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Effectiveness of an Educational Program upon Nurses' Knowledge toward the Continuous Positive Airway Pressure (CPAP) Machine in Neonatal Intensive Care Unit at AL-Hussein and the Pediatric Teaching Hospital

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Abstract: ***Objectives: To assess nurses' knowledge toward (CPAP) machine in NICU at Al-Diwanyia City Hospitals and to find out the relationships between the nurses' knowledge concerning (CPAP) Machine and socio-demographic information. Methodology: A descriptive study was carried out from December 26 -2016 to the 15th of May -2017. A non-probability sample of (24) nurses. The tool of the study included a questionnaire. The data were analyzed through the application of frequencies, percentages, MS and the inferential statistical analysis. Results: there was a statistical significant association between nurses' level of education and years of services in NICU and their knowledge toward (CPAP) at (post-2) of educational program. Conclusions: (1) Most of the study sample was females. (2)Mostly the ages of study sample were (25-29) Year. (3) A High percentage of the sample had been participated in training courses about CPAP. (4) There were highly significant differences between the two periods (pre and post-1 tests) of study sample in all domains of questionnaire. Recommendations: (1) The study recommended the necessity to develop the nurses' skills. (2) Policy should be initiated to providing a special educational course about Neonates with (CPAP) Machine.***

Keywords: Effectiveness, educational program, CPAP, Neonatal Intensive Care Unit

1. Introduction

The Continuous Positive Airway Pressure is a technique of airway management in which Positive intrapulmonary pressure is applied artificially to the airways, whereby distending pressure is created in the alveoli in a spontaneously breathing baby throughout the respiratory cycle. Continuous Positive Airway Pressure (CPAP) is a noninvasive method for applying a constant distending pressure level (above atmospheric) during inhalation and exhalation to support spontaneously breathing newborn infants with lung disease. CPAP is an "open-lung approach" used to manage newborn infants predisposed to developing airway instability, edema, and atelectasis (It is applied when the infant is breathing spontaneously. Nasal prongs or nasopharyngeal prongs can apply it. Nasal prongs constitute a simple system for application of CPAP. Mouth leak provides pressure pop off but introduces variation in level of CPAP. This system requires high flow of oxygen. Nasopharyngeal prongs are like endotracheal tube inserted through nose to hypopharynx. The length and diameter of any long prong in CPAP system increases resistance and work of breathing. It is very useful in postoperative high-risk infant with severe non-hypercapnia oxygenation failure and avoids reintubation [2]. The use of early NCPAP showing that CPAP initiated in the delivery room decreases the need for intubation and lowers the risk of other comorbidities of prematurity such as IVH, NEC, or prolonged oxygen delivery. This applies to all but the smallest premature infants (less than 25 wG) and thus should be considered as respiratory support prior to intubation for all patients with suspected RDS. Other studies have supported extubation and NCPAP immediately after surfactant delivery, showing that it prevents a later need for MV. The use of NCPAP can be use to help decrease the need for prolonged ventilatory support for patients with RDS and potentially decrease the incidence of chronic lung disease (CLD) [3]. Among more than 130 million births per year globally, approximately ten percent of newborns require some form of intervention immediately at birth. It is estimated that 25% of approximately 4 million neonatal deaths worldwide are secondary to birth asphyxia [4]. Nasal continuous positive airway pressure (CPAP) is the most widely used non-invasive continuous distending airway pressure modality and a cornerstone of modern neonatal care. Whereas there has been emphasis on understanding which devices and pressure sources best implement CPAP, the optimal duration of this therapy is less well studied. At birth, premature infants have life-threatening anatomic and physiologic immaturities of the respiratory system. CPAP attenuates this pathophysiology until sufficient stability develops and continuous distending pressure is no longer needed [5]. Non-invasive respiratory support in the neonatal intensive care unit (NICU) has been used for nearly 40 years as a means to reduce complications of invasive mechanical ventilation. Specific types of non-invasive support have been implicated in preventing respiratory failure in spontaneously breathing infants, especially those with Respiratory Distress Syndrome (RDS). Technological progress, along with a better understanding of the applications of equipment, advances in the care of the neonate, and documented favorable patient outcomes have translated into trends that continue to promote non-invasive respiratory support for care

of the neonate [6].

2. Objectives of the Study

- To find out demographic characteristics of nurses like age, gender, level of education …etc.
- To assess nurses' knowledge toward children with continuous positive airway pressure machine
- To assess the effectiveness of an educational program on nurses' knowledge toward the Continuous Positive Airway Pressure machine on study group (pre – posttest)
- To find out the relationship between the effectiveness of an educational health program and nurses' general information characteristics such as age, gender, nurses' educational level, years of experience in hospitals and years of experience at respiratory care unit

3. Methodology

3.1 Administrative arrangement

when getting the approval of the council of Nursing College for the study, the researcher submitted a detailed description including the objectives and methodology of this study for the Ministry of Planning (Central Statistical Organization and to the Al-Diwanyia Health Directorate (Training and Development department) in order to obtain an official permission.

3.2 Setting of the study

To obtain comprehensive data, the study was conducted in selected hospitals in Al-Diwanyia City, where Neonatal Intensive Care Units are available. The Pediatric Hospitals are AL-Hussein Pediatric Hospital and The Pediatric and Maternity Teaching Hospital in Al-Diwanyia city, Iraq. The study was carried out during the period from (26 December 2016 to 15 May 2017).

3.3 Design of the study

A (quasi experimental) study was carried out for assessing the Effectiveness of an Educational Program on nurses' knowledge toward The Continuous Positive Airway Pressure (CPAP) Machine in Neonatal Intensive Care Unit.

3.4 The sample of the study

A purposive (non-probability) sample of (24) nurses was chosen. All of them working in Neonatal Intensive Care Units (NICU) at Pediatric Teaching Hospitals.

3.5 The study instruments

To the purpose of the present study, a questionnaire are conduct by the researcher, The questionnaire was used before and after conducting a special program designed for increasing the knowledge of the sample, Scale of the questionnaire is (Yes or No)(36 questions) the correct answer code was (2) and the wrong answer code was (1) . The study instrument consisted of (5) parts. Part 1: Socio-demographic information of the nurses. Part 2: General information about Continuous Positive Airway Pressure (CPAP) Machine: It consists of (7) items. Part 3: Nurses' knowledge about the Uses of (CPAP) Machine for premature babies and newborns. It included (10) items. Part 4: Nurses' knowledge about the Contraindications for using of the (CPAP) Machine for newborn and premature infants. It included (11) items. Part 5: Nurses' knowledge about the Fundamentals for using CPAP Machine and The sign for (CPAP) failure in the treatment of respiratory distress syndrome. It included (8) items.

3.6 Data collection

The data were collected after conducting a pretest questionnaire, applying the program then the posttest by the personal direct intervention of the researcher. The data collection process was performed for the period from the 8th January until the 2nd of March 2016.

3.7 Statistical analysis

The following statistical data were obtained by using the analysis approach (SPSS) to analyze and assess the data of the study Descriptive Data Analysis and Inferential statistical analysis that include F test, T test and ANOVA.

4. Results

Table 1: Distribution of the Study Sample According to their Sociodemographic Characteristic

Variables		*No.*	*%*
Ages (years)	20-24 years	6	25
	25-29 years	12	50
	30-34 years	4	16.7
	35-39 years	1	4.2
	40 years and more	1	4.2
	Total	24	100
Gender	Male	11	45.8
	Female	13	54.2
	Total	24	100
Level of education	graduate nursing Course	-	-
	Graduate Nursing school	2	8.3
	graduate Junior high nursing	10	41.7
	Graduate Institute of Nursing	8	33.3
	Graduate of the College of Nursing and over	4	16.7
	Total	24	100
Years of service	1-5 years	16	66.7
	6-10 years	5	20.8
	11-15 years	2	8.3
	16-20 years	1	4.2
	21 years and more	-	-
	Total	24	100
Years of experience in neonatal intensive care unit	1-5 years	18	75
	6-10 Years	6	25
	11-15 Years	-	-
	16 years and more	-	-
	Total	24	100
Training course about CPAP	Yes	15	62.5
	No	9	37.5
	Total	24	100
No. of	1-2	10	66.7

training course	3-4	5	33.3
	5-6	-	-
	7 and more	-	-
	Total	15	100

No. = number, %= percentage

This table (1) shows that 50% of the study sample were between (25-29) years of age, females were 54.2%, 41.7% were graduates Junior high nursing, 66.7% had (1-5) years of services, 75% of them had (1-5) years of experience in neonatal intensive care unit; 62.5% of them participated in intensive care courses for newborn, from the 15 nurses who participated in intensive care courses for newborn, 66.7% of them had (1-2) courses.

Table 2: Distribution of Nurses Responses to CPAP Knowledge Pre Test

No.	Questions	True answer		False answer		M. S	Ass.
		f	%	f	%		
General information about device (CPAP)							
1.1	Maintenance of an increased (positive) trans pulmonary pressure during the inspiratory & expiratory phase of respiration.	16	66.7	8	33.3	1.67	M
1.2	It works to increase the effort during the process of breathing	3	12.5	21	87.5	1.12	L
1.3	It Conserves surfactant	4	16.7	20	83.3	1.17	L
1.4	It Increase the lung compliance	5	20.8	19	79.2	1.21	L
1.5	The unit of measurement for (CPAP) Machine is (Cm H2O).	9	37.5	15	62.5	1.38	M
1.6	It fails to work if the child continues the status of the chest retraction, asphyxia and snoring.	3	12.5	21	87.5	1.12	L
1.7	From its complication is Nasal obstruction.	5	20.8	19	79.2	1.21	L
Uses of device (CPAP) for premature babies and newborns							
2.1	It is used for patients with respiratory distress syndrome (RDS).	12	50	12	50	1.50	M
2.2	The Machine uses for treat Apnea of premature babies.	3	12.5	21	87.5	1.12	L
2.3	It can be used in case of premature baby with respiratory dysfunction and bradycardia movement.	-	-	24	100	1	L
2.4	It used if there was a possibility to infect the child with Pneumothorax.	1	4.2	23	95.8	1.04	L
2.5	If the child has bleeding in the upper gastrointestinal tract is used.	1	4.2	23	95.8	1.04	L
2.6	Used to eliminate excessive respiratory secretions of Baby.	-	-	24	100	1	L
2.7	When there is pulmonary bleeding may not use the (CPAP) Machine.	2	8.3	22	91.7	1.08	L
2.8	Used when low peak respiratory desired pressure in infants.	9	37.5	15	62.5	1.38	M
2.9	It works to increase intracranial pressure (ICP) for premature.	3	12.5	21	87.5	1.12	L
2.10	The goal of (CPAP) is to reduce the need for respiratory tube in emergencies.	4	16.7	20	83.3	1.17	L
Contraindications to use device (CPAP) for newborn and premature babies							
3.1	There is no mind to use the machine despite of the certain birth defects in the respiratory tract of a child its present, such as cleft lips or cleft palate.	4	16.7	20	83.3	1.17	L
3.2	It can be used in case of severe cardiovascular instability, such as low blood pressure.	3	12.5	21	87.5	1.12	L
3.3	If the child is unconscious and does not respond to stimuli, cannot use the (CPAP) machine in this condition.	8	33.3	16	66.7	1.33	L
3.4	It contraindicates the Machine in the case of pneumonia.	4	16.7	20	83.3	1.17	L
3.5	It Prevents use if the child suffers from nausea and vomiting.	4	16.7	20	83.3	1.17	L
3.6	If the child has surgery in the stomach, that does not affect the use of CPAP machine.	1	4.2	23	95.8	1.04	L
3.7	Abdominal distention is one of the most complication that can be happen.	8	33.3	16	66.7	1.33	L
3.8	Use of the machine does not reduce the proportion of urine and sodium excretion output.	-	-	24	100	1	L
3.9	The machine is not effective in the case of meconium aspiration.	-	-	24	100	1	L
3.10	CPAP Machine prevent to use in the case of Post-extubation in preterm VLBW infants.	-	-	24	100	1	L
3.11	CPAP cannot be used together with the Nebulizer.	-	-	24	100	1	L

Cont. table (2)

Fundamentals in the use of device CPAP							
4.1	Pressure FIO2 for treatment of Respiratory Distress Syndrome (RDS) should be start at 4 Cm H2O.	-	-	24	100	1	L
4.2	Pressure FIO2 for treatment of Apnea of Prematurity (AOP) should be start at 5 Cm H2O.	-	-	24	100	1	L
4.3	The sign for (CPAP) failure in the treatment of respiratory distress syndrome is worsening respiratory distress and/or hypoxemia.	11	45.8	13	54.2	1.46	M
4.4	Recurrent episodes of apnea is not a sign for CPAP failure in the treatment of Apnea of premature infants.	4	16.7	20	83.3	1.17	L
4.5	Chronic obstructive pulmonary disease (COPD) the maximum level of the pressure (CPAP) machine to be provided is 10cm H2O.	-	-	24	100	1	L
4.6	Congestive heart failure (CHF) the maximum level of the pressure (CPAP) machine to be provided is 5cm H2O.	-	-	24	100	1	L
4.7	The appropriate position for the child when using the CPAP machine be lifting the head and put a pillow under it.	2	8.3	22	91.7	1.08	L
4.8	There is no need to match the size of the probe with a premature baby's nose.	8	33.3	16	66.7	1.33	L

Total score of nurses' knowledge	Poor (36-48)		Acceptable (49-60)		Good (61-72)	
	No.	%	No.	%	No.	%
	24	100	-	-	-	-

f= frequency, %= percentage, M. S= mean of score, Ass.= assessment, level of assessment: (1-1.33) = low = L, (1.34-1.67) = moderate = M, (1.68-2.00) = high = H

This table shows that the nurses had a low level of assessment when responding to the scale items except for the items (1.1, 1.5, 2.1, 2.8, 4.3) were they had a moderate level. According to the total score of nurses' knowledge, they had a poor level of knowledge.

Table 3: Distribution the Levels of Assessment through the "Mean of Score" Among the Three Period (Pre, Post-1 and Post-2) for Nurses' Knowledge of the Study Sample

Period	Level of Assessment	Frequency	Percent
Pre-test	(1.00-1.33) Low	24	100
	(1.34 – 1.67) Moderate	-	-
	(1.68 – 2.00) High	-	-
	Total	24	100
	$\bar{x} \mp S.D$	1.16±0.014	
Post 1-test	(1.00 - 1.33) Low	-	-
	(1.34 – 1.67)Moderate	-	-
	(1.68 – 2.00) High	24	100
	Total	24	100
	$\bar{x} \mp S.D$	1.84±0.024	
Post 2-test	(1.00 - 1.33) Low		
	(1.34 – 1.67)Moderate		
	(1.68 – 2.00) High	24	100
	Total	24	100
	$\bar{x} \mp S.D$	1.9158±0.008	

$\bar{x} \mp S.D.$=Arithmetic Mean ($\bar{x}$) and Std. Dev. (S.D.)

This table shows a low level of assessment to the mean of score 24 (100%) of suggested group of assessment (1.00-1.33) for pre-test of study sample with a mean score and standard deviation (1.16±0.014). This table also, shows high level of assessment to the mean of score 24 (100%) of suggested group of assessment for the high level (1.68-2.00) for post-1 test of study sample, with a mean score and a standard deviation (1.84±0.024) and 24 (100%) of suggested group of assessment for the high level (1.68–2.00) for post-2 test of study sample, with a mean score and a standard deviation (1.9158±0.008).

Table 4: Comparison Significant Among the Three Period (Pre, Post-1 and Post-2) for Nurses' Knowledge toward the Continuous Positive Airway Pressure (CPAP) Machine in the Neonatal Intensive Care Unit of the Study Sample

Over all items	Periods		Matched Paired t-test	Sig. P-value	C.S.
Over all responding	Pre test	Post-1	-1.2	0.000	HS
		Post-2	-2.414	0.000	HS
	Post-1	Post-2	-12.037	0.000	HS

C.S.: Comparison Significant, NS: Non Significant at P ≥ 0.05, S: Significant at P < 0.05, HS: Highly Significant at P < 0.01

This table shows that there is a highly significant different at P < 0.01 between the initial period of pre time and post-1, then followed with a highly significant different at P < 0.01 between the initial period of pre time and post-2, and finally a highly significant different at P < 0.01 between the initial period of post-1 and post-2.

Table 5: Distribution and Association of Nurses' Knowledge with Their Age

Variables	Nurses' Knowledge			
Age (Years)	No.	Pre-test Mean ± S.D.	Post 1 Mean ± S.D.	Post 2 Mean ± S.D.
20-24	6	1.16±0.015	1.83±0	1.92±0.00
25-29	12	1.16±0.014	1.84±0.029	1.91±0.009
30-34	4	1.15±0.017	1.87±0.015	1.91±0.01
35-39	1	1.17±0	1.83±0	1.92±0.00
40 and more	1	1.17±0	1.86±0	1.9±0.00
Total	24	1.16±0.014	1.84±0.024	1.9158±0.008
		F =0.389 d.f.= 4 P = 0.814	F =1.853 d.f.= 4 P =0.16	F =1.517 d.f.= 4 P = 0.237

$\bar{x} \mp S.D.$=Arithmetic Mean ($\bar{x}$) and Std. Dev. (S.D.), No. = Number of frequencies, F = Fisher test, d.f. = degree of

freedom, P = probability value.

This table shows that there is no statistical significant association between nurses' age and their knowledge concerning CPAP machine at (pretest, post-1 and post-2) of educational program follow up (p value > 0.05). There are no differences between age groups and mean of knowledge when analyzed ANOVA

Table 6: Distribution and Association of Nurses' Knowledge with Their Gender

Variables	Nurses' Knowledge			
Gender	No.	Pre-test Mean ± S.D.	Post 1 Mean ± S.D.	Post 2 Mean ± S.D.
Male	11	1.16±0.014	1.85±0.025	1.9145±0.009
Female	13	1.16±0.014	1.84±0.022	1.9169±0.007
Total	24	1.16±0.014	1.84±0.024	1.9158±0.008
		F =0.032 d.f.= 1 P = 0.859	F = 2.969 d.f.=1 P = 0.099	F =0.478 d.f.= 1 P = 0.496

$\bar{x} \mp S.D.$=Arithmetic Mean ($\bar{x}$) and Std. Dev. (S.D.), No. = Number of frequencies, F = Fisher test, d.f. = degree of freedom, P = probability value.

This table shows that there is no statistical significant association between nurses' gender and their knowledge concerning CPAP machine at (pretest, post-1 and post-2) of educational program follow up (p value > 0.05). There are no differences between gender and mean of knowledge when analyzed ANOVA.

Table 7: Distribution and Association of Nurses' Knowledge with Their Level of Education

Variables	Nurses' Knowledge			
Level of Education	No.	Pre-test Mean ± S.D.	Post 1 Mean ± S.D.	Post 2 Mean ± S.D.
graduate of the School of Nursing	2	1.15±0.021	1.84±0.035	1.91±0.014
graduate Junior high nursing	10	1.16±0.015	1.84±0.028	1.92±0.00
Graduate Institute of Nursing	8	1.17±0	1.84±0.017	1.91±0.01
Graduate of the College of Nursing and over	4	1.15±0.17	1.87±0.015	1.92±0.00
Total	24	1.16±0.014	1.84±0.024	1.9158±0.008
		F =1.809 d.f. = 3 P =0.178	F = 1.88 d.f.= 3 P = 0.165	F = 3.889 d.f.=3 P =0.024

$\bar{x} \mp S.D.$=Arithmetic Mean ($\bar{x}$) and Std. Dev. (S.D.), No. = Number of frequencies, F = Fisher test, d.f. = degree of freedom, P = probability value.

This table shows that there is a statistical significant association between nurses' level of education and their knowledge concerning CPAP device at post-2 of educational program (p value < 0.05). There is no statistical significant association between nurses' level of education and their knowledge concerning CPAP device at (pretest and post-1) of educational program (p value > 0.05).

Table 8: Distribution and Association of Nurses' Knowledge with Their years of service

Variables	Nurses' Knowledge			
years of service	No.	Pre-test Mean ± S.D.	Post 1 Mean ± S.D.	Post 2 Mean ± S.D.
1-5 years	16	1.16 ±0.13	1.84±0.025	1.917±0.006
6-10 years	5	1.16 ±0.16	1.85±0.025	1.912±0.01
11-15 years	2	1.15±0.021	1.85±0.021	1.92±0.00
16-20 years	1	1.17±0.0	1.86±0	1.9±0.00
Total	24	1.16±0.014	1.84±0.024	1.9158±0.008
		F = 0.366 d.f. = 3 P = 0.778	F = 0.578 d.f. = 3 P = 0.636	F = 2.279 d.f. = 3 P = 0.111

$\bar{x} \mp S.D.$=Arithmetic Mean ($\bar{x}$) and Std. Dev. (S.D.), No. = Number of frequencies, F = Fisher test, d.f. = degree of freedom, P = probability value, < = Less than, ≥ = equal and more.

This table shows that there is no statistical significant association between nurses' years of services and their knowledge concerning CPAP device at (pretest, post-1 and post-2) for educational program follow up(p value > 0.05). There are no differences between years of service in nursing field and mean of knowledge when analyzed by ANOVA.

Table 9: Distribution and Association of Nurses' Knowledge with Their years of service in NICU

Variables	Nurses' Knowledge			
years of service in NICU	No.	Pre-test Mean ± S.D.	Post 1 Mean ± S.D.	Post 2 Mean ± S.D.
1-5 years	18	1.16 ±0.14	1.84±0.024	1.917±0.006
6-10 years	6	1.16 ±0.15	1.85±0.023	1.91±0.01
Total	24	1.16±0.014	1.84±0.24	1.9158±0.008
		F = 0.062 d.f. = 1 P = 0.806	F = 1.747 d.f. = 1 P = 0.2	F = 4.568 d.f. = 1 P = 0.044

$\bar{x} \mp S.D.$=Arithmetic Mean ($\bar{x}$) and Std. Dev. (S.D.), No. = Number of frequencies, F = Fisher test, d.f. = degree of freedom, P = probability value, < = Less than, ≥ = equal and more.

This table shows that there is a statistical significant association between nurses' years of services in NICU and their knowledge concerning CPAP device at post-2 of educational program (p value < 0.05). There is no statistical significant association between nurses' years of services in NICU and their knowledge concerning CPAP device at (pretest and post-1) of educational program (p value > 0.05).

Table 10: Distribution and Association of Nurses' Knowledge with Their Training course about CPAP

Variables	Nurses' Knowledge			
Training course about CPAP	No.	Pre-test Mean ± S.D.	Post 1 Mean ± S.D.	Post 2 Mean ± S.D.
Yes	15	1.16±0.015	1.85±0.024	1.917±0.007
No	9	1.17±0.01	1.84±0.025	1.91±0.01
Total	24	1.16±0.014	1.84±0.024	1.9158±0.008
		F = 2.301 d.f.= 1 P = 0.144	F = 1.663 d.f. = 1 P = 0.211	F = 1.326 d.f. = 1 P = 0.262

$\bar{x} \mp S.D.$=Arithmetic Mean ($\bar{x}$) and Std. Dev. (S.D.), No. = Number of frequencies, F = Fisher test, d.f. = degree of freedom, P = probability value, ≥= equal and more.

This table shows that there is no statistical significant association between nurses' training course and their knowledge concerning CPAP device at (pretest, post-1 and post-2) for educational program follow up(p value > 0.05). There are no differences between years of service in nursing field and mean of knowledge when analyzed by ANOVA.

5. Discussion

The data analysis of the present study as shown in Table (1) of the sociodemographic variables reveal that the majority of the participants age that 12 (50%) in the study sample were within (25-29) years, this results supported by Otheeb, (2016) study (Assessment of Nurses' Knowledge and Practices toward Isolation Techniques among Children with Hepatitis at Pediatric Teaching Hospitals in Baghdad City). who mentioned that most of his study sample were within (20-29) years (7). Concerning to the nurses' gender, most of nurses in the study sample were female 13 (54.2 %) these results supported by Obaid et al., (2016) study (Nurses' Knowledge Concerning Neonatal Sepsis In Neonatal Intensive Care Units At Pediatric Teaching Hospitals In Baghdad City). who mentioned that the most of his study sample was female 40 (70%) (8). In regard to the level of education, most of nurses 10 (41%) in the study sample were graduate Junior high nursing working in the Neonatal Intensive Care Unit, these results agree with Al-Jubouri, (2014) study (Assessment of Nurse's Knowledge about Nosocomial Infection at Hospitals in Baghdad City) (9). In relation to the number of years of experiences in nursing field 16 (66%) of nurses in the study sample had services of (1-5) years in the employment, As for years of experience in Neonatal Intensive Care Unit 18 (75%) of nurses had expert ≥1 years of provide in care for children, these results agree with Hammod, (2016) in her study (Effectiveness of an Educational Program on Nurses Knowledge Concerning Complications Prevention of Mechanical Ventilation at Intensive Care Unit in Al- Hussein Teaching Hospital at Nasiriya City). who mentioned that most of her study sample had experience 1-4 years were 17 (68.0%) (10). The results of the study also reveals that nurses participants in session of Continuous Positive Airway Pressure (CPAP) machine training (37%) who did not having training sessions This results supported by Al- Ftlawy, (2011) in his study (Determination of Nurses' knowledge Toward Care Provided to Patients with Acute Myocardial Infarction in Al-Najaf City). Who mentioned that 18 (47.4%) who did not have training sessions (11). The results indicated as shown in table (2) that the nurses had low level of assessment when respond to the scale items except the items (1.1, 1.5, 2.1, 2.8 and 4.3), where the nurses had a moderate level. According to the total score of nurses' knowledge, they had a poor level of knowledge. This result agrees with Ahmed and Abosamra (2015) study (Knowledge of Pediatric Critical Care Nurses Regarding Evidence Based Guidelines for Prevention of Ventilator Associated Pneumonia (VAP)) (13) .The findings of the study sample showed that there is statistical significant association between nurses' level of education and nurses' years of services in NICU and their knowledge toward The Continuous Positive Airway Pressure (CPAP) Machine at (post-2) of educational program follow up (p value > 0.05). There is no statistical significant association between nurses' age, nurses' gender, years of service in nursing field, nurses' training course and their knowledge toward The Continuous Positive Airway Pressure (CPAP) Machine at (pretest, post-1 and post-2).

6. Conclusions

Most study sample were females, Mostly the ages of study sample were (25-29) Years, a High percentage of the sample had been participate in training courses about CPAP Machine. Highly significant differences between the two periods (pre and post-1 tests) of study sample in all domains of (nurses' information toward The Continuous Positive Airway Pressure Machine in the Neonatal Intensive Care Unit).

7. Recommendations

Nurses must participate in training course about CPAP inside or outside Iraq. The study recommended the necessity to develop the nurses' skills. In addition, Policy should be initiated to providing a special educational course about Neonates with Continuous Positive Airway Pressure (CPAP) Machine.

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Author Profile

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