Results

The present study composed of the following tabulated data which presented in tables (1-39) and figures (1-3), included the following parts :

Part (I):-

- **Socio demographic characteristics of the studied nurses and neonates** (Table 1-8).

Part (II):-

- **Nurses' knowledge regarding mechanical ventilation and quality of nursing care for neonates undergoing mechanical ventilation** (Table 9-17).

Part (III):-

- **Quality of nursing care for neonates undergoing mechanical ventilation** (Table 18-24).

Part (IV):-

- **Relation between variables of the study** (Table 25-39).

Part I:- Socio demographic characteristics of the studied nurses.

Table 1:- Distribution of the studied nurses according to their socio demographic characteristics.

Items	No=70	%
Age in years		
20 -< 25	33	47.1
25-< 30	25	35.7
30 -< 35	7	10.0
35- ≤ 40	5	7.2
$\bar{X}$ ± SD 26.5 ± 4.3		
Years of experience		
< 2	6	8.6
2 < 5	11	15.7
5 < 8	25	35.7
≥ 8	28	40.0
$\bar{X}$ ± SD 6.2 ± 2.8		
Academic qualifications		
1- Bachelor of Nursing Sciences	8	11.4
2 - Diplom of Technical Institute of Nursing	6	8.6
3 - Diplom of Secondary Technical Nursing School	56	80.0
Total	**70**	**100**

Table (1) illustrated that, age of less than half (47.1%) of the studied nurses were between 20 -< 25 years. Regarding years of experience, it was found that 40.0% of the studied nurses had ≥ 8 years. Regarding academic qualifications, it was clear that more than three quarters (80.0%) of the studied nurses had Diplom of Secondary Technical Nursing School. It was found also that, all of the studied nurses (100.0%) were working as a bedside nurse at all the study settings.

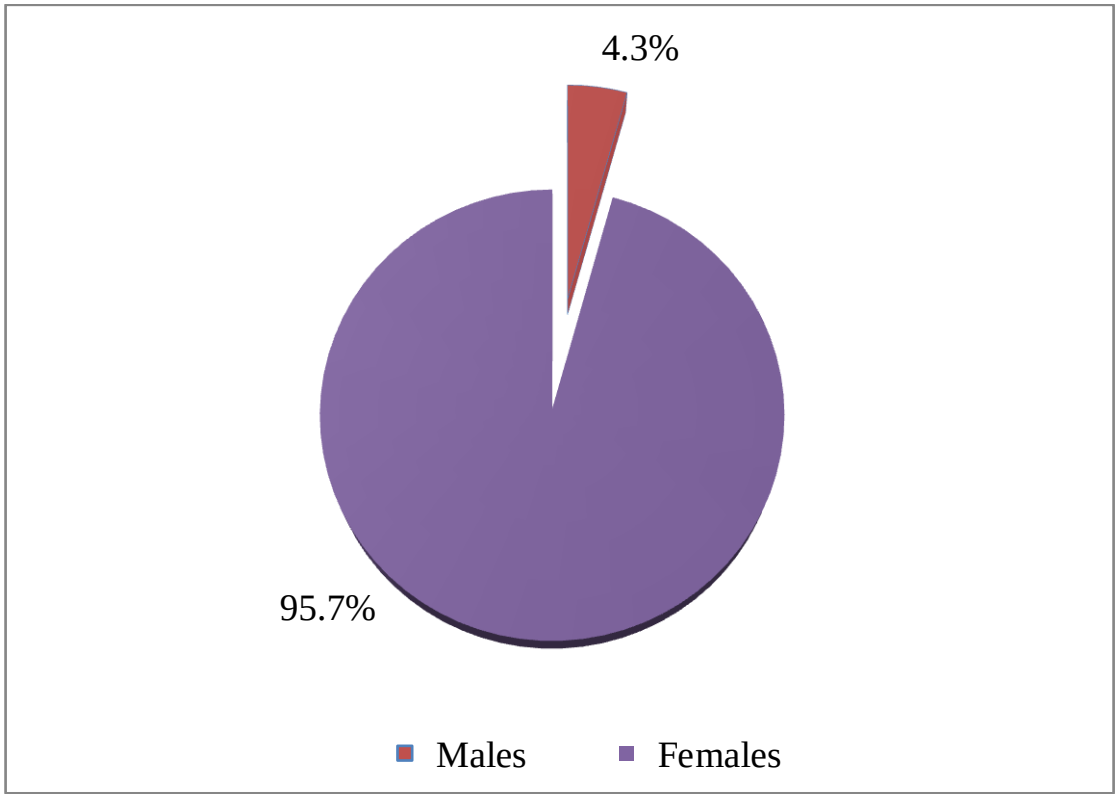

Figure (1):- Distribution of the studied nurses according to their gender.

As shown in figure (1), the highest percentage (95.7%) of the studied nurses were females, while the rest of them (4.3%) were males.

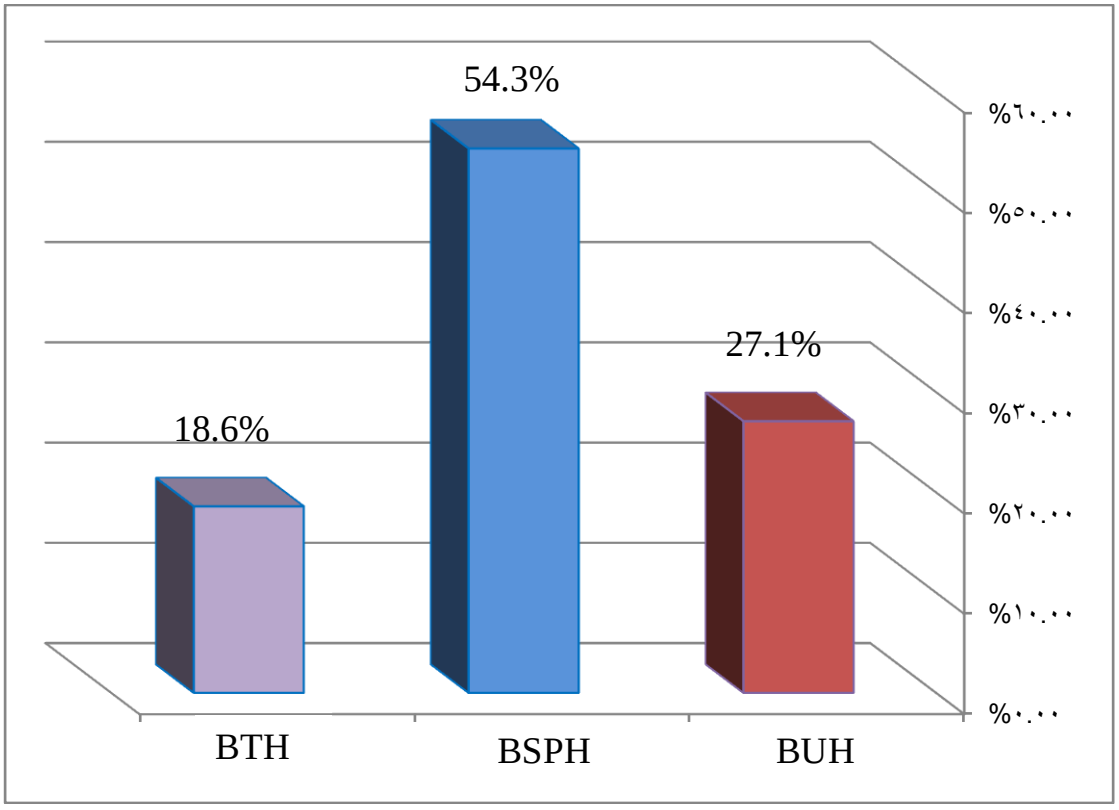

Figure (2):- Distribution of the studied nurses according to their place of work

Concerning the place of work of the studied nurses, figure (2) revealed that, (54.3%) of the studied nurses worked at the Benha Specialist Pediatric Hospital (BSPH), while (27.1%) worked at the Benha University Hospital (BUH), and only (18.6%) worked at the Benha Teaching Hospital (BTH).

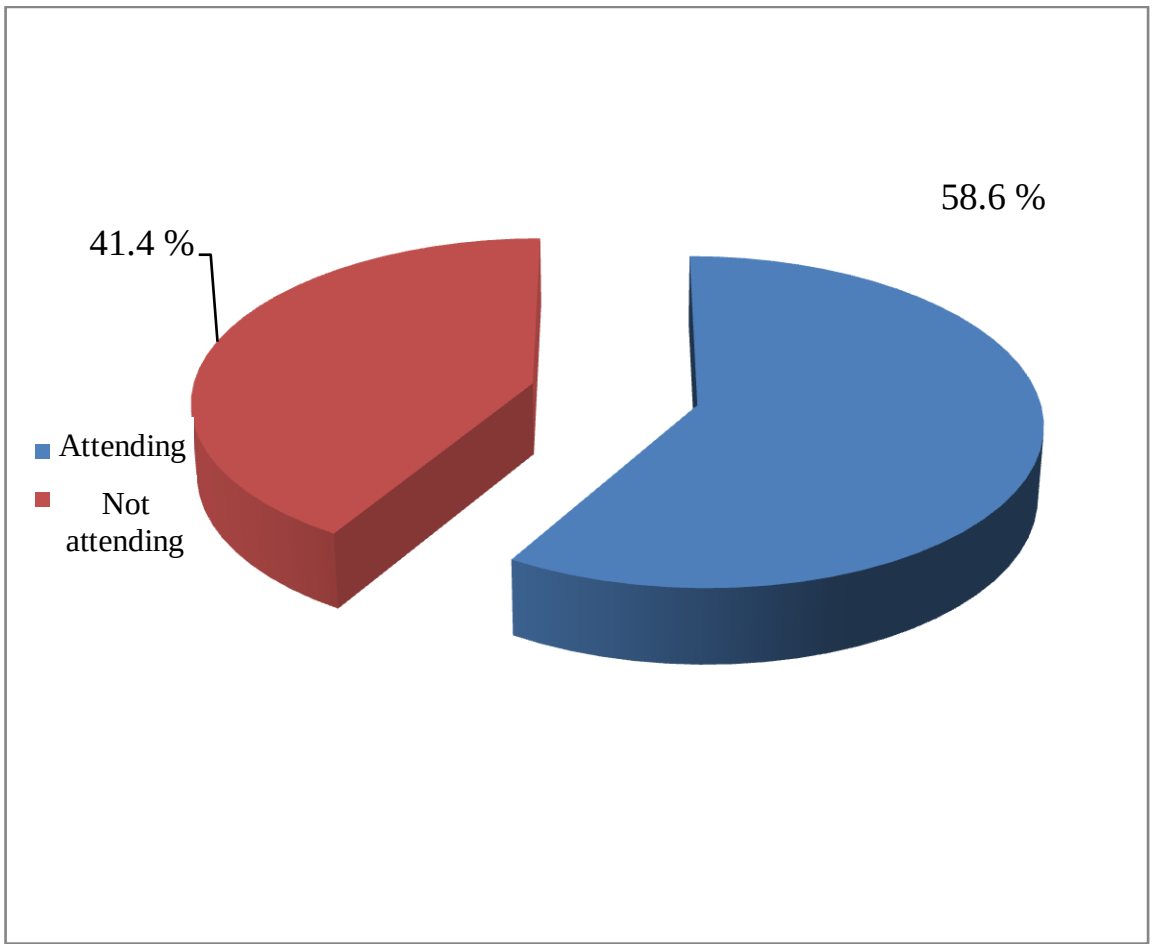

Figure (3):- Distribution of the studied nurses according to their attended previous training program.

As shown in this figure, more than half (58.6%) of the studied nurses have received previous training program, while less than half (41.4%) of them haven't previous training program.

Table 2:- Distribution of the studied neonates according to their socio demographic characteristics.

Number of the studied neonates = 70		
Items	**No**	**%**
Gender		
1- Male	49	70.0
2- Female	21	30.0
Gestational age in weeks		
24 - < 28	2	2.9
28 - < 32	25	35.7
32 - ≤ 36	43	61.4
$\bar{X}$± SD	**33.7± 3.6**	
Current age in days		
< 5	10	14.3
5 < 10	12	17.1
10 -≤ 15	48	68.6
$\bar{X}$± SD	**13.1 ± 6.5**	
Type of birth		
1-Normal	34	48.6
2-Cesarean Section	36	51.4
Weight on admission in grams		
500 -< 1000	5	7.1
1000 -< 1500	19	27.2
1500 -< 2000	11	15.7
2000 -≤ 2500	35	50.0
$\bar{X}$± SD	**2003 ± 733.95**	
Current weight in grams		
500 -< 1000	3	4.3
1000 -< 1500	21	30.0
1500 -< 2000	8	11.4
2000 -≤ 2500	38	54.3
$\bar{X}$± SD	**1967 ± 761.06**	
Total	**70**	**100**

Table (2) illustrated that, less than three quarters (70.0%) of the studied neonates were males and 61.4% of them had gestational age between 32 - ≤ 36 weeks, where more than two thirds (68.6%) of the studied neonates had current age between 10 - ≤ 15 days. Regarding type of birth, more than half (51.4%) of the studied neonates were delivered through cesarean section. Regarding weight of the studied neonates on admission at NICU, half of the studied neonates (50.0%) had between 2000 - ≤ 2500 grams, while the current weight of neonates, more than half (54.3%) had between 2000 - ≤ 2500 grams.

Table 3:- Distribution of the studied neonates according to their diagnosis.

Number of the studied neonates = 70		
Items	**No**	**%**
Diagnosis		
1- Respiratory distress syndrome	28	40.0
2- Respiratory distress (grades I, II**,** III**,** IV**)**	11	15.8
3- Diaphragmatic hernia & cleft lip	1	1.4
4- Pneumonia & RD (grades I, III)	4	5.7
5- Hydrocephalus &RDS	1	1.4
6- Jaundice & RD	1	1.4
7- Exmphalos major & RD	1	1.4
8- Neonatal sepsis, RDS& RD (grade I)	9	12.9
9- Hypoxic ischemic encephalopathy (HIE) & RDS	4	5.7
10- Neonatal sepsis, pneumonia & CHD	5	7.2
11- Meconium aspiration	1	1.4
12- Separated conjoined twins & RD	2	2.9
13- Multiple intestinal atresia & RD (grade II)	1	1.4
14- CHD & RD (grade II)	1	1.4
Total	**70**	**100**

Table (3) illustrated that, 40% of the studied neonates had respiratory distress syndrome.

Table 4:- Distribution of the studied neonates according to their vital signs compared with their normal peers.

Number of the studied neonates = 70				
Items	**Normal**		**Abnormal**	
	No	**%**	**No**	**%**
1- Temperature	57	81.4	13	18.6
2- Pulse	56	80.0	14	20.0
3- Respiration	42	60.0	28	40.0

Table (4) illustrated that, 81.4%, 80% & 60% of the studied neonates had normal range of temperature, pulse, and respiration respectively as compared with their normal peers.

Table 5:- Distribution of the studied neonates according to the modes of their mechanical ventilation.

Number of the studied neonates = 70		
Item	**No**	**%**
1- CMV	2	2.9
2- SIMV	28	40.0
3- CPAP	12	17.1
4- IMV	28	40.0
Total	**70**	**100**

Table (5) illustrated that, 40% of the studied neonates were undergoing SIMV and also IMV modes.

Table 6:- Distribution of the studied neonates according to causes and duration of connection to mechanical ventilation.

Number of the studied neonates = 70		
Item	**No**	**%**
The causes		
• Recurrent apnea	22	31.4
• Cyanosis	29	41.4
• Poor prognosis of the neonate	19	27.1
Duration of connection to mechanical ventilation in days		
• < 5	31	44.3
• 5 < 10	14	20.0
• 10 ≤ 15	25	35.7

Table (6) illustrated that, according to causes of connection to mechanical ventilation of the studied neonates, it was found that 41.4% of them had cyanosis. Regarding duration of connection to mechanical ventilation of the studied neonates, it was clear that less than half (44.3%) of them were connected for < 5days.

Table 7:- Distribution of the studied neonates according to the complication that occurs during their connection and weaning from mechanical ventilation.

Number of the studied neonates = 70				
Item	**Yes**		**No**	
	No	**%**	**No**	**%**
complication 1- Pneumonia. 2- Neonatal sepsis.	3 4	4.3 5.7	63	90.0
causes of weaning 1- Improvement of respiratory function. 2- Improvement of the arterial blood gases.	7	10.0	63	90.0

Table (7) illustrated that, the majority (90%) of the studied neonates had no complication during their connection to mechanical ventilation and weaned from mechanical ventilation due to improvement of respiratory function and the arterial blood gases.

Table 8:- Distribution of the studied neonates according to the investigations that was carried out during their connection to mechanical ventilation.

Number of the studied neonates = 70						
Investigations	**Normal**		**Abnormal**		**Not done**	
	No	**%**	**No**	**%**	**No**	**%**
• Pao_2	17	24.3	53	75.7	0	0.0
• $Paco_2$	28	40.0	42	60.0	0	0.0
• Hco_2	27	38.6	43	61.4	0	0.0
• Ph	34	48.6	36	51.4	0	0.0
• Hct	37	52.9	11	15.7	22	31.4
• Hb	30	42.9	22	31.4	18	25.7
• Ca	23	32.9	20	28.6	27	38.6
• CRP	25	35.7	18	25.7	27	38.6
• Blood Glucose	18	25.7	6	8.6	46	65.7
• K	25	35.7	8	11.4	37	52.9
• Creatinine	31	44.3	8	11.4	31	44.3
• PT	26	37.1	2	2.9	42	60.0
• PTT	16	22.9	11	15.7	43	61.4
• Urea	17	24.3	18	25.7	35	50.0
• SGOT	12	17.1	9	12.9	49	70.0
• SGPT	10	14.3	11	15.7	49	70.0
• Na	22	31.4	14	20.0	34	48.6

Table (8) illustrated that, Pao_2, $Paco_2$, Hco_2 & Ph were the common investigations that revealed abnormal findings and was carried out to 75.7%, 60%, 61.4% & 51.4% respectively.

Part (II):- Nurses' knowledge regarding mechanical ventilation and quality of nursing care for neonates undergoing mechanical ventilation.

Table 9:- Distribution of the studied nurses according to their knowledge regarding definition, indications, and uses of mechanical ventilation.

Number of the studied nurses = 70						
Items	**Good (75≤100%)**		**Average (60 <75%)**		**Poor (<60%)**	
	No	**%**	**No**	**%**	**No**	**%**
1- Definition	56	80.0	11	15.7	3	4.3
2- Indications	64	91.5	5	7.1	1	1.4
3- Uses of mechanical ventilation	53	75.7	11	15.7	6	8.6

Table (9) illustrated that, more than three quarters of the studied nurses reported good level of knowledge regarding definition, indications and uses of mechanical ventilation as revealed by 80%, 91.5% &75.7% of them respectively.

Table 10:- Distribution of the studied nurses according to their knowledge regarding types and modes of mechanical ventilation.

Number of the studied nurses = 70						
Items	**Good (75≤100%)**		**Average (60 <75%)**		**Poor (<60%)**	
	No	**%**	**No**	**%**	**No**	**%**
1- Types of mechanical ventilation						
• Non invasive	38	54.3	28	40.0	4	5.7
• Invasive	38	54.3	28	40.0	4	5.7
2- Modes of mechanical ventilation						
* **Invasive modes**						
• CMV mode.	54	77.2	12	17.1	4	5.7
• SIMV mode.	50	71.5	15	21.4	5	7.1
* **Non invasive mode (CPAP mode)**						
• Definition of CPAP mode.	11	15.7	0	0.0	59	84.3
• Indication of CPAP mode.	27	38.5	37	52.9	6	8.6
• The using of CPAP mode.	44	62.9	19	27.1	7	10.0
• Sterilization of the circuits of CPAP mode.	56	80.0	0	0.0	14	20.0

Table (10) illustrated that, more than half (54.3%) of the studied nurses had good level of knowledge about types of mechanical ventilation.

Table 11:- Distribution of the studied nurses according to their knowledge regarding size and routes of endotracheal tube (ETT) insertion.

Number of the studied nurses = 70				
Items	**Good (75≤100%)**		**Average (60 <75%)**	
	No	**%**	**No**	**%**
1- Size	67	95.7	3	4.3
2- Route of insertion	62	88.6	8	11.4

Table (11) illustrated that, the highest percentage (95.7%) of the studied nurses, had good level of knowledge about size of ETT and 88.6% of the studied nurses had good level of knowledge about route of insertion of ETT.

Table 12:- Distribution of the studied nurses according to their knowledge regarding the nurse role before, during, and after connecting the neonate with mechanical ventilation.

Number of the studied nurses = 70						
Items	**Good (75 ≤ 100%)**		**Average (60 < 75%)**		**Poor (< 60%)**	
	No	**%**	**No**	**%**	**No**	**%**
1- Before	9	12.9	24	34.2	37	52.9
2- During	8	11.4	6	8.6	56	80.0
3- After	10	14.2	30	42.9	30	42.9

Table (12) illustrated that, the studied nurses reported poor level of knowledge regarding their role before, during, and after connecting the neonate with mechanical ventilation, as stated by 52.9%, 80% & 42.9% of them respectively.

Table 13:- Distribution of the studied nurses according to their knowledge regarding problems that can occur during connecting the neonates to mechanical ventilation.

Number of the studied nurses = 70						
Items	**Good (75 ≤ 100%)**		**Average (60 < 75%)**		**Poor (< 60%)**	
	No	**%**	**No**	**%**	**No**	**%**
1- Low tidal volume	64	91.4	6	8.6	0	0.0
2- No tidal volume	65	92.9	5	7.1	0	0.0
3- High pressure	60	85.7	8	11.4	2	2.9
4- Low pressure	60	85.7	9	12.9	1	1.4

Table (13) illustrated that, the majority (85.7% - 92.9%) of the studied nurses reported good level of knowledge regarding problems that can occur during connecting the neonates to mechanical ventilation.

Table 14 :- Distribution of the studied nurses according to their knowledge regarding the nurse role before and after weaning the neonates from mechanical ventilation.

Number of the studied nurses = 70				
Items	**Good (75 ≤ 100%)**		**Average (60 < 75%)**	
	No	**%**	**No**	**%**
1- Before	66	94.3	4	5.7
2- After	65	92.9	5	7.1

Table (14) illustrated that, the majority (94.3% & 92.9%) of the studied nurses had good level of knowledge regarding their role before and after weaning of the neonate from mechanical ventilation.

Table 15:- Distribution of the studied nurses according to their knowledge regarding suction of the neonates undergoing mechanical ventilation.

Number of the studied nurses = 70				
Items	**Good (75 ≤ 100%)**		**Poor (< 60%)**	
	No	**%**	**No**	**%**
1- Right time for suction.	67	95.7	3	4.3
2- The selection of suitable catheter.	42	60.0	28	40.0
3- The length of suction procedure.	67	95.7	3	4.3
4- The essential nursing role regarding the neonates during suction.	64	91.4	6	8.6

Table (15) illustrated that, the majority (95.7%) of the studied nurses had good level of knowledge about right time for suction and the length of suction procedure.

Table 16:- Distribution of the studied nurses according to their total knowledge regarding mechanical ventilation and their role in care of neonates undergoing mechanical ventilation.

Level of knowledge	Number of the studied nurses =70	
	No	**%**
Good (75 ≤ 100%)	12	17.1
Average (60 < 75%)	34	48.6
Poor (<60%)	24	34.3
Total	**70**	**100**

Table (16) viewed that, less than half (48.6%) of the studied nurses had an average level of the total knowledge regarding mechanical ventilation and their role in care of neonates undergoing mechanical ventilation.

Table 17:- Distribution of the studied nurses according to their knowledge regarding quality of nursing care for neonates undergoing mechanical ventilation.

Number of the studied nurses = 70						
Items	**Good (75 ≤ 100%)**		**Average (60 < 75%)**		**Poor (< 60%)**	
	No	**%**	**No**	**%**	**No**	**%**
1-The concept of quality	24	34.3	38	54.3	8	11.4
2- The concept of quality of health care.	41	58.6	26	37.1	3	4.3
3- Concept of quality of nursing care for neonates undergoing mechanical ventilation	11	15.7	47	67.2	12	17.1
4- The aim of assessment of quality of nursing care for neonates undergoing mechanical ventilation	58	82.9	8	11.4	4	5.7
5- Route of evaluation of quality level in care of neonates undergoing mechanical ventilation	15	21.4	47	67.2	8	11.4
5- Role of the nurses for promotion of quality level in the NICU	54	77.2	12	17.1	4	5.7
6- Factors that promote quality of nursing care for neonates undergoing mechanical ventilation	61	87.2	5	7.1	4	5.7

Table (17) illustrated that, the majority (87.1%) of the studied nurses had good level of knowledge about factors that promote quality of nursing care for neonates undergoing mechanical ventilation.

Table 18:- Distribution of the studied nurses according to their total knowledge regarding quality of nursing care for neonates undergoing mechanical ventilation.

Level of knowledge	Number of the studied nurses =70	
	No	**%**
Good (75 ≤ 100%)	44	62.9
Average (60 < 75%)	14	20.0
Poor (< 60%)	12	17.1
Total	**70**	**100**

Table (18) viewed that, more than half (62.9%) of the studied nurses had good level of total knowledge regarding quality of nursing care of neonates undergoing mechanical ventilation.

Part III:- Quality of nursing care for neonates undergoing mechanical ventilation.

Table 19:- Distribution of the studied nurses according to their quality of nursing care (hand washing and vital signs) for neonates undergoing mechanical ventilation.

Number of the studied nurses =70				
Total procedures	**Average (60<75%)**		**Poor (<60%)**	
	No	**%**	**No**	**%**
1- Hand washing	20	28.6	50	71.4
2- Vital signs • Axillary temperature	51	72.9	19	27.1
• Heart rate	0	0.0	70	100
• Respiratory rate	57	81.4	13	18.6

Table (19) illustrated that, more than two thirds (71.4%) of the studied nurses had poor level regarding quality of nursing care in hand washing procedure. Regarding heart rate procedure, all of the studied nurses had poor level.

Table 20:- Distribution of the studied nurses according to their quality of nursing care (intravenous infusion and collection of blood sample) for neonates undergoing mechanical ventilation.

Number of the studied nurses = 70						
Total procedures	**Good (75 ≤ 100%)**		**Average (60<75%)**		**Poor (<60%)**	
	No	**%**	**No**	**%**	**No**	**%**
1- Intravenous infusion						
• Administering intravenous fluids	37	52.9	31	44.3	2	2.9
• Administering blood product	0	0.0	50	71.4	20	28.6
2- Collection of blood sample						
• Performing a vein puncture	11	15.7	39	55.7	20	28.6
• Arterial Blood Gases sample	29	41.4	41	58.6	0	0.0

Table (20) illustrated that, more than two thirds (71.4%) of the studied nurses had an average level regarding quality of nursing care of administering blood product procedure, where more than half (55.7% & 58.6%) of the studied nurses had an average level regarding quality of nursing care of performing a vein puncture and Arterial Blood Gases sample procedures respectively.

Table 21:- Distribution of the studied nurses according to their quality of nursing care (endotracheal tube insertion and suction) for neonates undergoing mechanical ventilation.

Number of the studied nurses = 70				
Total procedures	**Average (60<75%)**		**Poor (<60%)**	
	No	**%**	**No**	**%**
1- Endotracheal tube insertion	7	10	63	90
2- Suction				
• Oral /Nasal suction	3	4.3	67	95.7
• Endotracheal tube suction	0	0.0	70	100

Table (21) illustrated that, the majority (90% – 100%) of the studied nurses had poor level regarding quality of nursing care of endotracheal tube insertion and suction procedures.

Table 22:- Distribution of the studied nurses according to their quality of nursing care (nursing care before, during, and after connecting the neonate to mechanical ventilation) for neonates undergoing mechanical ventilation.

Number of the studied nurses = 70						
Total procedures	**Good (75 ≤ 100%)**		**Average (60<75%)**		**Poor (<60%)**	
	No	**%**	**No**	**%**	**No**	**%**
1- Nursing care before, during, and after connecting the neonate to mechanical ventilation						
• Before	11	15.7	59	84.3	0	0.0
• During	65	92.9	5	7.1	0	0.0
• After	0	0.0	26	37.1	44	62.9

Table (22) illustrated that, the highest percentage (92.9%) of the studied nurses, had good level regarding quality of nursing care during connecting the neonate to mechanical ventilation.

Table 23:- Distribution of the studied nurses according to their quality of nursing care (nursing care before, during, and after weaning the neonate from mechanical ventilation) for neonates undergoing mechanical ventilation.

Number of the studied nurses = 70						
Total procedures	**Good (75 ≤ 100%)**		**Average (60<75%)**		**Poor (<60%)**	
	No	**%**	**No**	**%**	**No**	**%**
1- Nursing care before, during, and after weaning the neonate from mechanical ventilation						
• Before	35	50	24	34.3	11	15.7
• During	43	61.4	27	38.6	0	0.0
• After	64	91.4	6	8.6	0	0.0

Table (23) illustrated that, the highest percentage (91.4%) of the studied nurses, had good level regarding quality of nursing care after weaning the neonate from mechanical ventilation.

Table 24:- Distribution of the studied nurses according to the total quality of nursing care for neonates undergoing mechanical ventilation.

Level of quality of nursing care	Number of the studied nurses =70	
	No	**%**
Average (60<75%)	31	44.3
Poor (<60%)	39	55.7
Total	**70**	**100**

Table (24) viewed that, more than half (55.7%) of the studied nurses had poor level regarding quality of nursing care for neonates undergoing mechanical ventilation.

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Part IV:- Relation between variables of the study.

Table 25 :- Relation between the nurses' total knowledge regarding mechanical ventilation and their role in care of neonates undergoing mechanical ventilation and their ages.

Age in years	Nurses' total knowledge (No=70)							
	Good (75≤100%)		Average (60 <75%)		Poor (<60%)		X^2	P
	No	%	No	%	No	%		
20 - < 25	3	4.3	19	27.1	11	15.7	36.75	<0.001
25 - < 30	3	4.3	10	14.3	12	17.2		
30 - <35	4	5.7	3	4.3	0	0.0		
35 - ≤ 40	2	2.9	2	2.9	1	1.4		
Total	12	17.1	34	48.6	24	34.3		

Table (25) showed that, there was positive statistical significant difference (X^2 36.75 & P <0.001) between the nurses' total knowledge and their age, where nurses of age group of 20 > 25 years had an average total level of knowledge.

Table 26 :- Relation between the nurses' total knowledge regarding mechanical ventilation and their role in care of neonates undergoing mechanical ventilation and their academic qualifications.

Academic qualifications	Nurses' total knowledge (No=70)							
	Good (75≤100%)		Average (60 <75%)		Poor (<60%)		X^2	P
	No	%	No	%	No	%		
1- Bachelor of Nursing Sciences	1	1.4	5	7.1	2	2.9	60.06	<0.001
2- Diplom of Technical Institute of Nursing	1	1.4	2	2.9	3	4.3		
3- Diplom of Secondary Technical Nursing School	10	14.3	27	38.6	19	27.1		
Total	12	17.1	34	48.6	24	34.3		

Table (26) showed that, there was positive statistical significant difference (X^2 60.06 & P <0.001) between the nurses' total knowledge and their qualifications. where 38.6% of the studied nurses who had Diplom of Secondary Technical Nursing School had an average total knowledge.

Table 27:- Relation between the nurses' total knowledge regarding mechanical ventilation and their role in care of neonates undergoing mechanical ventilation and their years of experience.

Years of experience	Nurses' total knowledge (No=70)							
	Good (75≤100%)		Average (60<75%)		Poor (<60%)		X^2	P
	No	%	No	%	No	%		
< 2	1	1.4	3	4.3	2	2.9	41.14	<0.001
2 - < 5	0	0.0	6	8.6	5	7.1		
5 - < 8	6	8.6	15	21.4	4	5.7		
≥ 8	5	7.1	10	14.3	13	18.6		
Total	12	17.1	34	48.6	24	34.3		

Table (27) showed that, there was positive statistical significant difference (X^2 41.14 & P<0.001) between the nurses' total knowledge and their years of experience.

Table 28 :- Relation between the nurses' total knowledge regarding mechanical ventilation and their role in care of neonates undergoing mechanical ventilation and their place of work.

Place of work	Nurses' total knowledge (No=70)							
	Good (75≤100%)		Average (60 <75%)		Poor (<60%)		X^2	P
	No	%	No	%	No	%		
1- Benha University Hospital	5	7.1	10	14.3	4	5.7	1.00	>0.05
2- Benha Specialist Pediatric Hospital	6	8.6	16	22.9	16	22.9		
3- Benha Teaching Hospital	1	1.4	8	11.4	4	5.7		
Total	12	17.1	34	48.6	24	34.3		

Table (28) showed that, there was no statistical significant difference (X^2 1.00 & P>0.05) between the nurses' total knowledge and their place of work.

Table 29 :- Relation between the nurses' total knowledge regarding quality of nursing care for neonates undergoing mechanical ventilation and their ages.

Age in years	Nurses' total knowledge (No=70)							
	Good (75≤100%)		Average (60 <75%)		Poor (<60%)		X^2	P
	No	%	No	%	No	%		
20 - < 25	21	30.1	10	14.3	2	2.9	.532	>0.05
25 - < 30	13	18.6	4	5.7	8	11.4		
30 - <35	5	7.1	0	0.0	2	2.9		
35 - ≤ 40	5	7.1	0	0.0	0	0.0		
Total	44	62.9	14	20.0	12	17.1		

Table (29) showed that, there was no statistical significant difference (X^2 .532 & P >0.05), between age of the studied nurses and their total knowledge.

Table 30 :- Relation between the nurses' total knowledge regarding quality of nursing care for neonates undergoing mechanical ventilation and their academic qualifications.

Academic qualifications	Nurses' total knowledge (No=70)							
	Good (75≤100%)		Average (60 <75%)		Poor (<60%)		X^2	P
	No	%	No	%	No	%		
1- Bachelor of Nursing Sciences	6	8.6	1	1.4	1	1.4	42.25	<0.001
2- Diplom of Technical Institute of Nursing	5	7.1	0	0.0	1	1.4		
3- Diplom of Secondary Technical Nursing School	33	47.2	13	18.6	10	14.3		
Total	44	62.9	14	20.0	12	17.1		

Table (30) showed that, there was positive statistical significant difference (X^2 42.25 & P <0.001) between the nurses' total knowledge and their academic qualifications, where 47.2% of the studied nurses who had Diplom of Secondary Technical Nursing School had good total knowledge.

Table 31:- Relation between the nurses' total knowledge regarding quality of nursing care for neonates undergoing mechanical ventilation and their years of experience.

Years of experience	Nurses' total knowledge (No=70)							
	Good (75≤100%)		Average (60<75%)		Poor (<60%)		X^2	P
	No	%	No	%	No	%		
< 2	4	5.7	2	2.9	0	0.0	16.49	<0.001
2 - < 5	5	7.1	4	5.7	2	2.9		
5 - < 8	15	21.4	5	7.1	5	7.1		
≥ 8	20	28.7	3	4.3	5	7.1		
Total	44	62.9	14	20.0	12	17.1		

Table (31) showed that, there was positive statistical significant difference (X^2 16.49 & P<0.001) between the nurses' total knowledge and their years of experience, where 28.7% of the studied nurses who had experience ≥ 8 years had good level of total knowledge.

Table 32 :- Relation between the nurses' total knowledge regarding quality of nursing care for neonates undergoing mechanical ventilation and their place of work.

Nurses' total knowledge (No=70)								
Place of work	**Good (75≤100%)**		**Average (60 <75%)**		**Poor (<60%)**		**X^2**	**P**
	No	**%**	**No**	**%**	**No**	**%**		
1-Benha University Hospital	17	24.3	0	0.0	2	2.8	10.75	<0.001
2-Benha Teaching Hospital	13	18.6	0	0.0	0	0.0		
3-Benha Specialist Pediatric Hospital	14	20.0	14	20.0	10	14.3		
Total	44	62.9	14	20.0	12	17.1		

Table (32) showed that, there was positive statistical significant difference (X^2 10.75 & P<0.001) between the nurses' total knowledge and their place of work, where less than one third (24.3%) of the studied nurses who were working at Benha university hospital had good level of total knowledge.

Table 33 :- Relation between the total score of quality of nursing care for neonates undergoing mechanical ventilation and the nurses' ages.

Age in years	Total quality of nursing care (No=70)					
	Average (60 <75%)		Poor (<60%)		X^2	P
	No	%	No	%		
20 - < 25	18	25.7	15	21.4	52.01	<0.001
25 - < 30	9	12.9	16	22.9		
30 - < 35	1	1.4	6	8.6		
35 ≤ 40	3	4.3	2	2.9		
Total	31	44.3	39	55.7		

Table (33**)** showed that, there was positive statistical significant difference (X^2 52.01 & P <0.001) between the nurses' age and their total quality of nursing care, where nurses in the age group of 20 - < 25 years had average level of quality of nursing care.

Table 34:- Relation between the total score of quality of nursing care for neonates undergoing mechanical ventilation and the nurses' academic qualifications.

Academic qualifications	Total quality of nursing care (No=70)					
	Average (60 <75%)		Poor (<60%)		X^2	P
	No	%	No	%		
1- Bachelor of Nursing Sciences	5	7.1	3	4.3	65.01	<0.001
2- Diplom of Technical Institute of Nursing	3	4.3	3	4.3		
3- Diplom of Secondary Technical Nursing School	23	32.9	33	47.1		
Total	31	44.3	39	55.7		

Table (34) showed that, there was positive statistical significant difference (X^2 65.01& P <0.001) between the nurses' qualifications and their total quality of nursing care, where less than half (47.1%) of the studied nurses who had Diplom of Secondary Technical Nursing School had poor level of quality of nursing care.

Table 35:- Relation between the total score of quality of nursing care for neonates undergoing mechanical ventilation and the nurses' experience.

Years of experience	Total quality of nursing care (No=70)					
	Average (60 <75%)		Poor (<60%)		X^2	P
	No	%	No	%		
< 2	3	4.3	3	4.3	50.58	<0.001
2 - < 5	5	7.1	6	8.6		
5 - < 8	9	12.9	16	22.9		
≥ 8	14	20.0	14	20.0		
Total	31	44.3	39	55.7		

Table (35) showed that, there was positive statistical significant difference (X^2 50.58 & P <0.001) between the nurses' years of experiences and their total quality of nursing care, where less than one quarter (22.9%) of the studied nurses who had experiences 5 - < 8 years had poor level of total quality of nursing care.

Table 36 :- Relation between the total score of quality of nursing care for neonates undergoing mechanical ventilation and the nurses' place of work.

Place of work	Total quality of nursing care (No=70)					
	Average (60 <75%)		Poor (<60%)		X^2	P
	No	%	No	%		
1-Benha University Hospital	8	11.4	11	15.7	13.56	<0.001
2-Benha Teaching Hospital	3	4.3	10	14.3		
3-Benha Specialist Pediatric Hospital	20	28.6	18	25.7		
Total	31	44.3	39	55.7		

Table (36) showed that, there was positive statistical significant difference (X^2 13.56 & P<0.001) between the nurses' place of work and their total quality of nursing care, where less than one third (28.6%) of the studied nurses who were working at Benha specialist pediatric hospital had average level of quality of nursing care.

Table 37:- Relation between the total score of quality of nursing care for neonates undergoing mechanical ventilation and the nurses' attendance of previous training programs.

Training programs	Total quality of nursing care (No=70)					
	Average (60 <75%)		Poor (<60%)		X^2	P
	No	%	No	%		
1- Attending	21	30.0	20	28.6	0.10	>0.05
2- Not attending	10	14.3	19	27.1		
Total	31	44.3	39	55.7		

Table (37) showed that, there was no statistical significant difference (X^2 0.10 & P >0.05) between the total quality of nursing care and the nurses' attendance of previous training programs, where around one third of the studied nurses (30%) who had attending previous training programs had average level of practice.

Table 38:- Correlation between the total score of nurses' knowledge regarding mechanical ventilation and their role in care of neonates undergoing mechanical ventilation and their total quality of nursing care.

Item	r	P
Nurses' total knowledge	-0.31	<0.007
Total quality of nursing care		

Table (38) viewed that, there was negative correlation (r -0.31 & P <0.007) between the nurses' total knowledge and their quality of nursing care.

Table 39:- Correlation between the total score of nurses' knowledge regarding quality of nursing care for neonates undergoing mechanical ventilation and their quality of nursing care.

Item	r	P
Nurses' total knowledge	-0.15	>0.05
Total quality of nursing care		

Table (39) viewed that, there was negative correlation (r -0.15 & P >0.05) between the nurses' total knowledge regarding quality of nursing care for neonates undergoing mechanical ventilation and their total quality of nursing care.