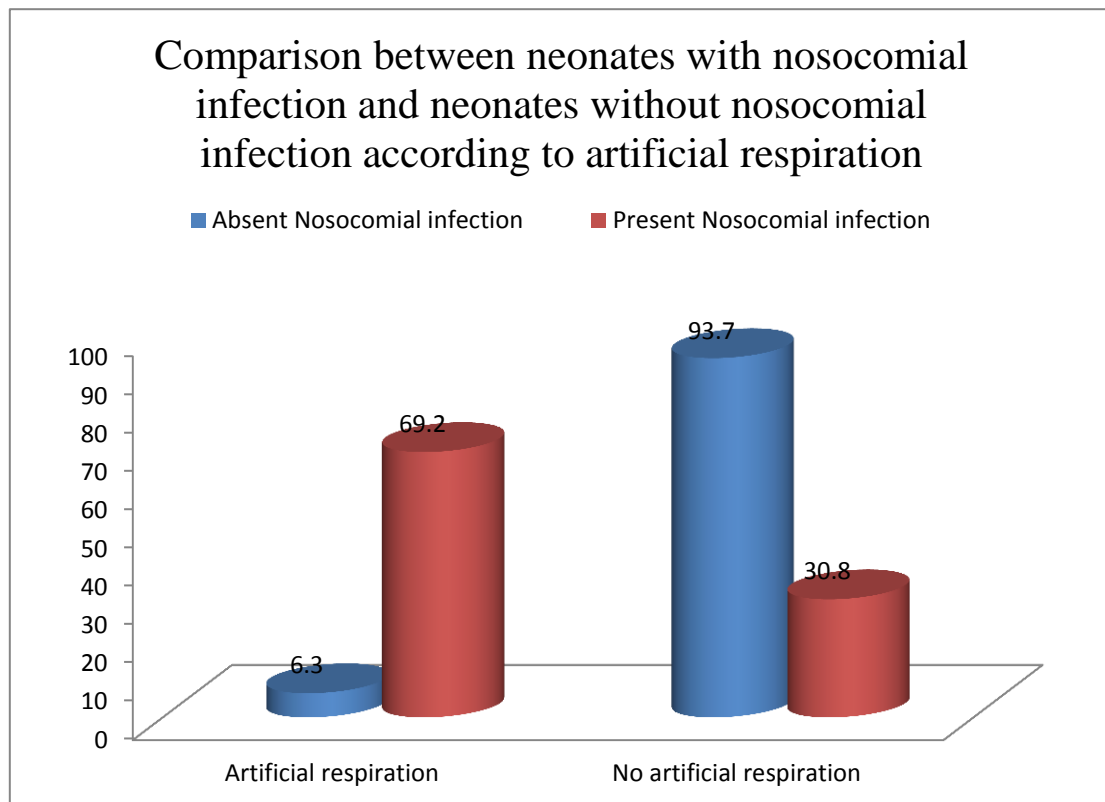

Table (17): Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to peripheral cannula insertion:

Peripheral cannula / Nosocomial infection	peripheral cannula		No peripheral cannula		Total
	No.	%	No.	%	No.
Absent	65	40.6	95	59.4	160
Present	50	76.9	15	23.1	65
Total	125	55.6	100	44.4	225

$$X^2 = 47.9$$

$$p < 0.05$$

This table shows that 67.9% of neonates diagnosed as nosocomial infection have peripheral venous cannula compared to 40.6% of neonates free of nosocomial infection. This difference is of statistical significance.

Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to peripheral cannula insertion
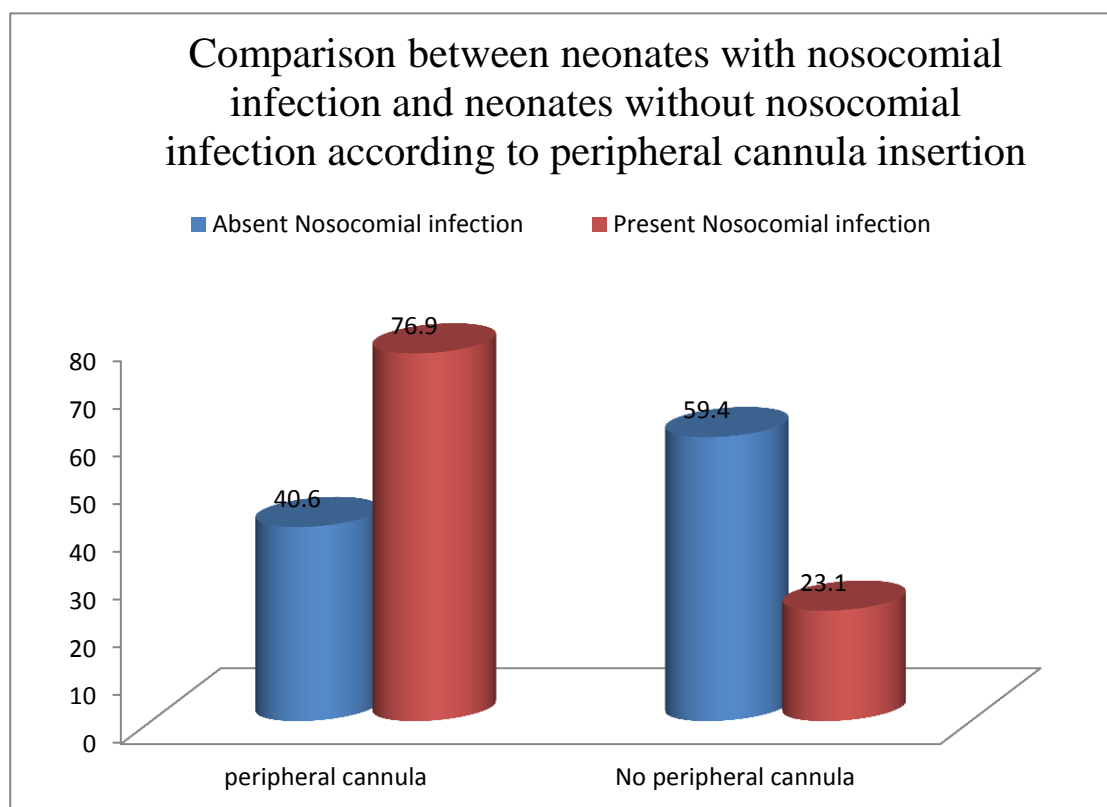
Table (18): Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to central venous cannula (CVC) insertion.

CVC / Nosocomial infection	CVC		No CVC		Total
	No.	%	No.	%	No.
Absent	25	15.6	135	84.4	160
Present	60	92.3	5	7.7	65
Total	85	37.8	140	62.2	225

$$X^2 = 112.4$$

$$p < 0.05$$

This table shows that CVC is performed in 92.3% of neonates diagnosed as nosocomial infection while this maneuver is performed only in 15.6% of neonates without nosocomial infection. This difference is of statistical significance.
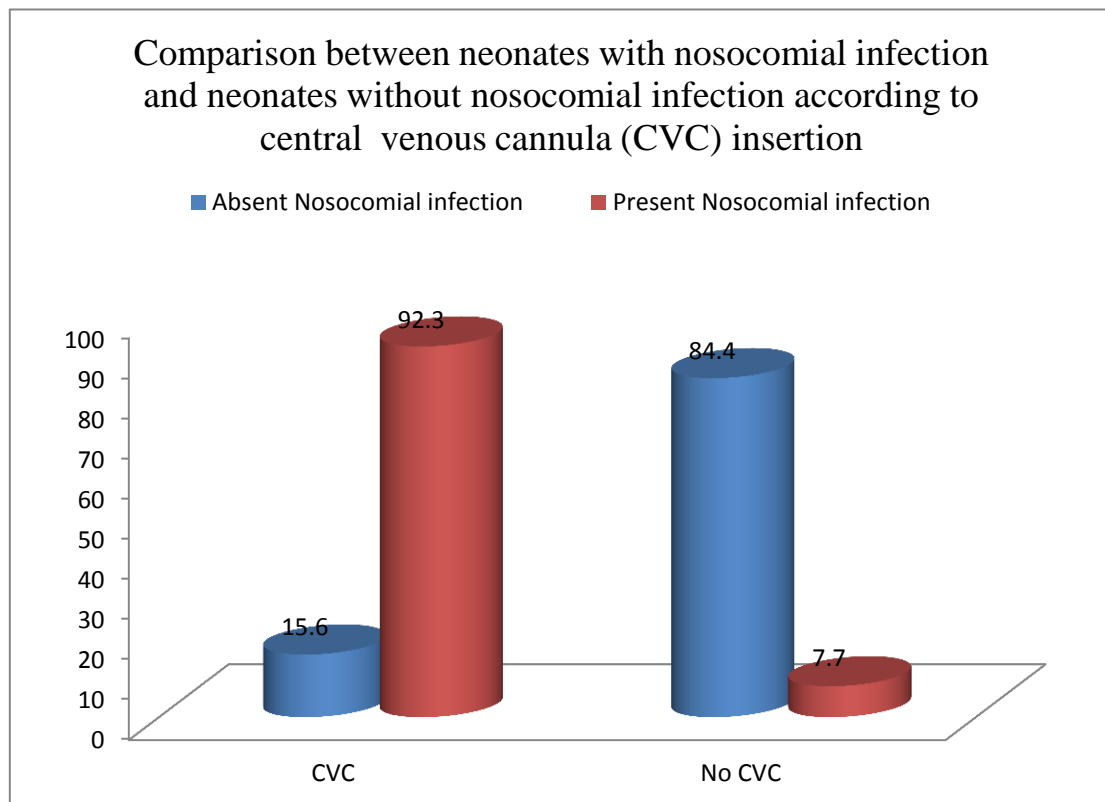

Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to central venous cannula (CVC) insertion

Table (19): Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to O2 box nasal-prongs.

O2 box / Nosocomial infection	O2 box nasal-prongs		No O2 box nasal-prongs		Total
	No.	%	No.	%	No.
Absent	45	28.1	115	71.9	160
Present	35	53.8	30	46.2	65
Total	80	35.6	145	64.4	225

$$X^2 = 12.9$$

$$p < 0.05$$

This table shows that O2 box nasal-prongs is administered to 53.8% of neonates diagnosed as nosocomial infection. While, this maneuver is performed only in 28.1% of neonates without nosocomial infection. This difference is of statistical significance.
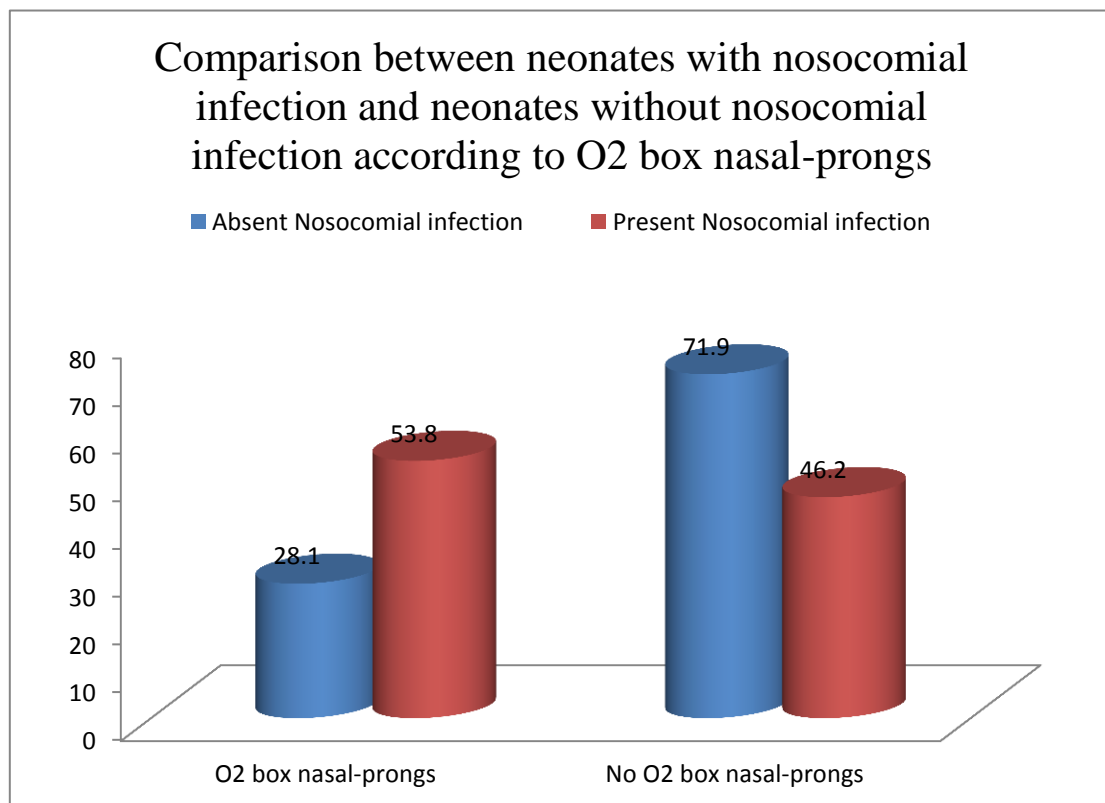

Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to O2 box nasal-prongs

Table (20): Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to mode of delivery:

Mode of delivery	CS		NVD		Total
Nosocomial infection	No.	%	No.	%	No.
Absent	50	31.3	110	68.7	160
Present	17	26.2	48	73.8	65
Total	67	29.8	158	70.2	225

$$X^2 = 0.4$$

$$p > 0.05$$

This table shows that, neonates diagnosed as having nosocomial infection delivered by normal vaginal delivery is estimated to be 73.8%. This percentage is of no statistical significance if compared with those delivered by caesarian section (26.2%).

Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to mode of delivery
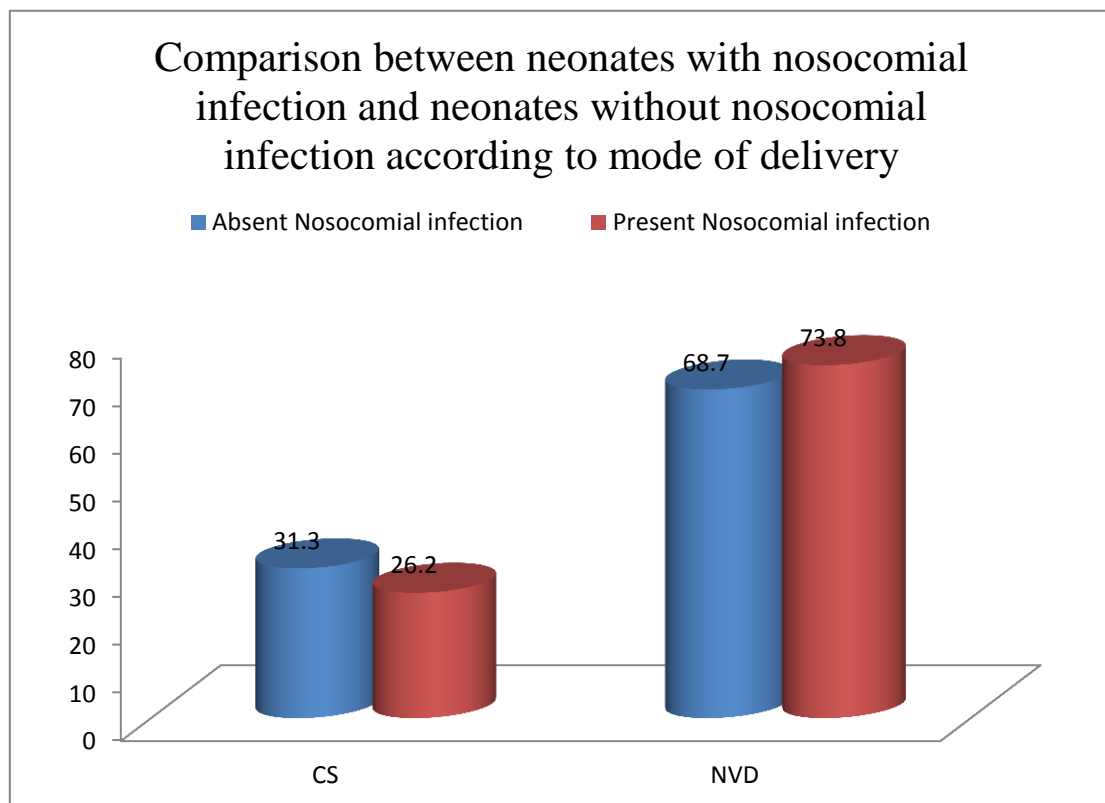
Table (21): Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to premature rupture of membrane (PROM).

PROM ⟍ Nosocomial infection	PROM		No PROM		Total
	No.	%	No.	%	No.
Absent	5	3.1	155	96.9	160
Present	5	7.7	60	92.3	65
Total	10	4.4	215	95.6	225

$$X^2 = 1.7$$

$$p > 0.05$$

This table shows that, only 7.7% of the infected group belonging to mother with PROM. While 3.1% of neonates diagnosed as having no nosocomial infection were belonging to mothers has PROM. This difference is of no statistical insignificance.
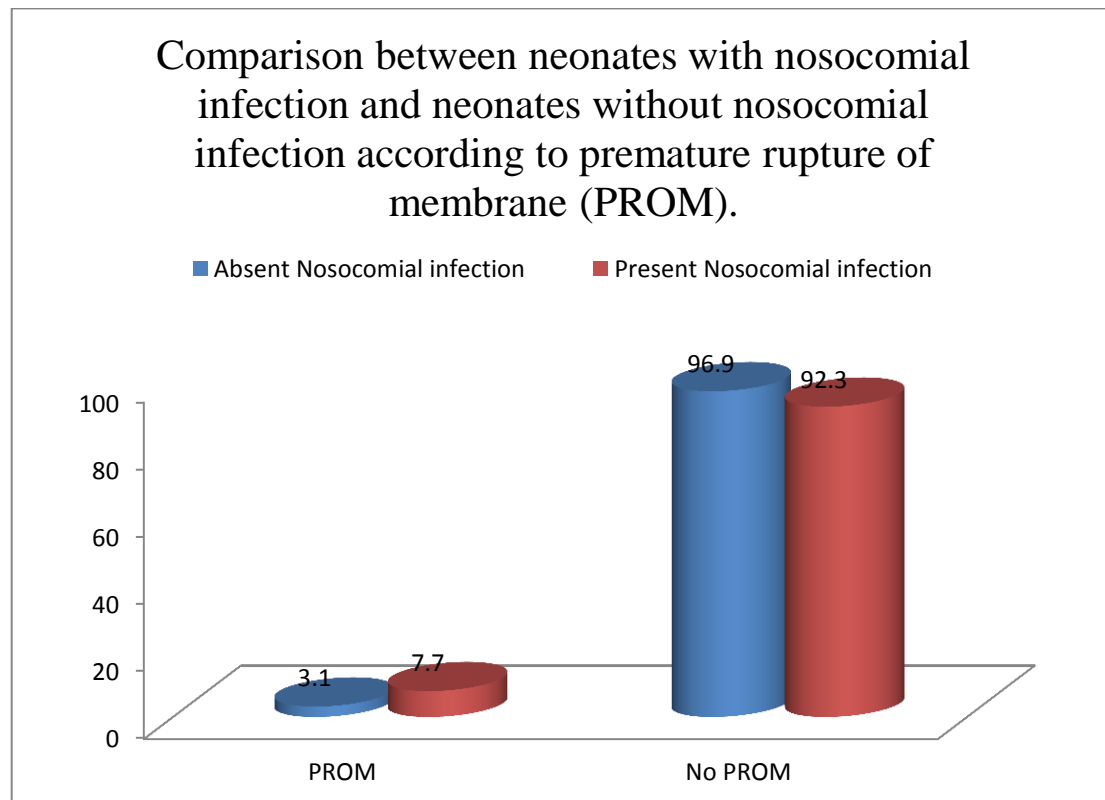

Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to premature rupture of membrane (PROM).

Table (22): Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to blood transfusion:

B. Transfusion Nosocomial infection	Blood transfusion.		No blood transfusion.		Total
	No.	%	No.	%	No.
Absent	10	6.3	150	93.7	160
Present	36	53.8	29	46.2	65
Total	35	15.6	190	84.4	225

$$X^2 = 62.5$$

$$p < 0.05$$

This table shows that, about 53.8% of the neonates who acquire nosocomial infection receive blood transfusion. While 6.3% of neonates having no nosocomial infection   receive blood transfusion. This difference is of statistical significance.
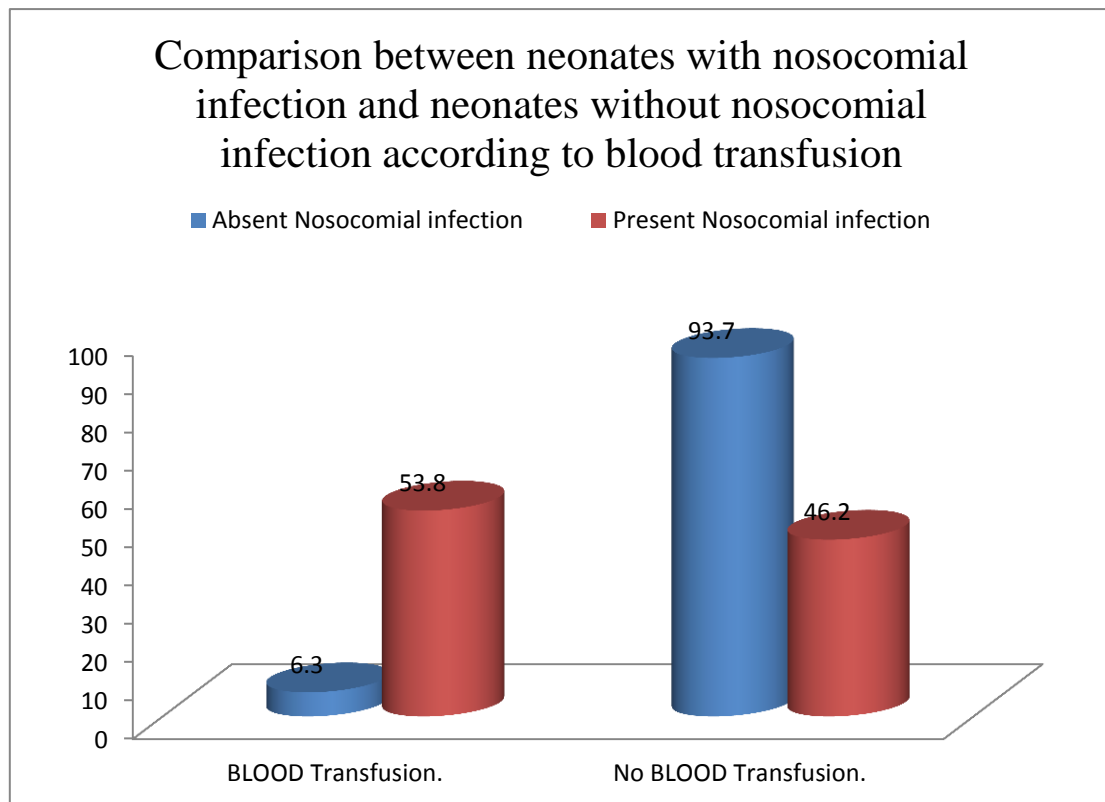

Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to blood transfusion

Table (23): Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to Mother Education:

Education Nosocomial infection	Educated		Not Educated		Total
	No.	%	No.	%	No.
Absent	87	54.4	73	45.6	160
Present	34	52.3	31	47.7	65
Total	121	53.8	104	46.2	225

$$X^2 = 0.1$$

$$p > 0.05$$

This table shows that the difference in the rate of occurrence of nosocomial infection among neonates of educated mothers (52.3%) and non educated mothers (47.7%) has no statistical significance
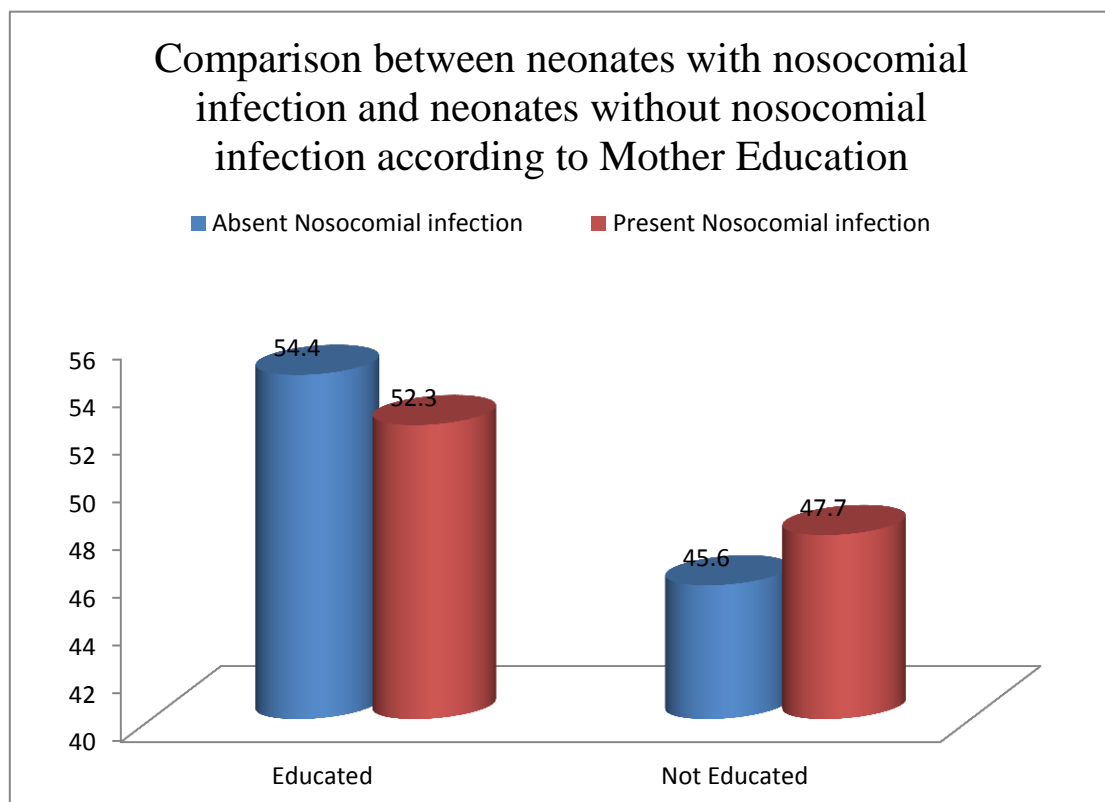

Comparison between neonates with nosocomial infection and neonates without nosocomial infection according to Mother Education

Table (24): Comparison between Nosocomially infected neonates and non nosocomially infected neonates according to Birth Weight:

NI⟍ Birth weight (gms)	Present (n=65)	Absent (n=160)
X̄±SD	1796.9 ±774.1	2708.4 ±693.9
t	8.6	
p	<0.001	

This table shows that lower difference in birth weight of infected group if compared to noninfected group is of statistical significance.

Comparison between Nosocomially infected neonates and non nosocomially infected neonates according to Birth Weight
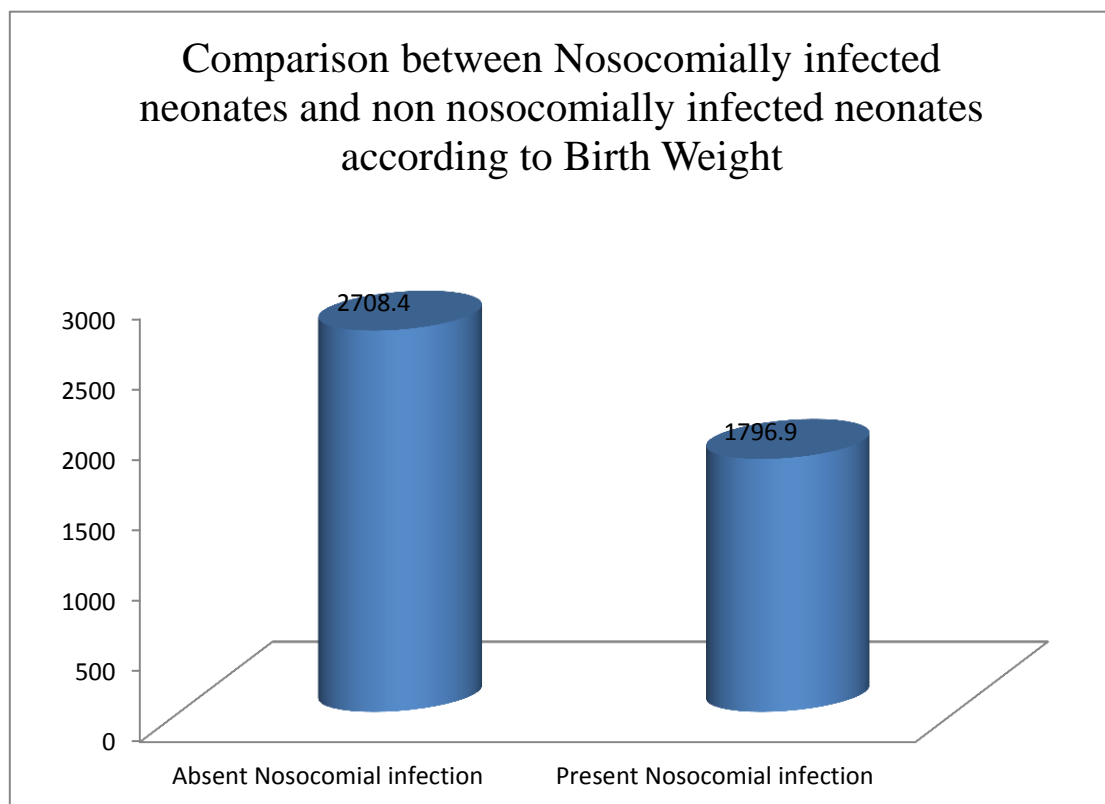
Table (25): Comparison between Nosocomially infected neonates and non nosocomially infected neonates according to gestational age:

NI G.A (in weeks)	Present (n=65)	Absent (n=160)
$\overline{X}\pm$SD	33.03±3.7	38.1± 2.3
t	10.4	
p	<0.001	

This table shows that, difference in gestational age of infected group compared with noninfected group is of statistical significance.

Comparison between Nosocomially infected neonates and non nosocomially infected neonates according to gestational age
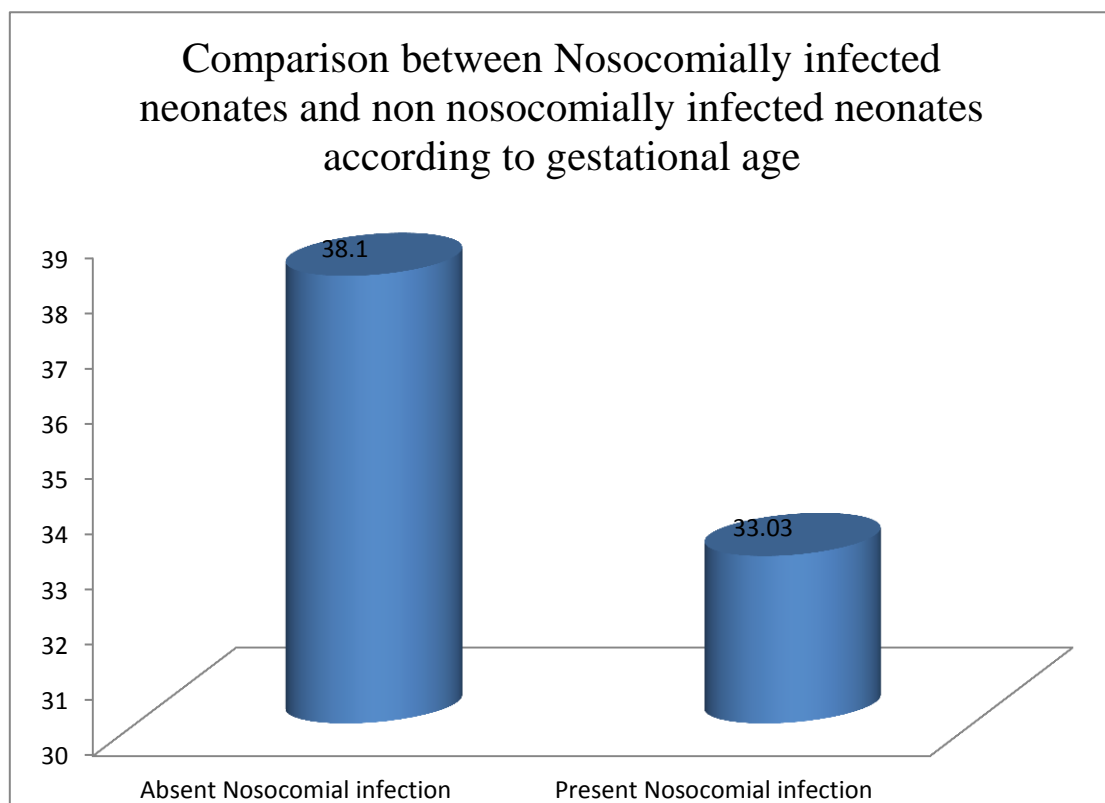
Table (26): Comparison between Nosocomially infected neonates and non nosocomially infected neonates according to stay days:

NI Period of hospital stay days	Present (n=65)	Absent (n=160)
$\overline{X}\pm SD$	10.7±3.9	3.9±1.4
t	19.2	
p	<0.001	

This table shows that higher difference in Period of hospital stay days of the infected group compared with that of noninfected group is of statistical significance

Comparison between Nosocomially infected neonates and non nosocomially infected neonates according to stay days