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Assessment of Nurse's Knowledge about Cardiopulmonary Resuscitation (CPR) in Intensive Care Units and Emergency Department in Basra Teaching Hospital

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Abstract **Original Research Article**

Objective: This study aims to assess the nurses' knowledge about cardiopulmonary resuscitation (CPR), and to find out the relationship between knowledge of the nurses and their demographic variables (gender, age group, Academic qualification, Years of work experience and formal training). ***Methodology:*** A descriptive cross-sectional design study was conducted at Al-Basra teaching hospital, starting from November 24th, 2019 to January 11th, 2020**.** A non-probability (purposive) sample of (40) nurses, those who were working in the coronary care unit , intensive care unit, and emergency unit at Al-Basra teaching hospital . The data were collected through questionnaire, and it is consist two part, Part 1 Included (8) items, and Part 2 (40) items. Data collected by means of structured self-report technique with the subjects. Validity of the instrument had been achieved by 8 experts from different scientific branches having at least 10 years of experience in their field of work. ***Results:*** The findings revealed that majority of nurses had poor knowledge about cardiopulmonary resuscitation. There is significant association between the nurse's knowledge and academic qualification at p-value 0.05 and there was no significant association between the nurse's knowledge and their gender, age group, Years of work experience, and Formal training. ***Conclusion:*** The researcher concluded that majority of the study sample are female, Most of study sample have poor knowledge about cardiopulmonary resuscitation at total mean (0.44)**.** ***Recommendations:*** Programs training study about cardiopulmonary resuscitation with a larger sample size to determine the effectiveness of CPR training on Nurses CPR knowledge.

Keywords: assessment, knowledge, nurses, cardiopulmonary resuscitation.

INTRODUCTION

Cardiopulmonary resuscitation (CPR) is a well-recognized medical procedure in which chest compressions and artificial ventilation are provided to maintain adequate blood flow to the brain and other vital organs [1]. Cardiopulmonary Resuscitation (CPR) is a critical component of Basic Life Support (BLS) and Advanced Life Support (ALS).Literature indicates deficiencies in Nurses CPR knowledge and skills [2].

Nurses are usually the first to identify the need for and initiate cardiopulmonary resuscitation (CPR) on patients with cardiopulmonary arrest in the hospital setting. Cardiopulmonary resuscitation has been shown to reduce in-hospital deaths when received from adequately trained health care professionals [3].

The American Heart Association (AHA) is the leading authority on resuscitation science. Its approved training courses are taught across the globe. In an effort to practice evidence-based medicine, AHA updates are released every 5 years. The 2015 AHA update for CPR and emergency cardiovascular care (ECC) focuses on topics involving significant new developments in resuscitation science or ongoing controversies, and serves as an update to the 2010 AHA Guidelines for CPR and ECC rather than as a complete revision of the guidelines [4].

Cardiac arrest can occur both inside and outside the hospital setting, which necessitates the need for early recognition and treatment. It is possible to reduce the high mortality rate associated with cardiac emergencies by ensuring adequate knowledge and practice of basic life support (BLS) skills. The

American Heart Association (AHA) has issued comprehensive guidelines for both in and out of hospital management, adult cardiac arrest chain of survival, immediate recognition of cardiac arrest, early activation of emergency medical services (EMS), early cardiopulmonary resuscitation (CPR), and defibrillation [5].

Knowing how to correctly perform BLS and the Advanced Life Support (ALS) are among the most important determining factors of the cardiopulmonary success rates. Therefore, it is critical for nurses to know and perform BLS to tackle acute medical emergencies. Thus improving the knowledge and practice of BLS among nurses is critical in the final outcome of acute emergency situations. However, because of poor knowledge and practice of the health care professionals towards BLS, deaths that could have been prevented even by inexpensive and simple procedures occur [6].

The quality of CPR performed by rescuers depends on learners integrating, retaining and applying the cognitive, behavioral and psychomotor skills required to successfully perform resuscitation [7].

It is estimated that sudden cardiac arrest (SCA) is still the leading cause of death both in Europe and in the United States. According to global statistics, every year due to SCA 50 to 100/100,000 citizens die from this cause around the world [8]

Recent American Heart Association (AHA) guidelines from 2010 and 2015 stressed the importance of high-quality chest compression and define standards for compression rate, depth, recoil, and maximal acceptable time for interruptions. High-quality cardiopulmonary resuscitation (CPR) is the “cornerstone of a system of care that can optimize outcomes beyond return of spontaneous circulation” [9, 10].

METHODOLOGY

Design of the Study: A descriptive cross-sectional design study was conducted at Al-Basra teaching hospital, starting from November 24th, 2019 to January 11th, 2020. In order to assess the nurses' knowledge about cardiopulmonary resuscitation.

The Sample of the Study: A non-probability (purposive) sample of (40) nurses, those who were working in the coronary care unit , intensive care unit, and emergency unit at Al-Basra teaching hospital .

The Study Instrument: Questionnaires was designed and constructed by the researchers to measure the knowledge of nurses toward cardiopulmonary resuscitation. In order to construct the questionnaires, the researchers employed an exploratory study when multiple choice questions were presented to (10) nurses who were selected according to study original criteria.

the questionnaires was constructed and composed of two parts Part 1: demographic Characteristics: consisted of (8) items, which include gender, age group, academic qualification, years of work experience, Working area, formal training in cardiopulmonary resuscitation, frequency of resuscitation performance on the patient, and Source of information. Part II. nurses' knowledge about cardiopulmonary resuscitation, the researchers depended on the adult basic life support: American Heart Association(AHA) 2015 guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care and related previous studies to build the questions regarded with the second section of nurses' knowledge, this part contain (40) items (multiple choice questions), these items rated and scored as, (1 for correct) and (0 for incorrect) and these items have a contained as a definition, purposes, indication, contraindication, causes of cardiac arrest, principles of external chest compressions and massage, and fundamentals of advanced resuscitation.

Validity of the instrument: The validity of the instrument had been achieved by 8 experts from different scientific branches having at least 10 years of experience in their field of work.

Data Collection: The data were collected through the utilization of the developed questionnaires and by means of structured self-report technique with the subjects. The data collection process has been performed from December 2ed, 2019 until the December 6th, 2019. Each questionnaire takes approximately (15-20) minute to complete the reported.

DATA ANALYSES

Statistical Package for Social Science (SPSS version 22) was used to analyze the data through descriptive and inferential statistical analyses.

RESULTS

Table-1: Distribution of the study sample by socio-demographic characteristics

Variables	Classification	Frequency	Percentage (%)
Gender	Male	17	42.5
	Female	23	57.5
	Total	**40**	**100**
Age group	20-29 year	27	67.5
	30-39 year	6	15.0
	40 year and above	7	17.5
	Total	**40**	**100.0**
Academic qualification	Nursing school	19	47.5
	Nursing institute	14	35.0
	Bachelors in nursing	7	17.5
	Total	**40**	**100.0**
Years of work experience	1-9 year	26	65.0
	10-19 year	8	20.0
	20 year and above	6	15.0
	Total	**40**	**100.0**
Working area	Intensive care unit	14	35.0
	Coronary care unit	12	30.0
	Emergency department	14	35.0
	Total	**40**	**100.0**
Formal training in cardiopulmonary resuscitation	Yes	24	60.0
	No	16	40.0
	Total	**40**	**100.0**
Frequency of CPR performance on the patient	Daily	15	37.5
	Once in a week	5	12.5
	Once in a month	11	27.5
	Once in a year	1	2.5
	Never	8	20.0
	Total	**40**	**100.0**
Source of information	Social media	24	60.0
	Formal training	16	40.0
	Total	**40**	**100.0**

Table 1: presents that the high percent (57.5%) of the study sample are females, 67.5% of them at age group (20-29) years, 47.5% of them nursing school, 65% years of work experience were arranged between (1-9 year), most of them (60%) have Formal training in cardiopulmonary resuscitation, 37.5% of them daily perform cardiopulmonary resuscitation on the patient, and most of them (60%) were source of information from social media.

Table-2: Total mean of the nurse's knowledge about cardiopulmonary resuscitation

No.	Items	Correct	Incorrect	Mean
1	What is CPR?	28	12	0.70
2	When is CPR performed?	15	25	0.38
3	What is one of the most common causes of cardiac arrest?	18	22	0.45
	Why is CPR important?	17	23	0.43
5	When is the best time to administer CPR?	22	18	0.55
6	What does a cycle of CPR consist of?	22	18	0.55
7	What is the correct sequence of the BLS steps, according to the 2015 AHA guidelines?	14	26	0.35
8	You are the 1st rescuer to arrive at the side of a victim. The very 1st step you take is to?	16	24	0.40
9	In order to protect your safety while providing CPR, you should:	20	20	0.50
10	When the heart stops, the lack of oxygenated blood can cause brain damage in only a few minutes. A person may die within:	9	31	0.23

11	When should you provide CPR?	26	14	0.65
12	At what rate should chest compressions occur?	11	29	0.28
13	During 2 rescuer CPR on an adult how many cycles of CPR do you perform before switching roles?	17	23	0.43
14	How deep should chest compressions be for an adult victim?	16	24	0.40
15	Single rescuers should use a compression-to-ventilation ratio of:	15	25	0.38
16	Where should you place your hand to provide chest compressions to an adult?	13	27	0.33
17	After each compression:	19	21	0.48
18	How should chest compressions be performed on an infant?	20	20	0.50
19	When delivering CPR to an infant, the correct depth of compression is:	13	27	0.33
20	How do you check for responsiveness in an infant?	18	22	0.45
21	In order to assess for a pulse in an adult victim, you would assess the _ for how long?	18	22	0.45
22	How long should you check for breathing while performing CPR?	12	28	0.30
23	Which is the adequate ventilation strategy for an adult with respiratory arrest and pulse frequency of 80 bpm?	10	30	0.25
24	After performing 30 high quality chest compressions on an adult victim, the next step is to?	23	17	0.58
25	Why is complete chest recoil good for CPR?	25	15	0.63
26	You suspect a head and neck injury in a victim who is unresponsive and not breathing. How would you open the airway to give breaths?	20	20	0.50
27	Which of the following statements is incorrect about performing chest compressions?	20	20	0.50
28	during administering compression:	16	24	0.40
29	Which of the following statements is incorrect about performing chest compressions?	16	24	0.40
30	How do you know the victim is receiving adequate breaths during CPR?	25	15	0.63
31	In case of an unresponsive adult, repeat the head tilt/chin lift maneuver and attempt the breath again when the:	15	25	0.38
32	How do you open an unresponsive victim's airway?	14	26	0.35
33	If you do not believe there's a spinal injury, what's the best way to open a patient's airway when they are unresponsive?	19	21	0.48
34	How does an automatic external defibrillator (AED) help a person who is in cardiac arrest?	19	21	0.48
35	Who can use an automated external defibrillator (AED)	15	25	0.38
36	A victim is in cardiac arrest and you go to place the automated external defibrillator (AED) pads on the victim's chest. You notice that the victim is wearing a Nitroglycerin medication patch where you would place an AED pad. What of the statements is NOT true?	11	29	0.28
37	A 14 year old is in cardiac arrest and the automated external defibrillator (AED) arrives on the scene. What type of AED pads will you apply?	17	23	0.43
38	Where should you place the automated external defibrillator (AED) pads when treating an infant for pediatric cardiac arrest?	16	24	0.40
39	Which of the following is NOT correct when performing CPR?	24	16	0.60
40	When should you stop doing CPR on a victim?	25	15	0.63
	Total means			**0.44**

Table 2: represent the total means of nurse's knowledge about cardiopulmonary resuscitation which is at a poor level (0.44)

Table-3: Association between gender, age group, academic qualification, and years of work experience, Formal training and nurse's knowledge about cardiopulmonary resuscitation

Variables		nurse's knowledge			Total	Pearson Chi-Square		
		Poor	Moderate	Good		X^2	df	Sig
Gender	Male	9 52.9%	6 35.3%	2 11.8%	17 100.0%	1.177	2	0.555 N.S
	Female	16 69.6%	5 21.7%	2 8.7%	23 100.0%			
Total		25 62.5%	11 27.5%	4 10.0%	40 100.0%			
Age group	20-29	17 63.0%	6 22.2%	4 14.8%	27 100.0%	2.924	4	0.571 N.S
	30-39	4 66.7%	2 33.3%	0 0.0%	6 100.0%			
	40 and above	4 57.1%	3 42.9%	0 0.0%	7 100.0%			
Total		25 62.5%	11 27.5%	4 10.0%	40 100.0%			
Academic qualification	Nursing school	15 78.9%	4 21.1%	0 0.0%	19 100.0%	25.126	4	0.000 Sig
	Nursing institute	10 71.4%	4 28.6%	0 0.0%	14 100.0%			
	Bachelors in nursing	0 0.0%	3 42.9%	4 57.1%	7 100.0%			
Total		25 62.5%	11 27.5%	4 10.0%	40 100.0%			
Years of work experience	1-9 year	16 61.5%	6 23.1%	4 15.4%	26 100.0%	3.815	4	0.432 N.S
	10-19 year	6 75.0%	2 25.0%	0 0.0%	8 100.0%			
	20 year and above	3 50.0%	3 50.0%	0 0.0%	6 100.0%			
Total		25 62.5%	11 27.5%	4 10.0%	40 100.0%			
Formal training	No	17 70.8%	4 16.7%	3 12.5%	24 100.0%	12.007	6	0.062 N.S
	Yes	8 50.0%	7 43.8%	1 6.3%	16 100.0%			
Total		25 62.5%	11 27.5%	4 10.0%	40 100.0%			

Table 3: presents that there is significant association between the nurse's knowledge and academic qualification at p-value 0.05 and there was no significant association between the nurse's knowledge and their gender, age group, Years of work experience, and Formal training.

DISCUSSION

The finding of the study shows that the majority (57.5%) of the study sample are females. these result agreed with the finding of study done by [2]which was indicated that majority of nurses were females 65.6%.acording to the age group, highest percentage (67.5%) were (20-29) years old and lowest percentage (17.5%) were 40 year and above. may be explained by the fact that younger nurses were freshly graduated, more interested and motivated and much active than the older ones in this place of work, This result supported by [3], and their findings indicate that the more of the studied nurses were between (20-30) years old(60%).Concerning academic qualification, most of study sample were nurses have nursing school degree and accounted for (47.5%). This result is

disagree with [11] he found that the majority of study sample were nurses have Nursing Technical Institute (75.4%).Relative to years of work experience more study sample are (1-9) years and accounted for (65%). This result is agree with [12] that finding indicate that the majority of nurses years of experience (1-10) years (32.8%).related to formal training course most of the study sample (60%) have formal training course on cardiopulmonary resuscitation and this agree with finding of study done by [8] that showed majority study population has attended training courses. This study result indicate that most nurses in the study sample that apply daily the cardiopulmonary resuscitation on patient at percentage (37.5%). This finding is disagree with the result of study that done by [2]; the result shows that (40.6%) performed CPR did so monthly this may be due common of disease and accident in Iraq more than other country. and according to the source of information the present study showed that most of them(60%) were source of information from social media, and This finding is similar to the result obtain from study done [13] that showed (48%) of sample have information from social media.

This study represents the total means of nurse's knowledge about cardiopulmonary resuscitation which is at a poor level (0.44) This result was similar to result obtain by [14] to determine the relationship between the nurse's knowledge level and their performance on cardiopulmonary resuscitation in critical and emergency care unit they found that there were 63.3% respondents which all of them had poor knowledge about cardiopulmonary resuscitation.

This study showed that there is significant association between the nurse's knowledge and academic qualification at p-value 0.05 This result is agree with result of study done by[15] and [16] that showed there was a significant relation between nurse knowledge scores & level of education p value = (<0.05). And similar with [17] their finding indicates that there was significant association between the nurses' knowledge and academic qualification at p-value 0.05. The study indicate that there was non-significant association between the nurses' knowledge about cardiopulmonary resuscitation procedure and their gender, age group, Years of work experience, and Formal training at p-value 0.05, this result agree with result of study done by [18] that showed that no significant association was found between cardiopulmonary resuscitation knowledge and gender, age, work experience, and advanced resuscitation courses.

CONCLUSION

The researchers concluded that majority of the study sample are female, Most of study sample have poor knowledge about cardiopulmonary resuscitation at total mean (0.44). And there is significant association between the nurse's knowledge and academic qualification at p-value 0.05 and there was no significant association between the nurse's knowledge and their gender, age group, Years of work experience, and Formal training.

RECOMMENDATIONS

Based on the result of this study the researchers recommended:

- Programs training study about cardiopulmonary resuscitation with a larger sample size to determine the effectiveness of CPR training on Nurses CPR knowledge.
- Applied CPR guidelines update by hospitals to modify nurse's knowledge about cardiopulmonary resuscitation every year.
- Activation of teaching students of nursing school and nursing institutes to the CPR procedure.

ETHICAL CONSIDERATIONS

Permission has been obtained from the College of Nursing/ university of Basra and Ministry of Health, Health Department of Basra, Training and Human Development Center to Basra teaching hospital, before conducting the study.

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REFERENCE

1. Catherine AB, Schechter J, Berzon B and Windle ML. (n.d.). Cardiopulmonary resuscitation (CPR). Practical essentials [homepage on the Internet].[cited 29 August 2017].
2. Munezero, John Bosco Tamu, Catherine Atuhaire, Sara Groves, and Samuel Nambile Cumber. 2018. "Assessment of Nurses Knowledge and Skills Following Cardiopulmonary Resuscitation Training at Mbarara Regional Referral Hospital, Uganda." *Pan African Medical Journal*. 2018; 30: 1–14.
3. Rajeswaran L, Cox M, Moeng S and Tsima BM. Assessment of nurses' cardiopulmonary resuscitation knowledge and skills within three district hospitals in Botswana. *African Journal of Primary Health Care & Family Medicine*. 2018; 10(1): 1–6.
4. Nolan JP, Hazinski MF, Aickin R, Bhanji F, Billi JE, Callaway CW, … Finn JC. Part 1: executive summary: 2015 international consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. *Resuscitation*. 2015: 95, e1–e31.
5. Majid A, Jamali M, Ashrafi MM, Ul Haq Z, Irfan R, Rehan A, … Menezes RG. Knowledge and

Attitude Towards Cardiopulmonary Resuscitation Among Doctors of a Tertiary Care Hospital in Karachi. *Cureus*. 2019; 11(3). https://doi.org/10.7759/cureus.4182

6. Birhanu Z and Amsalu S. A cross sectional study on knowledge , practice and associated factors towards basic life support among nurses working in amhara region referral hospitals, northwest Ethiopia, 2016, 2(2): 123–130.
7. Mancini ME, Soar J, Bhanji F, Billi JE, Dennett J, Finn J, Hazinski MF. Part 12: education, implementation, and teams: 2010 international consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. *Circulation*. 2010; 122(16_suppl_2), S539–S581.
8. Elbaih AH, Taha M, Elsakaya MS, Elshemally AA and Alshorbagy MEM. Assessment of cardiopulmonary resuscitation knowledge and experiences between emergency department nurses hospital pre and post basic life support training course.2019; *26*(10), 2320–2327. https://doi.org/10.5455/annalsmedres.2019.08.473
9. Travers AH, Rea TD, Bobrow BJ, Edelson DP, Berg RA, Sayre MR, Swor RA. Part 4: CPR overview: 2010 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*. 2010; 122(18_suppl_3), S676–S684.
10. Szarpak Ł, Truszewski Z, Smereka J and Czyżewski Ł. Does the use of a chest compression system in children improve the effectiveness of chest compressions? A randomised crossover simulation pilot study. *Kardiologia Polska (Polish Heart Journal)*. 2016; 74(12), 1499–1504.
11. Wendel J. Nurses' Knowledge, Preferences, Practices, and Perceived Barriers: Family Witnessed Resuscitation. Ball State University Muncie, Indiana. 2011 July.
12. Sánchez García AB, Fernández Alemán JL, Alonso Pérez N, Hernandez Hernández I, Navarro Valverde, R., & Rosillo Castro, D. Assessment of the knowledge level and its relevance in terms of CPR in medical personnel of the hospital emergency medical system of the Autonomous Community of the Region of Murcia. *Enferm Glob*. 2015; 14, 230.
13. Tsegaye W, Tesfaye M and Alemu M. Knowledge, attitude and practice of cardiopulmonary resuscitation and associated factors in Ethiopian university medical students. *Journal of General Practice*. 2015; 1–5.
14. Andriyani, Selvya Hesti, Fitri Ariani Setyorini, Enita Dewi, and Arum Pratiwi. "Nurse'Knowledge and Their Performance on Cardiopulmonary Resucitation (CPR) in Critical and Emergency Care Unit." *IJNP (Indonesian Journal of Nursing Practices)*.2019; 3(1): 52–57.
15. El-Meanawi, Nagla Hamdi Kamal Khalil. "Assessment Of Nurses Performance During Cardiopulmonary Resuscitation In Intensive Care Unit And Cardiac Care Unit At The Alexandria Main University Hospital." *Nursing management* . 2015; 4(12) 5: 50.
16. Al-Mansory A-K S, Al-Ani BA and Professor. Assessment of Nurses' Knowledge Concerning Peritonitis-Dialysis Association in Baghdad Teaching Hospitals. *Sci. J. Nursing / Baghdad*, 2006; 19(2). Retrieved from https://www.iasj.net/iasj?func=article&aId=36372
17. Al-Ani, Batool Amin Jaddoue, and Mohammed Abdual-Kareem Mustafa Al Janabi. 2014. "Assessment of Nurses' Knowledge towards Cardiopulmonary Resuscitation at Al-Najaf City's Teaching Hospital." *kufa Journal for Nursing sciences*. 4(1): 208–17.
18. Kalhori RP, Jalali A, Naderipour A, Almasi A, Khavasi M, Rezaei M and Abbasi M. Assessment of Iranian nurses and emergency medical personnel in terms of cardiopulmonary resuscitation knowledge based on the 2010 guideline. *Iranian Journal of Nursing and Midwifery Research*.2017; 22(3): 184.