Evaluation of Nurses' Practices toward Cardiopulmonary Resuscitation in Emergency Unit at Azadi Teaching Hospital

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Abstract:
Objectives: To identify and evaluate the practices of the nurses who work in emergency unit at Azadi teaching hospital toward cardiopulmonary resuscitation.

Methodology: Descriptive study were conducted by evaluation the sample which that consist of (44) nurses, through pre-test and post-test, they are chosen purposively (non-probability) for period 15th August 2014 to 30th September 2014. This study was applied in emergency unit at Azadi teaching hospital in Kirkuk city. For this purpose, checklist was introduced which consist of two parts; the first involves the demographic characteristics of the nurses, and the second involves a scientific checklist (pre-test – post-test) in main domains with (30) items about application of cardiopulmonary resuscitation – basic life support, automated external defibrillator use and advance life support, the sample was divided into two groups (case group and control group), theory and practical lectures were presentedfor case group only between the pre & post-test. The validity of the instrument was determined by using of face validity through the panel of experts, and the reliability of the instrument was determined by internal consistency through the computation of Pearson' Correlation Coefficient (Pearson' Reliability). The data were collected through the utilization of the checklist via observation. Data analysis was employed by applying the Statistical Package for Social Sciences (SPSS)version 21.

Results: The results indicated that the majority of sample was males and who aged 25-34 years old who were graduated from secondary school, and who had less than 3 years of employment in emergency unit make majority proportion. There are significant differences in sample's practices toward CPR and using the AED between the pre-test and post-test for the case sample, and there is no relationship between demographic characteristics of the sample and their practices except in domain of the AED use.

Recommendations: The study recommends providing more CPR training sessions and encouraging nursing staffs to participating in these sessions, replication of the study with a large sample is important and reestablish program of the 1000 Palmer.

Keyword: Cardiopulmonary Resuscitation, Emergency unit, Evaluation, Nurses and Practices.

I. Introduction

Cardiopulmonary resuscitation CPR is a lifesaving intervention and the cornerstone of resuscitation from cardiac arrest. Survival from cardiac arrest depends on early recognition of the event and immediate activation of the emergency response system, but equally critical is the quality of CPR delivered. Both animal and clinical studies demonstrate that the quality of CPR during resuscitation has a significant impact on survival and contributes to the wide variability of survival noted between and within systems of care[1].

The purpose of cardiopulmonary resuscitation is to temporarily maintain a circulation sufficient to preserve brain function until specialized treatment is available. Rescuers must start CPR if the victim is unresponsive and not breathing normally. Even if the victim takes occasional gasps, rescuers should start CPR. CPR should commence with chest compressions. Interruptions to chest compressions must be minimized. In victims who need resuscitation, by stander CPR dramatically increases the chance of survival. Bystander CPR rarely leads to harm in victims who are eventually found not to have suffered cardiac arrest: bystander CPR should be actively encouraged[2][3][4][5].

II. Methodology

A descriptive study was conducted by evaluation the sample which that consist of (44) nurses, they are chosen purposively (non-probability) for period 15th August to 30th September 2014.

The administrative arrangements procedure for conducting the present study has been takenby the nursing college – university of Baghdad to Kirkuk Health Directorate.

This study was applied in emergency unit at Azadi teaching hospital in Kirkuk city. For this purpose, checklist was introduced which consist of two parts; the first involves the demographic characteristics of the nurses such as (age, sex, educational level, years of employment, years of experience in emergency unit,

participating in CPR training sessions), and the second involves a scientific practical checklist(pre-test – post-test) in main domains; application of CPR – basic life support, using of automated external defibrillator AED and advance life support, these domains with (30) items. Under the strict supervision of the researcher .Each nurse was given a time period about (20–30) minutes to apply the procedures. Between the pre and post-test, theory and practical lectures were presented for case group only.

The validity of the instrument was determined by using of face validity through the panel of experts (14 experts). These experts were 7 faculty members from Nursing colleges, 3 Anesthetists from inside and outside Iraq, 4 Emergency Surgeons from Kirkuk hospitals.

The reliability of the instrument was determined by internal consistency through the computation of Pearson' Correlation Coefficient (Pearson' Reliability)[6]. The data were collected through the utilization of the checklist via observation. Data analysis was employed by applying the Statistical Package for Social Sciences SPSS version 21.

III.   The Results
Table (1): Distribution of the Demographic Characteristics of the Study Sample. No.: 44

Demographic Characteristics	Subgroups	Case Group		Control Group		Total	
		f.	%	f.	%	f.	%
Age Groups (Years)	18 - 24 Years	10	22.7	6	13.7	16	36.4
	25 - 34 Years	7	15.9	9	20.5	16	36.4
	35 - 44 Years	1	2.3	7	15.9	8	18.2
	45 years and more	4	9.0	0	0	4	9.0
	Mean of Score	5.5		7.33		22.5	
Gender	Male	16	36.4	14	31.8	30	68.2
	Female	6	13.7	8	18.1	14	31.8
Educational Level	Institute	8	18.1	9	20.5	17	38.6
	Secondary School	14	31.8	13	29.6	27	61.4
Years of Employment	≤ 1 - 5 Years	17	38.6	17	38.6	34	77.3
	6 - 10 Years	4	9.0	2	4.7	6	13.7
	11 - 15 Years	1	2.3	3	6.8	4	9.0
Years of Employment in Emergency Unit	≤ 1 - 3 Years	17	38.6	18	40.9	35	79.6
	4 - 6 Years	4	9.0	1	2.3	5	11.4
	7 - 9 Years	1	2.3	3	6.8	4	9.0
	Mean of Score	7.33		7.33		11	
Participating in CPR training sessions	Not Participating	8	18.1	9	20.4	17	38.6
	1 Training session	10	22.7	7	15.9	17	38.6
	2 Training session	3	6.8	4	9.0	7	15.9
	3 Training session and more	1	2.3	2	4.7	3	6.9

f. = frequency, %= percent, CPR= cardiopulmonary resuscitation.

Table (1) shows the demographic characteristics of the study sample; the first and second age group was (36.4%) of the study sample at age (18 – 34) years higher than other groups. The majority of the study sample was males (68.2%). Relative to their educational status, the greater number of them was secondary school graduates were of (61.4%) of the sample and (38.6%) of them were institute graduate. The majority of the sample were who had one to five years of employment and they accounted (77.3%) of the whole sample. The same percentage of the sample had one to three years of employment in emergency unit and they accounted (79.6%). Concerning to participating in CPR training session, (38.6%) of the sample not participating in CPR session, also (38.6%) had one training session in CPR, (15.9%) had two training sessions in CPR, and only (6.9%) had three training sessions in CPR (table - 1).

Table (2): Effectiveness of the CPR'sTheory and Practical Lectures on Nursing Staff Practices between Pre-test and Post-test for both Case and Control Groups.

The Groups	The tests	S.D.	M.
Control Group	Pre-Test	5.828	49.18
	Post-Test	10.477	54.36
Case Group	Pre-Test	6.160	47.32
	Post-Test	4.261	73.41
The difference proportion between pre and post test for control group			5.18
The difference proportion between pre & post test for Case Group (effectiveness of CPR Lectures)			26.09

M.: the Mean , S.D.: Standard Deviation, CPR: Cardiopulmonary Resuscitation.

This table shows the proportion of the difference for effectiveness of the CPR theory and practical lectures on nursing staff's practices between pre-test and post-test for case group is (26.09%) which mean good effectiveness of these lectures, while the proportion of the difference between pre-test and post-test for control group is (5.18%) which mean very slight elevation due to no lectures they are exposed to.

Table (3): Distribution of the Association between the Educational Level of the Study Sample and all Items of CPR domains

Domains	Responses	Institute Graduates		Secondary Graduates		Total	%
		f.	%	f.	%		
Check and Call Domain (include 5 items)	Ignore	4	3.6	6	5.5	10	1.5
	Partial Applied	16	14.6	26	23.6	42	6.4
	Complete Applied	20	18.2	38	34.5	58	8.8
CPR Application Domain (include 20 items)	Ignore	20	4.5	32	7.3	52	7.9
	Partial Applied	32	7.3	67	15.2	99	15
	Complete Applied	108	24.6	181	41.1	289	43.8
AED use and Post-Resuscitation Care Domain (include 5 items)	Ignore	4	3.6	16	14.6	20	3
	Partial Applied	22	20	38	34.5	60	9.1
	Complete Applied	14	12.7	16	14.6	30	4.5
Total		240	36.4	420	63.6	660	100

f.:frequency, %: percentage, CPR: Cardiopulmonary Resuscitation, AED: Automated external defibrillator, df.: 2, Critical (tabulated) degree: 5.991, p-value ≤ 0.05.

Table (3) shows thatthe domain of AED uses and Post- Resuscitation Care have a significant relationship with educational level, especially secondary graduates at p-value 0.05.

Table (4): Distribution of the Association between Years of Employment of the Sample in the emergency unit and all Items of CPR domains

Domains	Responses	1 – 3 Years		4 – 6 Years		10 Years & more		Total	%
		f.	%	f.	%	f.	%		
Check and Call Domain	Ignore	8	7.3	0	0	29	1.8	10	1.5
	Partial Applied	34	30.9	7	6.4	1	0.9	42	6.4
	Complete Applied	43	39.1	13	11.8	2	1.8	58	8.8
CPR Application Domain	Ignore	42	9.6	8	1.8	2	0.4	52	7.9
	Partial Applied	75	17.0	20	4.6	4	0.9	99	15
	Complete Applied	223	50.7	52	11.8	14	3.2	289	43.8
AED uses and Post-Resuscitation Care Domain	Ignore	18	16.4	0	0	2	1.8	20	3
	Partial Applied	46	41.8	12	10.9	2	1.8	60	9.1
	Complete Applied	21	19.1	8	7.3	1	0.90	30	4.5
Total		510	77.3	120	18.2	30	4.5	660	100

f.: frequency, %: percentage,CPR: Cardiopulmonary Resuscitation, AED: Automated external defibrillator,df.: 4, Critical (tabulated) degree: 9.488, p-value ≤ 0.05.

Table (4) shows that the domain of AED uses and Post-Resuscitation Care have a significant relationship with years of employment in emergency unit, especially who have (1-3) years of employment at p-value 0.05.

IV. Discussion
1- Discussion of the Demographic Characteristics of Nursing Staff:
Analyses of nurses' demographic characteristics ensure the equivalency in both groups and there are slight differences between case and control groups, this result of the study are accepted in the non-equivalent (pre-and post-test) quasi experimental design. Relative to their age groups, most of the nurses in the control group 9 (40.9 %) are second age group (25 - 34 Years), and in the case group 10 (45.5%) are first age group (18 - 24 Years) (Table -1). But these findings disagree with a study that reported that the age group (26 – 30) makes the majority of nurses (43.1%) is more than other groups[7]. This study reveals that the majority of nurses in the case group 16 (72.7 %) were male, and the majority of nurses in the control group 14 (63.6 %) were male (Table-1); the researcher confirms that the number of female assignments in the hospitals – as general, is little, and the working in emergency unit is difficult work, so it's hard to female. But these findings disagree with a study that reported that the female (86.3%) is more than male (13.7%)[7].

Related to their educational level, most of the nurses in case group 14 (63.6%) and in control group 13 (59.1 %) are nursing secondary school(Table-1). Also these findings disagree with a studythat reported that who had diploma in nursing makes the majority of nurses (69.6%) is more than other educational levels[7]. This study

has revealed that the majority of the nurses in the casegroup 17 (77.3 %), and control group 17 (77.3 %) are less than 5 years of employment as general (Table-1). This result indicated that the (≤5) years are predominant among the nursing' staff. These findings agree with a study that demonstrated that had employment 5 years and less makes the majority of nurses (55%) are more than other groups[7]. This study has revealed that the majority of the nurses in the case group 17 (77.3 %), and control group 18 (81.8 %) are less than 3 years of employment in emergency unit (Table-1). The researcher confirms that the transition of nurses from unit to other cause the nurses not to wish to work in the emergency unit because this unit needs difficult duty. These findings agree with a studythat demonstrated who had employment 5 years and less makes the majority of nurses (55%) are more than other groups[7]. This study shows that the 10 (45.5 %) of nurses in case group have one Training session in CPR, and 9 (40.9 %) of nurses in control group have no trainings in CPR (Table -1). These findings agree witha studythat noted that more than half of nurses (52%) have no participating in CPR training sessions [7]. The researcher confirms that conference regarding the knowledge and practice related to the CPR, are not fortunate to be enrolled in any training session or conferences because such session or conferences is not available and present to them so that the researcher suggests an opportunity for nurses to be enrolled in CPR training sessions, workshops and conferences to improve their knowledge and skills, and to keep them updated. This suggestion is in agreement with the findings obtained from a study suggests that education programs have been designed to keep nurses up to date with current practices and trends. They ensure nursing staff' abilities through mandatory annual competency sessions[8].

2- Discussion of CPR Program Effectiveness on Nursing StaffPractices in Emergency Unit:

During measures the effectiveness of the CPR program on nursing staff's practices between pre-test and post-test for both case and control groups, table (2) shows the Mean difference for effectiveness of the CPR theory and practical lectures on nursing staff's practices between pre-test and post-test for case group is (26.09), this means that the lectures have a good effectiveness on the nursing staff's practices apparent and clear in the difference between the pre-test and post-test of the case group, and confirms the credibility of this result is that there is very little difference in the Mean of (1.86) for control group. This result agrees with other studies, one in Botswana[7] the CPR skills of the nurses improved by (67.8%) after their CPR training, similar findings were reported by another study reported in Ireland[9]. While the difference between pre-test and post-test for control group is (5.18%) which means very slight elevation. The researcher confirms that the nurses in the control group are not changed in pre and post-test, they remain the same practices at all measures. This outcome is in agreement with a studywhich stated that the nurse does not participate in continuing education opportunities; the nurse will not be able to renew her license to the practice[10].

3- Relationship between Nursing Staff's Practices in CPR with Demographic Characteristics (Educational Level and Years of Employmentin Emergency Unit)

The results revealed that the case and control groups are comparable practices with regard to the demographic characteristics (educational level and years of employment in emergency unit) to find out the relationship.

A- Educational Level:

As a result of the data analysis, there is no significant association between the nurses' practices of the case group with their educational level related to main domains with all items of CPR application, except in the domain of AED use and Post-Resuscitation Care have a significant relationship with educational level at p-value 0.05 (table -3). The researcher confirms that all nurses who work in emergency unit are graduated from secondary nursing school and nursing institute, their study curriculum is almost equal, also they are work together in same unit, so there are very slight or no differences between them in providing CPR, and they must be prepared to implement any changes in patient care as soon as the changes become necessary (as the changes in CPR guidelines).

In agreement with this result, a study reports that in the event of a cardiac arrest, nurses are perceived by the community to be competent and ready to perform effective CPR. Irrespective of their educational level, nurses have a professional responsibility to maintain competence in CPR through regular updates [11].

B- Years of Employmentin Emergency Unit:

As a result of the data analysis, there is no association between the nurses' practices of the case group with their years of employment in emergency unit related to main domains with all items of CPR application, except in the domain of AED and Post-Resuscitation Carehave a significant relationship with years of employment in emergency unit at p-value 0.05 (table -4). Researcher sees the reason is that most nurses are those who have a few years of employment in the emergency unit, and they have almost the same knowledge and skills. While there is a study indicates that the important need according to that must be fulfilled if nurses are to be in a position to administer effective CPR is the need for expert instruction, expertise and education (collectively referred to as learning). Only nurses who have learned everything that they need to know about the

correct administration of CPR are in a fit state to administer CPR wherever it's required[12]. There is an Iranian study which stated that there are several authors showed that CPR skill decreased with time.

They demonstrated that retention ability of CPR skill in training was weak. The extent to which nurses' CPR knowledge and psychomotor skills were retained 2 years after re-test decreased from 80.6% to 64.3% [13].

Recommendations:

1- Providing more CPR training sessions and encouraging nursing staffs to the participating.
2- Replication the study with a large sample is important.
3- Reestablish program of the 1000 Palmer.

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Checklist Domains and its Items
Check and Call Domain:
Check and Call – step-1 – General Assessment: Scene, Cars, Peoples, Electrics, Water, Smoke or fire…etc.
Check and Call – step-2 – Specific Assessment: Be sure in safety place, no threats to him/her victim or others. (with Explanation).
Check and Call – step-3: Insurance of victim's consciousness by shake the victim's shoulder.
Check and Call – step-4: Be sure of victim's consciousness by asking him/her "are you OK" (with Explanation).
Check and Call – step-5 – Call: Shouting for help or activates Emergency medical service system (with Explanation).

CPR Application Domain:
CPR – step-1: Starts with CPR according to the international guidelines: right setting (Sitting on knees beside the victim).
CPR – step-2: Put the rest one hand on the victim's chest (Middle chest = lower half of the sternum).
CPR – step-3: Place the other hand on the first hand and fingers interlock.
CPR – step-4: Make sure the pressure of his/her hands not on the ribs, the end of the sternum and not on the top of the abdomen.
CPR – step-5: Put arms straight vertical over the victim's chest non-flexing
CPR – step-6: Start by compress on the exact location in depth (5-6) cm.
CPR – step-7: Make sure that after each compression return the chest back completely.
CPR – step-8: Do not leave the hands touching the victim's chest.
CPR – step-9: Repeat the process of pressing the chest until 30 compressions.
CPR – step-10: Time of compression is equal to the time of relaxation – no more and no less.
CPR – step-11: After 30 compressions, open the airway by tilting the head and lift the Chin.
CPR – step-12: On the header of the victim is filling the nostrils with a soft part of it by the index finger and thumb.
CPR – step-13: Taking normal breath – put lips on victim's mouth (and its open).

CPR – step-14: Blowing into the victim's mouth with notes rise chest and it take about one second like his rise in the normal state.

CPR – step-15: With maintaining the victim's head is tilted and lifted his chin, and notes down the chest with air outlet.

CPR – step-16: Taking another normal breath (second) – put the lips on the victim's mouth, and blowing it with note rise chest – that takes no more than 5 seconds.

CPR – step-17: Return without delay to the positioning of the vertical compression on the victim's chest, and the fingers interlocked and give 30compressions as in the first step.

CPR – step-18: Continue compressions to breath ratio by 30:2 (30 compressions with 2 breaths).

CPR – step-19: Stop only when the note marks of the return of consciousness or recovery as cough, open eyes, speaking, purposive movements or normal breathing, or continue CPR without interruptions.

CPR – step-20: Stop every two minutes to assess (check) the condition of the patient or injured, only when absence of marks of return the consciousness or recovery.

AED and Post-Resuscitation Care Domain:

AED and Post-Resuscitation Care – step-1: Connecting the AED to the victim correctly.

AED and Post-Resuscitation Care – step-2: Reading the diagnosis of AED correctly and distinguish shockable condition from the other (VF&VT) and (PEA &Asystol).

AED and Post-Resuscitation Care – step-3: The use of AED correctly, not touching the victim and alert people by advocating a "Clear".

AED and Post-Resuscitation Care – step-4: Advanced life support and special care for post CPR correctly when the availability of the monitor, medicines, fluids and other medical supplies.

AED and Post-Resuscitation Care – step-5: Identifying the complications as a result of CPR application (fractured ribs, ruptured lungs and their pneumothorax & hemothorax) and others, and good handling with each case.