Effectiveness of Simulation Techniques on the Nursing Students Knowledge toward Cardiopulmonary Resuscitation for Adults at College of Nursing/University of Baghdad

فعالية تقنية المحاكاة على معارف طلبة التمريض تجاه انعاش القلب والرئة للبالغين في كلية التمريض / جامعة بغداد

Musaab Majid Abdulwahhab*

الخلاصة

هدف الدراسة : تهدف الدراسة إلى معرفة تاثير المحاكاة على معارف طلبة كلية التمريض تجاه انعاش القلب والرئة للبالغين.

المنهجية: دراسة شبه تجريبية اجريت إختبارات (قبل الإختبار، بعد الإختبار 1 و بعد الإختبار 2) لمعرفة فعالية تقنية المحاكاة على معارف الطلبة تجاه انعاش القلب والرئة للبالغين . بدأت الدراسة من 2014/11/10 ولغاية 2015/5/10 ، وقد تم جمع 75 طالب وطالبة من المرحلة الرابعة في كلية التمريض وتكونت أداة الدراسة بالاعتماد على الدليل الاسترالي لإنعاش القلب والرئة. تتكون اداة الدراسة من 20 فقرة تقيس الانعاش القلبي الاساسي والمتقدم. وتم قياس ثبات الفقرات من خلال إجراء الاختبار وإعادة الاختبار = 0.85 واستخدم الباحث الإحصاء الوصفي والاستدلالي لتحليل البيانات.

النتائج: إختلاف قيمة المتوسط بين الاختبار القبل والإختبار البعدي الاول والإختبار البعدي الثاني تم احتسابه باستخدام اختبار (ت) المقترن . اظهرت النتائج على وجود دلالة احصائية عالية تشير الى وجود زيادة ملحوظة في معارف الطلبة تجاه انعاش القلب والرئة للبالغين.

الاستنتاج: استنتجت الدراسة وجود زيادة ملحوظة في معارف الطلبة عند استخدام تقنية المحاكاة عالية الدقة لانعاش القلب والرئة في تدريب الطلبة.

التوصيات: وفقا لنتائج الدراسة يوصي الباحث على توفير واستخدام المحاكاة عالية الدقة في تدريب الطلبة.

Abstract

Objectives: The study aims to findout the effectiveness of simulation on the students knowledge toward Cardiopulmonary resuscitation for adults

Methodology: a quasi-experimental   design study with pre test , post test 1 and post test 2 were conducted to identify the effectiveness of simulation on the students knowledge toward Cardiopulmonary resuscitation. The study starting from November 10th 2014 to the May 10th 2015 on 75 students at 4th years in the College of Nursing / University of Baghdad , the instrument was consist of the Australian guide for Cardio-pulmonary resuscitation , the instrument consist of 20 questions that measure the Basic and advance life support, the reliability of the study was measured through test retest method = 0.85, the researcher use the descriptive and inferential statistics to analyze data

The results of the study : differences in the mean among the pre test , post test 1 and post test 2 were calculated by using Paired Samples T   test , the results show a highly statistical significat differences (p 0.001), the mean (23.186, 49.880 and 52.5867) for pre test , post test 1 and post test 2 respectively show a a marked increase in the knowledge of students toward Cardio-pulmunary resuscitation

Conclusion: the study conclude that a significant increase in the students knowledge were found when using a high-fidelity Cardiopulmonary Resuscitation (CPR) Simulation in the training of the students.

Recommendations: according to the findings of the study the researcher recommend to provide and use a high fidelity simulation in the students training.

Keywords : Effectiveness, Simulation Techniques, Nursing Students, Knowledge, Cardiopulmonary Resuscitation.

* M.Sc. Lecturer Assistant - College of Nursing / University of Baghdad.
E-mail: musaab_majid@yahoo.com

Introduction

Cardiopulmonary resuscitation (CPR) is an essential skill for all health care professionals, especially nurses. It can be a lifesaver when applied by a competent and skilled person during resuscitation [1]. There are two levels of CPR are basic and advanced cardiac life support, CPR procedure is a coordinated integration of chest compression-induced circulation, rescue breathing and airway management whereby priorities are determined by evidence from literature and practice [2].

Chest compressions being at rate of at least 100 per minute in an effort to create artificial circulation by manually pumping blood through the heart. In addition the rescuer may provide breaths by either exhaling into their mouth or utilizing a device that pushes air into the lungs. The process of externally providing ventilation is termed artificial respiration[3].

An administering of an electric shock to the heart, termed defibrillation, is usually needed to restore a viable or "perfusing" heart rhythm. Defibrillation is only effective for certain heart rhythms, namely ventricular fibrillation, pulseless ventricular tachycardia, asystolic and pulseless electrical activity. CPR may however induce a shockable rhythm. CPR is generally continued until the person regains return of spontaneous circulation (ROSC) or is declared dead. CPR is indicated for any person who is unresponsive with no breathing or only gasps as breathing as it is most likely that they are in cardiac arrest [4].
In the present study, nursing students were tested and then learned by educators who are well-experienced on performing CPR. This is usually followed by increase for the resuscitation knowledge in different situations while studying in the simulation lab [5].

Over 750,000 citizens of the US and Europe suffer sudden cardiac arrest each year, and survival remains dismal: over 75% of victims do not leave the hospital alive.Cardiac arrest, requires treatment within minutes to attain survival. Cardiopulmonary resuscitation (CPR) and electrical defibrillation remain the two crucial interventions that can be life-saving during cardiac arrest. Through CPR training offered by the Australian resuscitation Council (ARC) and other organizations, laypersons can provide treatment to cardiac arrest victims before the arrival of emergency medical personnel [6].

Simulation, the art and science of recreating a clinical scenario in an artificial setting, has been an important aspect of nursing program curriculums for decades [7]. As an adjunct to clinical experience, simulation has allowed deliberate practice in a controlled environment. Students are able to practice a procedure prior to performance on a live patient. The value of this is unquestionable. Recently, however, high-fidelity simulation, with the increased level of sophistication and realism it brings to the laboratory setting, has elicited the possibility of simulation being used as a substitute for actual clinical experience [8].

Objectives of the study

The study aims to findout the effectiveness of simulation on the students knowledge toward Cardiopulmonary resuscitation .

Materials and methods

Design of the Study: a quasi-experimental study with pre test , post test 1 and post test 2 were conducted to identify the effectiveness of simulation on the students knowledge toward Cardiopulmonary resuscitation. The study starting from November 10th 2014 to the May 10th 2015.

Setting of the Study: College of Nursing/ University of Baghdad.

Sample of the study: A non- probability (purposive) sample of 75 student at 4th years level /morning studying.

Study Instrument: Basic and advance life support were measured by using twenty question depending on Australian cardiopulmonary resuscitation guide .

Reliability of the Questionnaire: Determination the reliability of the items scale was based upon the test retest of the questionnaire = 0.85

Statistical analysis: The researcher used the appropriate statistical methods in the data analysis which included descriptive data analysis and inferential data analysis.

Results of the study

Table 1: Analysis of variance among per test, post test 1 and post test 2 related to cardiopulmonary resuscitation

No	Items	Pre test mean	Sd	Post test 1 mean	Sd	Post test 2 mean	Sd
1	Resuscitation measures are divided into two component : Basic Life Support (BLS) and Advance Life Support (ALS)	1.093	.2928	2.62	.4869	2.85	.356
2	The purpose of CPR is to maintain sufficient circulation to prevent brain damage and cardio-pulmonary arrest	1.120	.3271	2.62	.4869	2.78	.412
3	Resuscitation approach Known as (DRS ABCD) which include Danger – Responsiveness – Send for help – Airway – Breathing – Chest compression and Defibrillator	1.133	.3422	2.20	.4026	2.42	.497
4	Resuscitation start with Keeping the patient away from danger by looking in the local area for hazard	1.066	.2512	2.66	.4865	2.81	.392
5	The maximum airway occurs with chin lift, Jaw thrust and head tilt	1.240	.4299	2.62	.4869	2.78	.412
6	The carotid pulse should be checked with no more than 10 second	1.160	.3690	2.20	.4026	2.44	.499
7	Breathing assessed through looking to chest movement – listening to breath sound and feel for exhaled air onto your cheek	1.333	.4745	2.62	.4869	2.62	.486
8	The lower half of the sternum is the recommended compression point and the patient should be placed on their back with firm surface	1.240	.4299	2.62	.4869	2.88	.327
9	The Depth of chest compression is one third of the depth of anterior- posterior diameter of the chest (about 2 inch)	1.093	.2928	2.22	.4214	2.22	.421
10	Chest compression rate about 100 beats per min	1.120	.3271	2.62	.4869	2.62	.486
11	Ratio of compression to ventilation is 30:2 for adult and 15 : 2 for infant	1.133	.3422	2.66	.4745	2.74	.437
12	Chest compression- used the heel of hand with fingers placed parallel to the rib	1.066	.2511	2.20	.4026	2.60	.493
13	Rescuer's shoulder should be vertically over the sternum and the compression arm kept straight	1.240	.4299	2.21	.4124	2.4	.499
14	Compression count should be loud while doing compression to ensure correct rhythm and rate	1.160	.3690	2.62	.4869	2.74	.437
15	Chest compression for infant should use thumb above the xiphoid process with ration of compression to ventilation = 3:1	1.333	.4745	2.62	.4869	2.62	.486
16	CPR for pregnant women should use (C traction) techniques before chest compression began	1.240	.4299	2.293	.4583	2.466	.502
17	DC shock dosage it's 4 joules\ kg	1.093	.2928	2.626	.4869	2.693	.464
18	We can use DC shock in the CPR for pregnant women	1.120	.3275	2.626	.4869	2.626	.486
19	There are shockable (pulseless VT, VF) and non- shockable (PEA, Asystole) CPR	1.133	.3422	2.360	.4832	2.360	.483
20	CPR should be continued until responsiveness or normal breathing return	1.066	.2511	2.626	.4869	2.813	.392
	Total	23.18	2.425	49.88	2.399	52.58	2.08
	Paired Samples T test 86.877 sig .0001						

This table show that a highly statistical significant association were found among pretest, post test1 and post test 2

Discussion

The results reveal that a highly statistical significant association were found among pretest, post test1 and post test 2. The marked increase in the mean of students knowledge suggest that the Simulation Techniques for undergraduate nursing education are the best to enhance teaching and learning quality by creating a collaborative community for knowledge.

This results comes along with the study done by National Athletic Trainers Association "The Effect of High-Fidelity Cardiopulmonary Resuscitation (CPR) Simulation on Athletic Training Student Knowledge, Confidence, Emotions, and Experiences" . The study was conducted in the University's high-fidelity simulation center, A mixed methods study design was employed with pre- and post intervention evaluations of students'cardiopulmonary resuscitation (CPR) knowledge, confidence, emotions. a significant increase through a paired sample t test (t = 5.640, P, .001) demonstrate a significant difference in athletic training student knowledge toward CPR [9] . in addition to that, another study done by Wiker.k. This study done at Brigham Young Universit; explored the benefits and limitations of using an human patient simulator (HPS) as a patient substitute for one day of actual clinical experience for nursing students. Learning outcomes included increased student knowledge, ability, and confidence in cardiopulmonary resuscitation [10].

Conclusions

the study conclude that the Simulation Techniques are a highly effective to increase the students knowledge toward cardiopulmonary resuscitation.

Recommendation

According to the findings of the study the researcher recommend to Prepare a special high-fidelity simulation center in the each nursing college.

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