



Effectiveness of Applying Guideline of Advanced Trauma Life Support on Nurses' Knowledge

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ABSTRACT

Introduction: Trauma is the main reason for death in children and young adults aged 10 to 40. The Advanced Trauma Life Support (ATLS) protocol is the most widely used technique for controlling and treating multiple trauma patients.

Methodology: The design used in the current study is a quasi-experimental design -experimental design (two -groups comparison), the study was conducted in emergency medicine department at Baghdad city in Iraq. Study Sample: A non-probability (purposive) sample was taken from staff nurses in emergency unite and critical unite and the sample was (80) nurses. Use questionnaire and observational checklist as the with implementation guideline.

Result: It was found that there is an effectiveness of the guideline on the study sample with the post-test when compared with the study group after implementation program.

Conclusion: The nurses in emergency unite and critical unite have inadequate knowledge concerning advance trauma life support guideline (ACLS). The guideline which implemented on nurses in emergency unite and critical unite had a benefit feedback on nurses 'knowledge and practice.

Keywords: Effectiveness, Guideline, Practices, Trauma, Simulation manikin

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INTRODUCTION

Severe trauma represents one of the most common health-care concerns confronting the modern community, resulting in more than five million deaths each year in the whole world, this number is probable to rise to above eight million by 2023 [1]. Trauma is the leading causes of death in children and young aged ten to fourteen. The Advanced Trauma Life Support (ATLS) protocol is currently the most commonly used technique for controlling and treating multiple trauma patients. In rural Nebraska, an absence of a standardized method for evaluating a trauma patient's condition and the skills to perform emergency lifesaving surgical techniques resulted in the development of an Advanced Trauma Life Support (ATLS) course. Traumatic injuries have a massive impact on today's society in terms of

morbidity, mortality, and financial costs. According to studies, both advanced life support skills and rapid stabilization and transport of the trauma victim improve the patient's overall outcome. Appropriate identity, field triage, ambulance caregiver intervention to provide before -hospital trauma care, and transfer of gravely traumatized casualties to hospital can all help to reduce mortality and morbidity. To enhance the victims' chances of survival, the health care provider must be trained in cardiopulmonary resuscitation (CPR). A piercing or blunt injury results in a traumatic haemothorax, which is an accumulation of blood inside the pleural cavity causing blood to accumulate in the pleural area, which has an impact on hemodynamics and breathing. Patients who are critically unwell are individuals who have a high risk of developing real or probable life-threatening conditions. The majority of trauma deaths occur in the traumatic incident's prehospital setting. Patients who are critically ill have serious, life-threatening conditions with serious consequences.

METHODOLOGY

The study design

The design used in this study is a quasi-experimental

design -experimental design (two-group comparison), which attained through the pre and post-tests method for study sample by apply guideline.

Study Setting

The study was conducted in emergency medicine department at Baghdad city in Iraq.

Study Sample

A non-probability (purposive) sample was taken from nurses who were emergency unite and critical care unite was (80) nurses (control group 40 nurse and study group 40 nurse).

Study Instrument

The questionnaire was used as a study tool Pre and post-test after the implementation of the guideline, which contains (42) questions related to the nurses' knowledge related to advance trauma life support guideline [2].

Data Analysis

Use data analysis such as frequencies, percentages, Pearson correlation coefficient test, paired t-test and ANOVA test to measure the level of knowledge.

Ethical Consideration

Approval was gained from the Ethics Committee of the College of Nursing. Permission was obtained from emergency medicine department, orally and written consent was gained from the current study participants [3].

RESULT AND FINDING

Table 1 presented that the participants in the experimental group was males (n = 28; 70.0%) and females (n = 12; 30.0%), while the control group, was a female (n = 12; 30.0%) and to males (n = 28; 70.0%). The group age of experimental group was 30-39 years (n = 21; 52.5%). and control group, the age 30-39-years (n = 18; 45%).The educational qualification of Experimental group was the diploma have 40%, while the control group was secondary school high percentage which

(n=20;50%).

Table 2 presented that the years of experience in nursing, the Experimental group have 1-10-years (n = 14; 35%),11-20-years (n = 14; 35%) and control group have 1-10-years (n = 28; 70%).With respect to years of experiences in emergency unite in the Experimental group have 1-3-years (n = 17; 42.5%), and the control group high percentage were 4-6 years (n = 18; 45.0%). Concerning participation in training courses related to ATLS, more than a half of Experimental group not enrolled in training courses which of (n = 31; 77.5%) and the control group who not enrolled in training course was (n = 34; 85.0%).Regarding the number of training courses, the experimental group was enrolled to training course which as (n = 9; 22.5%). and the control group (n = 6; 15.5%). The participant who training in Iraq for experimental group was (n = 9; 100.0%) and control group (n = 6; 100.0%). High percent of experimental group not have knowledge about ATLS which of (n = 30; 75.0%) and the control groups who not have such knowledge about ATLS was (n = 34;87.5%).

Table 3 shows the priority care knowledge of nurses related to Advance Trauma Life Support Guide Line experimental group was 13% was correct and 87% incorrect at pretest, at posttest was 87.5% was correct and 12.5 incorrect, while the control group was 28.16% was correct and67.84% incorrect at pretest, at posttest was 27.5% was correct and 72.5 incorrect [4].

Table 4 shows the breathing resuscitation knowledge of nurses related to advance trauma life support guide line experimental group was 15.5% was correct and 84.5% incorrect at pretest, at posttest was 915% was correct and 9 incorrect, while the control group was 20.5% was correct and 79.5% incorrect at pretest, at posttest was 41.75% was correct and 58.25 incorrect [5].

Table 5 shows the circulation knowledge of nurses related to advance trauma life support guide line experimental group was 25.41% was correct and 74.59 % incorrect at pretest, at posttest was 88.33% was correct and 11.77 incorrect, while the control group was 48.12% was

Table 1: The study sample's socio-demographic characteristics (Experimental and control group).

Variable	Experimental (n = 40)		Control Group (n = 40)	
	Freq.	Percent	Freq.	Percent
Gender				
Female	12	30	12	30
Male	28	70	28	70
Age (Years)				
20-29	6	15	10	25
30-39	21	52.5	18	45
40-49	9	22.5	8	20
≥ 50	4	10	4	10
Mean ± SD	2.2750 ±.84694		2.1500 ±.9216	
Educational Qualification				
High education (M&PHD)	3	7.5	0	0
Bachelor's degree	14	35	10	25
Diploma	16	40	10	25
Secondary school	7	17.5	20	50
Mean ± SD	2.6750 ±.85896		3.2500 ±.83972	

Table 2: Participants' employment characteristics for (Experiential and Control group).

Variable	Experimental Group (n = 40)		Control Group (n = 40)	
	Freq.	Percent	Freq.	Percent
Years of experience in Nursing				
1-10 years	14	35	28	70
11-20 years	14	35	10	25
Above 20 years	12	30	2	5
Years of experience in Emergency Room				
1-3 years	17	42.5	9	22.5
4-6 years	14	35	18	45
7-9	9	22.5	13	32.5
Have you taken a course on advance trauma life support?				
Yes	9	22.5	6	15.5
No	31	77.5	34	85
Number of training courses				
One course	9	100	6	100
More than one course	0	0	0	0
Total	9	100	6	100
Place of training course				
Inside Iraq	9	100	6	100
Outside Iraq	0	0	0	0
Do you have knowledge about advance trauma life support?				
Yes	10	25	5	12.5
No	30	75	35	87.5

Table 3: Evaluate of nurse's knowledge about priority care according to advance trauma life support at pre and posttest for experimental and control group.

NO	Items	Case group No. 40				Control group No. 40											
		Pre test		Post test		Pre test				Post test							
		Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect						
		f.	%	f.	%	f.	%	f.	%	f.	%	f.	%	f.	%	f.	%
1.	priority of emergency cases	11	27.5	29	72.5	35	62.5	15	37.5	10	25	30	75	15	37.5	25	62.5
2.	2nd trauma centers	3	7.5	37	92.5	37	92.5	3	7.5	4	10	36	90	15	37.5	25	62.5
3.	signs circulatory	4	10	36	90	38	95	2	5	11	27.5	29	67.5	13	32.5	27	67.5
4.	triage of the injured	5	12.5	35	87.5	39	97.5	1	2.5	19	47.5	21	52.5	9	22.5	31	77.5
5.	purpose of Trauma team	6	15	34	85	39	97.5	1	2.5	8	20	32	80	14	35	26	65
6.	injury severity scale	9	22.5	31	77.5	38	95	2	5	6	15	34	85	16	40	24	60
7.	the higher the death rate	3	7.5	37	92.5	37	92.5	3	7.5	8	20	32	80	14	35	26	65
8.	Nursing diagnosis	5	12.5	35	87.5	32	80	8	20	20	50	20	50	10	25	30	75
9.	The primary survey	4	10	36	90	33	82.5	7	17.5	25	75	15	25	8	20	32	80
10.	injured person who walks	3	7.5	37	92.5	35	95	5	12.5	11	27.5	29	72.5	16	35	26	65
11.	GCS	6	15	34	85	35	87.5	5	12.5	10	25	30	75	17	32.5	27	67.5
12.	oxygen to be cut off	6	15	34	85	34	85	6	15	16	40	14	60	15	37.5	25	62.5
13.	O2 is in the atmosphere	4	10	36	90	34	85	6	15	13	32.5	27	67.5	14	35	26	65
14.	Air pressure inside lungs	4	10	36	90	32	80	8	20	11	27.5	29	72.5	16	40	24	60
15.	(LOOK) First basic skills	5	12.5	35	87.5	34	85	6	15	3	7.5	27	92.5	19	47.5	21	52.5
Total		13		87		87.5		12.5		28.16		67.84		27.5		72.5	

correct and 51.48% incorrect at pretest, at posttest was 41.04% was correct and 68.95 incorrect [6].

Table 6 shows the disability knowledge of nurses related to advance trauma life support guide line experimental group was 26% was correct and 74% incorrect at pretest,

at posttest was 95% was correct and 5 incorrect, while the control group was 23.5% was correct and 76.5% incorrect at pretest, at posttest was 19.5% was correct and 80.5 incorrect [7].

Table 4: Evaluate of nurse’s knowledge about breathing resuscitation according to advance trauma life support at pre and posttest for experimental and control group.

NO	Items	Case group No. 40								Control group No. 40							
		Pre test				Post test				Pre test				Post test			
		Correct		Incorrect		Correct		Incorrect		Correct		Incorrect		Correct		Incorrect	
		f.	%	f.	%	f.	%	f.	%	f.	%	f.	%	f.	%	f.	%
1.	neck injury is opened by	14	35	26	65	34	85	6	15	8	20	32	80	15	37.5	25	62.5
2.	airway is evaluated first.	14	35	26	65	34	85	6	15	8	20	32	80	15	37.5	25	62.5
3.	injury above subclinical	3	7.5	37	92.5	33	92.5	7	7.5	13	32.5	27	67.5	15	37.5	25	62.5
4.	places nurse try to feel	4	10	36	90	37	92.5	3	7.5	6	15	34	85	19	47.5	21	52.5
5.	Order to continue CPR?	4	10	36	90	34	85	6	15	8	20	32	80	16	40	24	60
6.	ETT for ventilation	6	15	34	85	38	95	2	5	6	15	34	85	18	45	22	55
7.	To keep the neck Fixed	6	15	34	85	36	90	4	10	7	17.5	33	82.5	16	40	24	60
8.	percentage of oxygen	2	5	38	95	37	92.5	3	7.5	8	20	32	80	16	40	24	60
9.	starting CPR?	3	7.5	37	92.5	38	95	2	5	10	25	30	75	12	55	18	45
10.	respiratory rate	6	15	34	85	39	97.5	1	2.5	8	20	32	80	15	37.5	25	62.5
Total		15.5		84.5		91		9		20.5		79.5		41.75		58.25	

Table 5: Evaluate of nurse’s knowledge about circulation resuscitation according to advance trauma life support at pre and posttest for experimental and control group.

NO	Items	Case group No. 40								Control group No. 40							
		Pre test				Post test				Pre test				Post test			
		Correct		Incorrect		Correct		Incorrect		Correct		Incorrect		Correct		Incorrect	
		f.	%	f.	%	f.	%	f.	%	f.	%	f.	%	f.	%	f.	%
1.	Look basic skill.	9	22.5	31	77.5	35	87.5	5	12.5	5	12.5	25	87.5	12	30	28	70
2.	If the airway is blocked	9	22.5	31	77.5	35	87.5	5	12.5	37	92.5	3	7.5	16	40	24	60
3.	listen examination skills.	13	32.5	27	67.5	34	85	6	15	30	75	10	25	25	62.5	15	37.5
4.	feel 3 skill examination	9	22.5	31	77.5	35	87.5	5	12.5	37	92.5	3	7.5	16	40	24	60
5.	Control wound closure	8	20	32	80	37	92.5	3	7.5	12	30	28	70	19	47.5	21	52.5
6.	hemodynamic assess	11	27.5	29	72.5	37	92.5	3	7.5	21	52.5	19	47.5	19	47.5	21	52.5
7.	Assess circulation	12	30	28	70	36	90	4	10	16	40	24	60	14	35	26	65
8.	used for injuries N.S	17	42.5	23	57.5	35	87.5	5	12.5	16	40	24	60	18	45	22	55
9.	giving IV fluids Warm	10	25	30	75	32	80	8	20	18	45	22	55	21	52.5	19	47.5
10.	Ringer Lactate	10	25	30	75	36	90	4	10	18	45	22	55	18	45	22	55
11.	10% of the blood volume	3	7.5	37	92.5	36	90	4	10	12	30	28	70	12	30	28	70
12.	pulse reflects	11	27.5	29	72.5	36	90	4	10	9	22.5	31	77.5	7	17.5	33	82.5
Total		25.41		74.59		88.33		11.77		48.12		51.48		51		49	

DISCUSSION

Table 1 & 2 Discussion of the Socio-Demographic feature of the Sample

Throughout data analysis of present research, table4-1 shows the statistical distribution of the nurses'

demographic characteristics, show the experimental and control group is similar or no statistics are computed in order to each groups are constant with regard to various demographic feature. It is found that the emergency nurses for each group is (70%) male and (30%) female.

Table 6: Evaluate of nurse’s knowledge about circulation resuscitation according to advance trauma life support at pre and posttest for experimental and control group.

NO	Items	Case group No. 40								Control group No. 40							
		Pre test				Post test				Pre test				Post test			
		Correct		Incorrect		Correct		Incorrect		Correct		Incorrect		Correct		Incorrect	
		f.	%	f.	%	f.	%	f.	%	f.	%	f.	%	f.	%	f.	%
1.	pupil size	12	30	28	70	38	95	2	5	10	25	30	75	9	22.5	31	77.5
2.	Pupils of unequal size.	11	27.5	29	72.5	37	92.5	3	7.5	14	35	26	65	13	32.5	27	67.5
3.	Pupils dilated in size	10	25	30	75	38	95	2	5	10	25	30	75	8	20	32	80
4.	Pupils shrink in size,	9	22.5	31	77.5	39	97.5	1	2.5	3	7.5	37	92.5	1	2.5	39	97.5
5.	pt conscious of place, time	10	25	30	75	38	95	2	5	10	25	30	75	8	20	32	80
Total		26		74		95		5		24.5		75.5		24		76	

The education level of nurses is Diploma percentage (40%) and (50%) of the control were Secondary school.

Throughout the data analysis of research, table (4-2) shows the statistical distribution of the nurses' socio demographic characteristics. The outcome, in the present study, point out that the most of the emergency nurses 1-3 Years of experience in Emergency Room (42.5%) of the study group and 4-6 years (45%) of the control, the duration of years working in Emergency nurses was (6-10) years. And 22.5% of emergency nurse’s participant in a training course in study group. 15.5 % percent of emergency nurse’s participant in a training course in control group, all participant are inside of Iraq in study group and control group and the number of training course were times (100%) and (100 %) of the control group.

Despite the fact that emergency nurses attended numerous training sessions and were enrolled, we found that neither the study nor the control group's emergency nurses performed well on knowledge tests or on checklists used to check off practices before adopting guidelines.

Mannequins, simulation situations, and other genuine materials and equipment may not have been used to produce this outcome. Another explanation might be that not enough opportunity is given for emergency nurses who participated in earlier courses to put their new skills into practice. They claimed that a standardized course concept in pre-hospital trauma treatment results in better and safer implementation of the concepts, as well as better and safer recording of actual field operations.

Table 3 Distribution of effect of applying guideline on emergency nurse’s knowledge priority care concerning advance trauma life support between the study and the control group.

The important of the emergency knowledge is a basic goal of all health interventional program to maintain life of patient .so, the current study apply the program related to guideline of advance trauma life support to improve the nurse’s knowledge and practice, which to the result related that the experiential group have deficit

knowledge which of 87% incorrect answer at pretest about how use the plan of priority of care and then change it their knowledge at posttest to 87.5% correct answer. Improvement in knowledge concerning after the execution of the recommendation in all of the study's included domains, trauma care was unquestionably known. The priority of care is the first domain where nurse knowledge is measured. The findings shows that the information base has grown of the nurses’ work in emergency and critical unite after the implementation of the guideline of advance trauma life support.

According to Abellsson and Lindwall's phenomenographic study at Sewed, there are three main categories of expert ambulance nurses' opinions of evaluating patients who have had severe trauma: To be ready for unanticipated circumstances, having faith in one’s own leadership abilities and advancing professionally

In a study by Whiting et al, they created a trauma management curriculum for intensive care nurses in the United Kingdom and demonstrated the importance of specific training for ICU nurses in order to care for severely injured patients.

In a study conducted by Carley S, Driscoll P, education is a carefully thought-out event that influences behavior. Health care employees' knowledge can be increased through the use of adult education techniques. To accomplish these goals, adult learners must carefully evaluate lecture style, small group work, role playing, and skill stations. These methods are often applied in brief, intensive courses like Advanced Trauma Life Support (ATLS), which focus on providing the patient’s initial care. There is a dearth of instruction focused on decisive care. It is crucial to evaluate how trauma education has affected the clinical procedure, the patients’ outcomes, and the retention of skills and information.

Table (4) Evaluate of nurse’s knowledge about breathing resuscitation according to advance trauma life support at pre and posttest for experimental and control group table.

Respiratory resuscitation is one of the most common, interdisciplinary interventions for hospitalized patient

and required a high degree of coordination. Furthermore, respiratory resuscitation is an intervention that is associated with plethora of potential adverse outcome. The result present study related that the experimental group have deficit knowledge related to breathing resuscitation at pretest which as 84,5% which was incorrect answer about the steps which used to do resuscitation of breathing at pretest, while the result was improved at posttest which as 91.5 correct answer.

The researcher's opinion that the improvement of knowledge of participants in present study was that clarity and intensive lecture program, and no training course of participants was led to present results.

These findings were corroborated by Ali et al. (2019), who implemented the Prehospital Trauma Life Support (PHTLS) program. They discovered that the Prehospital trauma care had changed as evidenced by more frequent airway control, oxygen use, control of C-spine and hemorrhage, and splinting of bone fractures following the introduction of the Prehospital Trauma Life Support program.

Table 5 Evaluate of nurse's knowledge about circulation resuscitation according to advance trauma life support at pre and posttest for experimental and control group table.

In primary survey, the circulation still the priority after airway and breathing definitively managed. delivery of the oxygen to the tissue is dependent on adequate circulation, so the researcher evaluating the knowledge of the study sample about circulation during life support ,and their result was 74.59%incorrect answer about the items should be applied during resuscitation circulation for experimental group, and then improved at posttest which as the result was 88.33% correctly answer .while control group was their result about resuscitation of circulation at pretest 51.48%at pretest and then change it at posttest 49% in correct answer,

These results support the 2011 Roger et al. study from Benha University Hospital. Basic life support (BLS), which entails maintaining breathing and external trunk pressure, and Advanced Cardiac Life Support (ACLS), which entails BLS as well as the use of assistants for oxygenation, ventilation, and airway control, cardiovascular monitoring and arrhythmia recognition, tranquilizer and electrical treatment, and management of exceptional revival circumstances, are the two main categories of modern resuscitation. Excellent ACLS is critical for lost survival in cases of sudden death. This must be accomplished by ensuring that ambulance guardians and other human services personnel have the appropriate training in order to gain the requisite ACLS knowledge and abilities.

Table 6 Evaluate of nurse's knowledge about stabilizing the injured and preventing disability according to advance trauma life support at pre and posttest for experimental and control group table.

Providing safety and prevent other injury is very

important steps for injury patient, so emergency nurses most be aware about the steps which applied during giving care for patient at emergency unite and critical care unite, present study finding revealed the experiential group have deficit knowledge about the step of stability which as the result 74% incorrect answer at pretest for how provide safety and prevent disability for patient during care and after implementation of program their knowledge improve to 95%correct answer for same item related to stabling and prevent disability, while the control group was correct answer 24.5% and 75.5 incorrect answer at pretest ,at posttest was 24% was correct and 76% incorrect. Jordi, et al, examine the accuracy of triage acuity rating for Emergency triage nurses and assess nurses' subjective confidence in apply the Emergency Severity Index (ESI) their study was conducted in Emergency of 4 hospitals in the Germany between 2008-2011, they included 69 nurses, their results revealed that 59.6% of them was applying score correctly, and 78% have felt confident in their ability to apply ESI scale.

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