بسم الله الرحمن الرحيم

Shendi University

Faculty of graduate study and scientific research

Assessment of nurse's knowledge, skills and performance regarding cardiopulmonary resuscitation in El-mak Nimer university hospital

A thesis submitted as partial fulfillment requirement of B.s.c in nursing sciences.

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الآية

بسم الله الرحمن الرحيم

قال تعالى :

﴿ وَلَسَوْفَ يُعْطِيكَ رَبُّكَ فَتَرْضَى ۞ أَلَمْ يَجِدْكَ يَتِيماً فَآوَى ۞ وَوَجَدَكَ ضَالّاً فَهَدَى ۞ وَوَجَدَكَ عَائِلاً فَأَغْنَى ۞ فَأَمَّا الْيَتِيمَ فَلَا تَقْهَرْ ۞ وَأَمَّا السَّائِلَ فَلَا تَنْهَرْ ۞ وَأَمَّا بِنِعْمَةِ رَبِّكَ فَحَدِّثْ ﴾

صدق الله العظيم

سورة الضحى - الآية(5 – 11)

Dedication

I have dedicated this research to my dear parents

Who gave me all efforts and facilities to my study from childhood until adulthood.

[Kamal Abd Alla and Amira Mohammed]

To all my teachers:

Who are teaching me giving without take and patience without tedium.

Also I would like to dedicate it to my remaining brothers and sisters for their continuous assistance and help.

To all my friends:

Those who precede me and no longer with me,

Those who precede me and are still among me,

Those with me,

And to those who will follow me.

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Finally I would like to thanks all of the people who help me in this research

ملخص الدراسة

المقدمة :

البدء الفوري لعمليه الإنعاش القلبي الرئوي والعلاج بالصدمة الكهربية من أهم العوامل التي تزيد نسبه الحياة لمريض السكتة القلبية وعلي الرغم من التقدم التكنولوجي العالي والتدريب ألا إن هذه النسبة مازالت منخفضة في المستشفيات. هذه الدراسة تشخص الدورات التدريبية ومعرفه وكفاءة الممرضين ومهاراتهم في الإنعاش القلبي الرئوي في العناية المكثفة وعناية القلب.

نوع الدراسة:

أجريت هذه الدراسة الوصفية في مستشفي الملك نمر الجامعي في الفترة من يوليو إلى نوفمبر 2014. شملت الدراسة كل الممرضين العاملين في عناية الباطنية المكثفة والعناية المكثفة للقلب وعددهم ثلاثين.تم جمع البيانات باستخدام استبيان قياسي مغلق الأسئلة مكون من أربعة أجزاء وقائمه تحقق.

بعد جمع البيانات تم تحليلها يدويا ومن ثم باستخدام برنامج التحليل الحزمي للبيانات بالحاسوب إصدارة (11.5).

الأهداف:

أجريت الدراسة بغرض تقييم معرفه ومهارات الممرضين في عملية الإنعاش القلبي الرئوي في مستشفى الملك نمر الجامعي.

النتائج

توصلت الدراسة إلى أن (80%) من الممرضين حضر وكورسات تدريبية عن الإنعاش القلبي الرئوي وتوصلت الدراسة إلى أن ثلثهم لديهم معرفه ومهارات جيده فيما يتعلق بالإنعاش القلبي الرئوي.وأيضاً أوضحت الدراسة وجود علاقة إحصائية قوية لمعدل إجراء الإنعاش القلبي الرئوي مع سنين العمل بالمستشفى.

التوصيات :

توصلت الدراسة إلى عدة توصيات تمثلت في تفعيل السمنارات وورش العمل والتدريب المنتظم حول الإنعاش القلبي الرئوي وأوصت أيضاً بضرورة تعاقب الممرضين بين العناية المكثفة للباطنية وعناية القلب.

Abstract

Background:

Immediate start of basic cardiopulmonary resuscitation (CPR) and early defibrillation have been highlighted as crucial for survival from cardiac arrest, but despite new knowledge, new technology and massive personnel training the survival rates from in-hospital cardiac arrest are still low. National guidelines recommend regular intervals of CPR training to make all hospital personnel able to perform basic CPR till advanced care is available. This study investigates CPR training, resuscitation experience and self-confidence in skills among hospital personnel inside critical care areas

Study design:

Descriptive, hospital-based study, was conducted in Shendi city in ElMek Nimer University hospital in2014, study covered all nurse's in hospital who work in ICU and CCU they were 30 nurse, standard closed ended questioner and observational chick list was been used to data collection. The collected data was analyzed manually and then by using Computer software SPSS program version (11.5).

Objectives:

To assess knowledge and practice regarding cardiopulmonary resuscitation among nurse's in ElMek Nimer University hospital.

Result:

A total of 80% reported training in CPR. Real resuscitation experience and good knowledge about CPR was reported by one third of the respondents and the study show that there was strong relationship between performing of CPR and years of experience.

Recommendations:

Study recommended that Regular courses and seminars should be conducted for cardiopulmonary resuscitation; activate the nursing rotation between CCU and ICU.

Abbreviation

CPR	Cardiopulmonary resuscitation
EMS	Emergency medical system
ACLS	Advanced cardiovascular life support
AHA	American heart association
BLS	Basic life support
AED	Automated external defibrillator
ICU	Intensive care unit
CCU	Cardiac care unit
PEA	Pulse less electrical activity
VT	Ventricular tachycardia
VF	Ventricular fibrillation

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1.1. Introduction

Abrupt cessation of an effective cardiovascular circulation results in sudden collapse, Unconsciousness and loss of vital signs. This condition is known as "cardiac arrest". Mortality is 100% if no treatment is given.

With cardiopulmonary resuscitation (CPR), the immediate out-of-hospital survival rate is perhaps 5%, although success Rates are much lower for patients with concurrent severe illness. Nine out of ten immediate survivors die over the subsequent days, typically from injuries sustained as a result of the CPR attempt or from further cardiac arrest. ([Eynon CA 2003])

One of the defining characteristics of emergency physicians is their ability to recognize and manage the undifferentiated patient in cardiac or respiratory arrest. Emergency practitioners must be experts in understanding the path physiology of Cardiopulmonary arrest and the principles behind the resuscitation of these patients.

Modern cardiopulmonary resuscitation (CPR) began in the late 1950s with the rediscovery of closed chest cardiac massage and mouth-to-mouth ventilation. Advances in external defibrillation and other non-invasive techniques improved success rates of resuscitation and increased the number of individuals who could be adequately trained to immediately provide these interventions.

The highest potential survival rate from cardiac arrest can be achieved when there is recognition of early warning signs, activation of the emergency medical system (EMS), rapid initiation of basic CPR, rapid defibrillation and Advanced Cardiovascular Life Support (ACLS), including definitive airway management and intravenous (IV) medications. These steps are known as the "chain of survival."

While many factors determine survival from cardiac arrest, initiation of early CPR has been scientifically shown to save lives. Data from Seattle demonstrated successful outcome in 27% of patients if ACLS is started within 8 minutes of cardiac arrest. The Journal of the American Medical Association reported that for

patients who have CPR started within 4 minutes of arrest and ACLS within 8 minutes, successful resuscitation is increased to 43 %.(S V. Mahadevan, G M . Garmel2005).

In 2010, the American Heart Association (AHA) changed the guidelines for CPR. Whereas previously an "ABC" (airway, breathing, circulation) approach was recommended, the current recommendations are for a "CAB" (circulation, airway, and breathing) approach. This change was made in response to studies that showed that the amount of oxygen in a person's blood at the time of collapse is sufficient to sustain basic processes until emergency help arrives, and that better outcomes are achieved by circulating the blood first (as opposed to oxygenating blood that is not being circulated throughout the body). In addition to compressions first, the new AHA guidelines for CPR call for faster and deeper compressions. (Patricia Gonce Morton 2013)

1.2. Justification

CPR can be life-saving first aid and increases the person's chances of survival if started soon after the heart has stopped beating. If no CPR is performed, it only takes three to four minutes for the person to become brain dead due to a lack of oxygen.

By performing CPR, we circulate the blood so it can provide oxygen to the body, and the brain and other organs stay alive while we wait for the ambulance. There is usually enough oxygen still in the blood to keep the brain and other organs alive for a number of minutes, but it is not circulating unless someone does CPR. CPR does not guarantee that the person will survive, but it does give that person a chance when otherwise there would have been none.

If we are not sure whether a person is in cardiac arrest or not, we should start CPR. If a person does not require CPR, they will probably respond to us attempts. By performing CPR, we are unlikely to cause any harm to the person if they are not actually in cardiac arrest.[(Betterhealth)].

So Cardio pulmonary resuscitation is vital procedure which saves the patient life if it applies by proper technique and lead to many complication if it occur by wrong way.

1.3. Objective

General objective:

To assess nurses knowledge and skills regarding cardiopulmonary resuscitation

Specific objective:

- To assess nurses knowledge regarding indication, role, stages, and problem association.
- To identify nurses skills and performance while application of cardiopulmonary resuscitation procedure.
- To compare between nurses skill and the international guide line protocol of CPR.

Chapter Two

Literature Review

Literature review

Cardiac arrest is defined as cessation of cardiac mechanical activity. It is a clinical diagnosis, confirmed by unresponsiveness, absence of detectable pulse and apnea or agonal respirations. Cardiopulmonary resuscitation (CPR) is an attempt to restore spontaneous circulation through a broad range of maneuvers and techniques.

Within 15 seconds of cardiac arrest, the patient loses consciousness, electroencephalogram becomes flat after 30 seconds, pupils dilate fully after 60 seconds and cerebral damage takes place within 90-300 seconds. Therefore, it is essential to act immediately as reversible damage can occur in a short time (Sreevastava DK, Roy PK2 004).

The range of activities and skills during Basic life support (BLS) has been expanded to include automated external defibrillators (AED) in addition to initial airway assessment, rescue breathing by small volumes of expired air ventilation and chest compressions. Uniform compression-ventilation ratio of 15:2 has been adopted for single as well as two rescues. AED have been made available to reduce time lapse in defibrillation.

Defibrillators with biphasic current are also being used with several advantages. Standard manual chest compressions have been shown to be universally superior to alternative techniques (De Latorre F, Nolan 2001)

Indication

- Unconscious.
- No breathing, or extremely irregular or agonal breathing, Cheyne-Stokes respiration, etc.
- No circulation

---OR---

- Obstructed airway and the victim is an infant, pregnant or obese (i.e. too large to get your hands around to perform a Heimlich manuver).

- Many indications exist for CPR,these include.
- Dead cases,where no pulse and no breathing can be detected.
- Drug overdosage.
- Drowning.
- Poisoning.
- Non-fatal cardiac arrhythmia.
- Shocks and seizure(answers).

If the heart stops pumping, it is known as a cardiac arrest. Cardiopulmonary resuscitation (CPR) is a combination of techniques, including chest compressions, designed to pump the heart to get blood circulating and deliver oxygen to the brain until definitive treatment can stimulate the heart to start working again

A heart attack occurs when part of the heart is starved of oxygen. A heart attack can 'stun' the heart and interrupt its rhythm and ability to pump. This is because the heart does not receive enough oxygen and cannot pump blood around the body. There is no heartbeat (pulse) because the heart is not working. The medical term for a heart attack is an acute myocardial infarction (AMI).

When the blood stops circulating, the brain is starved of oxygen and the person quickly becomes unconscious and stops breathing. Without treatment, the person will die.

Causes of cardiac arrest:

A cardiac arrest can be caused by many things and causes tend to differ from adults to children.

For adults, they may include:

- Heart disease – the most common cause of reversible adult cardiac arrest (70%).
- Trauma.
- Respiratory illness hanging. (betterhealth).

CPR should be performed immediately on any person who has become unconscious and is found to be pulse less. Assessment of cardiac electrical activity via rapid "rhythm strip" recording can provide a more detailed analysis of the type of cardiac arrest, as well as indicate additional treatment options.

Loss of effective cardiac activity is generally due to the spontaneous initiation of a nonperfusing arrhythmia, sometimes referred to as a malignant arrhythmia. The most common nonperfusing arrhythmias include the following:

- Ventricular fibrillation (VF).
- Pulseless ventricular tachycardia (VT).
- Pulseless electrical activity (PEA).
- Asystole.
- Pulseless bradycardia.

CPR should be started before the rhythm is identified and should be continued while the defibrillator is being applied and charged. Additionally, CPR should be resumed immediately after a defibrillatory shock until a pulsatile state is established[(emedicine.medscape)].

Path physiology:

Sudden cardiac death due to unexpected cardiac arrest claims the lives of an estimated 250,000 adult Americans each year. Most of these events will occur outside of the hospital. The majority of these patients are men between the ages of 50 and 75 years, who have significant atherosclerotic heart disease. Underlying disease and co morbid factors significantly affect the metabolic state of cells before the onset of cardiac ischemia and alter the ability of cells to recover from a prolonged ischemic event. Hypoxia or hypotension prior to arrest, even if brief, creates tissue acidosis in diseased cells, making them more resistant to resuscitative efforts. Cardiac arrest results in cessation of blood flow throughout the body. Anaerobic metabolism begins almost immediately. A cascade of metabolic events is created, including calcium release, generation of free radicals, and activation of

catabolic enzymes that further injure the body's cells. The brain is most susceptible to the absence of circulation and traditionally suffers irreversible damage after 5 minutes in an arrest state. Restoration of pre-arrest neurologic function rarely occurs in patients with untreated cardiac arrest of longer than 10 minutes duration. The heart is the second most susceptible organ. Patients who suffer cardiac arrest from a noncardiac cause remain at risk for secondary cardiac ischemia in the post-resuscitation period. CPR, even utilizing maximal chest compressions, can only generate 30% of baseline cardiac output. The resuscitation period, therefore, still contributes to ongoing global ischemia. The goal of CPR is to preferentially direct blood flow to the heart and brain in order to adequately restore organized myocardial electrical activity while minimizing ischemic brain injury. There are two main theories to explain how this happens. In the cardiac compression model, the heart is squeezed between the sternum and the thoracic spine creating a pressure gradient between the ventricles and the great vessels. This causes blood to flow into the systemic and pulmonary arterial circulation. In the thoracic pump model, chest compressions cause a rise in the intrathoracic pressure that creates a pressure gradient between the intrathoracic vascular bed and the extrathoracic arterial bed, which causes blood to flow down the pressure gradient.[sv and gm2005)]

The primary survey:

Emergency personnel need a systematic approach to resuscitation. The simplest and most familiar approach follows the concept of the primary and secondary surveys, and utilizes the ABCs (Airway, Breathing, Circulation) as a reminder Person collapses

• Possible cardiac arrest.

• Assess responsiveness.

Unresponsive.

Not breathing.

No pulse.

VF/VT Non-VF/VT.

CPR for.

1 minute.

CPR up to 3minutes.

• Activate emergency response system.

• Call for defibrillator.

• **A**Assess breathing (open airway, *look, listen, and feel*).

• **B** Give two slow breaths.

• **C** Assess pulse, if no pulse →

• **C** Start chest compressions.

• **D** Attach monitor/defibrillator when available.

In the primary survey, the focus is on basic CPR and defibrillation:

Airway:

The first step to assessing the patient's airway is to look for respiratory activity, listen for breathing, and feel for air exchange at the patient's nose and mouth. If these are present, assess the patient's ability to protect the airway by asking them to speak. If the patient can speak, immediate definitive airway management is not likely needed. If the patient does not respond to questions, the absence of a strong gag reflex confirms the inadequacy of protective airway mechanisms.

Once you have established that the patient is not breathing or unable to protect the airway, steps must be taken to provide airway support. If you are alone in the room, immediately call for assistance and then place the patient in a supine position.[(sv and gm2005)].

One must be careful in a patient who is suspected of having neck trauma to maintain in-line stabilization of the cervical spine. This is performed by keeping one hand behind the head and neck while the other hand rolls the patient toward you.

Once the patient is correctly positioned on his/her back, open the airway. An unresponsive or unconscious patient will have decreased muscle tone, allowing the tongue and epiglottis to fall back and obstruct the pharynx and larynx.

In order to correctly position the head and open the airway of the patient without suspected traumatic injury, use the *head tilt-chin lift maneuver*. If standing on the patient's right side, place the left hand on the patient's forehead and the fingers of the right hand under the bony part of the chin. Simultaneously apply firm backward pressure on the forehead tilting the head back and lifting the chin up and forward. Open the patient's mouth to prepare for ventilation. If there is visible foreign material in the airway, it should be removed or suctioned away.

If there is the possibility of neck trauma, the head tilt-chin lift maneuver could cause cervical spine injury if the neck is hyper-extended. In such cases, the *jaw thrust maneuver* should be utilized. To perform this maneuver, position yourself at the patient's head. Place your thumbs on the zygomatic arches on either side of the face. Grasp the angles of the victim's lower jaw with your remaining fingers, and lift the lower jaw up and forward. Visible foreign material in the airway should be removed or suctioned away.[sv and gm2005)]

Breathing:

Most victims suffering from cardiopulmonary arrest will not breathe spontaneously. After positioning the head and opening the airway, one should quickly assess for chest excursion and the presence of exhalation. If the patient is not breathing nor has inadequate respirations, assist the patient with artificial respiration. In the emergency department (ED) setting, a bag-valve mask device should be readily available. Utilizing the same technique as the jaw thrust maneuver for opening the airway, squeeze the mask between your thumbs and your remaining fingers as you lift the jaw. This will create an airtight seal while another rescuer provides rescue breathing through compression of the bag. If you are alone, apply the mask to the patient's face. Place the middle, ring, and little fingers of one

hand along the bony portion of the mandible, and place the thumb and index finger of the same hand on the mask. Squeeze the mask between your fingers on to the patient's face to create an airtight seal. Compress the bag with your other hand. Provide rescue breaths of 2 seconds duration while watching for chest rise.

If you do not see the chest rise or find it difficult to compress air from the bag into the patient's airway, reposition the head and mask and try again. If subsequent attempts to ventilate the patient are unsuccessful, the patient may have an obstructed airway. Open the patient's mouth by grasping both the tongue and the lower jaw between the thumb and fingers, and then lift the mandible. If you see obstructing material, use a McGill forceps or clamp to remove it. If this equipment is not available, slide your index finger down the inside of the cheek to the base of the tongue and dislodge any foreign bodies using a hooking action. Use caution to avoid pushing any obstructing material further down the airway. If you still cannot effectively administer rescue breathing and suspect an obstructed airway, perform abdominal thrusts. These abdominal thrusts elevate the diaphragm and increase airway pressure. The resulting air escape from the lungs can effectively dislodge an obstructing foreign body from the upper airway. To perform this maneuver, place the heel of one hand against the patient's abdomen just above the navel and well below the xiphoid process. Place your other hand on top of the first. Press both hands into the abdomen five times in a quick upward-thrusting motion maintaining a midline position. Then, reattempt ventilation.[sv and gm2005)]

Circulation:

In the patient with suspected cardiopulmonary arrest, one should check for a carotid pulse, as this is the most central of the peripheral arteries.

A carotid pulse may persist even in the presence of poor perfusion. If no pulse is present, chest compressions should be initiated and the patient should be placed on a cardiac monitor. To adequately perform chest compressions, the heel of one hand should be placed in the midline on the lower part of the sternum (just

above the notch where the ribs meet the lower sternum). The other hand is placed on top of the first hand and the fingers interlocked and kept off of the chest. Position your shoulders directly over your hands and lock your elbows. Depress the sternum about 1.5–2 inches approximately 100 times per minute, while allowing another member of the team to give rescue breathing after every five compressions. Properly performed compressions can produce a systolic blood pressure of 60mmHg (sv and gm2005)

Defibrillation:

Cardiac arrest from a primary cardiac etiology typically presents as ventricular fibrillation (VF) or less often as pulse less ventricular tachycardia (VT). Both are treated identically. Early defibrillation is the one intervention that has been shown to increase survival for patients in VF or pulse less VT. When defibrillation can be successfully performed within the first minute or two, as many as 90% of patients return to their pre-arrest neurologic status. The longer the patient remains in cardiac arrest, the more likely that defibrillation and resuscitation will be unsuccessful. Survival rates are _10% when defibrillation is delayed 10 minutes or more after a patient's collapse. The term automatic external defibrillator (AED) refers to a sophisticated computerized device that incorporates a rhythm analysis system and a shock advisory system. AEDs are designed to recognize VF or VT and advise the user to deliver an electric shock to convert the non-per fusing rhythm to per fusing one. Placing AEDs in public access areas like airports, sports stadiums, or restaurants allows quicker access to life-saving defibrillation.

When police officers in Rochester, Minnesota were equipped with an AED, survival from out-of hospital VF averaged 50% with a median time from collapse to defibrillation of 5 minutes. Similar statistics have been reported in public access trials in other states. These survival rates are twice those previously reported for the most effective emergency medical systems (EMS). Since survival from VF or pulse less VT is so time-sensitive, defibrillation in witnessed VF or pulse less VT should

preclude any other type of evaluation. Defibrillation should be attempted with up to three shocks as soon as the diagnosis is made . Using gel or defibrillation pads, one paddle should be placed to the right of the sternum below the right clavicle and the other in the mid axillaries line at the level of the nipple. Firm pressure of approximately 25 lb should be applied to each paddle. Alternatively, "hands off" defibrillator pads can be used that are placed on the chest and the back, sandwiching the heart.[sv and gm2005].

Successful defibrillation depends on the amount of current transmitted across the heart. This is proportional to the energy output of the defibrillator and inversely proportional to the transthoracic impedance, which depends on chest size, phase of respiration, and other variables. Current defibrillators are monophonic and do not adjust for the transthoracic impedance. The first biphasic waveform defibrillator was approved in 1996. While not used in all EDs worldwide, the biphasic waveform adjusts for differences in transthoracic impedance, allowing less energy requirements for successful defibrillation. Animal studies showed their superiority over monophonic defibrillation for the termination of VF and pulse less VT. Early clinical experience with 150 J biphasic waveform defibrillation for treatment of VF was very positive. Evidence to date suggests that non-progressive impedance-adjusted low energy biphasic counter shock (150 J three times) is safe, acceptable, and clinically effective.[sv and gm2005]

The secondary survey:

The secondary survey uses the same mnemonic as the primary survey; however, the interventions are more involved and aggressive:

Airway:

End tracheal intubation is the most effective method of ensuring adequate ventilation, oxygenation, and airway protection against aspiration during cardiac arrest. In addition, it is an additional route of entry for some resuscitation medications, such as atropine, epinephrine, and lidocaine.[sv and gm2005]

Breathing:

If the patient has been intubated in the pre-hospital setting, the adequacy of intubation should be checked by auscultation the chest for equal bilateral breath sounds, identifying fog in the end tracheal tube on exhalation, and monitoring end-tidal CO_2. The presence of exhaled CO_2 on a monitor indicates proper tracheal tube placement and can detect subsequent tube dislodgement. False readings can occur if CO_2 delivery is low in cardiac arrest patients due to low blood flow to the lungs. False readings have also been reported in patients who ingested carbonated liquids prior to intubation. A chest X-ray can help determine the location of the tip of the end tracheal tube in relation to the carina. The patient should be placed on a ventilator for positive pressure ventilation. Continuous high flow oxygen and pulse oximetry should be maintained.[sv and gm2005)]

Circulation:

Intravenous (IV) access should be obtained, preferably with a central venous catheter in the internal jugular, subclavian, or femoral vein. Two large bore peripheral lines may be acceptable and IV fluids should be infused. The patient's rhythm should be identified and appropriate interventions instituted based on accepted ACLS guidelines.[sv and gm2005)]

Ventricular fibrillation (VF) or pulse less Ventricular tachycardia (VT):

VF and pulse less VT remain the most common underlying rhythms of cardiac arrest.

The therapeutic goal is to convert these non per fusing rhythms into per fusing ones. Early defibrillation has been shown to be the most effective intervention, which is why recognition of VF/VT and defibrillation are addressed in the primary survey. If VF or pulse less VT is refractory to three initial attempts at defibrillation, vasopressin therapy in the form of epinephrine or vasopressin should be administered. These agents have been shown to improve the success rate of

subsequent defibrillation attempts as well as improve myocardial and cerebral perfusion during CPR.(sv and gm2005)

Ant arrhythmic agents such as amiodarone, lidocaine and procainamide raise the fibrillation threshold. Administration of these agents should always be followed by repeated counter shocks. The patient's cardiac rhythm should be monitored for changes between interventions, with resuscitation strategies modified based on any changes in rhythm or perfusion.(sv and gm2005)

A systole and Bradycardia:

Bradycardia leading to a systole uniformly has a Poor prognosis. The goal of therapy is to increase the heart rate to provide a per fusing blood pressure or, in the case of a systole, to re-establish a spontaneous rhythm. Primary Bradycardia occurs when the heart's intrinsic electrical system fails to generate an adequate heart rate. (sv and gm2005)

Secondary Bradycardia occurs when factors other than the heart's own electrical system cause a slow rate, such as hypoxia, stroke, or cardio depressant medications (beta blockers, calcium channel blockers, or opiates). Atropine and epinephrine (sv and gm2005)

Contraindications:

The only absolute contraindication to CPR is a do-not-resuscitate (DNR) order or other advanced directive indicating a person's desire to not be resuscitated in the event of cardiac arrest. A relative contraindication to performing CPR is if a clinician justifiably feels that the intervention would be medically futile(emedicine.medscape)

Pharmacotherapy in Cardiopulmonary Resuscitation:

Vasopressors:

Vasopressor agents given during cardiac arrest, aim to improve aortic diastolic pressure. Consequently, increases in coronary and cerebral perfusion pressures enhance both myocardial and cerebral blood flow and improve survival

Adrenergic vasopressors:

Adrenaline (epinephrine):

Adrenergic agonist; adrenaline (epinephrine) is routinely used to enhance cerebral and myocardial blood flow by preventing arterial collapse and by augmenting aortic diastolic pressure through alpha 1 and 2 receptors (Sreevastava DK 2004).

Its alpha adrenergic receptor stimulating properties improves coronary perfusion pressure, while its potentially harmful beta adrenergic effects primarily beta 1 actions (inotropic and chronotropic) result in increases in myocardial oxygen consumption, in the incidence of ventricular arrhythmias, and intrapulmonary shunting due to reduced hypoxic pulmonary vasoconstriction (Nolan JP2002).

Accordingly adrenaline increases myocardial lactate concentration and decreases myocardial ATP content (Huang L, Tang W2004).

Although beta 2 actions are predominantly bronchodilatory, its stimulation in the myocardium further increases oxygen consumption during CPR and the severity of myocardial ischemic injury after successful CPR ((Huang L, Tang W2004).).

Adrenaline has not been shown to improve outcome, although it is one of the mainly used vasopressors in the practice of advanced cardiac life support (ACLS). Standard optimal dose recommendation for intravenous adrenaline is 1 mg (10 ml of in 10000 solution or 1 ml of 1 in 1000 solution) every 3-5 minutes according to ACLS guidelines (Zideman DA 2001).

However, in the majority of cases adrenaline did not appear to be administered according to current ACLS guidelines. The median interval between adrenaline doses during CPR was 6.5 min (Johansson J, Hammerby R2004).

Additionally, adrenaline is believed to stiffen the major vessels leading away from the heart, thus adding to the transmission of the raised intrathoracic pressure

and the forward flow of the blood, which is known as the the chest pump theory (Zideman DA 2001).

If venous cannulation has not been achieved immediately, then adrenaline 2-3 mg diluted in 10 ml normal saline (0.9%) may be administered via the endotracheal (ET) route and followed by five ventilations to aid spread throughout the lungs (Zideman DA 2001)

Antiarrythmic agents:

The use of antiarrythmic drugs has been recommended to aid electrical defibrillation, to prevent the reoccurrence of ventricular fibrillation and to terminate serious electrical arrythmias.

Antiarrythmic drugs should increase the likelihood of successful defibrillation by suppressing a variety of potentially malignant arrhythmias (Huang L, Tang W2004).

Amiodarone:

Amiodarone should be considered as a Class IIb, following adrenaline, to treat shock refractory VF/VT as early as after three shocks is provided Amiodarone improves survival to hospital admission but not to hospital discharge because of the side effects such as hypotension and bradycardia (Huang L, Tang W2004).

Amiodarone does prevent ventricular arrhythmias and animal studies demonstrated that it could reduce the defibrillation threshold. In an experimental model of persistant VF, animals receiving amiodarone alone had significantly lower resuscitation generated aortic (systolic and diastolic), right atrial systolic and coronary perfusion pressures than did either adrenaline alone or the combination of amiodarone and adrenaline. Amiodarone has many different hemodynamic effects.

It blocks potassium channels leading to prolongation in the duration of the action potential. It also causes block in sodium and calcium channels and alpha and beta adrenergic receptors. As a result of its direct effect on smooth muscle, and its

ability to block calcium channels and alpha adrenergic receptors, amiodarone dilates coronary arteries. It also dilates peripheral arteries leading to vasodilatation and reduction in after load and systemic blood pressure. Hypotension complicates its use particularly in the setting of a rapid infusion. Therefore, amiodarone is effective in treating most ventricular and supraventricular tachyarrythmias (Huang L, Tang W2004).

The recommended dose of amiodarone is 300 mg diluted in 20 ml 5% dextrose as an IV bolus via a peripheral vein when there is no central venous route It should be given after the third shock without allowing delay in the delivery of the fourth shock(Huang L, Tang W2004)

A further dose of 150 mg amiodarone may be required in refractory cases followed by an infusion of 1 mg min-1 for 6 h and then 0.5 mg/min to a maximum of 2 g in 24 h. However, according to European datasheet maximum dose of amiodarone is 1.2 g in 24h. It has been reported that dogs receiving amiodarone alone had significantly lower resuscitation generated aortic systolic and diastolic and right atrial systolic and coronary perfusion pressures than did either adrenaline alone or the combination of amiodarone and adrenaline in the persistent VF model (Paiva EF, Perondi MBM 2003).

Lidocaine:

Lidocaine is a second choice after amiodarone and procainamid. It is acceptable for use in VT after defibrillation, hemodynamically unstable ventricular premature contractions and hemodynamically stable VT . Its clinical efficacy in refractory VF led to an indeterminate Class It has been used to treat resistant VF if amidoarone is not available However, studies have shown that lidocaine offers no improvement in survival from VF. It may actually raise the defibrillation threshold and prevent the recurrence of VF after successful defibrillation

The recommended dose is 1-1.5 mg/kg iv bolus and is repeated in the dose of 0.5-0.75 mg/kg not exceeding 3 mg/kg/h. Continuous infusion of 1-4 mg/min is started only if spontaneous circulation returns during CPR ([Sreevastava DK 2004]).

Procainamide:

It is another alternative to amiodarone but the necessity for relatively slow rate of infusion (30 mg min-1 to a total of 17 mg/kg) makes it a less favorable option (De Latorre F, Nolan2001).

Magnesium:

The antiarrhythmic action of magnesium is mediated by the activation of membrane sodium-potassium adenosine triphosphatase and blocking of slow calcium channels Magnesium is universally accepted for the therapy of torsades de pointes . 1-2 g (4-8 mmol) of magnesium sulphate diluted in 100 ml of 5% dextrose is recommended to be given over 30-60 min followed by an infusion of 0.5 -1 g/h (1). Its use is recommended for shock refractory VF when hypomagnesemia is suspected e.g patients on potassium losing diuretics, because magnesium mirrors the action of extracellular potassium in stabilizing myocardial cell membrane De Latorre F, Nolan 2004.

Others:

Atropine Atropine enhances automacticity and conduction of both sinoatrial and atriventricular node. It is most effective in hemodynamically significant bradycardia due to vagal stimulation

The recommended dose in PEA associated with bradycardia (<60 beat/min) and asystole is 3 mg iv and 6 mg ET (1, 3). For the treatment of sinus bradycardia, 0.5 mg (approximately 10 µg kg-1) iv should be given and repeated if required up to a total dose of 40 µg kg-1

Sodium bicarbonate (NaHCO3):

Bicarbonate therapy should be considered only after the confirmed interventions such as defibrillation, cardiac compression, intubation, ventilation and vasopressor therapy have been ineffective

The bicarbonate therapy should be guided by determining the bicarbonate concentration or calculating the base deficit obtained from arterial blood gas analysis (Sreevastava DK 2004).

Risks:

CPR can cause injury to a person's ribs, liver, lungs, and heart. However, these risks must be accepted if CPR is necessary to save the person's life.

Normal results:

In many cases, successful CPR results in restoration of consciousness and life. Barring other injuries, a revived person usually returns to normal functions within a few hours of being revived.

Abnormal results:

These include injuries incurred during CPR and lack of success with CPR. Possible sites for injuries include a person's ribs, liver, lungs, and heart. Partially successful CPR may result in brain damage. Unsuccessful CPR results in death(medical-dictionary.thefreedictionary)

Stopping CPR:

Generally, CPR is stopped when:

- The person is revived and starts breathing on their own.
- Medical help such as ambulance paramedics arrive to take over.
- The person performing the CPR is forced to stop from physical exhaustion (betterhealth)

Post-resuscitation care:

More often than not, patients who have been resuscitated following cardiac arrest are hemodynamically unstable, ventilator-dependent and comatose.

Aggressive management post-resuscitation is essential to maximize their chances for recovery.

The immediate goals for post-resuscitation care include the following list:

1. Provide cardio respiratory support to optimize tissue perfusion, especially to the brain.

2. Transport the patient to an appropriate intensive or critical care unit (ICU or CCU). If one is not available, the patient should be transferred to a tertiary institution that can provide critical care.

3. Continue efforts to identify the precipitating causes of the arrest.

4. Institute measures to prevent recurrence, including but not limited to maintenance of antiarrhythmic drips when appropriate. (S V. Mahadevan, G M. Garmel2005)

All patients require a repeat thorough physical examination. Particular attention should be paid to the patient's cardiopulmonary status. A chest X-ray should be reviewed or obtained to confirm endotracheal tube position. Ventilator settings should be adjusted to the necessary level of mechanical support as determined by arterial blood gas values and the patient's spontaneous efforts. A 12-lead ECG should be repeated and compared to previous tracings. Continuous cardiac monitoring must be maintained. In the hemodynamically unstable patient, assess circulating fluid volume, urine output, and ventricular function to determine the need for additional crystalloid replacement or vasopressor infusion.

Invasive hemodynamic monitoring, such as arterial lines and Swan Ganz catheters, should be considered, although controversy exists regardin the necessity of such monitoring in the ED.

Laboratory evaluations of electrolytes, cardiac markers, or drug levels should be reviewed, including the reassessment of the patient's acid– base status. All patients resuscitated from VF or

VT should receive antiarrhythmic therapy during the first 24 hours post-resuscitation. (S V. Mahadevan, G M. Garmel2005)

A significant amount of brain damage can occur when blood flow to the brain is re-established after resuscitation. This reperfusion injury involves many physiologic processes and is not completely understood. It is important to maintain blood pressure, acid–base status, oxygenation, and adequate sedation during the post-resuscitation period in order to improve long-term neurologic outcome. (S V. Mahadevan, G M. Garmel2005)

Termination of efforts:

Despite our best efforts, some patients cannot be resuscitated. The decision to terminate efforts at saving a life can be a difficult one. Many factors need to be considered, including time to the initiation of CPR, time to defibrillation, co-morbid disease, age of the patient, initial rhythm, quality of life prior to the arrest, and expected quality of life if resuscitated. The most important prognostic factor is the duration of cardiac arrest. The chance of being discharged from the hospital alive and(S V. Mahadevan, G M. Garmel2005)

Cardiopulmonary and cerebral resuscitation:

Neurologically intact diminishes as resuscitation time increases. Available scientific studies have shown that prolonged resuscitation efforts are unlikely to be successful if there is no return of spontaneous circulation at any time during 30 minutes of cumulative ACLS. Reversible causes of cardiac arrest such as drug overdose, electrolyte abnormalities, or profound hypothermia should be taken into account when considering termination of efforts. Treatment of these causes may improve the efficacy of the resuscitation effort and the patient's chances of survival. (S V. Mahadevan, G M. Garmel2005)

Hypothermia (core body temperature of_30°C/86°F) is associated with marked depression of cerebral blood flow, oxygen requirement, cardiac output, and arterial pressure. Hypothermia may exert a protective effect on the brain and other organs in cardiac arrest. Although rare, full resuscitation with intact neurologic recovery may be possible after prolonged hypothermic cardiac arrest. Research is

ongoing to determine the role of induced hypothermia in cardiac arrest. (S V. Mahadevan, G M. Garmel2005)

When all Basic Life Support (BLS) or ACLS measures have been reasonably attempted and the likelihood of survival is minimal, resuscitation efforts should be discontinued. Informing family members of the death of a loved one is a very difficult responsibility faced by emergency physicians. Prior to such a disclosure, family members should be gathered in a quiet and private area. Social service personnel and nursing staff should be asked to assist. It is best to be honest and straightforward using language that is appropriate for the family's education level and culture. Briefly relate the circumstances regarding the resuscitation efforts ending with the news that their loved one is dead. Avoid terminology such as "passed away" or "is gone," which may lead to confusion. Family will often want to know what, if anything, they could have done to change the outcome. It is important to reassure them that they did nothing wrong if this is appropriate.

Enlist the support of social services, clergy, or other culturally-appropriate personnel to assist you with some of the associated issues, such as autopsy, organ donation, and viewing the body.

Express your sympathy and make sure that there is reasonable social support before leaving (S V. Mahadevan, G M. Garmel2005)

Chapter Three

Methodology

3. Methodology

3.1. Study design:

This was Descriptive, hospital-based study, done to assess nurse's knowledge and practice regarding cardiopulmonary resuscitation in Elmak Nimer University hospital.

3.2. Study time:

This study was done during the period which extended from July 2014 to November 2014.

3.3. Study area:

This study was done in Shendi city, river Nile state, Sudan, which located in the north of Khartoum about 176Km, it's population about 80000 persons (WHO 2003) most of them are farmers.

Shendi city now is one of the rich cities in health care facilities; it contains three main hospitals, Elmak Nimer University hospital. Shendi teaching hospital and military hospital, and also there is hoshbannaga hospital and elmiseiktab hospital.

3.4. Setting:

This study was carried out at Elmak Nimer University hospital. This hospital was established since 2002. And it’s the second university hospital in Sudan. The hospital provides most types of medical services (medicine, surgery, Obs/Gyne, and pediatric). Beside these there are cardiac, renal, and oncology centers). In the hospital there is a big theater complex in which most type general operations can be done (caesarean, GIT surgery and orthopedic surgery …etc.)

There was an outpatient clinic in the hospital established science 2009.

The hospital system for work , for nursing staff , morning shift for 8 hours in duration, and afternoon , evening shift for 16 hours, and is the distribution of

C: ***"unsatisfied knowledge***"if the score was half of the total answer.

D: "poor knowledge ""if the score was less than half of from the total answer.

Then observational check list used to assess practice of nurses and content 16 steps according to the cardiopulmonary resuscitation guideline. Rated by

- **done correctly** for right action scored by 2 mark
- **Not done correctly** for wrong action scored by 1 mark
- **missed** for not done action scored by 0.

3.8. Data collection technique:

The data was collected during one weak daily during three shift, the nurses were allowed to filled questioner by them self, it takes about (5-8) minutes and the check list is filled by the researcher after nurse apply the procedure., no one refuse to participate and there was no missing

3.9. Data analysis:

The data was coded and analyzed manually and then by SPSS program version (11.5) by using statistical measure; - percentage, frequency, standard deviation and chi squire test and presented in forms of tables and figures.

3.10. Ethical consideration:

The proposal was approved from the scientific committee board, and then permission was taken from general hospital manger and the head nurse to conduct the research.

The purpose of the study has been explained verbally clearly to participant and their information should be used for the purpose of study only and there have chance to continuous, or stopped at any time they wish.

nursing staff according to need of hospital departments ,nurses they will rotated frequently without fixed intervals according to the need.

Intensive care unit is important part of the hospital and contains 9 beds to involved critical medicine case and the nurse who work in it very skillful.

Cardiac care unit is another important part and it divided into three parts

3.5. Study population:

Include all nurses in Elmak Nimer University hospital whom work all three shifts during the time of study, excluded nurses in holiday.

3.6. Sampling & Sample size:

The study was covered all nursing staff in hospital work in intensive care unit (ICU) and cardiac care unit (CCU).and they were 30, various certificates of diploma, bachelor and master in nursing

3.7. Data collection tools:

Two tool used in this research questionnaire and chick list. Standard closed ended questioner was been developed by researcher، based on the Literature review composed of four parts.

Part one: personal data (age, sex, years of experience, site of work).

Part two: regarding cardiopulmonary resuscitation, include (definition, indication, contraindication, complication, and performance of cardiopulmonary resuscitation).

Part three: fact about cardiopulmonary resuscitation skill.

Part four: about medication use in cardiopulmonary resuscitation.

Knowledge scale system:

The knowledge section comprised question about nurse `s knowledge about cardiopulmonary resuscitation, the knowledge parte was measuring by using 4 categoriess:

A:"knowledgeable": for full answer.

B:"satisfied knowledge" for more than two third of answer

Chapter Four

Results

4. Results

The results were presented into the following sequences:

Section I: frequency and distribution of the study population according to their general characteristics and Scio -demographic data.

Section II: - the study group distributions accord to their knowledge and practice.

Section III:-Correlations and comparisons between variables of the study group (level of education, site of work, and years of experience and their knowledge and practice.

N=30

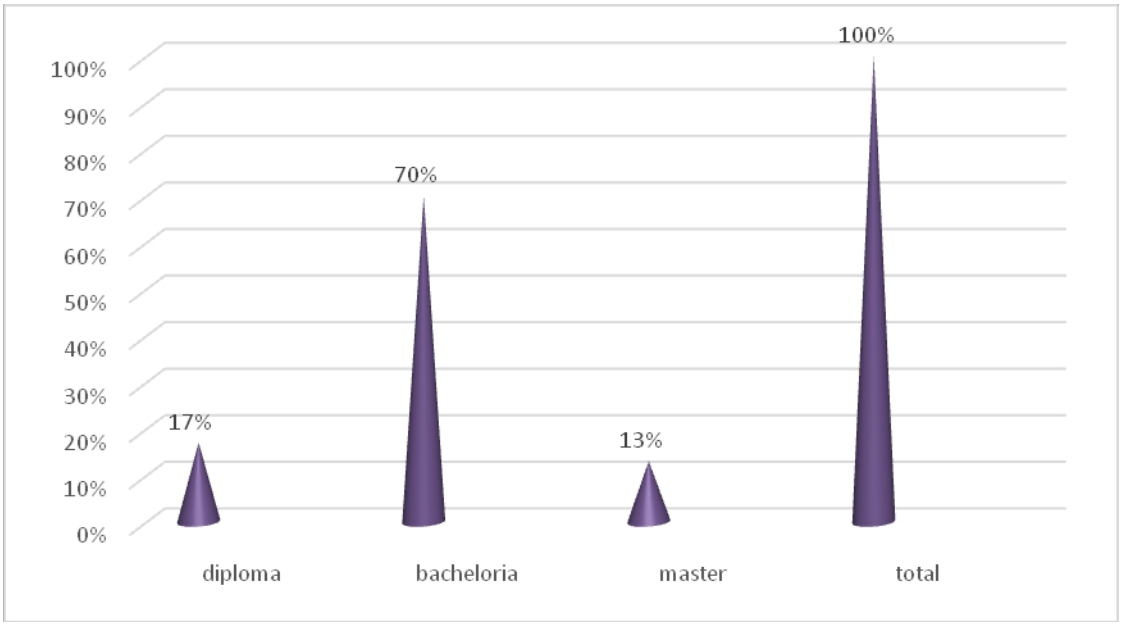

Figure No (1): the distribution of nurse's according to their level of education

The figure showed that,(70%) of nurse's have bachelor, (13%)have master degree and (17%), have diploma.

N=30

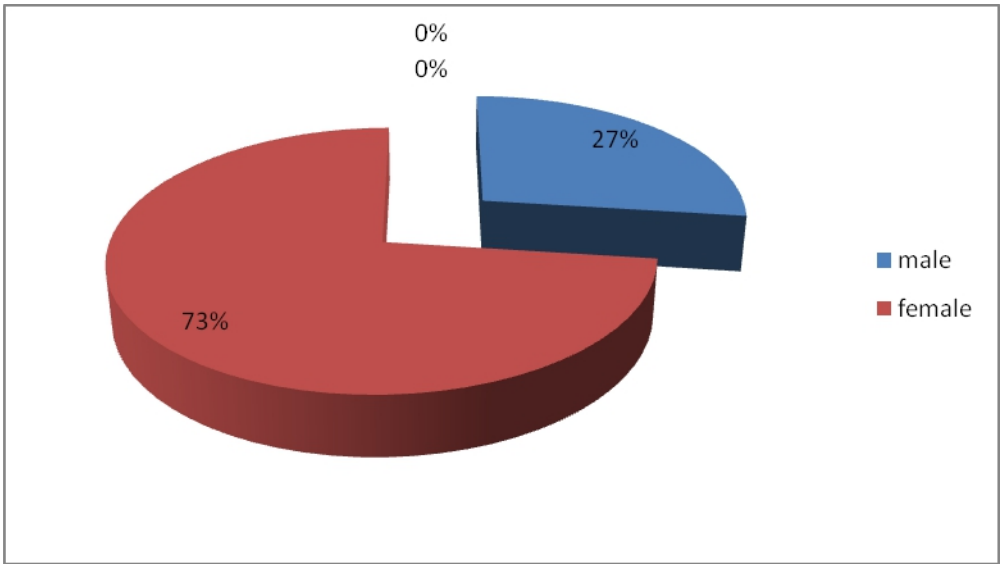

Figure No (2) distribution of nurse's according to sex.

The figure showed that (73%) of nurse's is female and (27%) is male.

N=30

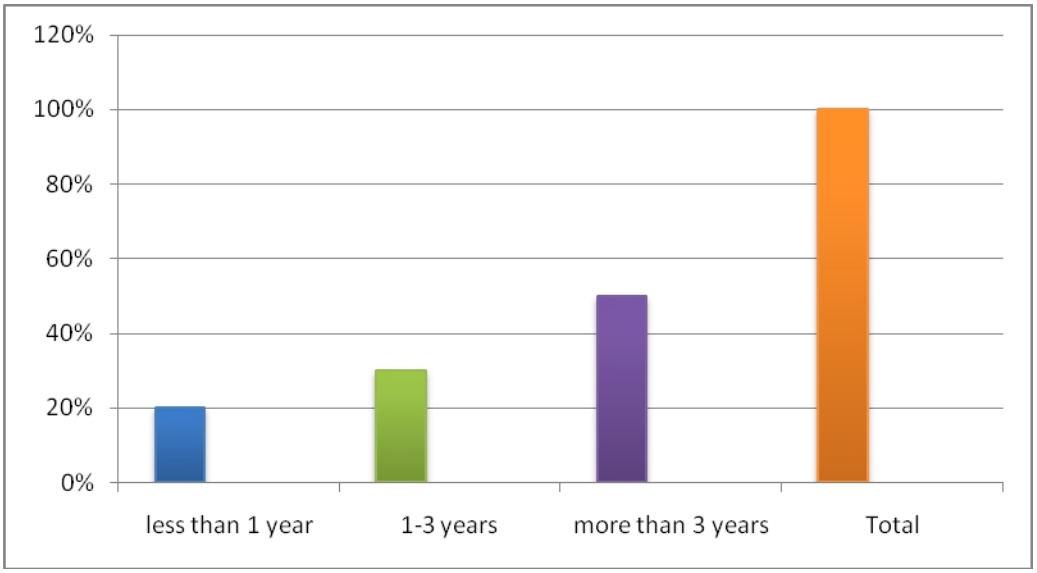

Figure No (3) distribution of nurse's according to experience years.

The figure showed that (50%) of nurse's have more than three years, (30%) have (1-3) years and (20%)of nurse's have less than years

N=30

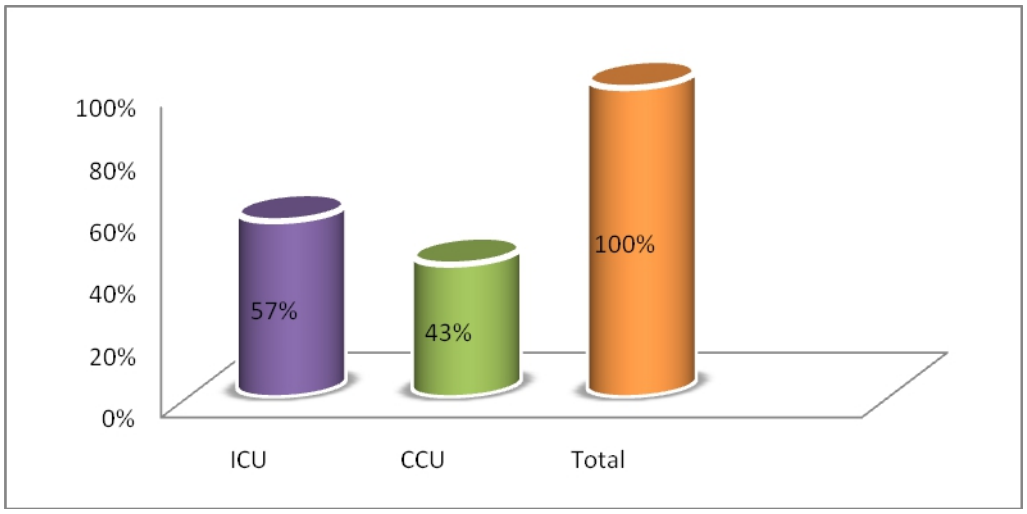

Figure NO (4)the distribution of nurse's according to their work department.

The figure showed that (57%)of nurse's working in ICU and (43%) working in CCU.

Table (1): The distribution of nurse's according to their knowledge regarding definition of cardiopulmonary resuscitation:

Level of knowledge	*Frequency*	*Percentage*
Knowledgeable	2	6.7%
Satisfy knowledge	6	20%
Un satisfy knowledge	22	73.3%
Poor	0	0%
Total	30	100%

The above table showed that (6.7 %) of nurse's ware knowledgeable about definition CPR, (20%) ware satisfy knowledge,(73.3%) ware un satisfy knowledge regarding definition of CPR.

Table (2): The distribution of nurse's according to their knowledge regarding indication of cardiopulmonary resuscitation:

Level of knowledge	*Frequency*	*Percentage*
Knowledgeable	2	6-7%
Satisfy knowledge	9	30%
Un satisfy knowledge	18	60%
Poor	1	3.3%
Total	30	100%

The above table showed that(6.7 %) of nurse's ware knowledgeable about indication of CPR, (30%) ware satisfy knowledge,(60%) ware un satisfy knowledge, and (3.3 %) of nurse's ware poor knowledge regarding indication of CPR.

Table (3): The distribution of nurse's according to their knowledge regarding contraindication of cardiopulmonary resuscitation:

Level of knowledge	*Frequency*	*Percentage*
Knowledgeable	1	3.3%
Satisfy knowledge	7	23.3%
Un satisfy knowledge	19	63.3%
Poor	3	10%
Total	30	100%

The above table showed that(3.3 %) of nurse's ware knowledgeable about CPR contraindication, (23.3%) ware satisfy knowledge,(63.3%) ware un satisfy knowledge, and (10 %) of nurse's ware poor knowledge regarding contraindication of CPR.

Table (4): The distribution of nurse's according to their knowledge regarding complication of cardiopulmonary resuscitation:

Level of knowledge	*Frequency*	*Percentage*
Knowledgeable	0	0%
Satisfy knowledge	10	33.3%
Un satisfy knowledge	20	66.7%
Poor	0	0%
Total	30	100%

The above table showed that (0%) of nurse's ware knowledgeable about CPR complication, (33.3%) ware satisfy knowledge,(66.3%) ware un satisfy knowledge, and (0%) of nurse's ware poor knowledge regarding complication of CPR.

N=30

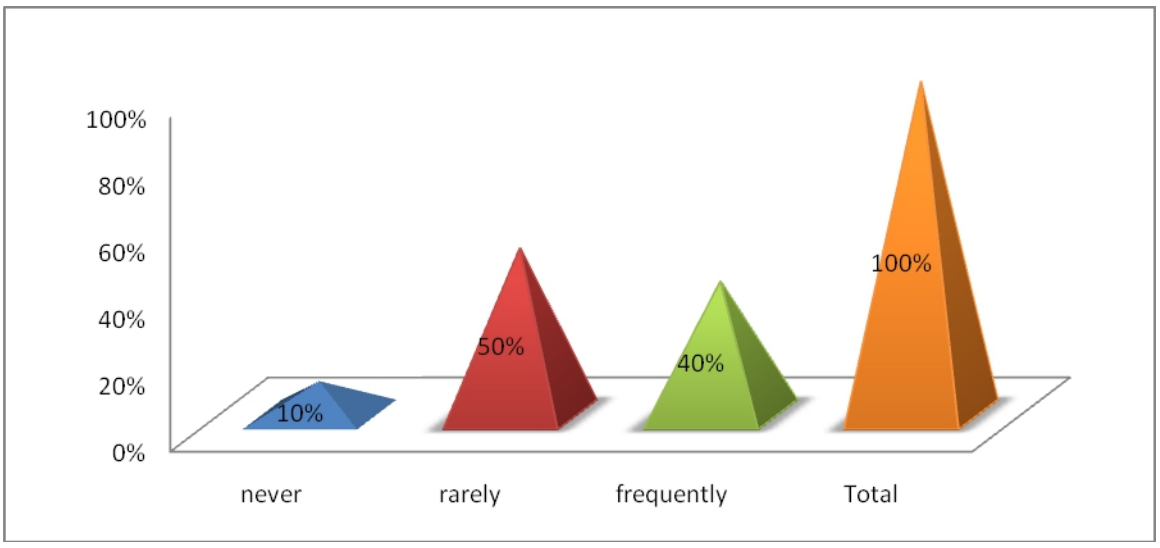

Figure NO (5) the distribution of nurse's according to their CPR performing.

The figure showed that (10%) of nurse's didn't perform CPR before, (50%) rarely and (40%) frequently perform of CPR.

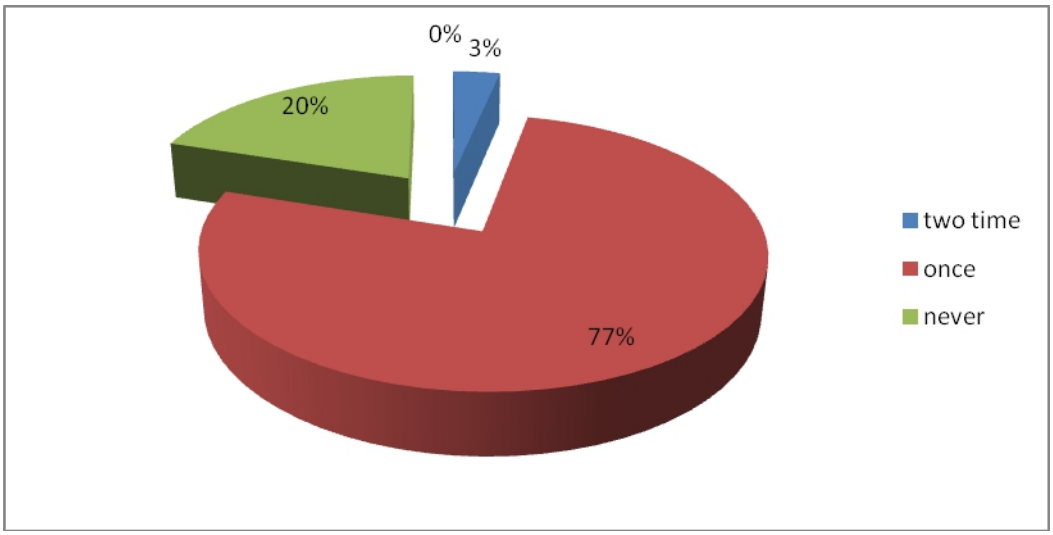

Figure NO (6) the distribution of nurse's according to their CPR course attending.

The figure showed that (20%) of nurse's didn't attend CPR course before, (77%) once and (3%) attend CPR course tow time.

Table (5) the distribution of nurse's according to their participation in CPR:

Practice	*Frequency*	*Percentage*
Good practice	3	10%
Satisfy practice	8	26%
Un satisfy practice	12	40%
Poor	7	23%
Total	30	100%

The above table showed that(10%) of nurse's ware good practice during CPR, (26%) ware satisfy practice,(40%) ware un satisfy practice, and (23 %) of nurse's ware poor practice during CPR performing.

Table (6) the distribution of nurse's according to their delivery of CPR in cases of cardiac arrest:

Level of knowledge	*Frequency*	*Percentage*
One person	0	0%
Two person	4	13.3%
Three or more	25	83.3%
Don’t remember	1	3.3%
Total	30	100%

The above table showed that(13.3 %) of nurse's say the CPR should be delivered by two person, (83.3%) delivered by three or more and(3.3%) don’t remember.

Table (7) the distribution of nurse's according to their initial action in CPR:

Action	*Frequency*	*Percentage*
Open airway	13	43.3%
Call for help	11	36.7%
Start compression	4	13.3%
Don't know	2	6.7%
Total	30	100%

The above table showed that(43.3%) of nurse's open the patient airway firstly, (36.7%) call for help, (13.3%) start the compression and (6.7%) don't remember the initial action of CPR.

Table (8): The distribution of nurse's according to their knowledge regarding patient assessment during CPR:

Level of knowledge	*knowledgeable*		*Satisfy knowledge*		*Un satisfy knowledge*		*poor*	
	f	*p*	*f*	*p*	*f*	*p*	*f*	*p*
Patient response	7	23.3%	5	16.7%	18	60%	0	0%
Stop CPR	2	6.7%	5	16.7%	6	20%	17	56%

The above table showed that(23.3%) of study group knowledgeable about sign of patient response, (16.7%) satisfy knowledge, (60%) unsatisfied knowledge and another things there was (6.7%) knowledgeable about when stopping of CPR, (16.7%) satisfied knowledge, (20%) unsatisfied knowledge and (56%) poor knowledge.

Table (9): fact about CPR:

Nursing action in case of CPR	*true*		*false*	
	f	***p***	***f***	***p***
Compression to ventilation ratio 30:2	28	93.3%	2	6.7%
Rescue breath should be 10-12 b\m	21	70%	9	39%
Compression rate should be100 c\m	17	56%	13	44%
Recommendation for defibrillation is VT and VF	22	73.3%	8	26.6%
Recommendation for defibrillation is a systole	13	44%	17	56%

The above table showed that (93%) of nurse's ware know about compression to ventilation ratio, (70%) of them know about the normal breathing should be delivered at the min, (56%) know about the compression in min, and (73%) know about recommendation for defibrillation. CPR.

Table (10): The distribution of nurse`s according to their drugs knowledge:

medication	*Know indication only*		*Know indication and dose*		*Don't Know*		*total*	
	f	*P*	*f*	*p*	*f*	*p*	*f*	*p*
Adrenaline	11	36.6%	15	50%	4	13.4%	30	100%
Amiodarone	0	0%	7	23.3%	23	76.6%	30	100%
Lidocaine	4	13.4%	7	23.3%	19	63.3%	30	100%
Magnesium sulphate	1	3.3%	8	26.4%	21	70%	30	100%
Atropine	13	43.4%	7	23.3%	10	33.3%	30	100%

The above table shows that (50%) of study group know the adrenaline indication and dose, (23.3%) know indication and dose of the atropine, lidocaine, and amiodarone and (26.4%) indication and dose of magnesium sulphate.

Table (11): The distribution of nurse's according to their initial action in CPR:

action	*Done correctly*		*Not done correctly*		*missed*		*total*	
	f	*p*	*f*	*p*	*f*	*p*	*f*	*p*
Check for danger	13	43%	3	10%	15	47%	30	100%
Check for consciousness	21	70%	0	0%	9	30%	30	100%
Seeking for help	27	90%	0	0%	3	10%	30	100%
Putting pt in flat firm position	8	27%	0	0%	22	73%	30	100%

The above table showed that(43 %) of nurse's checked the danger around patient correctly, (10%) done not correctly and (47 %) missed this step,(70 %) of nurse's checked patient consciousness level and (30%) missed the check for consciousness. And one more (90 %) of nurse's seek the help and (10%) start without seeking the help and in addition to that(27 %) of nurse's put the patient in flat firm position and (73%) missed this step.

Table (12): The distribution of nurse's according to assessment point:

action	*Done correctly*		*Not done correctly*		*missed*		*total*	
	f	*p*	*f*	*p*	*f*	*p*	*f*	*p*
Check for airway	19	63%	6	20%	5	17%	30	100%
Check for breathing	20	68%	5	16%	5	16%	30	100%
Check for circulation	20	68%	5	16%	5	16%	30	100%
Check for normal breathing by look listen feel	11	37%	3	10%	16	53%	30	100%

The above table showed that (63%) of nurse's checked the airway correctly, (20%) done not correctly and (17%) missed this step. (68%) of nurse's checked the breathing and circulation correctly, (16%) done not correctly and (16%) missed this step. And (37%) of nurse's checked the normal breathing by look, listen, feel correctly, (10%) done not correctly and (53 %) missed this step

Table (13): The distribution of nurse's according to their delivering of compression and breathing:

action	*Done correctly*		*Not done correctly*		*missed*		*total*	
	f	*p*	*f*	*p*	*f*	*p*	*f*	*p*
open airway	29	97%	1	3%	0	0%	30	100%
Give initial breathing	30	100%	0	0%	0	0%	30	100%
Looking for chest raising	20	67%	0	0%	10	33%	30	100%
Locate compression point at the sternum	26	87%	4	13%	0	0%	30	100%
Interlocking hands	27	90%	3	10%	0	0%	30	100%
Started compression	30	100%	0	0%	0	0%	30	100%
Continue with ratio 30:2	29	97%	1	3%	0	0%	30	100%

The above table showed that(97 %) of nurse's open airway correctly, and (3%) done not correctly, (100%) giving two initial breathing correctly,(67 %) of nurse's looking for chest of patient rise during artificial breathing and (33%) missing this step.

In addition to that(87 %) of nurse's locate their hand in the compression point at the sternum correctly and (13%) done not correctly, (90 %) of nurse's interlocked their hand correctly and (10%) done not correctly and all nurses (100%) start the compression and (97 %) of nurse's continue with ratio 30:2 correctly, (3%) done not correctly

Table (14): The distribution of nurse's according post CPR care:

action	*Done correctly*		*Not done correctly*		*missed*		*total*	
	f	*p*	*f*	*p*	*f*	*p*	*f*	*p*
Check for victim response	16	53%	0	0%	14	47%	30	100%
Putting patient in recovery position	12	40%	0	0%	18	60%	30	100%

The above table showed that (53 %) of nurse's checked the patient response and (14%) missed the check and (40%) of nurse's putting the victim in recovery position and (60%) missed this step

Table (15): The distribution of nurse's who followed sequence exactly

Action	*Frequency*	*Percentage*
Done	2	7%
Not done	28	93%
Total	30	100%

The above table showed that just(7 %) of nurse's followed sequence exactly.

Table NO (16): Cross tabulation between frequency of CPR performing and years of experience. N=30

Experience	*Frequency of CPR performing*			*Total*	*P value*
	Never	Rarely	Frequently		
less than 1 year	1	2	1	4	.000
1-3 year	0	6	4	10	.000
More than 3 years	2	7	7	14	.000
Total	3	15	12	30	

Table NO (17): Cross tabulation between initially action in CPR and years of experience.

Experience	*Initially action*				*Total*	*P value*
	Open airway	Call for help	Start compression	Don't remember		
less than 1 year	2	2	0	0	4	.000
1-3 year	5	5	0	0	10	.000
More than 3years	6	4	4	2	16	.000
Total	13	11	4	2	30	

Table NO (18): Cross tabulation between delivery of CPR and qualification

qualification	*Delivery of CPR*				*Total*	*P value*
	One person	Two person	Three or more	Don't remember		
diploma	0	0	5	0	5	.000
bacheloria	0	4	16	1	21	.000
master	0	0	4	0	4	.000
Total	0	4	25	1	30	

Table NO (19): Cross tabulation between initially action in CPR and years of experience.

N=30

Site of wok	*Cases of stop CPR*				*Total*	*P value*
	knowledgeable	Satisfy knowledge	Unsatisfied knowledge	Don't know		
ICU	0	3	4	10	17	.000
CCU	2	2	2	7	13	.000
Total	2	5	6	17	30	

Chapter Five

Discussion
Conclusion
Recommendations

5.1. Discussion

Abrupt cessation of an effective cardiovascular circulation results in sudden collapse, unconsciousness and loss of vital signs. This condition is known as “cardiac arrest”.

Mortality is 100% if no treatment is given. With cardiopulmonary resuscitation

(CPR), the immediate out-of-hospital survival rate is perhaps 5%, although success rates are much lower for patients with concurrent severe illness. Nine out of ten immediate survivors die over the subsequent days, typically from injuries sustained as a result of the CPR attempt or from further cardiac arrest.

The majority (73%) was female, the study reveal that most of the nurses with vary educational level and (70%) of a study had Baccalaureate degree, while others with master degree and (17%) was diploma. Half of them (50%) were work with experience more than 3 year, and Reported places of work were ICU and CCU (57%) of them work in the intensive care unit.

With regard the cardiopulmonary resuscitation the study showed (7%) of nurse has good knowledge about definition of cardiopulmonary resuscitation while (20%) has satisfied knowledge and (73%) of them have unsatisfied knowledge.

In addition to (7%) have a good knowledge about indication of CPR, (30%) have satisfied knowledge while (60%) unsatisfied knowledge and (3%) poor knowledge about indication of it.

One more (3.3%) of nurses knowledgeable about contraindication of CPR, (23.3%) satisfied knowledge, (63.3%) unsatisfied and (10%) have a poor knowledge.

Also the study shows that just (33.3%) of nurse have satisfied knowledge about the complication of cardiopulmonary resuscitation and (67.3%) unsatisfied knowledge. All of the previous results conduct that the majority of nurses have unsatisfied knowledge regarding definition, indication, contraindication and

complication this may be due to lack of workshop provided by the hospital and lack of nurse time to review and updating him.

The study found nurse's how had been performing CPR frequently is (40%) and half of them performing it rarely and (10%) never perform the CPR. And the cross tabulation show that nurses who have experience period more than three years frequently performing CPR more than other.

A total of 24 respondents (80%) had attended previous CPR training, Numbers of CPR courses attended varied between zero (20%); one (76.7%) and two courses (3.3%).

A total of respondents (10%) had taken an active part in a real resuscitation situation and have good practice during CPR either as team leader or performing compression or breathing or administer the drug while the (26.7%) participate with satisfied practice, (40%) unsatisfied practice and (23.3%) have poor practice this indicate to lake of nurse's interesting to trying another role during CPR and there is no rotation in the role and may be related to the medical participation in procedure.

The study show that (83.3%) of study group say the CPR should be delivered by three or more person that mean majority of nurse preferred and work as team in case of cardiac arrest and co-operate together and that is affect more.

In addition to that, less than half (43.3%) start the CPR by opening the patient airway and this is right action while the others differ their action between call for help and start CPR compression. And that indicate lack of nurse's knowledge about the guideline of cardiopulmonary resuscitation.

In addition to that, regarding nurse's knowledge about patient response to CPR (60%) have unsatisfied knowledge about sign of patient response. More one (56%) of study group have poor knowledge about when stop the CPR that indicate lack of assessment during cardiopulmonary resuscitation, the cross tabulation show that nurses in CCU more knowledge about cases of stopping CPR more than whom work in ICU.

The study reveal that majority of nurse have good knowledge about defibrillation indicators for documented ventricular fibrillation and pulse less ventricular tachycardia and not recommended for a systole patient.

In addition to that the study show the tow third of study group have a good knowledge about indication of use and dosage of atropine and adrenaline but have a poor knowledge about other drugs like amiodarone, lidocaine and magnesium sulphate that is related to limits of use this drug in cardiac arrest in the hospital.

In comparing between the nurses in this study and the guide line of cardiopulmonary resuscitation the study show that (43%) of nurse checked for danger and (47%) of them missed this step.

(70%) of study group checked the patient consciousness correctly, (90%) of them seeking the help before start CPR but (53%) of nurse missed put the patient in flat firm surface.

In step of check ABC the study show (63%) check the airway, (68%) checked the breathing and circulation correctly.

In addition to (97%) of study group open the patient airway by correct way while (3%) not done it correctly and (100%) of them give 2 initial breathing but (67%) look for patient chest for rise and fall.

In compression performing (87%) of nurse Located compression point at the sternum correctly and (90%) of all nurse interlock there hand properly and just all of nurses (100%)Started compressions correctly and (97%) of study group continue the CPR process by rate 30 compression to 2 rescue breath.

The study show that (53%) of study group checked the victim recover while (47%) missed this step and other wise (40%) of study group putting the patient in recovery position while (60%) of them missed.

Finally (7%) of all nurses perform the cardiopulmonary resuscitation by proper way and this is very few percentage from total nurse in this study because it is very important procedure to save the patient life.

5.2. Conclusion

Based on the finding present study, it was concluded that:-

- More than half nurses have a satisfied knowledge regarding definition, indication, contraindication and complication of cardiopulmonary resuscitation.
- The study revealed that, there is fixed role between nurse during the CPR appear in the poor practice in participation of them in CPR by confidence level.
- No enough training program regarding cardiopulmonary resuscitation , in addition to these the study explained that more than half of nurse`s wear have sufficient knowledge about it .and there was gap between knowledge and practice attitude
- In addition to the study show the more than two third of study group apply the CPR by the way semi for guideline protocol of CPR.
- Experience years and work place are highly statistical significant associated with cardiopulmonary resuscitation,*p*. value (0.00

5.3. Recommendations

Based result and conclusion of the study the following is recommended:

- The hospital should establish regular training program and workshops about cardiopulmonary resuscitation with collaboration with ministry of health.
- Nurses should keep fixed program to discuss problems that faced him during CPR and contribute by solution
- To keep these programs continuous by encouraging the rotation between the staff in the ICU and CCU.

Chapter Six

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Appendix

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