

## Assessment of Nurses' Knowledge towards Cardiopulmonary Resuscitation at Al-Najaf City's Teaching Hospital.

### تقييم معارف الممرضين باتجاه الإنعاش القلبي الرئوي في مستشفى النجف التعليمي

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#### الخلاصة:

**الهدف:** تهدف الدراسة الى تقييم معارف الممرضين المتعلقة بالإنعاش القلبي الرئوي وكذلك لإيجاد العلاقة بين معارف الممرضين والمتغيرات الديموغرافية كالعمر والجنس ومستوى التعليم وعدد سنوات الخبرة والدورات التدريبية.

**المنهجية:** دراسة مقطعية وصفية أجريت في مستشفى النجف التعليمي (مدينة الصدر الطبية) بدأت بتاريخ الحادي عشر من تشرين الثاني ولغاية تم اختيار عينة غرضيه غير احتمالية مكونة من ممرضاً من العاملين في وحدة العناية القلبية ووحدة العناية المركزة و الطوارئ ووحدة الإنعاش الرئوي وغرفة العمليات والردهة الجراحية والردهات الباطنية في مدينة الصدر الطبية. جمعت المعلومات من خلال إعداد استبانته تم بنائها لغرض الدراسة وتم جمع البيانات من خلال المقابلة الشخصية وتكونت الاستبانة من جزئين . تم جمع المعلومات بواسطة أسلوب المقابلة الشخصية لعينة الدراسة وتم تحديد مصداقيتها من خلال عرضها على خبير.

**النتائج:** أشارت نتائج الدراسة إلى أن غالبية الممرضين لديهم معرفة قليلة تجاه موضوع توقف القلب والإنعاش القلبي الرئوي و غير مؤثرة بين معرفة الممرضين تجاه الإنعاش القلبي الرئوي والجنس والفئات العمرية كما بينت الدراسة وجود علاقة مؤثرة بين معلومات الممرضين بصورة عامة تجاه الإنعاش القلبي الرئوي و المؤهل الأكاديمي وكذلك لا توجد علاقة بين معرفة الممرضين تجاه عملية الإنعاش القلبي الرئوي وعدد سنوات الخبرة العملية ومكان العمل والتدريب وكفاءة الإنعاش القلبي الرئوي للمريض.

**استنتاج الدراسة:** استنتج الباحث أن غالبية الممرضين لديهم معارف قليلة ما يتعلق بتوقف القلب المفاجئ وبعملية الإنعاش القلبي الرئوي

**التوصيات:** أوصت الدراسة بضرورة اشراك الممرضين بدورات علمية تاهيلية تتعلق بالإنعاش القلبي الرئوي وحث الممرضين بضرورة إجراء البحوث الميدانية للوقوف على المشكلات التي تعيق العمل التمريضي وتفعيل التقييم الدوري للممرضين للتخفيف على الإبداع التمريضي.

#### Abstract:

**Objective:** aimed to assess the nurses' knowledge concerning cardiopulmonary resuscitation and to find out the association between the knowledge scores of the nurses and their demographic variables of age, gender, level of education, years of experience, and training session.

**Methodology:** A descriptive cross-sectional design was conducted on the al-najaf city's teaching hospital (Al-Sader Medical City). Starting from December 11th, 2012 to July 30th, 2013. A non-probability (purposive) sample of (85) nurses, those who were working in the coronary care unit, intensive care unit ,emergency unit, respiratory care unit, operation room and surgical ward, and medical ward, at al-Sader medical city. The data were collected through the utilization of the developed questionnaire, and it is consist two part, Part 1 Included (7) items, and Part 2 (39) items. Data collected by means of structured self-report technique with the subjects. Reliability of the questionnaire was determined through pilot study and validity determined through a panel of experts consist of (13) experts.

**Results:** revealed that majority of nurses had poor knowledge regarding cardiac arrest and cardiopulmonary resuscitation. There was non-significant association between the nurses' knowledge toward cardiopulmonary resuscitation procedure and their gender, age group. The study result indicate that there was significant association between the overall nurses' knowledge toward CPR and their Academic qualification. Also there is no relationship between the nurses' knowledge toward cardiopulmonary resuscitation procedure and their Years of work experience, Area of Assignment, Formal training, and CPR Performance on patient.

**Conclusion:** The researcher can conclude that the majority of the nurses had poor knowledge concerning cardiac arrest and cardiopulmonary resuscitation.

**Recommendation:** The study recommends that the referral hospitals should develop procedure manuals that provide detailed information about all the most recent advances, discoveries and practices in CPR The procedure manual should be subject to an annual audit, and active steps should be initiated to remedy identified deficiencies.

**Key wards:** assessment, knowledge, nurses, cardiopulmonary resuscitation.

## INTRODUCTION

Cardiopulmonary resuscitation (CPR) is a lifesaving technique which is useful in many emergencies. Cardiopulmonary resuscitation is essential in cases of suffocation, near-drowning, electrocution injuries, heart attacks, or any other situation in which a person's breathing or heartbeat has stopped. It involves a combination of rescue breathing and chest compressions, which keep oxygenated blood flowing to the brain and other vital organs until more definitive medical treatment can restore a normal heart rhythm. When the heart stops, the absence of oxygenated blood can cause irreparable brain damage in only a few minutes. Death will occur within 6 minutes (Cummins, et. al., 2001).

Cardiopulmonary resuscitation measures vary according to the needs of the patient and the knowledge of the nurse giving the treatment. Knowing what to do in an emergency situation is as important as knowing what not to do, because CPR measures misapplied might lead to serious complications such as broken ribs, ineffective lung inflation and cardiac output resulting in brain damage or death (Sudden Cardiac Arrest Foundation, 2012).

Time is critical when helping a person in cardiopulmonary arrest. The earlier CPR is performed, the greater the chance of a successful resuscitation. Cardiopulmonary resuscitation is one link in what the American Heart Association calls the "chain of survival". The chain of survival is a series of actions that, when performed in sequence, will double a cardiac arrest victims' chance of survival (Vukmir, 2004).

About 300,000 people suffer out-of-hospital cardiac arrest in the USA each year, either because they've had a heart attack or suffered with a rhythm disturbance or witnessed with the symptoms of No pulse, No breath and No movement; fewer than eight percent survive. According to the American Heart Association, SCA kills approximately 233,000 people each year in the United States (Rani, 2011).

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 (Peberdy, 2009).

Cardiopulmonary resuscitation (CPR) is a desperate lifesaving effort to restore circulation and respiration within a few minutes in a patient or an otherwise healthy individual who has suffered cardio-respiratory arrest from a catastrophic event. Many a life can be saved if CPR is instituted in time (Jindal, 2000).

As there is increase in the number and frequency of cases such as myocardial Infarction, Ventricular Fibrillation, Poisoning, accidents, drowning and many other medical emergency cases, they require efficient, quick, adequate and timely Cardiopulmonary Resuscitation. As the nurses are the backbone in functioning of a hospital, they must be equipped with the necessary knowledge, skills, training and meet any emergency promptly and effectively (Andreka & Frenneaux, 2006).

The ability to respond quickly and effectively to a cardiac arrest situation rests on the nurses being competent in the emergency life-saving procedure of cardiopulmonary resuscitation (Luciano et. al., 2010). The survival rate after cardiac arrest depends on the quality of CPR, alarm response time, and time to defibrillation. All healthcare professionals should be able to perform CPR with competence (Kaye et. al., 1985; Herlitz et.al, 2005). The study aimed to evaluate the nurses' knowledge concerning cardiopulmonary resuscitation and to find out the association between the knowledge scores of the nurses and their selected demographic variables of age, gender, level of education, years of experience, income and training session.

## METHODOLOGY:

### Design of the Study:

A descriptive cross-sectional design study was conducted at Al-najaf city's teaching hospital, starting from December 11th, 2012 to July 30th, 2013. In order to assess the nurses' knowledge concerning cardiopulmonary resuscitation.

**The Sample of the Study:**

A non-probability (purposive) sample of (85) nurses, those who were working in the coronary care unit which as intensive care unit, emergency unit, respiratory care unit, operation room and surgical ward, and medical ward, at al-Sader medical city.

**The Study Instrument:**

Questionnaires was designed and constructed by the researcher to measure the knowledge of nurses toward cardiopulmonary resuscitation. In order to construct the questionnaires, the researcher employed an exploratory study when open- end questions were presented to (30) nurses who were selected according to study original criteria.

the questionnaires was constructed and composed of three parts **Part 1: demographic Characteristics:** consisted of (7) items, which include gender, age, academic qualification, years of work experience, area of assignment, formal training in cardiopulmonary resuscitation, frequency of resuscitation performance on the patient. **Part II. nurses' knowledge toward cardiopulmonary resuscitation: 2.1: anatomy and physiology:** The first section of the nurses' knowledge part was comprised of (11) items, which included question regarded with the anatomy and physiology of the heart **2.2: cardiac arrest and cardiopulmonary resuscitation:** the researcher depended on the adult basic life support: 2010 American heart association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care and related studies to build the questions regarded with the second section of nurses' knowledge, this part contain 39 questions about the causes of cardiac arrest, how can recognize a person had cardiac arrest, and practical steps of cardiac resuscitation.

**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 March 12th, 2013 until the April 1th, 2013. Each subject spends approximately (20-25) minute to complete the reported.

**Data Analyses:** In order to achieve the early stated objectives, the data of the study were analyzed through the use of statistical package of social sciences (SPSS) version 16 through descriptive and inferential statistical analyses.

## RESULTS

**Table (1): Distribution of the Observed frequencies, percent's, and cumulative percent's of Demographical Characteristics and some related factors with comparison significant**

Age Groups	Freq.'s &Percent's	Freq.	Percent	Cum. Percent	C.S. (*) P-value
Gender	Female	30	35.3	35.3	Binomial P=0.009 (HS)
	Male	55	64.7	100	
Age Groups	20 – 24	19	22.4	22.4	Chi-Sq. test P=0.001 HS
	25 – 29	25	29.4	51.8	
	30 – 34	17	20	71.8	
	35 – 39	11	12.9	84.7	
	40 – 44	8	9.4	94.1	
	45 – 50	5	5.9	100	
		30.53±7.18			
Academic qualification	Nursing school	28	32.9	32.9	Chi-Sq. test P=0.224 NS
	Diploma in Nursing	22	25.9	58.8	
	Bachelors in Nursing	35	41.2	100	
Years of work experience groups	< 5 yrs.	48	56.5	56.5	Chi-Sq. test P=0.000 HS
	5 - 9 yrs.	16	18.8	75.3	
	10 - 19 yrs.	14	16.5	91.8	
	20 ≥ yrs.	7	8.2	100	
		6.42±7.0			
Area of Assignment	Coronary care unit	14	16.5	16.5	Chi-Sq. test P=0.022 S
	Intensive Care Unit	13	15.3	31.8	
	Accident and Emergency ward	26	30.6	62.4	
	Respiratory care unit	9	10.6	72.9	
	Medical wards	13	15.3	88.2	
	Operation room	10	11.8	100	
Formal training in cardiopulmonary resuscitation	No	52	61.2	61.2	Binomial P=0.051 (NS)
	Yes	33	38.8	100	
Frequency of CPR performance on the patient	Never	19	22.4	22.4	Chi-Sq. test P=0.862 NS
	Daily	14	16.5	38.8	
	Weekly	18	21.2	60	
	Monthly	15	17.6	77.6	
	Annually	19	22.4	100	

(\*)NS: Non Sig. at P>0.05; S: Sig. at P<0.05; HS: Highly Sig. at P<0.05

The majority (64.7%) of the study sample are males, highest percentage (29.4%) between (25-29) years old. Also shows that bachelors in nursing academic qualification are more the study sample and accounted for (41.2%), and With regard to years of work experience more study sample are less than 5 years and accounted for (56.3%), most of the sample (61.2%) not have any formal training course on cardiopulmonary resuscitation, and show the most study sample that never apply the cpr on patient and accounted for (22.4%).

**Table (2): Summary statistics for Nurses' knowledge toward Cardiopulmonary Resuscitation at Al-Najaf teaching hospital and initial assessment according to cutoff point for the studied Questionnaire's Main Domains**

Main Domains	No.	Minimum	Maximum	Mean of score	Standard Deviation	Relative Sufficiency	assessment
Anatomy and Physiology	85	1.09	2.00	1.55	0.23	77.60	Pass
Cardiac arrest and cardiopulmonary resuscitation procedure	85	1.15	1.90	1.47	0.13	73.47	Failure
WMS - Questions on knowledge about CPR to nurses	85	1.16	1.90	1.49	0.13	74.50	Failure

table (2) illustrates that final assessment for anatomy and physiology domain is pass, while final assessment for cardiac arrest and cardiopulmonary resuscitation procedure is failure furthermore final assessment for two domain over all is failure at general mean of score 1.5.

**Table (3): Association between the distributions of Freq. of Nurses Demographical Characteristics of and studied domains and an overall assessments according to "Under/Upper" Cutoff point with comparison significant**

Main Domains	Demographical Characteristics	Freq.'s and Percent's	Assessment		Total	C.S. <sup>(*)</sup> P-value
			Under	Upper		
WMS - Questions on knowledge about CPR to nurses with gender	Female	Freq.	16	14	30	F.E.P.T. P = 0.132 NS C.C. = 0.145 P = 0.178 NS
		% Gender	53.3%	46.7%	100%	
		% W.G.M.S.	43.2%	29.2%	35.3%	
	Male	Freq.	21	34	55	
		% Gender	38.2%	61.8%	100%	
		% W.G.M.S.	56.8%	70.8%	64.7%	
WMS - Questions on knowledge about CPR to nurses with age group	20 – 24	Freq.	5	14	19	Chi-Sq. test P=0.170 NS C.C. = 0.289 P = 0.170 NS
		% Age Groups	26.3%	73.7%	100%	
		% W.G.M.S.	13.5%	29.2%	22.4%	
	25 – 29	Freq.	8	17	25	
		% Age Groups	32%	68%	100%	
		% W.G.M.S.	21.6%	35.4%	29.4%	
	30 – 34	Freq.	10	7	17	
		% Age Groups	58.8%	41.2%	100%	
		% W.G.M.S.	27.0%	14.6%	20%	
	35 – 39	Freq.	7	4	11	
		% Age Groups	63.6%	36.4%	100%	
		% W.G.M.S.	18.9%	8.3%	12.9%	
	40 – 44	Freq.	4	4	8	
		% Age Groups	50%	50%	100%	
		% W.G.M.S.	10.8%	8.3%	9.4%	
45 – 50	Freq.	3	2	5		
	% Age Groups	60%	40%	100%		
	% W.G.M.S.	8.1%	4.2%	5.9%		
WMS - Questions on knowledge about CPR to nurses with academic qualification	Nursing school	Freq.	17	11	28	Chi-Sq. test P=0.016 S C.C. = 0.298 P = 0.016 S
		% Academic qualification	60.7%	39.3%	100%	
		% W.G.M.S	45.9%	22.9%	32.9%	
	Diploma in Nursing	Freq.	11	11	22	
		% Academic qualification	50.0%	50.0%	100%	
		% W.G.M.S	29.7%	22.9%	25.9%	
	Bachelors in Nursing	Freq.	9	26	35	
		% Academic qualification	25.7%	74.3%	100%	
		% W.G.M.S	24.3%	54.2%	41.2%	
WMS - Questions on knowledge about CPR to nurses with Years of work experience	< 5 yrs.	Freq.	16	32	48	Chi-Sq. test P=0.134 NS C.C. = 0.248 P = 0.134 NS
		% Years of work experience	33.3%	66.7%	100%	
		% W.G.M.S	43.2%	66.7%	56.5%	
	5 - 9 yrs.	Freq.	8	8	16	
		% Years of work experience	50%	50%	100%	
		% W.G.M.S	21.6%	16.7%	18.8%	
	10 - 19 yrs.	Freq.	8	6	14	
		% Years of work experience	57.10%	42.90%	100.00%	
		% W.G.M.S	21.60%	12.50%	16.50%	
	20 > yrs.	Freq.	5	2	7	
		% Years of work experience	71.4%	28.6%	100%	
		% W.G.M.S	13.5%	4.2%	8.2%	
WMS - Questions on knowledge about CPR to nurses	Coronary care unit	Freq.	6	8	14	Chi-Sq. test P=0.105 NS
		% Area of assignment	42.9%	57.1%	100%	
		% W.G.M.S	16.2%	16.7%	16.5%	
	Intensive Care Unit	Freq.	3	10	13	

with Area of assignment	% Area of assignment	23.1%	76.9%	100%	C.C. = 0.311 P = 0.105 NS	
		% W.G.M.S	8.1%	20.8%		15.3%
	Accident and Emergency ward	Freq.	17	9		26
		% Area of assignment	65.4%	34.6%		100%
		% W.G.M.S	45.9%	18.8%		30.6%
	Respiratory care unit	Freq.	2	7		9
		% Area of assignment	22.2%	77.8%		100%
		% W.G.M.S	5.4%	14.6%		10.6%
	Medical wards	Freq.	5	8		13
		% Area of assignment	38.5%	61.5%		100%
		% W.G.M.S	13.5%	16.7%		15.3%
	Operation room	Freq.	4	6		10
% Area of assignment		40%	60%	100%		
% W.G.M.S		10.8%	12.5%	11.8%		
WMS - Questions on knowledge about CPR to nurses with Formal training	No	Freq.	24	28	52	F.E.P.T. P = 0.350 NS C.C. = 0.066 P = 0.540 NS
		% Formal training	46.2%	53.8%	100%	
		% W.G.M.S	64.9%	58.3%	61.2%	
	Yes	Freq.	13	20	33	
		% Formal training	39.4%	60.6%	100%	
		% W.G.M.S	35.1%	41.7%	38.8%	
WMS - Questions on knowledge about CPR to nurses with Freq. of CPR Performance on the patients	Never	Freq.	8	11	19	Chi-Sq. test P=0.912 NS C.C. = 0.107 P = 0.912 NS
		% Freq. of CPR	42.1%	57.9%	100%	
		% W.G.M.S	21.6%	22.9%	22.4%	
	Daily	Freq.	7	7	14	
		% Freq. of CPR	50.0%	50.0%	100%	
		% W.G.M.S	18.9%	14.6%	16.5%	
	Weekly	Freq.	9	9	18	
		% Freq. of CPR	50%	50%	100%	
		% W.G.M.S	24.3%	18.8%	21.2%	
	Monthly	Freq.	6	9	15	
		% Freq. of CPR	40%	60%	100%	
		% W.G.M.S	16.2%	18.8%	17.6%	
	Annually	Freq.	7	12	19	
		% Freq. of CPR	36.8%	63.2%	100%	
		% W.G.M.S	18.9%	25.0%	22.4%	

F.E.P.T. = Fisher Exact Probability test C.C. = Contingency Coefficients

Table (3) indicates that there is non-significant association between the nurses' knowledge toward (anatomy & physiology, cardiac arrest & cardiopulmonary resuscitation) domains and their gender, age group, Years of work experience, Area of Assignment, Formal training, and Freq. of CPR Performance on the patients at p-value 0.05. Table of the study result also indicate that there is significant association between the overall nurses knowledge toward cardiopulmonary resuscitation and their Academic qualification at p-value 0.05.

## DISCUSSION:

### Part-I: Discussion of the demographic Characteristics Related to the Nurses' knowledge

the study the finding shows that the majority (64.7%) of the study sample were males. these result agreed with the finding of many studies done by Al-Ftlawi (2011); Hamza (2012); which were indicated that majority of nurses were males. regarding the age group, highest percentage (29.4%) were (25-29) years old and lowest percentage (5.9%) were (45-50) years old. 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 areas. This result supported by Winkelman et.al, (2009), and their findings indicate that the more of the studied nurses were between (20-30) years old. Concerning academic qualification, most of study sample were nurses have bachelor's degree and accounted for (41.2%). This result is agree with Wendel, (2011) he found that the majority of study sample were nurses have bachelor's degree. Relative to years of work experience more study sample are less

than 5 years and accounted for (56.3%). This result is agree with Wendel (2011); Cabaluna (2011); Rajeswaran (2009), their findings indicate that the majority of nurses years of experience were less than 5 years. With regarding to Area of Assignment illustrates more study sample (30.6%) from the accident an emergency ward. This result may be related to hospital policy in the distribution of hospital nursing staff as needed and according to the intensity of work. With respect to formal training course most of the study sample (61.2%) not have any formal training course on cardiopulmonary resuscitation, Rajeswaran (2009) shows that higher percentage was for nurses who did not participate in training sessions. The present study indicate that most nurses in the study sample that never apply the cardiopulmonary resuscitation on patient and accounted for (22.4%). This finding is similar to the result obtain from study done by De Gendt et.al, (2007); the result shows that (54.3%) of respondents reported that cardiopulmonary resuscitation was 'never' started on their ward.

### **Part-II: Discussion of the final assessment for nurses' knowledge toward CPR**

The result of assessment of nurses' knowledge regarding cardiac arrest and cardiopulmonary resuscitation procedure was poor based on statistical mean of score 1.5. This result was similar to result obtain by Parajulee & Selvaraj (2011), to evaluation Knowledge of Nurses towards Cardiopulmonary Resuscitation in a Tertiary Care Teaching Hospital in Nepal. They found low percentage of knowledge among the respondents. Xiu-zhen, et.al, (2008), also revealed in his study "Survey of knowledge of cardiopulmonary resuscitation in nurses of community-based health services in Hainan province" That the final evaluation of the knowledge of nurses was poor. A Study of House Officers in a Teaching Hospital on Knowledge, Perception of Skills and Confidence Level in Performing CPR this study conducted by Saiboon et. al., (2007), and Perceived competence in cardiopulmonary resuscitation, knowledge and practice among qualified nurses in Kuwait, study carried out by al-kandary et.al., (2007), both of those studies showed that the knowledge of nurses towards cardiac arrest and CPR procedure is not sufficient.

### **Part-III: Discussion of the correlation between an overall assessments and demographic characteristic**

There was non-significant association between the nurses' knowledge toward cardiopulmonary resuscitation procedure and their gender at p-value 0.05. This result is agree with Rajeswaran (2009); al-kandary, et.al, (2007); their finding indicate that there is non-significant association between the nurses' knowledge toward CPR and their gender. In Comparison of the respondent's total scores with age group, there was non-significant between the knowledge scores of the respondents toward cardiopulmonary resuscitation procedure and their age group at p-value 0.05. This result was agree with Hamza (2012); Rajeswaran (2009); their finding indicate that there was non-significant association between the nurses' knowledge and their age group. This result also correspond to the study was conducted by Parajulee & Selvaraj (2011), they found non-significant association between the knowledge scores of the respondents toward CPR procedure and their age group. The study result indicate that there was significant association between the overall nurses' knowledge toward CPR and their Academic qualification at p-value 0.05. This result commensurate with Elazazay et.al, (2012); & Robin et.al. (2011); their results indicated that there is a significant association between the nurse's knowledge toward CPR and their Academic qualification. There was a non-significant association between the nurses' knowledge toward cardiopulmonary resuscitation procedure and their Years of work experience at p-value 0.05. This result agree with result obtain by both studies done by Hamza (2012); Rajeswaran (2009); which indicated that there was a non-significant association between the nurse's knowledge toward CPR and their Years of work experience. There was a non-significant association between the nurses' knowledge toward cardiopulmonary resuscitation procedure and their Area of Assignment at p-value 0.05. This result is agree with al-kandary, et al., (2007), their finding indicate that there was non-significant association between the nurses' knowledge toward CPR and their Area of Assignment. Regarding the correlation between nurses' knowledge toward cardiopulmonary resuscitation procedure and their Formal training, the present study result reveal there is a non-significant association between



the nurses' knowledge toward cardio-pulmonary resuscitation procedure and their Formal training at p-value 0.05. This result was agree with study done al-kandary et.al, (2007), their finding indicate that there was non-significant association between the nurses' knowledge toward CPR and their Formal training. With regard to the number Frequency of CPR Performance on the patients and its relationship to the knowledge of nurses, the present study showed that there is a non-significant association between the nurses' knowledge toward cardio-pulmonary resuscitation procedure and their Frequency of CPR Performance on the patients at p-value 0.05. This result was agree with Al-kandary et.al, (2007), their findings indicated that there is non-significant association between the nurses' knowledge toward CPR and their CPR Performance.

### **CONCLUSIONS:**

According to the result of present study, the researcher can make the following conclusions:

1. The majority of the study sample are male.
2. with age group (25-29) years old.
3. More of the studied nurses were bachelors' academic qualification
4. Years of work experience for more study nurses are less than 5 years.
5. Most of the sample have no formal training course on cardiopulmonary resuscitation.
6. Most study nurses never apply the CPR on their patient.
7. Most of study nurses have poor knowledge toward cardiopulmonary resuscitation.
8. The study confirms that non-significant association between the nurses' knowledge toward (anatomy & physiology, cardiac arrest & cardiopulmonary resuscitation) domains and their demographic characteristic accept the Academic qualification highly significant.

### **RECOMMENDATIONS:**

Base on the result of the present study the researcher recommended are following:

1. The referral hospitals should develop procedure manuals that provide detailed information about all the most recent advances, discoveries and practices in CPR The procedure manual should be subject to an annual audit, and active steps should be initiated to remedy identified deficiencies.
2. Activation of teaching students of nursing colleges and nursing institutes to the CPR process.

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