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ASSESSMENT OF NURSES KNOWLEDGE TOWARDS CARDIOPULMONARY RESUSCITATION AT AL_NASIRIYAH TEACHING HOSPITAL IN THE DHI_QAR CITY

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Çankırı 2022

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ACCEPTANCE AND APPROVAL

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ETHICS STATEMENT

The thesis entitled "**Assessment Of Nurses Knowledge Towards Cardıopulmonary Resuscıtatıon At Al_Nasırıyah Teachıng Hospıtal In The Dhı_Qar Cıty"** which was prepared and presented as a thesis, was written by myself and in accordance with the scientific, academic rules and ethical conduct. The idea/hypothesis of my thesis solely belongs to my supervisor and to me. The research pertaining to the thesis was conducted by myself and therefore, all of the used sentences and interpretations within the work belongs to me.

I declare the aforementioned issues to be correct.

İmza
18/7/ 2022
Ali Hussein OWAID

ABSTRACT

ASSESSMENT OF NURSES KNOWLEDGE TOWARDS CARDIOPULMONARY RESUSCITATION AT AL_NASIRIYAH TEACHING HOSPITAL IN THE DHI_QAR CITY

ALI HUSSEIN OWAID ALTUBAILI

Master of Science in Nursing

Advisor: Asst. Prof. DR.HURİ SEVAL GÖNDEREN ÇAKMAK'

Objective: To determine the nurses' level of knowledge in cardiopulmonary resuscitation and for the purpose of determining the correlation between nurses' knowledge of CPR and demographic characteristics (gender, age, academic achievement, years of experience, training session).

Methodology: A descriptive cross-sectional was performed at Al-Nasiriyah teaching hospital from November 17, 2021, to April 20, 2022. The sample of 300 nurses included those working in CPR-practicing units such as the ER, ICU, CCU, OR, and medical ward at Al-Nasiriyah teaching hospital in Dhi_qar city. The data was gathered through the use of a questionnaire, which included 7 questions and 39 questions. Structured self-report techniques were used to gather the data. The reliability and validity of the tool were It has been proven in many previous Iraqi studies. **Result:** According to the study findings, approximately 6.67% of nurses have poor knowledge, 59.33% have moderate knowledge, and 34% have good knowledge. This shows that there is no direct relationship ($P > 0.05$) between how well nurses know CPR and how they are related to each other, except for (age), (academic achievement), (years of experience), and (current workplace) in which there was a significant correlation ($P < 0.05$) with nurses' knowledge of CPR. **Conclusion:** In this study, the researchers can conclude that most of the nurse participants had moderate knowledge of CPR.

Recommendation: CPR procedural guides should be developed by the referral institutions to include all of the most recent breakthroughs, discoveries, and practices in CPR. If a process manual isn't being followed, corrective action should be taken.

Key words: Assessment, Cardiopulmonary Resuscitation, Knowledge ,Nurses.

ÖZET

DHI_QAR KENTİNDEKİ AL_NASİRİYAH EĞİTİM HASTANESİNDE ÇALIŞAN HEMŞİRELERİN KARDİYOPÜLMONER RESÜSİTASYONA YÖNELİK BİLGİLERİNİN DEĞERLENDİRİLMESİ

ALI HUSSEIN OWAID ALTUBAILI

Hemşirelik, Yüksek Lisans

Tez Danışmanı: Dr. Öğr. Üyesi HURİ SEVAL GÖNDEREN ÇAKMAK'

Ocak 2022

Amaç: Çalışmada hemşirelerin kardiyopulmoner resüsitasyon (CPR) bilgi düzeylerinin belirlenmesi amaçlanmaktadır.

Methodoloji: Al-Nasiriyah eğitim hastanesinde çalışan 300 hemşire ile 17 Kasım 2021'den 20 Nisan 2022 tarihleri arasında yürütülmüştür. Çalışma analitik tipdedir. Çalışmaya Dhi_qar kentindeki Al-Nasiriyah eğitim hastanesindeki yoğun bakım, acil servis ve CPR uygulaması yapılan birimlerde çalışan hemşireler dahil edilmiştir. Verilerin toplanmasında hemşirelerin demografik bilgilerinin(7 soru) ve CPR bilgilerinin(39 soru) sorgulandığı anket formu uygulanmıştır. CPR bilgilerinin sorgulandığı anket formu aracının geçerlilik güvenilirliği ırak halkı için yapılmıştır. Çalışma sürecide çankırı karatekin üniveristesi Etik kurulundan etik izin ve çalışma yapılan hasaneden yazılı izinler alınmıştır. Ayrıca çalışmaya katılmak gönüllülük esasına dayanarak, katılımcılardan sözel ve yazılı onam alınmıştır. Veri toplama süreci araştırmacı tarafından yüz yüze yürütülmüştür.

Bulgular: Araştırma bulgularına göre hemşirelerin yaklaşık %6.67'si yetersiz, %59.33'ü orta düzeye ve %34'ü de iyi seviyede CPR ile ilgili bilgiye sahipti. Hemşirelerin CPR bilgileri ile yaş, akademik başarı ve çalıştıkları birim arasında ,istatistiksel anlamlı bir fark vardır ($p < 0.05$) birbirleriyle ne tür bir ilişkide oldukları göstermektedir.

Sonuç: Bu çalışmada hemşire katılımcıların çoğunun orta seviyede CPR bilgisine sahip olduğu görülmektedir. CPR prosedür kılavuzları, CPR kapsamındaki en son atılımların, keşiflerin ve uygulamaların tümünü içerecek şekilde atıf yapılan kurumlar tarafından geliştirilmelidir. Proses kılavuzu uygulanmıyorsa, düzeltici önlem alınmalıdır.

Anahtar kelimeler: Değerlendirme, Kardiyopulmoner Resüsitasyon, Bilgi, Hemşireler

PREFACE AND ACKNOWLEDGEMENTS

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ALI HUSSEIN OWAID ALTUBAILI

Çankırı-2022

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ABBREVIATIONS

AHA : American Heart Association
ACLS : Advanced Cardiovascular Life Support
ILCOR : International Liaison Committee on Resuscitation
CPR : Cardiopulmonary Resuscitation
ECC : Emergency Cardiovascular Care
C-A-B : Chest compressions, Airway, Breathing
A-B-C : Airway, Breathing, Chest Compressions
ROSC : Return of Spontaneous Circulation
SCA : Sudden Cardiac Arrest
EMS : Emergency Medical Services
CPA : Cardiopulmonary Arrest
BLS : Basic Life Support
ALS : Advanced Life Support
IHCA : In Hospital Cardiac Arrest
OHCA : Out Hospital Cardiac Arrest
H : Hypotheses
LA : Left Atrium
RA : Right Atrium
LV : Left Ventricle
RV : Right Ventricle
SA : Sinoatrial
AV : Atrioventricular
CO : Cardiac Output
HR : Heart Rate
SV : Stroke Volume
EDV : End-Diastolic Volume
ESV : End-Systolic Volume
AED : Automated External Defibrillator
VF : Ventricular Fibrillation
VT : Ventricular Tachycardia
SGA : Supraglottic airway

RCT : Randomized Controlled Trial

PVT : Pulses Ventricular Tachycardia

IO : Intraosseous

IV : Intravenous

SCD : Sudden Cardiac Death

CAD : Coronary Artery Disease

PEA : Pulseless Electrical Activity

ACS : Acute Coronary Syndrome

LQTS : Long QT Syndrome

CPVT : Catecholaminergic Polymorphic Ventricular Tachycardia

DNAR : Do Not Attempt Resuscitation

DRSABC : Danger, Reaction, Shout for assistance, Airwa, Breathing, Circulation

ETC02 : End-Tidal Carbon Dioxide

MCQ : Multiple Choice Question

ICU : Intensive Care Unit

ER : Emergency room

CCU : Coronary care unit

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1. INTRODUCTION

In the past , In the Bible, mouth-to-mouth resuscitation is frequently mentioned. The Hebrew Prophet Elijah is said to have been the first person to use this method. He "put his mouth over his mouth" by heating the dead boy's body. In 1740, the Paris Academy of Sciences said that people who drown should get mouth-to-mouth resuscitation. The first known chest compression was performed by Dr. Friedrich Maass in 1891. As a result of the work of Peter Safar and James Elan, it was first commercially available in 1956. CPR was recognized as an approved practice by the American Heart Association (AHA) in 1963 when cardiologist Leonard Scherlis founded the committee. In 1972, Seattle, Washington, saw the first large-scale CPR instruction. In 1979, the third National Conference on Cardiopulmonary Resuscitation created the American College of Cardiology (ACLS). As of 1992, there was an International Committee on Resuscitation (ILCOR). In 1999, CPR and ECC guidelines were published for the first time worldwide. CPR and ECC recommendations issued by the AHA since that time have been updated when new scientific evidence has become available. New CPR and ECC guidelines from the American Heart Association (AHA) for 2020 are now available. According to the 2010 International Consensus on CPR and ECC, the American Heart Association amended it in 2015 (Bhatnagar *et al*. 2018).

CPR is a series of life-saving techniques used to revive a newborn, child, or adult who has had a cardiac or respiratory arrest, therefore increasing the likelihood of survival. CPR is the technique of physically squeezing and breathing persons who are having cardiac arrest in order to keep them alive until emergency aid arrives (Bhatnagar *et al* .2018).

Cardiopulmonary resuscitation (CPR) is asequence of life-saving procedures performed immediately after cardiac arrest to make it more likely that you will survive. Reviving someone from cardiac arrest requires the use of a chain of coordinated interventions, each representing a link in the chain. There is a connection between rapid identification and activation of the emergency response system, early CPR with focused chest compressions, rapid defibrillation, successful advanced life support, and integrated post-

cardiac arrest care. In adults, the new "C-A-B" CPR sequence replaces the previous "A-B-C" prescription of performing CPR in the order of "Airway, Breathing, Chest Compressions" (Chest compressions, Airway, Breathing). Additionally. Quality The emphasis is on "Hands-Only (compression only) CPR" for the inexperienced lay responder. A general consensus was reached that high-quality CPR should be prioritized, maintaining an appropriate rate and depth of chest compressions while permitting full chest recoil, minimizing interruptions, and without breathing additional air. Cardiopulmonary resuscitation (CPR) is a critical part of a treatment strategy that may go beyond just restoring circulation (ROSC). In order to enhance CPR quality and detect ROSC, more focus is being placed on physiologic monitoring. Patients receiving post-cardiac arrest therapy need a comprehensive, systematic, integrated, multidisciplinary system of care. When it comes down to it, the ultimate objective of resuscitation therapy is to restore a patient's health quality and functional ability (Lee 2012).

SCA is defined as "the rapid cessation of heart activity to the point of the sufferer being unresponsive, without normal breathing or signs of circulation." Performing CPR is the initial step in resuscitating a person who has collapsed due to a cardiac arrest. When the Chain of Survival is properly implemented by EMS following an out-of-hospital cardiac arrest, the amount of treatment provided by EMS is significantly increased, with one of the most critical parts being the quality of CPR administration. Regardless of this, overall survival rates continue to be low. In-hospital survival is somewhat greater than out-of-hospital survival (22.3–25.5 percent), but not by much (10.8 percent). A major factor in the disparity in survival rates has been the inadequate quality of CPR delivered by rescuers. The manner in which chest compressions are performed is one of the most critical components of high-quality CPR. Depth, speed, and recoil are all essential considerations when evaluating compression quality, in addition to the time it takes to initiate compressions. When the compression depth is too shallow, survival rates decrease by 30% percent. Many rescuers do compressions at an insufficient pace or depth. This is crucial information to know. Resuscitators favor leaning during compressions because it minimizes

chest wall recoil, which in turn lowers coronary perfusion pressure and so improves resuscitation results. Time to defibrillation following cardiac arrest in ventricular fibrillation is another crucial factor in predicting survival after cardiac arrest. Between collapse and defibrillation, survival chances decrease by 7–10% for every minute without CPR and by 3–4% with bystander CPR. The quality of CPR provided by rescuers is directly linked to the success of early defibrillation in patients with ventricular fibrillation/pulseless ventricular tachycardia (Rajeswaran *et al.* 2018).

Term used in medicine to describe sudden cessation of heart, respiratory, or brain function. This condition has a direct effect on blood flow and the ability of the pulmonary system to make gas exchanges happen in the body. Children are most likely to get CPA because they are in shock or have trouble breathing. This is when the respiratory system doesn't do its job well and the gas exchange process doesn't work as well as it should (Sanguino *et al.* 2021).

The ability to do cardiopulmonary resuscitation (CPR) in the event of a medical emergency is an absolute need for every healthcare professional. In poor nations, CPR is still a relatively new treatment option compared to advanced countries. Both in Basic Life Support (BLS) and in Advanced Life Support (ALS) .CPR is an essential element. Anyone who has ever attempted CPR on a person in cardiac arrest knows that it is an extremely effective way to save a life (Munezero *et al.* 2018).

Resuscitation is a term used in hospitals and health care settings to refer to fast interventions aimed at preventing death and maximizing human survival. The health care worker's rapid actions may mean the difference between life and death. CPR is the cornerstone approach for treating cardiac arrest in an emergency situation. Nurses are a vital element of the health care system and are often regarded as knowledgeable about institutional care. Those who have suffered a cardiac arrest require immediate CPR as a life-saving medical procedure. Rescue breathing and chest compressions are used in this procedure

to suspected cardiac arrest sufferers. As critical members of the healthcare team, nurses are presumed to possess the necessary basic skills and knowledge to conduct CPR. CPR has been shown to significantly reduce the risk of sudden death when administered correctly, and is hence regarded as a critical medical practice. Often, the doctor will be unable to attend to the patient, and hence the nurses are obliged to offer emergency treatment. To do the process meticulously, the nurses must be informed and skilled in the operation. Contrary to their duties, investigations from many nations have shown that nurses lack understanding relating (Mohammed Ahmed *et al*. 2017).

According to the American Heart Association2020 , Throughout the United States and other rich nations, mortality and morbidity associated with cardiac arrest continue to be a major problem. According to the American Heart Association's "Heart Disease and Stroke Statistics 2020 Update," 347,700 Americans suffer from an out-of-hospital cardiac arrest each year. including more than 7,000 children under the age of 18. (OHCA). An estimated 9.7 of every 1000 adult cardiac arrests and 2.7 of every 1000 pediatric hospitalizations are associated with IHCA. Approximately 1% of American newborns require extensive cardiopulmonary resuscitation (CPR). Since 2004, IHCA results for adults and children have steadily improved, while OHCA outcomes have not. Since 2012, the number of adult patients who restore spontaneous circulation (ROSC) after an out-of-hospital cardiac arrest (OHCA) and are treated by emergency medical services has been relatively stable. In this new edition of the resuscitation recommendations, the Chain of Survival has been added to each chain to underline the significance of survival and recovery for resuscitation results. Both OHCA and IHCA have developed Chains of Survival for adults and children (Merchant *et al.* 2020).

1.1. Important of Study

Approximately 350,000 to 700,000 people die each year in Europe due to abrupt heart attack (SCA). CPR performed by a bystander (CPR) is critical for effective defibrillation and improved outcomes, increasing a victim's chances of life by two or

fourfold or more. Bystander cardiopulmonary resuscitation rates vary significantly across localities, ranging from 10% to 65% (Navarro-Patón et al., 2017).

Survival after cardiac arrest is directly tied to the effectiveness and speed with which cardiopulmonary resuscitation is performed (CPR). Cardiopulmonary arrest occurs most often in hospitals. Additionally, before physicians arrive, nurses are the first members of the health care team to arrive at the scene of a cardiopulmonary arrest. Thus, it is critical that nurses have comprehensive theoretical and practical training in basic life support (Yılmaz and Simsek 2019).

A patient in cardiac arrest is always discovered by a nurse, and as such, they should be able to perform a successful resuscitation at the earliest opportunity. According to study, six months after receiving their initial CPR training, nurses' knowledge and abilities deteriorate while their performance increases when all nurses are trained and take proper life support courses, which has been the case for over 50 years. Learners must integrate, retain, and use the cognitive, behavioral, and psychomotor abilities necessary to execute effective resuscitation in order to offer high-quality CPR (Rajeswaran *et al.* 2018).

1.2. Statement of the Problem

Assessment of nurses knowledge to wards cardiopulmonary resuscitation at Nasiriyah teaching hospital in Dhi-qar

1.3. Objectives of the Study

- To determine the nurses' level of knowledge on cardiopulmonary resuscitation.

1.4. Limitation of the Study

- Time limits.2022.
- place limits. Dhi-qar, Iraq.

2. LITERATURE REVIEW

2.1. Anatomy of the Heart

The heart is a cone-shaped muscle pump placed in the midline of the chest and measuring approximately the diameter of a hand. It weighs 300 grams and is found in the adult thorax's middle mediastinum. The lower (diaphragmatic) surface is attached to the central diaphragm tendon, but the lower (basal) surface faces posteriorly and is located directly anterior to the oesophageal and (posterior to that) descending aorta. The foundation is dominated by the left atrium. The fibrous pericardium joins the left ventricle (left ventricle) and right atrium (right atrium) sides of the heart to the lung and phrenic nerve. The heart's anterior surface sits behind the sternum and the costal cartilages. The location of the interventricular septum has a significant impact on the components of the anterior and inferior surfaces. Although the heart is primarily a midline structure, one-third of the heart is located to the right of the midline and the other two-thirds to the left. Because the left ventricle's wall is 10 millimeters thicker than the right ventricle's, the interventricular septum is protruding to the right (3e5 mm). The front surface of the heart is two-thirds right ventricle and one-third left ventricle, obliquely across the heart in the coronal plane (Whitaker 2010).

The heart is a four-chambered organ that pumps blood around the body. Sends deoxygenated blood to the lungs; then gets oxygenated blood from the lungs. As far as histology goes, the heart's cellular characteristics play an important part in its regular operation and adaptations (Arackal and Alsayouri 2019).

There are four unique chambers in the heart, each with a different thickness of muscle wall lining the inside. The tiny, thin-walled chambers of the left atrium (LA) and right atrium (RA) are situated above the left ventricle (LV) and right ventricle (RV), respectively. Ventricles are enormous, thick-walled chambers that do most of the work in the body.. The atria collect blood from the venous and pulmonary systems and then contract and expel it into the ventricles. The blood is then circulated by the ventricles,

either throughout the body or into the lungs. Valve annuli, membranous septum, interventricular aortic interval, right and left fibrous trigones are all seen in heart fibrous structure. The central fibrous body is formed by the right trigone and the membranous septum, and is perforated by the bundle of His. Besides separating the atrium and ventricles electrically, the heart's fibrous framework serves as structural support. The four valves each have a specific role in the maintenance of physiological balance. Epicardium, myocardium, and endocardium are the three layers that make up the heart's wall Serous pericardium's visceral layer forms the epicardium, which protects the heart chambers from external damage. There are three distinct layers of muscle in the myocardium, the heart's intermediate layer, all of which may be seen in the left ventricle and interventricular septum, including the subepicardial, middle concentric, and subendocardial regions. The subepicardial and subendocardial layers make up the majority of the rest of the heart. Besides excitable nodal tissue and the conducting system, the myocardium also comprises other essential components. Endocardium and subendothelial connective tissue make up this deepest layer of the heart (Shah *et al.* 2009).

2.1.1. Structure of the heart

There are three main components to the heart: the fibrous skeleton, the cardiac muscle, and the impulse conduction system. In the base of the heart, the fibrous or cardiac skeleton is located. Fiberous skeleton functions include anchoring valve leaflets, insulating conduction in the atria from the ventricles, and providing structural support for the heart muscle (Saremi *et al.* 2017)

In the heart's wall, the epicardium, myocardium, and endocardium are the three primary components, respectively. Tunica adventitia (the outermost layer of the heart) corresponds to the three layers of the artery in terms of embryology. The heart is protected by the pericardium, a two-layered fluid-filled sac. The fibrous/parietal pericardium protects the heart's outer layer, while the visceral pericardium, located within, connects the two. Viscosity, fibro-elastic connective tissue, and fat are all part of the epicardium, a term that refers to all of these components. Below the epicardium, the

coronary arteries and veins, lymphatic vessels, and nerves are all present. A layer of subendothelial tissue lies beneath the endothelium, forming the endocardium. An ion-conducting system is located in the subendocardium between the endocardium and the myocardium of a heart muscle (Rodriguez and Tan 2017)

The epicardium contains several blood vessels and nerves, including the coronary arteries and veins and lymphatic vessels. Connective tissue between the endothelial cells and the subendothelial fibroblasts constitutes the endocardium. The impulse-conducting system is housed in the subendocardium, which is located between the endocardium and myocardium. Cardiac cells are specialized for transmitting electrical impulses in the heart. The sinoatrial (SA) node, located at the intersection of the superior vena cava and right atrium, is where electrical impulses begin. Once they've made their way through both the interatrial and interventricular septa, the atrioventricular (AV) node receives them. Hexagonal bundles of His are formed when fibers pierce the cardiac skeleton's core fibrous body to create the bundle. Interventricular septum division and branching into the ventricles produce Purkinje fibers. The heart's valves play a crucial role. They serve as both an exit gate and a backflow prevention device. Semilunar valves are valves that separate the aorta from the left ventricle and the pulmonary artery from the right ventricle. The tricuspid and mitral valves are atrioventricular (AV) valves. The right atrium and right ventricle are separated by the tricuspid valve, whereas the left atrium and left ventricle are separated by the mitral valve. These valves are attached to the ventricles by chordae tendinae, which penetrate into the papillary muscle of the ventricles, making them distinctive (Arackal and Alsayouri 2019).

2.1.2. Function of the heart

The heart pumps blood throughout the body as its primary job. cardiac output, the rate at which blood is pumped from the heart, best reflects cardiac function. Several variables influence cardiac output. Cardiac output is calculated by multiplying the stroke volume by the heart rate. Thus, the output of the heart is directly influenced by changes in these two components. The difference between the end-diastolic volume and the end-systolic volume is used to determine stroke volume, which is the amount of

blood evacuated following ventricular contraction. Stroke volume can be affected by factors like as contractility, preload, and postload. In cardiology, end-diastolic volume before systole is known as preload. Preload can most accurately be determined by measuring the end-diastolic volume. In contrast, the ventricle's afterload is the total force it must withstand throughout systole. The definition of afterload is built on the law of LaPlace. As a result, afterload is immediately affected by changes in pressure, radius, or wall thickness (Arackal and Alsayouri 2019).

2.1.3. Cardiac output

This is the rate at which the body's vital organs, including the brain, get blood. By controlling both the heart rate (HR) and the stroke volume (SV) ,a body's demand for oxygen may be changed, such as during exercise . This means that cardiac output is regulated by a complicated mechanism including the autonomic nervous system, the endocrine system, and paracrine signaling channels. Cardiac output is calculated in liters per minute as the product of heart rate (HR) and stroke volume (SV). The term "heart rate" is most frequently used to refer to the number of times the heart beats in one minute. The SV value represents the volume of blood expelled during ventricular contraction or during each heartbeat. Conclusion-diastolic volume (EDV), The volume of blood that fills the heart at the conclusion of diastole cannot be evacuated during systole. Conclusion-systolic volume is thus the volume left in the heart at the conclusion of systole (ESV). A person's EDV (end-diastolic volume) isn't the same as their ESV (end-systolic volume).Several factors impact both HR and VS at the same time. Human heart output ranges from 5-6 liters per minute at rest to more than 35 liters per minute during activity (King and Lowery 2017) .

2.1.4. Heart valve

Different structures make up each heart valve, each with a distinct histological profile. Although the aortic, pulmonary, mitral, and tricuspid valves all have a common construction, each valve is specifically tailored to perform its own duty in the heart's cycle (Misfeld and Sievers 2007).

Blood is pumped from the body to the lungs for oxygenation by the tricuspid and pulmonic valves on the right side of the heart, and from the lungs back to the body by the mitral and aortic valves on the left side of the heart. The aortic and pulmonic valves control the flow of blood from the ventricles to the arteries on the left and right sides of the heart. Atrioventricular (AV) valves are located on both sides of the heart, and they are the mitral and tricuspid valves, respectively. Systole is the time during which the ventricles contract, while diastole is when they fill through open mitral and tricuspid valves. All four valves are closed during isovolumic contractions and relaxations. A pressure of roughly 30 mm Hg is required for the valves to function properly when they are fully closed. However, the aortic valve is capable of withstanding 100 mm Hg whereas the mitral valve closes against pressures of 150 mm Hg. The valves on the left side of the heart are more vulnerable to illness because of this high cyclic stress. In valve pathology, hemodynamics may play an important role (Yoganathan and Casey Jones 2004).

2.1.5. Control of the heart rate

Atrial fibrillation does not have a defined optimum heart rate. At rest, the ventricular rate response should be maintained between 60 and 80 beats/min and between 90 and 115 beats/min during moderate exercise, according to current guidelines .In individuals with atrial fibrillation, a consensus statement recommends a resting heart rate of 90 bpm and an exercise heart rate of 180 bpm. However, there have been no randomized clinical trials to support these goal rates for avoiding all-cause cardiovascular morbidity or death, and such recommendations may be erroneous(Camm *et al*. 2007).

2.2. Background Cardiopulmonary Resuscitation

Standardized training in cardiopulmonary resuscitation (CPR) is now more important than ever, as it is an essential method for treating cardiac arrest. Whether or not a patient survives a cardiac arrest is directly correlated with the proficiency of the nurses performing this life-saving treatment (Shrestha *et al*. 2020).

In the event of a cardiac arrest in the hospital, nurses are the ones who are most likely to recognize and begin CPR. CPR has been found to minimize in-hospital fatalities when administered by properly educated health care providers (Rajeswaran *et al*. 2018).

CPR training is required of nurses because of their experience with patients in life-threatening situations and their training in patient care (Parajulee and Selvaraj 2011).

In hospitals and health care institutions, resuscitation is taking immediate action to save a person's life and provide them the greatest chance of survival possible (Mohammed Ahmed *et al*., 2017).

Primary, secondary, and tertiary level clinics and hospitals in Botswana are all run by nurses. Trauma and medical crises are increasing, and nurses should be trained in cardiopulmonary resuscitation (CPR) to be able to respond to cardiac arrest scenarios (Rajeswaran and Ehlers 2014).

Cardiopulmonary Resuscitation (CPR) is one of the most critical interventions in the field of socio-medical intervention.. Even though it's a simple treatment, it has the potential to boost survival rates for individuals who suffer sudden cardiac arrest, most often as a result of coronary artery disease (Stiell *et al*. 2004).

2.3. The Aim of Cardiopulmonary Resuscitation

CPR is performed to ensure that important organs get oxygen prior to the onset of self-sustained blood flow. It is best for the patient and for the bystanders to begin CPR as soon as possible. Survival can be predicted with CPR. Both cardiac output and arterial blood oxygen content are necessary for optimal tissue oxygenation. Bystander CPR can be done in two different ways. However, external chest compressions boost forward blood flow at the risk of a rescue breath stoppage. As a result, blood flow via the pulmonary vasculature is limited in the quantity of oxygen it can hold. Administering rescue breaths to oxygenate alveolar gas, on the other hand, necessitates delaying

external chest compression. This delay in chest compression leads in a dramatic decrease in forward blood flow and impaired oxygenation of important organs (Deakin *et al.* 2007).

2.4. Chain of Survival

In cardiac arrest care, the primary objective is to ensure that all required steps are taken to improve outcomes. High-quality CPR and early defibrillation as well as appropriate post-ROSC treatment and support for recovery and survivability are all covered. All of these duties need an organizational infrastructure that includes education, training, equipment, supplies, and communication to succeed. Thus, we know that each of these many therapy areas adds to the patient's functional survival after cardiac arrest. The Chains of Survival for OHCA and IHCA are quite distinct, and this is reflected in the various causes, techniques, and outcomes of their resuscitation. (Figure 2.1). For the victim, community involvement and responsiveness are critical to OHCACommunity members must be able to recognize cardiac arrest, dial 9-1-1 (or the local emergency response number), do CPR (even compression-only CPR for untrained lay rescuers), and administer an AED (Kleinman *et al*. 2015).

This is when emergency medical services arrive on the scene and begin doing CPR before transporting the patient to a hospital for further stabilization and long-term care. When compared to IHCA, the importance of monitoring and prevention cannot be overstated. A robust multidisciplinary strategy comprises teams of medical specialists that react, give CPR, immediately defibrillate, initiate ALS measures, and maintain post-ROSC care in the event of an arrest in the hospital. IHCA is superior to OHCA in terms of overall outcomes, perhaps due to shorter delays in successful resuscitation in IHCA cases (Virani *et al.* 2020).

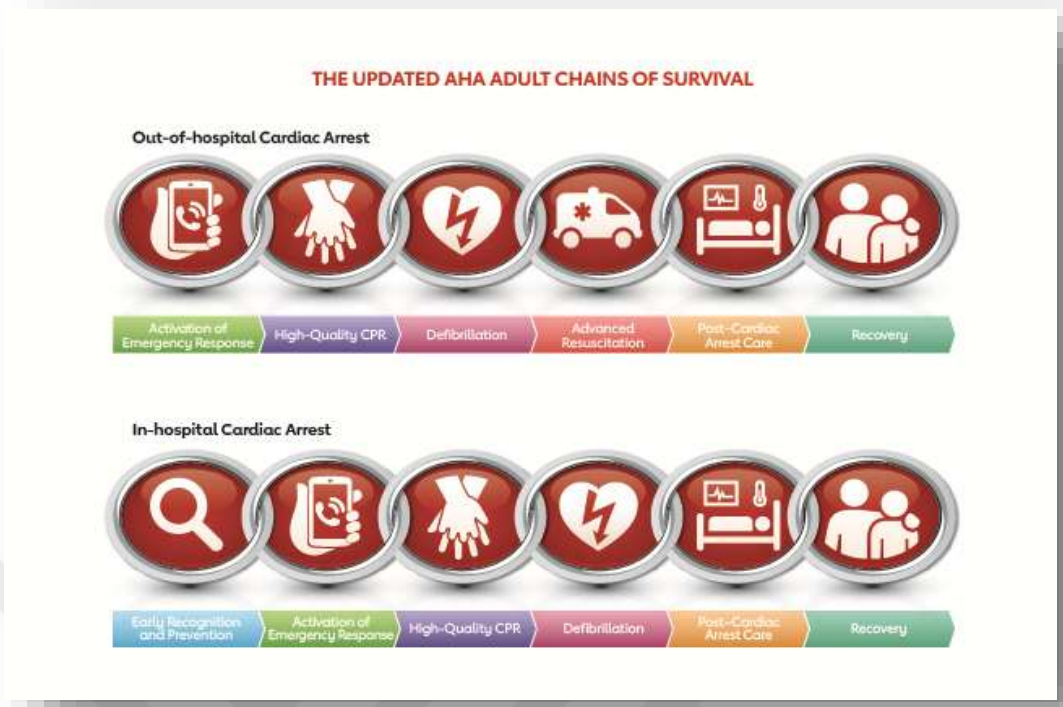

Figure 2.1. Survival Chains for IHCA and OHCA by the American Heart Association in 2020(Panchal *et al*. 2020).

2.5. Major Concepts of CPR

2.5.1. Cardiac arrest

If the sufferer is to have the highest chance of recovery after an adult cardiac arrest, a number of interrelated systems must function together seamlessly. Adults who suffer a cardiac arrest must be diagnosed quickly, get immediate cardiopulmonary resuscitation (CPR), and any malignant shockable rhythms must be defibrillated. After ROSC, they must also receive supportive care and therapy for the underlying reasons. The most prevalent causes of sudden cardiac death in adults are now known to be myocardial infarction and electrical abnormalities because to this technique. CPR may be used to treat respiratory insufficiency, toxic ingestion, pulmonary embolism (PE), and drowning as possible causes of cardiac arrest (Lavonas *et al*. 2015).

There may be a higher incidence of noncardiac causes in the hospital. Among those occurring outside the hospital environment include an increase in opioid overdoses. Conducting CPR, summoning assistance, and, if necessary, AED treatment of ventricular fibrillation (VF) or ventricular tachycardia (VT). If high-quality CPR and defibrillation are the primary means of resuscitation, other particular therapies for possible underlying reasons may be useful in some circumstances (Dezfulian *et al*. 2021).

The American Heart Association's Guidelines for Recognizing Cardiac Arrest Two to three times as many people who get CPR from a bystander will survive a cardiac arrest. An unconscious but non-cardiac patient's benefit surpasses any possible danger of chest compressions. In these patients, CPR has been found to have a minimal risk of damage.For individuals in cardiac arrest, it has been proven that rescuers may have trouble finding a pulse, which may lead to CPR being delayed or even abandoned altogether. As a result, a lay rescuer's ability to recognize cardiac arrest is based only on the victim's degree of awareness and breathing effort. A pulse check is part of the recognition process for cardiac arrest by healthcare practitioners, however the necessity of avoiding wasting time in the search for a pulse cannot be overstated.

1. If a person is unconscious/unresponsive and not breathing normally (e.g., merely gasping for air), the lay rescuer should consider cardiac arrest.
2. In cases when a person is unresponsive or unconscious, and their respiration is missing or disordered (e.g., merely gasping), healthcare providers should search for a pulse for no more than 10 seconds before concluding that the patient has had a cardiac arrest (Panchal *et al*. 2020).

2.5.2. Beginning of a resuscitation

Emergency response system activation and the initiation of cardiopulmonary resuscitation are the next steps in the Chain of Survival once cardiac arrest has been discovered (CPR). CPR should be started as soon as possible in order to increase the chances of survival and neurological consequences. CPR and the emergency response

system should be initiated simultaneously if feasible. While CPR is being performed, a It's possible for a single responder to activate the emergency system and begin calling for assistance, with the phone placed in speaker mode so that normal communication may continue, and immediately beginning CPR. As soon as feasible, the only rescuer should activate EMS and return to the victim as soon as possible so that CPR may be performed. Patients who have been misdiagnosed as being in cardiac arrest face a low risk of damage from CPR, according to recent studies. Cardiopulmonary resuscitation is more beneficial than minimally harmful for people who aren't experiencing cardiac arrest. Early CPR is the most important part of the resuscitation process for both ordinary responders and medical professionals, regardless of their training or experience. CPR may only be performed by lay rescuers, although healthcare experts may also do chest compressions and breathing.

Lay Rescuer Recommendations for Resuscitation Initiation (Untrained or Trained) according to the AHA

1. CPR should be performed by all lay rescuers at the very least When supporting a cardiac arrest victim.
2. CPR should begin immediately when a lonely responder triggers the emergency response system and identifies a cardiac arrest.
3. CPR can be performed on a patient who looks to be in urgent danger of cardiac arrest by anybody, even if they are not medical experts, because the risk of injuring the patient is extremely minimal.
4. The adult in OHCA can benefit from further ventilation (rescue breaths) by lay rescuers who have been trained in CPR using chest compressions and ventilation (rescue breaths) (Olasveengen *et al.* 2020).

2.5.3. Open airway

Proper ventilation and oxygenation can only occur if the airways are open. Rescuers should know the advantages and cons of each strategy and be proficient in the skills

required for each, the patient's airway must be developed and maintained despite the lack of high-quality evidence supporting any one strategy. When it comes to securing an acceptable airway, rescuers must be aware that many ways may be required to do so. Airway integrity and ventilation and oxygenation must be regularly evaluated in order to ensure patient safety. Open airways in cardiac arrest patients have not been studied to compare alternative techniques. Radiographic and cadaver investigations provide the bulk of the evidence used to assess the efficacy of various airway management techniques (Panchal *et al*. 2020).

Recommendations to open the airway according to the guidelines of the AHA2020

1. If there is no injury to the cervical spine, execute the head tilt–chin lift treatment to open the patient's airway.
2. To free the airway, a head tilt–chin lift method should be utilized by a trained lay rescuer who is proficient in both compressions and breathing if there is no cervical spine trauma.
3. Patients who are unable to cough or gag may benefit from the use of an airway adjunct (e.g., oropharyngeal and/or nasopharyngeal airway) to aid in the supply of breathing using a bag-mask device.
4. It is preferable to use an oral airway in patients with confirmed or suspected base skull fractures and significant coagulopathy.
5. Cricoid should not be administered frequently to adults experiencing cardiac arrest (Panchal *et al*. 2020).

Opening the airway after a head or neck injury according to the American Heart Association's guidelines

1. Healthcare professionals should perform an airway clearing jaw push on patients suspected of having a cervical spine injury without extending the patient's head.
2. If a jaw thrust and an airway adjunct fail to open the airway, a head tilt and chin raise should be utilized.

3. Rescuers should avoid employing immobilization devices if they sustain head or neck injuries since untrained rescuers may cause harm by using them(R. A. Berg *et al*. 2010).

2.5.4. High-quality CPR metrics.

One of the most critical interventions in treating a patient in cardiac arrest is doing effective CPR and administering defibrillation when necessary. High-quality CPR has a number of essential components, chest compressions should be performed as quickly and deeply as possible, with no resting on the chest in between them (Idris *et al*. 2015).

AHA2020's recommendations for CPR positioning and location

1. One hand should be placed on a victim's lower sternum and a second hand should be placed on top of it, such that both hands are overlapping in this position.
2. CPR should be conducted where the victim is if it is safe and effective to do so there, regardless of where the victim is located.
3. The supine posture and performing CPR on a firm surface are the best options for performing CPR on a person.
4. It may be appropriate for rescuers to do CPR on victims who are prone, especially in hospitalized patients with advanced airways, for as long as the victim is unable to lie flat (Olasveengen *et al*. 2020).

Pauses and Compression Fraction according AHA2020

1. Chest compressions in adult cardiac arrest should be as quick as feasible, especially during the preshock and postshock phases.
2. As soon as the rescuer fails to discover a pulse after 10 seconds of checking, There should be a repeating of chest compressions immediately.

3. Compression quality must be maintained by alternating between rescuers' chest compressors every two minutes or every five cycles of compressions and ventilation at a 30:2 ratio.
4. Adults in cardiac arrest should always begin chest compressions as soon as the shock has been administered.
5. When doing cardiopulmonary resuscitation (CPR) on an adult in cardiac arrest who does not have an advanced airway, it is appropriate to take two breaths, each lasting one second.
6. An effective chest compression fraction of 60% is recommended for adult cardiac arrest CPR (Olasveengen *et al*. 2020).

Compression Depth and Rate according AHA2020

1. When doing CPR on an average adult, compression depths should not exceed 2.4 inches, or six centimeters, at all times.
2. Adult cardiac arrest sufferers should be given chest compressions at a pace between 100 and 120 per minute..
3. Avoid leaning on the chest between compressions for cardiac arrest patients.
4. Chest compressions should be performed so that the period between compression and recoil/relaxation is about equal (Olasveengen *et al*. 2020).

2.5.5. Ventilation and ratio of compression to ventilation

Patients with a pulse who are apneic need rescue breaths more than anybody else. The role of assisted breathing in the treatment of cardiac arrest patients is less certain. It is possible that extended chest compressions without assisted ventilation will be less efficient than regular CPR because of the drop in arterial oxygen content that occurs as the duration of CPR rises (compressions plus breaths). In the case of an asphyxiated cardiac arrest, this is a critical factor. Patients who are considered to have had cardiac arrests in circumstances with short EMS response times are the subject of most published studies. There may be a threshold at which the lack of ventilation is hazardous, and the findings should be taken with a grain of salt (Kleinman *et al.* 2015).

Continuous chest compressions, once an advanced airway has been introduced, Increasing the compression fraction will make it more difficult to breathe, though. Performing chest compressions without interrupting for ventilation may be possible to save time. The effectiveness of ventilation with an SGA compared to an endotracheal tube during cardiac arrest may be lower, however this hasn't been proved in recent RCT studies. The employment of SGAs only complicates things (Wang *et al*. 2018).

Basic ventilation techniques recommended by the American Heart Association2020 during cardiac arrest.

1. Adults in cardiac arrest who are being ventilated should have tidal volumes of 500 to 600 mL, or enough to raise the patient's chest, according to recommendations.
2. It is possible for patients who do not have an advanced airway to use a bag-mask ventilator or to breathe through their mouths.
3. In the case of providing rescue breaths, it may be suitable to provide a breath over one second, take a "regular" (not deep) breath, and then deliver a second breath over one second (Wang *et al*. 2018).

Compression-to-Ventilation Ratio Recommendations: ALS according American Heart Association2020.

1. Prior to inserting an advanced airway, healthcare providers often do CPR with 30 compressions and 2 breaths (tracheal tube or supraglottic airway).
2. It is possible for EMS personnel to give 10 breaths per minute of asynchronous ventilation prior to the insertion of an advanced airway (1 breath every 6 seconds).
3. An advanced airway may allow for a breathing rate of one breath every six seconds (a rate of 10 breaths per minute) while doing continuous chest compressions.

4. Use of minimally interrupted (delayed breathing) chest compressions for shockable OHCA is possible as part of an all-encompassing therapy plan (R. A. Berg *et al.* 2010).

2.5.6. Defibrillation

Early defibrillation is critical in cases of abrupt cardiac arrest brought on by VF or pulseless VT (PVT). After the onset of VF/VT, defibrillation is most effective when performed as quickly as feasible. Preventing defibrillation from failing in cases of prolonged VF/VT requires a predetermined CPR period before the examination of the heart's energy reserves. Keeping CPR running smoothly while administering shock is also a top responsibility. A variety of unique shock waveforms are now available in defibrillators. It is impossible to compare the shock efficacy of various devices even when they are set to the same pre-programmed energy level. Defibrillators also have different specifications for cardioversion energy settings. For a certain waveform, look to the manufacturer's suggested energy. Current research is focusing on developing tools that can detect the underlying heart rhythm while performing CPR and extract prognostic information from the ventricular waveform. These still need to be tested and validated before they can be used on a regular basis. A shock-inducing tachyarrhythmias should be treated using defibrillators (using biphasic or monophasic wave patterns). If you're suffering from tachyarrhythmic heart disease, biphasic defibrillators are preferable than monophasic ones since they are more successful at stopping the heartbeat. The use of a single shock approach rather than many shocks is recommended in cases of unmonitored cardiac arrest. In situations of suspected shock-refractory arrhythmias, consult the manufacturer's instructions for that waveform to decide whether fixed or rising energy levels should be utilized for subsequent shocks. However, if you lack this knowledge, you should try the greatest dose of defibrillation. In cases of shock-refractory arrhythmias, a defibrillator with an increase in energy capacity can be employed. This level of energy should be utilized for the first shock until there is conclusive evidence that one biphasic waveform is superior to another for stopping VF. The maximum dosage of a defibrillator may be considered if this information is unavailable (Kleinman *et al*. 2015).

Other Electric or Pseudo-electric Techniques of Cardiopulmonary Resuscitation Defibrillation is not the only therapeutic option for cardiac arrest; a range of electric and pseudoelectrical therapies have been investigated as potential remedies for the condition. Transcutaneous pacing in cardiac arrest with bradyasystolic rhythm has been studied by researchers. According to theory, electrical impulses can produce heart contraction and forward blood flow, but there has been no proof of this in clinical studies for individuals with cardiovascular disease. For patients in the early stages of cardiac arrest, "temporizing techniques" such as precordial thump, "Temporizing measures" include chest compressions with the fist or percussion, as well as chest compressions with the cough (the CPR performed before the patient lost consciousness).A single, acute, high-velocity contact occurs when the ulnar surface of a tightly clinched fist impacts the sternum in the middle (or "punch"). In the pre-cordial zone, it is believed that a low-energy shock-like impulse may stop the underlying tachyarrhythmia. Percussion (or percussion) pacing involves striking the sternum with a closed hand at a low velocity. The goal of first pacing is to induce myocardial depolarization by generating a strong electric impulse in the heart's tissue. In order to temporarily boost the aortic and intracardiac pressures and prevent the patient from losing consciousness, CPR techniques such as coughing are used (Olasveengen *et al*. 2020).

2.5.7. Access to blood vessels

Peripheral IV is the standard method for administering emergency medication. Patients' and operators' unique traits and experience make gaining IV access in an emergency situation a challenge, which can lead to treatment delays. IO, central venous, intracardiac, and endotracheal channels can be used in place of IV access for acute medication delivery. The Guidelines for CPR and Emergency Cardiovascular Care, published in 2000, indicated that intracardiac medication delivery was banned. It's little wonder that endotracheal drug administration has mostly gone out of favor considering the variety of different routes available for patients to get their medications. In hospitals, central venous access is the most often used procedure due to the high degree of skill and training required. Compared to IV cannulation, it is easier to do, has a

higher success rate, and is less risky in terms of procedural complications. In cardiac arrest, a successful IV drug delivery has not yet been explored. AHA2020 Recommendations for Vascular Access Techniques in the Treatment of Cardiac Arrest:

1. Intravenous access for medication delivery should initially be attempted in the event of cardiac arrest.
2. If intravenous access fails or is impractical, intraosseous access may be an option.
3. It's possible that if intravenous and intraosseous access is failed or impossible, central venous access may be considered.
4. When alternative options aren't an option, administering medication by endotracheal intubation may be explored (Olasveengen *et al*. 2020).

In case of cardiac arrest, use of vasopressor medications when administered during CPR, Epinephrine has been suggested to have therapeutic benefits due to its -adrenergic effects on the heart and brain, blood flow to the heart and brain increases as a result. The actions of -adrenergic receptors may raise myocardial oxygen demand, decrease subendocardial perfusion, and cause proarrhythmia. Epinephrine's effectiveness in treating OHCA was examined in two randomized, placebo-controlled studies including approximately 8500 participants .Epinephrine was found to improve ROSC and survival to hospital release in a meta-analysis and systematic review of these and additional investigations, respectively. There was no difference in survival with a positive or poor neurological result at three months between the epinephrine and placebo groups, even though the latter happened slightly more frequently in the latter. Epinephrine is more effective when given sooner rather than later, and the short time between cardiac arrest and receiving epinephrine in recent trials may be responsible for the dismal survival rates with good neurological outcomes. In OHCA studies, this is a common problem. In the IHCA group, epinephrine may have a distinct influence on outcomes because of the shorter time to medication availability. Higher doses of epinephrine or other vasopressors during CPR have not been shown to improve outcomes. Medications Other Than Vasopressors in Cardiac Arrest. VF/pVT that does not respond to

defibrillation may be treated with amiodarone or lidocaine.. Steroid usage during CPR for patients who have had an OHCA is of questionable efficacy. Treatment of cardiac arrest with calcium is not suggested on a regular basis. Sodium bicarbonate should not be used on a regular basis in cardiac arrest patients. Magnesium is not suggested for treatment in cardiac arrest on a regular basis.

In Cardiac Arrest: AHA2020 Recommendations for Vasopressor Management:

1. In the case of cardiac arrest, we recommend that epinephrine be delivered.
2. During cardiac arrest, it is recommended that a dose of epinephrine of 1 mg be provided every 3–5 minutes according to clinical trial criteria.
3. Epinephrine should be administered as quickly as possible in cases of cardiac arrest with a nonshockable rhythm, regardless of time.
4. After the initial defibrillation attempts fail, the use of epinephrine in the treatment of cardiac arrest may be beneficial.
5. In cardiac arrest, vasopressin can be used alone or in combination with epinephrine, however it offers no benefits over epinephrine.
6. In cardiac arrest, it is not advisable to take large doses of epinephrine very often (Perkins *et al*. 2018).

2.6. Etiology and Pathology of CPR

Sudden cardiac arrest (SCA) is a sudden and unexpected cessation of heart mechanical activity that results in a loss of efficient circulation. Approximately 400,000 people in Europe suffer with SCA each year due to ventricular fibrillation, which is the most common cause. Insufficient cerebral blood supply renders the majority of those suffering with SCA unconscious within seconds or minutes. Preliminary signs are rare. Symptoms may include chest pain, palpitations, shortness of breath, and weakness if they are present. A delay in responding to SCA can have a substantial impact on a patient's chances of survival, which is why it must be addressed as soon as possible

because the survival rate is only 5 to 20 %. Sudden cardiac death (SCD) is defined as any death that occurs naturally, unexpectedly, and within an hour after the onset of symptoms induced by heart disease. 25% of fatalities are the result of SCD. SCD is most often caused by a cardiac condition known as coronary artery disease (CAD). Ventricular fibrillation, asystole, pulseless electrical activity (PEA), and prolonged ventricular tachycardia are the most often seen cardiac causes (VT). In addition to this, a major blood artery rupture or ventricular rupture might cause cardiac tamponade or mechanical blockage of the flow. SCD is must be separated from sudden cardiac arrest (SCA) (SCA). Cardiopulmonary resuscitation and/or defibrillation delivered as fast as feasible in cardiac arrest can restore function, however in sudden cardiac death, function loss is irreversible.(Perkins *et al.* 2015).

Cardiovascular and non-cardiac causes of cardiac arrest are possible:

1. Malignant arrhythmias, cardiac arrest and death are all possible outcomes for patients with acute coronary syndrome (ACS). More than two-thirds of all SCDs are the result of ACS. The most common causes of cardiac arrest in these individuals are cardiac arrhythmia (VT, VF, asystole, complete AV block, and PEA) or active heart failure when myocardial infarction damages a major portion of the heart muscle.
2. 10% of all SCDs are caused by a condition of the heart's structure unrelated to coronary artery disease. Hypertrophic, dilated, or arrhythmogenic cardiomyopathies, heart rhythm abnormalities, congenital coronary artery malformations, myocarditis, high blood pressure and congestive heart failure are all included in this category. SCD risk is multiplied by five when a person has congestive heart failure.
3. Hereditary arrhythmia syndromes. There are between 5% and 10% of sudden cardiac deaths that are not caused by heart disease. Such irregular heartbeats are usually caused by inherited genetic disorders. Due to the fact that ion channels convey electrically charged particles across the cell membrane, this condition is occasionally referred to as channelopathy. inherited arrhythmias like as Brugada

syndrome, LQTS, and catecholaminergic polymorphic ventricular tachycardia (CPVT) are all included in this grouping (CPVT). Pre-excitation syndrome and Wolff-Parkinson-White syndrome are two other arrhythmia-causing conditions that aren't linked to a gene mutation.

4. Cardiac tamponade can occur quickly (acutely) or slowly (chronic). Cardiac tamponade can lead to cardiac arrest and death if it goes untreated. Diagnostic, angiographic, and interventional cardiac procedures as well as trauma to the chest can cause cardiac arrest and ultimately SCD.

5. Non-cardiac variables account for just 15 to 25 percent of all heart problems. Traumatic chest injuries, severe bleeding (gastrointestinal bleeding, aortic rupture, or a brain hemorrhage), hypovolemic shock, overdose, and drowning are among the most prevalent non-cardiac causes.

6. Malignant heart rhythm problems and cardiac arrest can be caused by numerous forms of pulmonary embolism, tension pneumothorax, and pleuropericardial adhesions.

7. A cardiac or respiratory arrest can occur in people who have had major non-cardiac procedures, especially if they have heart disease or strong cardiovascular risk factors.

8. Cardiac arrhythmias and, ultimately, cardiac arrest, can result from body temperatures as low as 28° C or as high as 40° C.

9. An imbalance in electrolyte concentrations (hypokalemia, hypomagnesemia, hypocalcemia and hypernatremia) and acid-base condition can compromise heart function, leading to cardiac arrest.

10. Certain jellyfish stings, pesticides, herbicides, cocaine, amphetamines, alcohol, organophosphates, and nerve-acting chemicals can all induce heart failure.

11. Some drugs, such as tricyclic antidepressants and beta blockers and calcium antagonists, can cause heart failure. These include theophylline, digoxin, ergometrine, and antiarrhythmics.

12. Cardiac arrest can be caused by anaphylaxis, hypoglycemia, hyperglycemia, infection, airway obstruction, and hypoxia.

13. Lightning strikes in severe weather and electric shocks when handling electrical appliances or coming into touch with a power source (Libby *et al.* 2018).

2.7. Compressions (Hands Only)

Adults who are at danger of cardiac arrest owing to cardiac arrhythmias can benefit from compressions (the hands alone), Babies and children, on the other hand, are more prone to have respiratory arrest and require oxygenation and cleaning of the airway, making this therapy contraindicated in these cases. When it comes to cardiac arrests in youngsters, a research found that conducting compressions alone is no better than performing no CPR at all. It is simpler for those who have no training to utilize compressions since onlookers are often uninformed of regulations and hesitant to try mouth-to-mouth breathing. Most individuals aren't educated to palpate pulses, so they might waste time looking for one or falsely feel their own pulse if they're untrained. This is why someone who looks to be in cardiac arrest should only be examined for responsiveness and breathing. A patient's pulse should be checked by a health care practitioner as well, although this should take no more than 10 seconds. The most accurate way to determine pulse rate is to look at the carotid artery in the neck. A procedure using simply compressions is used if no pulse can be detected and no signs of regular breathing can be seen. In order to keep track of how long it took to do CPR, the rescuer should time the start of CPR as well as the end.

Any eyewitness arrest of an adult who suddenly falls might be taken as an indication that.

1. First, dial 911 or have someone else dial it for you in the event of a medical emergency. If you don't have a phone, yell for help!
2. CPR should be started with compressions at least 100 times per minute. (While waiting for the AED, do not halt compressions; interruptions should not last longer than 10 seconds.)

3. For every two minutes the shock should be repeated, and compressions should be quickly resumed after each shock. If a defibrillator is accessible, or if a bystander or a second rescuer is summoned to get one, it should be utilized as quickly as feasible.

4. Note. If a defibrillator becomes accessible after compressions begin, halt CPR and utilize it.

If at all feasible, the rescuer should log the length of time spent performing CPR. It is reasonable to assume that if an adult suddenly falls in front of you, For a few minutes, their body will be adequately oxygenated, allowing you to phone 9-1-1 and locate a nearby defibrillator. On the floor, the sufferer must lie on his or her back before compressions may begin. Depending on the situation, a backboard may be used in a hospital. The xiphoid process, which is readily broken, should not be compressed; compressions should be applied over the sternum as shown in the following (figure 2.2)

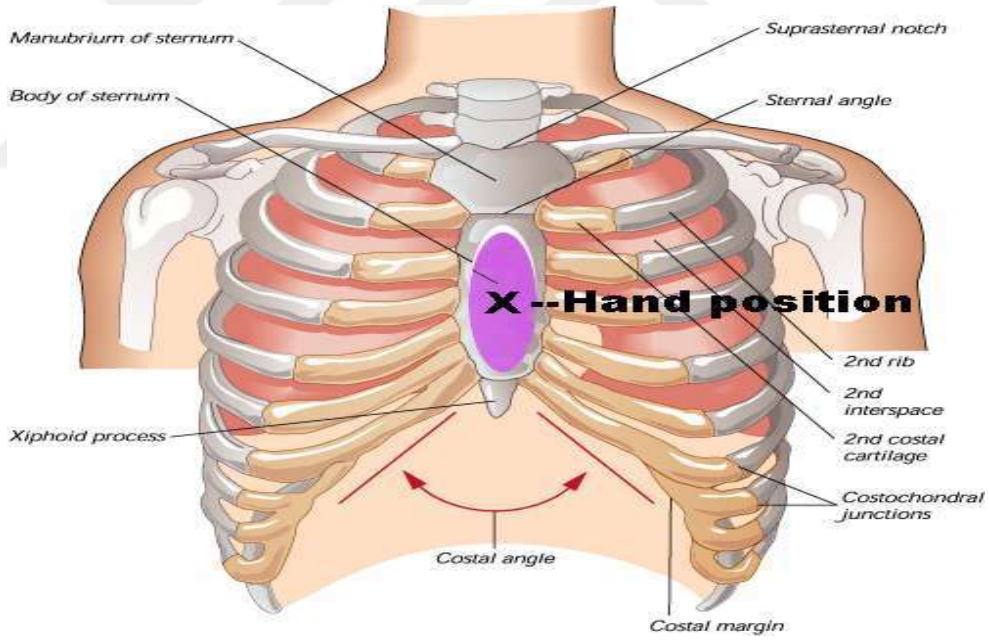

Figure 2.2. Compressions must be performed above the sternum in order to avoid the xiphoid process(Lockwood 2020).

It's easiest to determine the correct hand position by drawing two fingers down each rib until they reach the centre of the chest, then placing two fingers over the xiphoid process with your palm positioned exactly over them as shown in the following (figure 2.3).

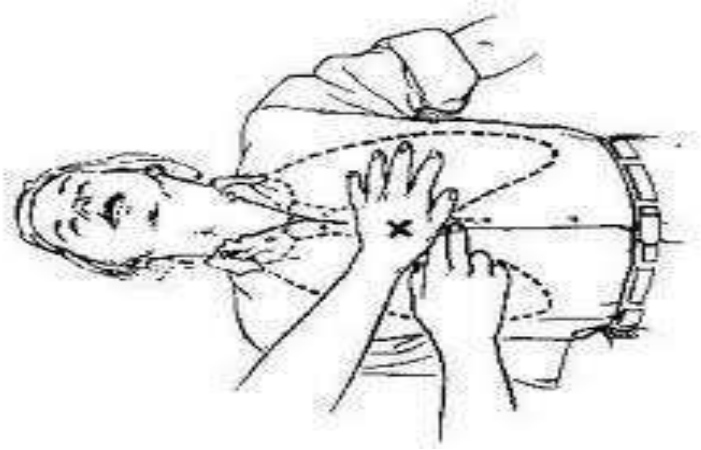

Figure 2.3. The hand in its proper position(Lockwood 2020).

Unless the nipples are very big or pendulous, the hand is placed between them in most instances. The second hand is placed on top of the first, fingers connected, and elbows locked to begin compressions as shown in the following (figure 2.4).

Figure 2.4. The correct body position(Lockwood 2020).

A rocking motion with the complete body applying pressure instead of just the arms is preferable while performing compressions. Compressions should be performed with the arm locked, not flexed. Compressions administered just using the force of the arms are incapable of providing a suitable depth of compression. At least 100 compressions per minute, hard and rapid, are required. Similar to "Staying Alive" (Dum, Dum, Dum,...

Stayin' Alive) by the Bee Gees. Pressure on the chest used to be a 1.5 to 2 inch rule, however this has now been altered. At least 2 inches of compression is required under current guidelines. It may be essential to apply deeper compression on obese or extremely massive individuals as shown in the following (figure 2.5).

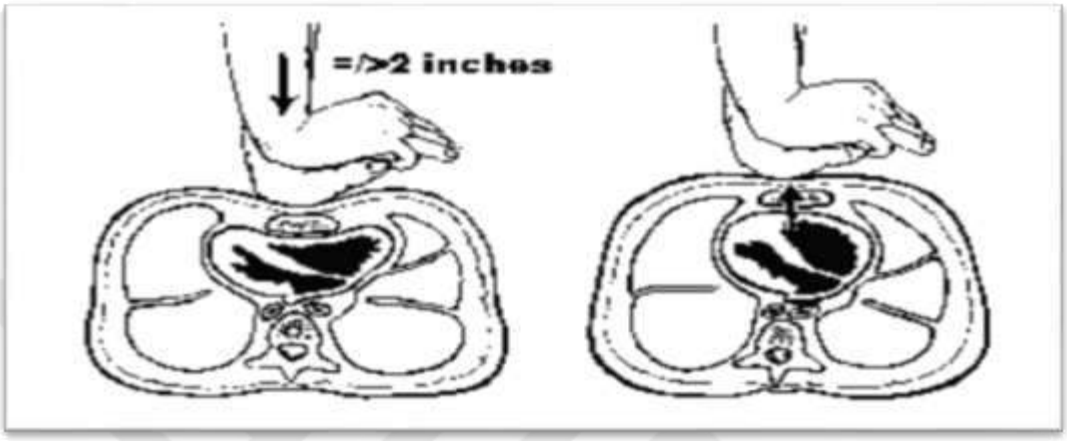

Figure 2.5. Depth of pressure on the chest(Lockwood 2020).

If possible, the rescuer should let the chest to fully recoil after each compression so the heart may rest and re-charge. However, if the rescuer lifts their hands, this might lead to ineffective compressions as the fingers bounce about the chest. A typical complication with CPR is that the ribs break during compression, especially in elderly persons, and the rescuer may feel the ribs shatter. Cardiac arrest is more likely to be fatal than a rib fracture. It's still a severe issue, despite this. The danger of a fracture increases if the rescuer's hands are not appropriately placed across the sternum. Fractures were seen in one-third of the CPR patients. As long as the patient is breathing and has a pulse, the rescuer should continue to press on the patient until help arrives or the rescuer is no longer able to continue compressions (Lockwood 2020).

2.8. AED/Defibrillation

AEDs, or automated external defibrillators, are medical devices that shock or defibrillate the heart. As compared to defibrillators in hospitals, public-area AEDs have a lower level of sophistication, The equipment, on the other hand, is easy to use and

comes with printed instructions. It is possible to include cutting shears, mouth-to-mouth barrier devices, gloves, a hair removal razor, and towels in the Defibrillator pack. as a means of avoid arcing during defibrillation, women should take off their metal bras and chest piercings. The electrode pads come with images to help you install them correctly. In order to decide if a shock is necessary, a machine automatically checks the heart's rhythm after the pads are in place. Within three minutes of the time of the arrest, defibrillation is the ideal. In the United States, All certified AEDs contain a spoken message that includes instructions for rescuers to avoid touching the patient and to press a button to administer the shock for some devices. This message is included in all certified AEDs. The electric shock is provided when a fully automated AED is initiated. To continue CPR or administer another shock, the AED generally reevaluates and gives instructions... Good Samaritan rules cover the use of an AED to administer defibrillation in an emergency (Lockwood 2020) .

2.9. Compressions-Airway-Breathing (CAB)

2.9.1. Adults

The old CPR protocol, ABC, must be replaced with the new one, CAB. After 30 compressions, a single qualified rescuer must provide two rescue breaths and continue at a 30:2 pace for the rest of the time. A 30:2 rescuer-to-adult ratio is used to help those in need. The two most common causes of sudden cardiac death in adults are ventricular fibrillation and pulseless ventricular tachycardia, both of which need immediate cardiopulmonary resuscitation (CPR). Compressions are also less intimidating and give the rescuer time to think and respond in an out-of-facility CPR situation.

The rescuer should not use their fingers to clean the victim's mouth unless there is clear evidence of food or other items that might be inhaled during breathing.

1. To initiate an emergency response, call 9-1-1 or ask someone else to do so. If there is no phone accessible, shout for assistance.

2. In order to begin CPR, perform 30 compressions at a pace of greater than 100 compressions per minute (While waiting for the AED, do not interrupt compressions.)
3. The airway should be opened as quickly as possible..
4. 4.Compressions can continue after two ventilations.
5. If a defibrillator is available, use it immediately and follow the instructions on how to shock the patient. After each shock, perform CPR for two minutes and then repeat the procedure every two minutes.
6. At a rate of 30 compressions for every two ventilations, keep going (30:2). There is a 30:2 rescue ratio with one rescuer and a 15:2 rescue ratio with two rescuers for infants and children.
7. There should be no more than ten compressions with the bag valve mask in use at any given moment (8 to 10 times a minute).
8. A defibrillator can be used during CPR if it becomes available after compressions have begun. The victim's jaw is elevated and one hand is put on top of his or her head. therefore opening the victim's airway, which is followed by ventilation. The rescuer uses one hand to squeeze the victim's nostrils and the other to preserve jaw posture while blowing air into the victim's mouth to seal the airway shut as shown in the following (figure 2.6).

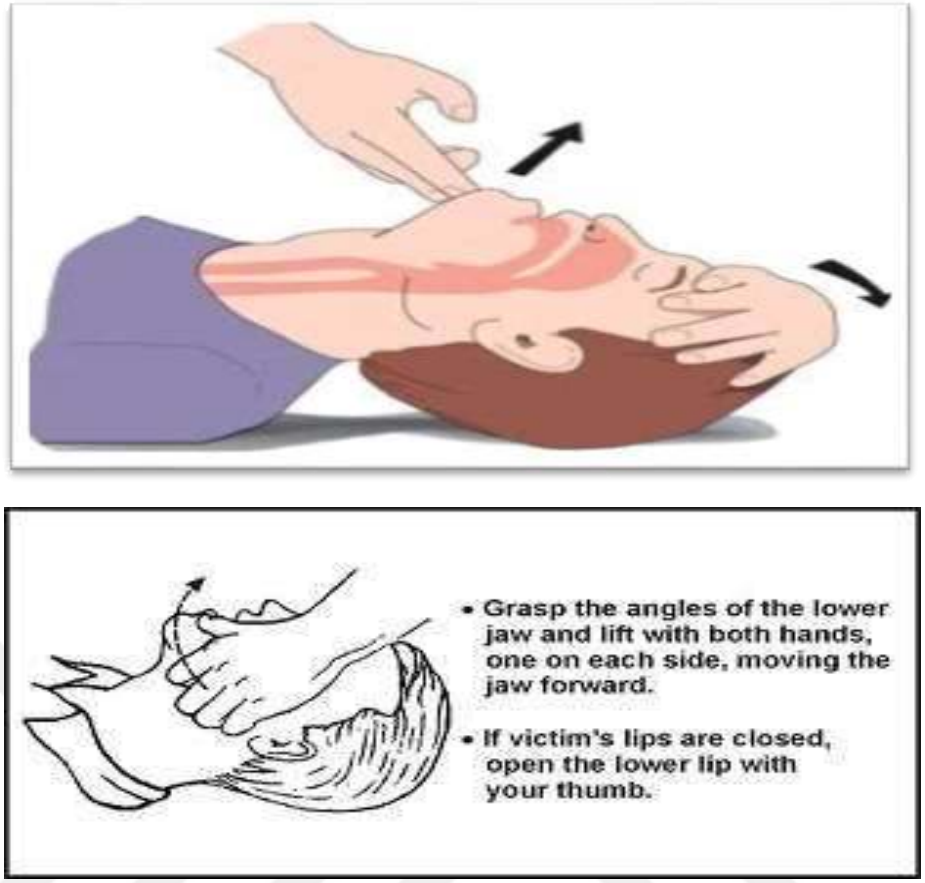

Figure 2.6. Position showing how to open the airway(Lockwood 2020).

It is possible to substitute the jaw thrust in the event of a spinal cord injury or craniofacial injuries, however this is not suggested for rescuers who have not been trained in this technique. The rescuer should blow into the sufferer's mouth, then raise it so that the sufferer may exhale. It is recommended that a one-second rescue breath be given to the patient as shown in the following (figure 2.7).

Figure 2.7. The rescuer blows into the victim's mouth(Lockwood 2020).

Mouth to nose breathing may be used when the person has vomit in their mouth, they are drowning, or they have maxillofacial injuries to prevent air from escaping their mouths and allowing oxygen to enter their lungs. A single individual performing CPR should perform two quick breaths and then immediately restart compressions. There should be no difference in compression rates between two people doing CPR, even if a second person is providing ventilation, An additional experienced rescuer can examine the carotid or radial pulse while compressions are being applied to see whether a pulse is being generated (Lockwood 2020).

2.9.2. Children and infants

Compressions should go as deep as one-third of the chest's anterior-posterior diameter when performed on infants and children. This is typically 1.5 inches for neonates and around 2 inches for children. A flat, solid surface, such a table or countertop, Compressions call for this. To prevent crushing the chest, use two fingers on infants and one hand on children under the age of two. To keep an infant's airways open, lay your hands on their forehead.

Compressions are conducted at a 30:2 rate for one rescuer and a 15:1 rate for two rescuers, at least 100 per minute.

1. Request for help and request that someone call 9-1-1 and fetch an AED if one is available.
2. Start Cardiopulmonary resuscitation as soon as possible and keep it going at a pace of 100 compressions per minute.
3. The first two minutes of CPR should be performed at a rate of 30:2 for one rescuer, or 15:2 for two, before phoning 9-1-1 or utilizing an AED (if the victim is alone).
4. At least 2 minutes of CPR should be performed by one rescuer and 15 minutes by two rescuers, before calling 9-1-1 (if alone) or getting/using an AED.

5. When aid arrives, the kid recovers, or you are unable to continue, you should continue until help arrives.

Preventing airway obstruction by extending the head too far in a newborn (less than 12 months of age),the baby should appear to be sniffling when the head is extended in a "sniffing" posture. It's important to pay attention to the baby's chest while evaluating their breathing because it might be shallow in an infant. When rescuing a newborn or young kid, Instead of a deep blow, the rescuer should utilize puffs of air from the cheeks to avoid putting unnecessary strain on the child's lungs. The brachial artery, which is positioned between the elbow and the shoulder, can be used to assess an infant's pulse. Children's carotid or femoral pulses can be accurately assessed by rescue workers who have received specialized training. The new law emphasizes that the healthcare provider should check for a pulse for no longer than 10 seconds prior to initiating CPR.. AEDs can now be used on babies and children under the guidance of the AHA's revised policy. If a pediatric dose-attenuator system is not available, a regular AED can be utilized for children ages 1 to 8. If a manual defibrillator is available, it should be used on infants less than 12 months. If neither of these options is available, Alternatively, an AED equipped with a doseattenuator system for children can be used to treat the patient (Lockwood 2020).

2.10. Adult Basic and Advanced Life Support according AHA 2020

2.10.1. The CPR reconfirmed

Cardiac arrest care has always relied on the use of CPR. According to the findings of a recent research that enrolled more than 12,500 participants, the importance of good chest compressions has been reinforced. For an average adult, rescuers should pressure the chest at least 2 inches (5 cm) deep during manual CPR, although they should avoid compressing the chest too deeply (more than 2.4 inches (6 centimeters))(Hwang *et al.* 2016)

Between 100 and 120 compressions per minute are feasible for rescuers. If the patient is not experiencing a heart attack, a recent systematic analysis shows that lay rescuers should begin CPR because the risk of damage to the patient is minimal (Tanaka *et al.* 2014)

2.10.2. Double sequential defibrillation

CPR and defibrillation must be performed immediately in the event of pulseless ventricular tachycardia or ventricular fibrillation. Rescuers must be prepared for the possibility that a defibrillation effort would fail to resuscitate some victims. Using two defibrillators at the same time to treat these individuals has emerged as a novel technical method. For individuals with a refractory shockable rhythm, double consecutive defibrillation has not been shown useful (Cheskes *et al*. 2020)

2.10.3. Intravenous (IV) therapy should be administered prior to intraosseous (IO) therapy

While the IV route has been traditionally designated for emergency care, the IO route has gained favor and is increasingly employed as a first-line mode of vascular access. When it comes to giving medication, new study suggests that the intravenous route may be more successful than the intravenous route (IO) (Granfeldt *et al*. 2020)

2.10.4. Early administration of epinephrine reaffirmed

Epinephrine has been shown to improve ROSC and survival in two randomized clinical trials, resulting in an advocate for the use of the drug in cardiac arrest patients. Epinephrine's influence on neurological outcome was unknown, and this, combined with the fact that results varied depending on when it was administered and how fast it was administered, led to the development of the following new theories:

- A nonshockable, inoperable cardiac arrest should be treated with epinephrine as soon as feasible.
- After early defibrillation attempts have failed, it may be appropriate to inject epinephrine for cardiac arrest with a shockable rhythm. (Panchal *et al.* 2019).

2.10.5. Cardiopulmonary resuscitation with a focus on the patient as an individual

If the major cause of cardiac arrest is respiratory, if a pregnant uterus limits blood supply to the heart, or if a fetus is still alive and must be saved, the best prognosis for certain cardiac arrest patients may require specific treatment. Opiate overdose and cardiac arrest in pregnancy are both covered under the Special Circumstances of Resuscitation section.

- Intoxication with an opioid overdose. Many more people are succumbing to heart and respiratory arrests due to the opioid crisis than before it began. While naloxone or other measures are being administered to the patient, It has been suggested that rescuers and qualified responders immediately activate emergency response systems without delay (Dezfulian *et al.* 2021).

2.10.6. Cardiac arrest during pregnancy :

To ensure the health of both mother and fetus, we've amended our recommendations to include the importance of administering resuscitation to pregnant women. Anesthesiologists, critical care physicians, and neonatologists and nurse should work together to develop a strategy for dealing with cardiac arrest in pregnant women. Aortocaval compression relief with left lateral uterine displacement and high-quality CPR are the most crucial features of treatment for pregnant women in cardiac arrest. For women with fundus heights equal to or greater than the umbilicus who have been unable to achieve ROSC through the use of conventional resuscitation methods and manual left-lateral uterine displacement, it is advised that they begin preparing to evacuate their uterus while they are still receiving CPR. However, when peri-mortem cesarean

delivery is being planned, it is reasonable to prepare for BLS and ACLS in-in-terventions, It is possible that the provider's expertise level and available resources might affect this timeframe (Jeejeebhoy *et al*. 2015).

2.10.7. For prognostication, point-of-care ultrasound

Using portable ultrasound devices, for example, many people have tried to employ modern technology to give guidance in deciding if resuscitation is futile or not anymore. But based on the facts gathered, it appears that this is not the case (Berg *et al*. 2020).

2.10.8. Postresuscitative care

There must be a coordinated, multidisciplinary system of treatment for individuals who have undergone a cardiac arrest, as an integral part of the Chain of Survival. The first stabilization phase and extra emergency efforts following ROSC are described in a novel algorithm that we've developed. Blood pressure control, seizure monitoring and treatment, and temperature control are all important factors (Callaway *et al.* 2015).

2.10.9. Improving neuroprognostication

Following ROSC, For cardiac arrest survivors who do not regain consciousness, a precise neurological prognosis is required to prevent terminating therapy with detrimental effects on individuals with high recovery potential (Geocadin *et al*. 2019) .

We've created evidence-based guidelines to make multimodal prognostication easier. These are some examples:

- Patients who are in a coma after a cardiac arrest should not have a neuroprognostic evaluation right away in order to prevent the likelihood of a temporary poor examination in the immediate aftermath of the damage (Samaniego, Mlynash, Caulfield, Eyngorn, and Wijman 2011).

- Although individual prognostic tests may be achieved sooner, multimodal neuroprognostication is appropriate if the patient is still unconscious 72 hours after a cardiac arrest has occurred. To help with neuroprognostication, we give detailed instructions on how to employ clinical examinations, blood biomarkers, electrophysiological testing, and neuroimaging.

2.10.10. Recuperation and survival

Finally, cardiac arrest resuscitation has been included to the Chain of Survival. Before leaving the hospital, patients who have undergone cardiac arrest should be informed about their long-term rehabilitation needs, as well as their expectations for recovery and their carers' expectations, in order to maximize their ability to function independently in all aspects of life. In order to understand this notion, the following advice are essential:

- After a cardiac arrest, we recommend that survivors and those who care for them undergo a full assessment for symptoms of anxiety, depression, post-traumatic stress disorder, and exhaustion.
- Cardiac arrest survivors should receive a multimodal examination and therapy to address physical, neurological, cardiovascular, and cognitive deficiencies prior to being discharged from the hospital.
- Cardiac arrest survivors and their caregivers should be given a comprehensive discharge plan that includes medical and rehabilitative treatment recommendations, as well as expectations for returning to activity and/or employment after the event (Cowan *et al*. 2001).

2.11. Factors Affecting on Nurses during the Quality of Cardiopulmonary Resuscitation

Immediately following a cardiac arrest, CPR and post-resuscitation therapy are essential to a patient's life. There are five key components to a patient's survival chain: early detection, prompt medical attention and start of Cardiopulmonary Resuscitation (CPR),

which includes effective compressions of the chest, obstructive breathing and oxygen delivery, prompt shock with a pacemaker if pVT/VF is present, and prompt shock with an external cardioverter defibrillator. A standardization of processes and practices is suggested by the Inter American Heart Foundation as a means of distributing CPA more equitably across healthcare practitioners. This advise emphasizes the fact that training improves the quality of service provided to CPA patients since it is carried out faster, more structuredly, calmly, and effectively. For this reason, the Foundation emphasises how important it is to have the necessary supplies and equipment on hand in order to avoid a failed rescue attempt because of an insufficient supply. When a patient's life is in danger, nurses are the first responders to begin CPR and call the Rapid Response Team (RRT) or the patient's caregivers to begin advanced life support measures. As a result, nurses must be quick thinkers who possess clinical acumen, technological know-how, and emotional control in order to respond effectively in an emergency. Accurate CPR requires a team of trained professionals who can perform multiple tasks at once while maintaining high levels of communication and dynamism. The American Heart Association (AHA) agrees, and stresses the importance of a team leader who can assist each team member, organize the group, and act as a facilitator in th e process . Adult inpatient CPR quality is primarily influenced by the following variables: Discord or stress among any employees; a scarcity of resources or equipment; inexperience with the emergency trolley; and an immediate family member's presence when attendance initially begins are all considerations to take into account. According to experts, stress does not affect CPR effectiveness, and having a leader on present improves the quality of CPR. In evaluating these variables, neither the length of the nurses' professional experience nor the type of the work schedule had any bearing (Citolino Filho *et al.* 2015).

2.12. End-of-Life Care and the Ethics of Cardiopulmonary Resuscitation

When a patient's vital processes are disrupted in front of the patient's family or caretakers, nothing is more dramatic in medical practice. Little could be done to increase the average lifespan in the past. It is difficult to answer moral and ethical concerns because of today's medicine's ability to postpone death. Medical experts,

patients, family members, and attorneys all face the challenge of determining whether to begin cardiopulmonary resuscitation, stop, or give up. There are many theories, ideas, and standards in ethics that deal with the study of morality as a whole. Morality is no longer something to be considered just in the context of a given situation; it is now being recognized as the foundation of all human existence. Advances in medicine have made it possible to better understand illness etiology and pathophysiology, as well as to rapidly diagnose and treat patients with current medicines. This has all been made possible by advances in medicine. Consideration of moral, ethical, legal, cultural, and religious concerns is common while making the decision to stop resuscitation efforts. CPR should be stopped when the rescuer's safety is at risk, Asystole lasting more than 20 minutes despite attempts to restart CPR in the absence of reversible reasons is considered to be irreversible death, even if there are no reversible causes of the condition. it is recommended according to medical attitude. In order to alleviate their suffering from pain, dyspnea, delirium, convulsions, and other terminal problems, it is vital to offer medical care to those in this condition. When non-communicable illness is in its latter stages, it is morally permissible to refrain from doing CPR on such people. In spite of the fact that the majority of cardiac arrest victims do not survive, it is still possible to save their lives, current research shows that survival rates are improving, particularly when survival techniques are properly used. In some situations of refractory cardiac arrest, further interventional methods may be beneficial. The likelihood of a patient's survival can be increased even more if resuscitation attempts are initiated, not initiated, stopped, or denied according to specific instructions, and resistant patients can be identified that may benefit from more sophisticated therapies (Begic *et al*. 2016).

2.13. DNR, DNAR

Do Not Attempt Resuscitation (DNAR) orders must be issued by a physician or other authorized official in accordance with local law and must be signed and dated to be considered legal. AND (Allow Natural Death) is being used as a replacement for DNAR in many situations, as it emphasizes the order to allow natural consequences of a sickness or injury and emphasizes continued end-of-life care. Resuscitation interventions should be clearly outlined in DNAR orders in case of life-threatening

events. Preceding the DNAR order is often a dialogue with the patient, family, or surrogate decision maker to ascertain the patient's desires about resuscitation efforts. Moreover, in certain countries, a witness or a second treating physician may be required to substantiate a patient's claim (Morrison *et al*. 2010).

2.14. Role of Nurse

Nurses are a vital element of the healthcare system and are widely regarded as knowledgeable about institutional care. Cardiopulmonary Resuscitation (CPR) is a life-saving medical procedure that must be performed in the case of an unexpected cardiac arrest. Victims who are believed to be in cardiac arrest receive rescue breathing and chest compressions. Nurses are considered to have the necessary abilities and knowledge to conduct CPR because of their role in the healthcare team. CPR can significantly reduce the risk of sudden death if it is done in a timely manner. It's therefore a significant operation in the medical world. When a doctor isn't around, nurses are supposed to offer emergency care for the patient. The nurses must be well-versed in the operation in order to carry it out in a thorough manner (Parajulee and Selvaraj 2011).

Cardiopulmonary resuscitation (CPR) is frequently started by nurses on patients who have collapsed due to a cardiac arrest. CPR has been found to minimize hospital fatalities when administered by doctors and nurses who are properly educated (Rajeswaran *et al.* 2018)

The nurse has a variety of roles and responsibility when it relates to CPR, including the following: Recognizing the patient's deterioration, Preparing for emergency resuscitation by recognizing cardiac arrest and beginning CPR until a team arrives, Assuring that the resuscitation trolley's contents are complete, up to date, and in good operating order, Compilation of audit data at participating healthcare organizations for the National Cardiac Arrest Audit.

Trolley and Associated Equipment for Resuscitation**.** If a patient has a cardiac arrest while in the hospital, the medical team should have rapid access to resuscitation equipment and medications. Pre-hospital and community resuscitation guidelines are distinct from those in the hospital. Local healthcare organizations should standardize the configuration of resuscitation equipment, including the defibrillator. Every member of the healthcare team must know how to respond to a patient in cardiac arrest, as well as how to use the technology that is available. When examining a patient who looks to have collapsed (DRSABC), the following protocol should be followed: Danger, Reaction, Shout for assistance, Airway, Breathing, Circulation The RCUK guidelines outline how to examine a collapsed patient and administer basic life support in the hospital setting. This methodical approach to patient evaluation and care is reflected in the design of the resuscitation trolley, which typically has distinct compartments for the airway, breathing, and circulation. It is imperative that the resuscitation cart be fully equipped with all necessary supplies for effective use. Single-use sterile equipment must have its packing intact and not have expired before it is used. A laryngoscope's light source is operating, for example; no equipment is missing from the cardiac arrest trolley. It's common to find a defibrillator on top of the cardiac arrest cart. In addition to automatic external defibrillators, equipment that may be used for a number of purposes, including as transcutaneous pacing and synchronized cardioversion are available for manual use. Local policies and the level of acuity in the clinical region might influence this. In a cardiac arrest, local regulations will also define who is judged able to administer defibrillation. In line with the manufacturer's recommendations, the defibrillator's performance should be tested alongside the trolley's. It's common practice to leave defibrillators plugged in to make sure the battery is completely charged and ready to go when needed. In the case of a medical emergency, nurses must remember to disconnect the defibrillator before pushing the cart. Equipment such as portable suction units and personal protective gear may be found on the trolley's upper shelf. trolleys often have an oxygen cylinder attached to them(Bowden and Smith 2017).

2.14.1. Airway and breathing

Throughout resuscitation, it is critical to maintain a clear airway. There are several options for airway management beyond the first airway intervention of head tilts, neck lifts and jaw thrusts, if head or spinal injuries are suspected. Preventing airway occlusion due to the tongue or soft palate can be accomplished by simple airway adjuncts, such as oropharyngeal airways. When the patient's airway is obstructed but he or she is not entirely unconscious, the nasopharyngeal airways may be very beneficial. For unconscious patients, particularly those in cardiac arrest, oropharyngeal airways are a typical method of ventilation. For safe and successful practice, the oropharyngeal airway must be sized properly. A bag-valve-mask is used to provide ventilation in cardiac arrest regardless of the airway adjunct. When it comes to getting an airtight seal with the mask while retaining a clear path to the airway, a two-person procedure is strongly advised. Anaesthetists often conduct endotracheal tube intubations since the procedure requires certain training and experience. Using supraglottic airway devices in resuscitation bridges the gap between the use of basic adjuncts and advanced airway management. Both suction-free laryngeal mask airways and laryngeal-fitting supraglottic airways are currently accessible as supraglottic airway devices. In order to execute an intubation, nursing staff must be familiar with the equipment required, even though the anesthesiologist is ultimately accountable for this procedure. This is critical in terms of inspecting and replenishing the trolley, as well as aiding with the insertion of the endotracheal tube. Equipment that may be necessary for intubation, as well as its clinical applications, are discussed. CPR must be altered once the endotracheal tube is successfully placed by nurses. There is a shift from a chest compressions to ventilation ratio of 30:2—the administration of 30 compressions followed by 2 ventilations—to continuous chest compressions. As a single healthcare professional gives 2 minutes of consecutive compressions, ten separate ventilations are performed. Bag-valve-mask mask is removed after intubation, and the bag is linked directly to an endotracheal tube, with or without a catheter mount, as needed. According to RCUK standards, end-tidal carbon dioxide (ETC02) monitoring using waveform ETC02 monitoring, or capnography, is highly recommended . Endotracheal tube insertion can be confirmed using ETC02 during resuscitation.

• Identify the quality of chest compressions.

• Indicate an early resumption of spontaneous circulation.

• Draw attention to the possibility that resuscitation might be ineffective.

As a result of the growing importance of capnography in resuscitation, devices that measure waveform ETC02 may become increasingly significant(Bowden and Smith 2017).

2.14.2. Circulation

Patients' outcomes have been shown to be improved by high-quality chest compressions performed with short breaks (less than 5 seconds). The heart and brain receive adequate blood flow when chest compressions are performed appropriately. It's vital to have vascular access in order to maintain the circulatory system when administering intravenous medications. Devices for accessing peripheral vascular systems, such as flushes and needles, are available in the trolley's circulation drawer. In addition to blood sample and intravenous fluid delivery, vascular access is necessary. It is possible to utilize both crystalloid and colloidal fluids to address hypovolemia during resuscitation. Equipment for administering intravenous fluids, including as fluids and 'giving' sets, can be found in the circulation drawer. Drug delivery through intravenous route during resuscitation may be easiest, but the patient's collapse might make this problematic if there isn't an appropriate vascular access equipment on hand to help with it. In the event of cardiac arrest or severe illness, an intraosseous device should be used to provide an alternative route for the delivery of medication and fluids. It is possible that the cardiac arrest trolley will include a variety of commercially available intraosseous insertion devices. A familiarity with local policies, procedures, and equipment lists is vital because these gadgets are available in a variety of healthcare institutions(Bowden and Smith 2017).

2.14.3. Drug

When someone is in cardiac arrest, current guidelines still recommend administering adrenaline (epinephrine) and amiodarone hydrochloride, despite the very small standard medicine list. When activated, adrenaline is a powerful vasoconstrictor. Adrenaline-induced peripheral vasoconstriction improves cerebral and coronary perfusion pressures, allowing for more effective CPR. This is why adrenaline is used in all cardiac arrest situations. throughout the resuscitation effort, every 3-5 minutes. Adrenaline at a 1:10,000 concentration, or 1 mg per 10 mL, is advised for cardiac arrest patients. Not to be confused with the 1:1,000 anaphylactic dose that is used for this purpose. Nurses must be able to tell the difference between the two possible concentrations of adrenaline on the trolley. In clinical practice, the antiarrhythmic medication amiodarone is commonly prescribed to treat patients. Defibrillation-resistant shockable rhythms in cardiac arrest are treated with this medication. 300mg should be given after the third shock, according to current standards (RCUK 2015). It is normal practice to provide amiodarone in a single dosage during resuscitation, as opposed to adrenaline. It is possible to provide a second dosage if the treating physician so desires. Drugs are frequently injected straight into the bloodstream in cases of cardiac arrest. The intramuscular and subcutaneous methods, for example, are unsuccessful due of poor absorption and circulation, respectively. As a result, intravenous and intraosseous resuscitation are the preferred methods. When delivering medication in the form of boluses to a cardiac arrest patient, it is imperative that the registered nurse be conversant with the drugs that are being utilized. Many cardiac arrest medications are packaged in pre-filled syringes to expedite the practice of administering them. Drug management measures must be followed even in the face of a life-threatening scenario such as cardiac arrest. It is essential for registered nurses who administer intravenous drugs on a regular basis to be educated in cardiac arrest response. If two registrants are available, the NMC recommends that they inspect the medicine before administering it (NMC 2015). In an emergency, a registered nurse and a pre-registration student may do the examination. Saline flushes produced by a registered nurse who is not adept in intravenous therapy delivery should be provided by a nursing student or a qualified nurse. In the real world, it is common for the responsible practitioner to assign the task

of checking the resuscitation trolley to a student nurse. Nursing students are responsible for ensuring that students are informed of local legislation and the contents of the trolley, including drugs(Bowden and Smith 2017).

2.14.4. Documentation, including audits of cardiac arrests

When a patient has a cardiac arrest, it is important to chronicle the order in which the various procedures were performed. CPR, medication and fluid delivery and defibrillator usage may all be documented by nursing staff in real time to provide the best possible record keeping. If this data is included in the cardiac arrest audit report, it can help refine local protocols and influence national standards-setting efforts. The National Cardiac Arrest Audit should include all events in which a patient receives chest compressions or defibrillation. The objective of this audit is to.

• The improvement of patient outcomes.

• To reduce cardiac arrests that could have been avoided.

• Prevent unnecessary resuscitation by reducing the number of incidents.

• The use of scientifically proven methods should be encouraged(Bowden and Smith 2017).

2.15. Studies Related to Topic

The study in Iraq It was the goal of this study to explore the correlation between the nurses' knowledge scores and their demographic data, such as their age, gender and education level as well as their years of experience and training session. The teaching hospital in al-najaf was analyzed using a descriptive cross-sectional approach. The period from December 11, 2012, through July 30, 2013. There were 85 al-Sader medical city nurses who worked in the coronary care unit, intensive care unit, emergency room, respiratory unit, operating room and surgical ward and medical ward who were used in the non-probability (purposive) sample. The data were gathered through the use of a created questionnaire that was divided into two sections: Part 1 had seven (7) items and

Part 2 contained thirty-nine (39) items. Data were gathered using a systematic self-report approach with respondents. The majority of nurses lacked fundamental knowledge of cardiac arrest and CPR, according to the findings. There was no statistically significant influence of gender or age on the capacity of nurses to conduct cardiopulmonary resuscitation (CPR). It may be deduced from these statistics that there is a high correlation between nurses' CPR competence and their academic degrees. A nurse's understanding of CPR protocols is not linked to their years of experience, area of assignment, formal training or patient CPR performance. Researchers found that most nurses lacked appropriate knowledge on cardiac arrest and cardiopulmonary resuscitation. Referral hospitals should establish procedural guidelines that offer comprehensive information on the most recent advancements, discoveries, and practices in cardiopulmonary resuscitation, according to the study. The process handbook should be audited on an annual basis, and corrective steps should be implemented to address any issues that are discovered(Mustafa 2014).

The study in Turkey done between June and August of 2012 with 108 nurses working at a State Hospital's internal, surgical, emergency, and critical care units. In a three-step process, the CPR course was taught (training brochure, applied training on models, visual presentation,). After six weeks, a questionnaire was used to re-evaluate the education's impact. It was determined that 32% of nursing staff had previously administered CPR, 39% were active participants in in-service training, and 35.2 percent had obtained information from doctors without their consent. The averages of CPR accurate responses were unaffected by age, gender, marital status, or educational level. Study results showed nurses' CPR knowledge and skills should be updated on a regular basis, researchers said (GÜVEN and KARABULUT 2018).

The study in Nepal was There will be a correlation between nurses' CPR knowledge ratings and certain demographic characteristics in this study. In Bharatpur , Nepal, the College of Medical Sciences-Teaching Facility conducted the research in October 2010 with the help of hospital nurses . The outcome was 70 of the 175 nurses answered, a response rate of 40%. The respondents' mean SD age was 22.07 2.30 years, and their mean SD period of experience was 11.45 2.67 months. There were almost 15 distinct

workplaces represented among the survey participants. The Department of Medicine provided the majority of the responders (n = 8, or 11.43 percent). For the entire total knowledge, the mean and standard deviation were 11.45 2.67 (the highest score was 21). Neither age (p = 0.823) nor length of experience (p = 0.239) were associated with total scores. There was, however, a link between the job locations and the overall results (p = 0.013).This study's findings show that nurses' level of expertise is poor and that training efforts are needed (Parajulee and Selvaraj 2011).

3. MATERIAL AND METHODS

3.1. Study Design

A descriptive cross-sectional was designed at Al- Nasiriyah teaching hospital from November 17, 2021, to April 20, 2022. To evaluate nurses' knowledge of CPR and to see if there is a link between nurses' knowledge of cardiopulmonary resuscitation and certain demographic traits.

3.2. The Setting of the Study

Coronary care unit, intensive care, emergency unit, operation room and surgical ward, in AL-Nasiriyah teaching hospital in Dhi-qar city

3.3. The Sample of the Study

300 nurses are working in units that practice CPR like ER, ICU, CCU, OR and medical ward, in Al-Nasiriyah teaching hospital in Dhi_qar city.

Table 3.1: Distribution of the sample according to the place of work

Workplace	**frequency**	**percentage**
Coronary care unit	38	12.7
Intensive Care Unit	80	26.7
Emergency Unit	54	18.0
Operation Room	36	12.0
Medical Wards	92	30.7

3.3.1. The sample size

The sample size was calculated according to the table provided by Krejcie and Morgan (1970), which created a readily used table for determining sample size according to the

population size. The total population size for nurses in the included hospitals was 855. The minimal accepted sample size according to (Krejcie and Morgan 1970) is 270. For more reliable and confident results, the sample size that has been taken in this study was 300. Table 3.1 illustrates the specifics.

Table 3.2: Calculation of sample sizes in the study

Hospital	**Population Size**	**Minimal Accepted size**	**Selected Sample size**
Al-Nasirya Hospital	855	270	300

The sample size is determined using the Steven Thompson equation. From the following formula

$$n=N*P(1-P)[[N-1*(d2 \div Z2)]+P(1-P)]$$

n =refer to sample size

N = refers to population size

Z = refers to confidence level at 95%(1.96)

d =refer to error proportion (0.05)

p =refer to probability (0.5)

The sample was calculated by applying an equation Steven Thompson d: error proportion (0.05) and Z: Confidence level 95%(1.96) p: probability (0.5) N: population size of nurses (855). The result is the results were (265.52) approximated to 266. The value of the sample size was n:266. A larger sample number was taken to ensure a small error rate and a high confidence rate. The number of samples was 300

3.3.2. Inclusion criteria

- nurses who agreed to participate in the study
- working in the emergency and intensive care units of the hospital

3.3.3. Exclusion criteria

- Nurses working in units that do not practice CPR
- Nurses who refused to participate in the study

3.4. The Study Instrument

The instrument development consisted of two parts, and the data was collected using a questionnaire to determine the relationship between nurses' knowledge of cardiopulmonary resuscitation and their clinical performance and certain demographic characteristics. We created and prepared a questionnaire. To evaluate nurses' knowledge of cardiopulmonary resuscitation based on previous Iraqi studies.

3.4.1. Part 1; Demographic characteristics

A demographic characteristics sheet contained seven items, including gender, age, academic attainment, years of experience, current workplace, if have any CPR training course and provide CPR to the patient.

3.4.2. Part 2; Nurses' knowledge of CPR

3.4.2.1. Anatomy and Physiology

This section contained (11) topics that covered the anatomy and physiology of the heart, including the location, size, and layers of the heart, as well as how and why the heart pumps blood to the body and so forth.

3.4.2.2. Cardiac Arrest and Cardiopulmonary Resuscitation

An adult provided life support for the researcher: 2020 Cardiopulmonary resuscitation guidelines from the American Heart Association and related studies were used to build the second section, including 39 questions about the causes of cardiac arrest how to detect someone who has had a cardiac arrest, and practical resuscitation measures.

3.5. Rating and Scoring

The items have been rated and scored according to the following patterns: Multiple-choice questions; each question consists of four options one option is true, and three remaining options are false. The correct answer takes a score (2), and the Incorrect answer takes a score (1).

3.6. Validity of the Tool

It has been proven in many previous Iraqi studies (Mustafa 2014).

3.7. Reliability of the Tool

The consistency and reliability of a research instrument in measuring a variable of interest are both important considerations. Internal consistency (Alpha Cronbach technique) and stability (test-retest) are used to determine the scales' reliability (table 3.3).

Table 3.3: Reliability (Internal Consistency and Stability) Coefficient of the Studied scale

Reliability Coefficients		Standard Lower value	Actual Values	Evaluation
Nurses' Knowledge	Internal Consistency Cronbach Alpha	0.7	0.78	Accepted
	Stability Test-Retest	0.8	0.84	Accepted

The questionnaire's computed findings suggest that the examined scale (Nurses' Knowledge) may be used to research the phenomena in the same population at any time in the future {Formatting Citation}

3.8. Data Collection

A questionnaire with a face-to-face direct interview technique was used to collect data. The data was gathered using designed questionnaires and a structured self-report approach with the individuals. Data was collected from November 17, 2021, to April 1, 2022. Each subject takes about 30 to 45 minutes to complete the report.

3.9. Data Analyses

The statistical program for social sciences (SPSS) version 25 was used to enter and evaluate the data from the sample. Means, standard deviations, frequencies, and percentages are all types of descriptive statistics, which are typically presented in the form of tables and bar charts. The histogram and normal distribution curve were used to examine all of the continuous variables for statistical normality. Statistical tests were conducted on the variables according to their distribution and kind. A Chi-square test was used to compare frequencies. A bivariate Pearson's correlation test was used to examine the correlations. Significant differences or correlations were defined as those with a significance level of$\leq$ 0.05.

3.10. Approval of the Ethics Committee

To speed up collecting data from participants (No: 24, Date: 7.02.2022), ethical permission from the Çankırı Karatekin University Scientific Research Evaluation Ethical Committee was acquired. The research was also sanctioned by the Iraqi Ministry of Health's Dhi Qar Health Department (No. 88/2021, dated November 17, 2021). After telling the sample about the study and its goals and getting their verbal permission to take part, the researcher started collecting data.

4. RESULTS

According to table (4.1), which shows the demographic data, most nurse subgroups are those with ages ranging between 20–24 years (46.3%); female nurses (53.3%); those that have institute nursing degrees (52%); those who have less than 2 years of experience (53.3%); those working in medical wards (30.7%); those with no training courses in CPR (54%); those who perform CPR on the patient each week (53.7%).

Table 4.1: The demographic data of nurses (N=300) Descriptive statistics (frequency and percentage)

Demographic data	**Sub-groups**	**Frequency (N=300)**	**Percentage**
Age / years	20 – 24	139	46.3
	25 – 29	107	35.7
	30 – 34	24	8.0
	35 – 39	15	5.0
	40 – 44	8	2.7
	45 – 50	7	2.3
Gender	Female	160	53.3
	Male	140	46.7
Academic achievement	Nursing school	31	10.3
	Nursing institute	156	52.0
	B.Sc. in Nursing	113	37.7
Years of Experience	Less than 2 years	160	53.3
	2–3 years	58	19.3
	4–5 years	49	16.3
	6–7 years	19	6.3
	8–9 years	5	1.7
	10 or more	9	3.0
Current Workplace	Coronary Care unit	38	12.7
	Intensive Care Unit	80	26.7
	Emergency Unit	54	18.0
	Operation Room	36	12.0
	Medical Wards	92	30.7
CPR training course	Yes	138	46.0
	No	162	54.0
Perform CPR on the patient?	Daily	48	16.0
	Weekly	161	53.7
	Monthly	68	22.7
	Yearly	23	7.7

Table (4.2) shows the assessment and mean scores of nurses' knowledge of CPR. This table shows that the nurses have (moderate) knowledge regarding most questions about CPR; some items exhibited (good) knowledge, few other items showed (poor) knowledge. The overall total knowledge is (moderate). Based on the statistical scoring approach, this evaluation has been made, in which the item is classified as (poor) if the mean score is among (1-1.33); it is considered (moderate) if the mean of scores is between (1.34–1.66); while it is considered (good) if the mean of scores is more than (1.67).

Table 4.2: Assessment and mean of scores of nurses' knowledge about CPR

No.	Items		Freq	%	MS	SD	Assess.
1		Incorrect	33	11.0	1.89	0.31	Good
		Correct	267	89.0			
2		Incorrect	70	23.3	1.77	0.42	Good
		Correct	230	76.7			
3		Incorrect	129	43.0	1.57	0.50	Moderate
		Correct	171	57.0			
4		Incorrect	86	28.7	1.71	0.45	Good
		Correct	214	71.3			
5		Incorrect	144	48.0	1.52	0.50	Moderate
		Correct	156	52.0			
6		Incorrect	121	40.3	1.60	0.49	Moderate
		Correct	179	59.7			
7		Incorrect	135	45.0	1.55	0.50	Moderate
		Correct	165	55.0			
8		Incorrect	146	48.7	1.51	0.50	Moderate
		Correct	154	51.3			
9		Incorrect	185	61.7	1.38	0.49	Moderate
		Correct	115	38.3			
10		Incorrect	144	48.0	1.52	0.50	Moderate
		Correct	156	52.0			
11		Incorrect	129	43.0	1.57	0.50	Moderate
		Correct	171	57.0			
12		Incorrect	58	19.3	1.81	0.39	Good
		Correct	242	80.7			
13		Incorrect	55	18.3	1.82	0.39	Good
		Correct	245	81.7			
14		Incorrect	155	51.7	1.48	0.50	Moderate
		Correct	145	48.3			
15		Incorrect	193	64.3	1.36	0.48	Moderate
		Correct	107	35.7			
16		Incorrect	145	48.3	1.52	0.50	Moderate
		Correct	155	51.7			
17		Incorrect	130	43.3	1.57	0.50	Moderate
		Correct	170	56.7			

Table 4.2. (Continue):

18		Incorrect	125	41.7	1.58	0.49	Moderate
		Correct	175	58.3			
19		Incorrect	153	51.0	1.49	0.50	Moderate
		Correct	147	49.0			
20		Incorrect	233	77.7	1.22	0.42	Poor
		Correct	67	22.3			
21		Incorrect	60	20.0	1.80	0.40	Good
		Correct	240	80.0			
22		Incorrect	116	38.7	1.61	0.49	Moderate
		Correct	184	61.3			
23		Incorrect	127	42.3	1.58	0.49	Moderate
		Correct	173	57.7			
24		Incorrect	40	13.3	1.87	0.34	Good
		Correct	260	86.7			
25		Incorrect	83	27.7	1.72	0.45	Good
		Correct	217	72.3			
26		Incorrect	69	23.0	1.77	0.42	Good
		Correct	231	77.0			
27		Incorrect	114	38.0	1.62	0.49	Moderate
		Correct	186	62.0			
28		Incorrect	99	33.0	1.67	0.47	Good
		Correct	201	67.0			
29		Incorrect	131	43.7	1.56	0.50	Moderate
		Correct	169	56.3			
30		Incorrect	167	55.7	1.44	0.50	Moderate
		Correct	133	44.3			
31		Incorrect	191	63.7	1.39	0.73	Moderate
		Correct	109	36.3			
32		Incorrect	191	63.7	1.36	0.48	Moderate
		Correct	109	36.3			
33		Incorrect	205	68.3	1.32	0.47	Poor
		Correct	95	31.7			
34		Incorrect	204	68.0	1.32	0.47	Poor
		Correct	96	32.0			
35		Incorrect	143	47.7	1.52	0.50	Moderate
		Correct	157	52.3			
36		Incorrect	129	43.0	1.57	0.50	Moderate
		Correct	171	57.0			
37		Incorrect	163	54.3	1.46	0.50	Moderate
		Correct	137	45.7			
38		Incorrect	139	46.3	1.54	0.50	Moderate
		Correct	161	53.7			
39		Incorrect	154	51.3	1.49	0.50	Moderate
		Correct	146	48.7			
40		Incorrect	134	44.7	1.55	0.50	Moderate
		Correct	166	55.3			

Table 4.2. (Continue):

41		Incorrect	176	58.7	1.41	0.49	Moderate
		Correct	124	41.3			
42		Incorrect	184	61.3	1.39	0.49	Moderate
		Correct	116	38.7			
43		Incorrect	119	39.7	1.60	0.49	Moderate
		Correct	181	60.3			
44		Incorrect	189	63.0	1.37	0.48	Moderate
		Correct	111	37.0			
45		Incorrect	77	25.7	1.74	0.44	Good
		Correct	223	74.3			
46		Incorrect	113	37.7	1.62	0.48	Moderate
		Correct	187	62.3			
47		Incorrect	157	52.3	1.48	0.50	Moderate
		Correct	143	47.7			
48		Incorrect	123	41.0	1.59	0.49	Moderate
		Correct	177	59.0			
49		Incorrect	159	53.0	1.47	0.50	Moderate
		Correct	141	47.0			
50		Incorrect	106	35.3	1.65	0.48	Moderate
		Correct	194	64.7			
Total knowledge about CPR					1.56	0.48	Moderate

MS: Mean of Scores; SD : Standard Deviation ; Poor : MS = 1-1.33 ; Moderate : MS =1.34-1.66 ; Good : MS≥1.67

It shows that about (6.67%) of the nurses have poor knowledge, (59.33 %) of them have moderate knowledge, while (and 34 %) have good knowledge. This table exhibited the descriptive statistics of nurses' knowledge regarding CPR (Figure 4.1 and Table 4.3)**.**

Table 4.3: Frequency and percentage of nurses according to their knowledge regarding CPR.

Statistics	**knowledge Levels**		
	Poor	**Moderate**	**Good**
Frequency	20	178	102
Percentage	6.67	59.33	34.00

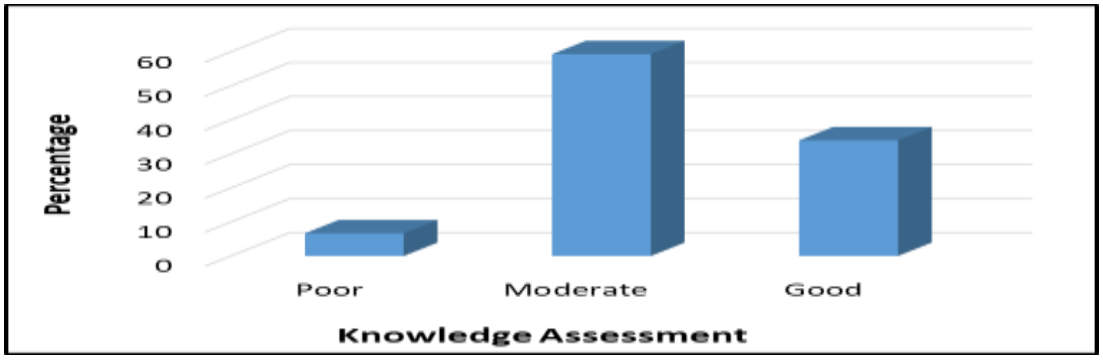

Figure 4.1: Frequency and percentage of nurses according to their knowledge regarding CPR

Table (4.4) This shows that there is no direct association(P>0.05) there is an association between how well nurses know CPR and how they are related to each other, except for (age), (academic achievement), (years of experience), and (current workplace) in which there was a significant association(P<0.05) with nurses' knowledge on CPR.

Table 4.4: The association between nurses' demographic data and their overall knowledge of CPR

Demographic data	**Sub-groups**		**Poor**	**Moderate**	**Good**	**χ^2 P value**
Age / years	20 – 24	N	11	95	33	36.2 (0.000) HS
		%	7.9%	68.3%	23.7%	
	25 – 29	N	8	42	57	
		%	7.5%	39.3%	53.3%	
	30 – 34	N	1	15	8	
		%	4.2%	62.5%	33.3%	
	35 – 39	N	0	12	3	
		%	0.0%	80.0%	20.0%	
	40 – 44	N	0	7	1	
		%	0.0%	87.5%	12.5%	
	45 – 50	N	0	7	0	
		%	0.0%	100.0%	0.0%	
Gender	Male	N	11	83	46	0.65 (0.71) NS
		%	7.9%	59.3%	32.9%	
	Female	N	9	95	56	
		%	5.6%	59.4%	35.0%	
Academic achievement	Nursing school	N	3	28	0	217.9 (0.000) HS
		%	9.7%	90.3%	0.0%	
	Nursing institute	N	17	134	5	
		%	10.9%	85.9%	3.2%	
	M.Sc. in Nursing	N	0	16	97	
		%	0.0%	14.2%	85.8%	

Table 4.4. (Continue):

Years of Experience	Less than 2 years	N	9	83	68	18.9 (0.04) S
		%	5.6%	51.9%	42.5%	
	2–3 years	N	5	40	13	
		%	8.6%	69.0%	22.4%	
	4–5 years	N	5	29	15	
		%	10.2%	59.2%	30.6%	
	6–7 years	N	0	16	3	
		%	0.0%	84.2%	15.8%	
	8–9 years	N	1	4	0	
		%	20.0%	80.0%	0.0%	
	10 or more	N	0	6	3	
		%	0.0%	66.7%	33.3%	
Current Workplace	Coronary Care Unit	N	2	22	14	32.6 (0.000) HS
		%	5.3%	57.9%	36.8%	
	Intensive Care Unit	N	4	31	45	
		%	5.0%	38.8%	56.3%	
	Emergency Unit	N	6	35	13	
		%	11.1%	64.8%	24.1%	
	Operation Room	N	0	24	12	
		%	0.0%	66.7%	33.3%	
	Medical Wards	N	8	66	18	
		%	8.7%	71.7%	19.6%	
CPR training course	Yes	N	10	83	45	0.30 (0.86) NS
		%	7.2%	60.1%	32.6%	
	No	N	10	95	57	
		%	6.2%	58.6%	35.2%	
Perform CPR on the patient?	Daily	N	2	28	18	7.70 (0.26) NS
		%	4.2%	58.3%	37.5%	
	Weekly	N	13	89	59	
		%	8.1%	55.3%	36.6%	
	Monthly	N	2	45	21	
		%	2.9%	66.2%	30.9%	
	Yearly	N	3	16	4	
		%	13.0%	69.6%	17.4%	

NS (non_significant): at P value >0.05; HS (High significant): at P value <0.01; S (significant): at P value <0.05

Table (4.5) shows the Pearson Correlation Coefficient (r) between the mean scores of nurses' knowledge of CPR and their demographic data. According to this table, there was a significant positive correlation (P>0.05) between the overall mean of scores of nurses' knowledge on CPR each of: (age r= 0.646; P value= 0.03), (academic achievement r= 0.456; P value= 0.05), (years of experience r= 763; P value= 0.001) and (current workplace r= 0.457; P value= 0.04) .

Table 4.5: Pearson Correlation Coefficient (r) between the mean scores of nurses' knowledge of CPR and their demographic data

Markers	P value	Correlation Coefficient (r)	Significance
Age / years	0.03	0.646	S
Gender	0.43	- 0.121	NS
Academic achievement	0.05	0.456	S
Years of Experience	0.001	0.763	HS
Current Workplace	0.04	0.457	S
CPR Training Course	0.42	0.098	NS
Perform CPR on the patient?	0.36	0.141	NS

NS: Non-Significant at $P>0.05$; S: Significant at $P\leq0.05$; HS: High Significant at $P\leq0.01$

5. DISCUSSION

5.1. Demographic Data of the Study Sample

The distribution of socio-demographic characteristic for both study and control groups are illustrated in table (4.1). According to this table, the nurses with ages ranging between (20-24) years constitute (46.3%), and those with ages (25-29) made up about (35.7%) of the total nurses population, similar results were obtained by (Rajeswaran et al., 2018) who found that about 60% of participated nurses were aged between 20 and 30 years(Mohammed Ahmed et al., 2017) conducted research in Mosul and discovered that the most (52.51 %) of the study's sample were between the ages of 20 and 30 years. (Mustafa, 2014) found that nurses ages between (20-29) made up more the (50%) of the total population (Guskuma *et al*. 2019) The mean age was measured to be 36.4 years.This could be attributed to the fact that younger nurses were more productive, influenced, and effective in these areas than their older counterparts, according to the study.

The present study has also found that most participated nurses are female (53.3%); these results agree with (Rajeswaran et al., 2018) who found that most of the participated nurses (70%) were female; (Guskuma et al., 2019)found that there is a predominance of females (74.6%) in his study. However, (Mohammed Ahmed *et al.* 2017) found that (90.4%) of the nurses were male.(Mustafa 2014) found that male nurses made up more the (64%) of the total population.

The present study has also found that (52%) of nurses were graduated in nursing institute. This result may agree with (Mohammed Ahmed et al., 2017) found that (41.8%) of the nurses graduated in nursing institute. (Mustafa 2014) found most nurses were graduated from college (41.2%).

The current study also found that most nurses have less than 2 years of experience (53.3%); This outcome may be consistent with (Mohammed Ahmed *et al*. 2017) Which

discovered that (22.95%) of the nurses have experience of less than one year, (Mustafa, 2014) found about (56.5%) of the nurses have less than 5 years of experience. (Rajeswaran *et al*. 2018) It was documented that the period of work experience from 1 to 6 years was 49.3%.

The current study also found that most nurses had no training courses about CPR (54%), this result may come in agreement with (Mustafa, 2014) who discovered that 61.2 % of the nurses had no CPR training, (Rajeswaran et al., 2018) Discovered that previous CPR training studies were evenly split, 52% reported no previous formal CPR training.

The difference between the results of these studies may attributed to differences in the sample size and differences in location.

5.2. Nurses' Knowledge about CPR

The current study shows that about (6.67%) of the nurses have poor knowledge, (59.33 %) of them have moderate knowledge, and 34 %) have good knowledge. Previous studies obtained similar results (Rajeswaran et al., 2018). According to quantitative research done in three district hospitals in Botswana, 51.3 percent of participants scored less than 50 percent on the pre-test CPR knowledge MCQ, and 87 percent of participants scored less than 70 percent on the post-test. Only 4% of test takers met the passing standard of 85% (Mohammed Ahmed *et al.* 2017). A previous study on nurses obtained a descriptive study about CPR in Ibn Sina Hospital and Al-Zahrawi Hospital, about 122 nurses in the emergency unit, intensive care, surgical and medical suites, and operational units to assess nurses' knowledge about CPR. The degree of knowledge related to it was low, with a mean score of (27.94) and a standard deviation of 0.609 (Mustafa 2014) performed research in Najaf, Iraq, and discovered that nurses' understanding of cardiac arrest and cardiopulmonary resuscitation procedures was inadequate as measured by a statistical mean of score of 1.5. These findings were comparable to those obtained by (Parajulee and Selvaraj 2011); in a Nepal educational tertiary care hospital to evaluate nurses' understanding of cardiopulmonary resuscitation. They discovered that the nurses' knowledge levels were poor. Researchers

in Kuwait evaluated the nurses' CPR knowledge, attitude, and experience. This study also found that nurses had a poor understanding of CPR (Al Kandary *et al*. 2007). (Chen *et al*. 2008), According to his study, "Survey of cardiopulmonary resuscitation knowledge in community-based health services in Hainan province," The final evaluation of nurses' expertise was inadequate. All house officers in a teaching hospital were evaluated on their understanding of CPR abilities and their confidence in performing the procedure. This study was carried out by (Saiboon *et al*. 2007). According to research done, cardiopulmonary resuscitation perceived competence, knowledge, and practice among certified nurses in Kuwait. by (Al Kandary *et al*. 2007). According to both these studies, nurses' understanding of cardiac arrest and the CPR technique is inadequate. In addition, (Marzooq and Lyneham 2009), CPR knowledge is said to be lacking in the majority of nurses, and both research groups were found to lack basic life support expertise, according to the findings of the study. (Plagisou *et al.* 2016) A study was conducted in an NHS hospital in Greece. The study was a cross-sectional study to assess the knowledge of nurses and nurses' assistants about CPR. The mean score for health answers was 50.6 ± 25.9% in the written test and a mean of 4.1 ± 2. It was found that the nursing staff had low theoretical knowledge. (Botes and Moepeng 2020) Critical care registered nurses (N=96) from Academic Hospital's adult emergency and intensive care units participated in a descriptive cross-sectional study in South Africa. The CPR knowledge among specialty practice nurses was only 46%, which was insufficient for the care required in high-risk situations.

Poor initial or refresher CPR training has been cited for nurses' poor practical skills. Educator skills, teaching techniques, student forgetfulness, and a lack of frequent updates all contribute to the low level of CPR expertise among nurses. (Bukiran, Erdur, Ozen, and Bozkurt, 2014 and Marzooq & Lyneham, 2009). Only 1.7 % claimed a lack of desire to keep up-to-date CPR knowledge, while only 14 % blamed a lack of institutional supervision.

The role of nurses in the healthcare team is critical. Those who require emergency or severe treatment are an essential part of the hospital staff. There is a high risk of cardiac arrest among patients in the emergency and critical care units, even if the patient does

not have a heart condition. Nurses in Najaf hospitals were assessed on their understanding of CPR, an essential skill for any nurse to learn. When the doctor is not present in the ward or the community, nurses play a significant role in the emergency treatment of the patients, as do nurses in the hospital. As a result, every nurse must know how to perform CPR in an emergency (the researcher).

The ability to administer successful cardiopulmonary resuscitation (CPR) requires a thorough understanding of standard treatment and the latest advances in CPR techniques. However, current evidence shows that the quality of CPR performed by nurses and nursing students is lower than the standards of care. Nursing students must know how to do cardiopulmonary resuscitation (CPR) to participate in clinical rotations (Oermann *et al*. 2011).

An important aspect of nursing education is resuscitation training, in which nurses must feel and behave competently in the face of cardiac arrest victims. To enhance patient survival following cardiac arrest, all nurses must access the necessary information and skills (Hamilton, 2005). Correct hand positioning during CPR might be challenging because information and abilities learned in training courses can fade with time, reinforcing that professionals should receive regular training because the performance of effective and immediate CPR is decisive for better survival rates and reduction of sequelae (Guskuma *et al*. 2019)

Skills learned to include rhythm detection, defibrillation, resuscitation and airway management in advanced resuscitation training. The influence of knowledge on chest compression performance has been studied, including rate, depth, recoil, and hand posture performed research measures (Burkhardt, Glick, and Terndrup, 2014). According to their findings, those who rated the effective compression rate as more than 100 per minute did chest compressions more often. Regarding hand placement, those who were more knowledgeable conducted more compressions. These data revealed that at least some aspects of CPR performance were significantly impacted by knowledge of the recommendations.

According to previous research, students who had successful resuscitation training experiences felt more confident in their ability and competence in clinical settings. Similarly, according to previous research, healthcare professionals who received simulation-based training felt more confident in their abilities (Mohamed 2017).

5.3. Association between Nurses' Knowledge and their Demographic Data

The present study's findings indicate a significant ($P<0.05$)correlation between the overall evaluation of nurses' knowledge and (age), (academic achievement), and (years of experience) (current workplace).

Regarding age, similar results were obtained (Botes & Moepeng, 2020). They discovered that the mean CPR knowledge scores varied little amongst the various age demographics. However, other studies may contradict the results (Mohammed Ahmed et al., 2017). During the investigation, there was no correlation between nurses' CPR competence and their age (P value = 0.05).

Regarding the educational level, the current results agree with (Mustafa, 2014). With a p-value of 0.05, that study showed that there was a statistically significant relationship between how well nurses knew CPR and how much schooling they had.(Elazazay, Abdelazez, and Elsaie, 2012)and (Gemmill et al., 2011). According to their findings, there is a correlation between CPR knowledge and the nurse's academic qualifications. (Guskuma et al., 2019) recorded that the highest accuracy and correct answers were related to the highest level of education. However, other studies may contraindicate the results (Mohammed Ahmed et al., 2017). At (P value=0.05), it was shown that nurses' knowledge of CPR and their educational level had no significant correlation. It was shown that persons with lower education and experience could not remember basic CPR skills. This research's findings show a serious lack of understanding of CPR (Marzooq and Lyneham 2009).

Regarding the association between nurses' knowledge, these results showed that nurses working in the CPR unit and Intensive Care Unit (ICU) had the highest level of knowledge about CPR, and this is an expected result because nurses are contacted with CPR procedures daily, so their knowledge is more than those in other workplaces. This result agrees with (Mohammed Ahmed *et al.* 2017). According to this study, there was a statistically significant correlation between nurses' expertise and their location of work p value =0.05. The current study agrees with another study (Marzooq and Lyneham, 2009). In contrast, on the other hand, the findings revealed that there were major inequalities in knowledge and working areas. (Parajulee and Selvaraj 2011) discovered a statistically significant correlation between the knowledge scores and the respondents' workplaces (p=0.013). However, the current results were inconsistent with those of Al Kandary et al., 2007. (Botes & Moepeng, 2020), who discovered emergency care nurses had a slightly higher mean CPR score (48%) than intensive care nurses (45%), but both groups scored below the recommended level.

Regarding years of experience, in which there is a significant association with the level of knowledge, this result is expected because the years of experience are correlated with age, so when the level of education is associated with age, it is expected to be associated with years of experience. This result agrees with (Guskuma et al., 2019). This study found a correlation between a person's degree of knowledge and their professional experience. The time of professional experience also influenced the number of correct answers in this study: professionals with more than #ve years of experience had a lower rate of correct answers than professionals with less than five years of experience. This finding may be related to these professionals' longer time intervals without CPR retraining. In contrast to these results, a study revealed that professionals with previous experience in CA care tended to be involved in this care due to acquiring knowledge and skills in other care. However, this result disagrees with those (Mustafa, 2014). At a p-value of 0.05, there was no correlation between nurses' understanding of CPR and their years of experience in the field. Additionally, this conclusion contradicts the findings of two studies (Hamza 2012). (Rajeswaran et al., 2018). The study showed that nurses' knowledge of CPR did not seem to correlate with their experience as nurses. New research shows that nurses and physicians who work in high-risk regions for

cardiac arrest had considerably higher scores than those who work in low-risk areas. People who had more than five cardiac arrests in the previous year did better than those who hadn't had any. (Passali *et al.* 2011) .

6. CONCLUSION AND RECOMMENDATION

6.1. Conclusion

The findings of this study allow the researcher to derive the following conclusions.

1. The participation of females in this study is greater than males.
2. The age group most participating is (20-24) years old.
3. Concerning the educational level, the largest number of participants in this study was from a nursing institute compared to the College of Nursing and Nursing Preparatory.
4. As for the years of experience, the largest number of nurses had experienced less than two years.
5. In this study, most participating nurses did not have CPR training.
6. The largest number of nurses in this study performed weekly CPR.
7. In this study, most of the nurse participants had moderate knowledge of CPR
8. According to this study, there is no significant association ($P>0.05$) between the overall assessment of nurses' knowledge of CPR and their demographic data, except for age, academic achievement, experience, and current workplace, all of which were significantly associated($P <0.05$) with nurses' knowledge of CPR.

6.2. Recommendations

Based on this study's findings, the following recommendations were made:

1. The referral institutions should develop CPR procedural guides to include all the most recent breakthroughs, discoveries, and practices in CPR. Corrective action should be taken if a process manual isn't being followed.

2. Activating the procedures and steps of cardiopulmonary resuscitation for the Institute and the College of Nursing students.
3. Every year, hospitals update their CPR standards to refresh nurses' expertise in cardiopulmonary resuscitation.
4. All nursing school programs should include CPR instruction comparable to what was delivered to the study's training group.
5. To maintain the skills and information gained through "State of the Art" Cardiopulmonary resuscitation training, hospitals should integrate it into the orientation of new nursing staff. The highest priority must be given to CCU, ER, and ICU nurses since these patients are more likely to need urgent treatment.
6. Frequent, up-to-date CPR instruction for nursing staff in the case of a cardiac arrest is necessary.
7. All nurses should be educated and trained in CPR.

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APPENDIX

APPENDICES 1: Questionnaire on evaluating nurses' knowledge of cardiopulmonary resuscitation in Nasiriyah Teaching Hospital

APPENDICES 2: Ethical approval from Çankırı karatekin Üniversitesi

APPENDICES 3: Ethical approval from Iraq

APPENDICES 4: : English proofreading

APPENDICES 5: C.V

APPENDICES 1: Questionnaire on evaluating nurses' knowledge of cardiopulmonary resuscitation in Nasiriyah Teaching Hospital

1. Demographic data

Put a tick (√) in the appropriate box

1.1 Gender

1.Male		
2.Female		

1.2 Age

Year

1.3Academic achievement

A- Nursing school		
B- Nursing institute		
C - Bachelor of Science in Nursing		

1.4 Number of years of experience

1.5 current workplace

A – Coronary Care Unit		
B- Intensive care unit		
C - emergency unit		
D- Respiratory Care Unit		
E- Lobbies or other sections mentioned		

1.6 Do you have any CPR training course?

A- Yes		
If the answer is yes		
1- Duration of the course		
2- The name of the place of training		
B- No		

7.1 Do you perform CPR on the patient?

A- daily		
B- weekly		
C- monthly		
D-yearly		

2- Questions about nurses' assessment of CPR

Put a tick (√) in the appropriate answer box

A - Anatomy and physiology

1 - The heart is a hollow muscular organ, located in the

A - the upper part of the rib cage		
B - the lower part of the rib cage		
C - In the center of the chest cage, with a slight slope to the left side		
D- None of the above		

2- The weight and size of the heart are affected by?

A- age		
B- gender		
C- body weight		
D- All of the above		

3 - The heart pumps blood to the tissues, and to provide them with

A – oxygen		
B- carbon dioxide		
C- Food and minerals		
D- (a) and (c) are both correct		

4- How many layers does the heart have?

A - two layers		
B - 3 layers		

C - 4 layers		
D - 5 layers		

5 – The right side of the heart

A -It consists of the right atrium and the right ventricle		
B - circulates deoxygenated venous blood		
C - pumps blood to the lungs		
D- All of the above		

6 - The left side of the heart

A- It consists of the left atrium and the left ventricle		
B - The oxygenated blood is distributed to all parts of the body through the aorta		
C - the blood circulation is small		
D- (a) and (b) are both correct		

7 - The valves of the heart allow blood to flow in one direction

A - Depends on the movement of the direction of blood and the change in pressure inside the heart		
B - composed of thin leaflets of fibrous tissue		
C- (a) and (b) are both correct		
D- None of the above		

8 - Cardiac Output is?

A-The amount of blood that is pumped in micro		
B - calculated by (the amount of blood paid during each stroke) × (heartbeat within a minute)		
C-In the case of comfort at the adult man (5 liter / min)		
D-(B) and (T) are both true		

9 - The amount of blood paid from the heart during each single strike

A - equal (the product of the heart per minute) / (the number of heartbeat per minute)		

B - approximately 70 ml		
C-(A) and (b) both are true		
D-None of the above		

10 - Where is the breath center?

A – Brain		
B- brain stem		
C- spinal cord		
D - peripheral nerves		

11. The lungs

A-Two elastic sponge members		
B-Surrounded by the visceral pleural membrane		
C- - The left lung consists of two and the right lung from three cloves		
D- All mentioned above		

B-Relating to cardiac arrest and cardiopulmonary resuscitation

12-Which of the conditions below may lead to the application of CPR?

A-cancer		
B - renal failure		
C- myocardial infarction		
D-AIDS		

13. What are the most common complications of the victim application is applied?

A - Death of brain cells		
B - fracture of multiple ribs in the thoracic cage		
C- hemiplegia		
D- contusion of the heart		

14- Which of the following interventions has a significant impact on improving survival during sudden cardiac arrest?

A - cardiopulmonary resuscitation		
B- Early cardiopulmonary resuscitation (within 5 minutes) and the use of an electric shock device		
C-The use of an electric shock device without CPR		
D - Cardiopulmonary resuscitation (within 10 minutes) and the use of an electric shock device		

15 - What is the most likely cause of cardiac arrest after myocardial infarction

A - ventricular fibrillation		
B- atrial fibrillation		
C - stop the contraction		
D- premature ventricular contraction		

16 - The victim who has a cardiac arrest must have the following sign

A - sharp chest pain		
B - shortness of breath		
C - pulse failure		
C- (B) and (C) are both correct		

17 - The first organ in the human body affected by a lack of oxygen is?

A-heart		
B-Lung		
C-Brain		
D- (a) and (c) are both correct		

18 - Cardiac arrest occurs

A - When the heart stops producing an effective heartbeat and sufficient blood		
B – suddenly		
C - as a result of respiratory arrest		
C- All of the above		

19 - How long can the brain survive without oxygen?

A - 6-8 minutes		
B- 1-2 minutes		
C- 3-5 minutes		
D- 8-9 minutes		

20 - The first and necessary step in the treatment of cardiac arrest is immediate recognition, the paramedic should

A- Check the pulse and breathing		
B- check your blood pressure		
C - tapping the victim's shoulder and asking him "Are you okay?"		
D- Check the temperature		

21 - When assessing the pulse of an unconscious victim, which of the following is the best artery to check the pulse?

A – radial		
B – femoral		
C-carotid		
D-brachial		

22 - How often should the emergency trolley be checked in the hallway or anywhere in a hospital?

A - At the beginning of each week		
B - at each shift		
C- Once every month		
D- every day		

23 - What is the first drug given in cases of cardiac arrest?

A – Vasopressin		
b- atropine		
C- adrenaline		
D- Magnesium sulfate		

24 - What does the abbreviation CPR mean to you?

A- Call, Plan, Respond		
B- Coronary Pathogen Revival		
C- Cardio-Pulmonary Resuscitation		
D- Capillary Process Review		

25-(the chain of survival) The means of survival series means

A - Early access to emergency services		
B - early cardiopulmonary resuscitation		
C- Early electric shocks		
D- All of the above		

26 - Means of Survival Series Include

A- early basic life support		
B- advanced life support		
C- No life support		
D- (a) and (b) are both correct		

27 - What is the main objective of the CPR process?

A - to maintain cerebral perfusion		
B - to relieve pain		
C - to maintain cardiac perfusion		
D- (a) and (b) are both correct		

28 - Components of CPR include the following

A - chest compressions and artificial respiration only		
B - chest compressions and electric shocks only		
C - electric shocks only		
D- chest compressions, artificial respiration, and electric shocks		

29 - How long is the time allowed for the paramedic to look at the victim before applying CPR?

A - 10 seconds		
B - 15 seconds		
C - 25 seconds		
D - 30 seconds		

30 - What is the best way to open the airway of an unconscious victim who does not suffer from a spinal injury?

A- Jaw thrust		
B- the head tilt– chin lift maneuver		
C- Use the tongue lift-finger sweep method		
D- None of the above		

31 - The main objective of supporting the breathing process during CPR is?

A - Increased pressure on the heart		
B- Maintain adequate oxygen as much as possible		
C - reduce carbon dioxide		
D- (B) and (C) are both correct		

32- The paramedic should avoid excessive ventilation as it may lead to?

A-Stomach bloating		
B - Decreased blood flow back from the veins to the heart		
C- (a) and (b) are both correct		
D- None of the above		

33 - The technique of artificial respiration is accomplished by

A - The paramedic's mouth is directly at the victim's mouth		
B - The mouth of the paramedic to the mouth of the victim by means of artificial respiration		
C - the mouth of the paramedic to the nose of the victim		
D- All of the above		

34 - The paramedic should give artificial respiration at a rate

A- Once every 2-3 seconds		
B- Once every 4-5 seconds		
C- Once every 5-6 seconds		
D- Once every 8-9 seconds		

35 - The paramedic should give artificial respiration at a rate

A - 10 times a minute		
B - 12 times a minute		
C- 14 times a minute		
D- 16 times a minute		

36- When the paramedic gives mouth-to-mouth artificial respiration, what is the best procedure to ensure the success of this method?

A - Putting the mouth over the victim's mouth and giving him one little breath		
B - Putting the mouth over the victim's mouth and giving him two breaths while observing the rise and fall of the chest cage		
C - Putting the mouth on the victim's mouth and giving him 5 breaths within 2 seconds		
D- Putting the mouth over the victim's mouth and giving him one slow breath within 5 seconds		

37 - Air during artificial respiration will go to the victim's stomach in some cases?

A - Giving one's breath so that the victim's chest rises		
B - give a strong breath		
C - Not turning the head back		
D- (B) and (C) are both correct		

38 - One of the following is an artificial respiration instrument

A- bag and mask device		
B- supraglottic device		
C- a stethoscope		
D- (a) and (b) are both correct		

39 - What type of artificial respiration should be given during CPR?

A - superficial breath		
B - normal breath		
C- deep breath		
D- a very deep breath		

40 - What is the correct place for chest compressions in CPR?

A - 10 (cm) below the sternum		
B - the middle of the chest		
C - left side of the chest (below the nipple)		
D- Anywhere in the chest		

41 - What is the ratio between chest compressions and artificial respiration?

A- 1:10		
B- 2:30		
C- 2:15		
D- 3:20		

42 - To maximize the effectiveness of chest compressions, place the victim

A - on a flexible bed		
B - On his back with the paramedic next to the bed		
C - on a hard surface		
D- (B) and (C) are both correct		

43-Correct performance of chest compressions requires several basic skills. The depth of the single click should be at least ?

A - 2 inches (5 cm)		
B - 3 inches (7.5 cm)		
C - 1 inch (2.5 cm)		
D- 0.5 inch (1.25 cm)		

44 - What is the correct rate of chest compressions in one minute?

A - 60 times		
B - 80 times		
C - 100 times		
D - 120 times		

45 - chest pressure should be?

A - fast and deep		
B- superficial and slow		
C - shallow and fast		
D - slow and deep		

46 - What are the important signs that require resorting to chest compressions?

A - The victim has a pulse but is having difficulty breathing		
B - The victim is unresponsive, is not breathing and has no pulse		
C-The victim responds, but complains of chest pain		
D-The victim does not respond adequately, but is breathing		

47 - What is the benefit of reducing interruptions during chest compressions during CPR?

A - There is no need to worry about interruption during chest compressions		
B - Reducing the interruption means that the paramedic will be untiring during the CPR process		
C - Only specialists and personnel providing advanced care should be concerned about reducing interruptions		
D - Reducing the interruption during chest compressions increases the chance of saving the victim		

48-What does "hand only cpr" mean?

A - artificial respiration only		
B- Open the airway only		
C - electric shocks only		
D- None of the above		

49 - The recovery position is used in the following cases

A - When the victim who has normal breathing and normal blood circulation does not respond		
B - to maintain the efficiency of the respiratory tract and reduce the risk of obstruction		
C- (a) and (b) are both correct		
D- None of the above		

50 - defibrillation

A - It is the process of connecting an electrical device and applying strong electrical shocks to the heart		
B - It should be carried out immediately after it is diagnosed that the patient suffers from an emergency heart problem		
C - It is applied to correct the shivering of the heart that		

leads to cardiac arrest		
D- All of the above		

استبانه حول تقييم معارف الممرضين اتجاه الإنعاش القلبي الرئوي في مستشفى الناصريه التعليمي

1- البيانات الديموغرافية

ضع علامة (√) في المربع المناسب

1.1 الجنس

أ- ذكر		
ب- أنثى		

1.2 العمر

سنة

3.1 التحصيل الدراسي

أ- إعدادية التمريض		
ب- معهد تمريض		
ت- بكالوريوس علوم في التمريض		

4.1 عدد سنوات الخبرة

5.1 مكان العمل

أ- وحدة إنعاش القلب		
ب- وحدة العناية المركزة		
ت- وحدة الطوارئ		
ث- وحدة عناية الجهاز التنفسي		
ج- ردهات أو أقسام أخرى تذكر		

6.1 هل لديك إي دوره تدريبية حول الإنعاش القلبي الرئوي؟

أ- نعم		
إذا كانت الإجابة نعم		
1- مدة الدورة		
2- اسم مكان التدريب		
ب- كلا		

7.1 هل تمارس الإنعاش القلبي الرئوي على المريض؟

أ- يوميا		
ب- أسبوعيا		
ت- شهريا		
ث- سنويا		

2- أسئلة حول تقييم معارف الممرضين باتجاه الإنعاش القلبي الرئوي

ضع علامة (√) في مربع الاجابه المناسبة

أ- التشريح والفسلجه

1 - القلب هو عضو عضلي مجوف، ويقع في

أ- الجزء العلوي للقفص الصدري		
ب- الجزء السفلي للقفص الصدري		
ت- في مركز القفص لصدري مع قليل من الميول للجانب الأيسر		
ث- ليس مما ذكر أعلاه		

2 – يتأثر وزن القلب وحجمه بـــــ ؟

أ- العمر		
ب- الجنس		
ت- وزن الجسم		
ث- كل ما ذكر أعلاه		

3 - يضخ القلب الدم إلى الأنسجة، ولتزويدهم بـــــــ؟

أ- الأوكسجين		
ب- ثنائي اوكسيد الكربون		
ت- الغذاء والمعادن		
ث- (أ) و (ت) كلاهما صحيح		

4 – عدد الطبقات المكونة للقلب هو؟

أ- طبقتان		
ب- 3 طبقات		
ت- 4 طبقات		
ث- 5 طبقات		

5 - الجانب الأيمن من القلب

أ- يتكون من الأذين الأيمن والبطين الأيمن		
ب- يوزع الدم الوريدي غير المؤكسج		
ت- يضخ الدم إلى الرئة		
ث- كل ما ذكر أعلاه		

6 - الجانب الأيسر من القلب

أ- يتألف من الأذين الأيسر والبطين الأيسر		
ب- يوزع الدم المؤكسج إلى جميع أجزاء الجسم عن طريق الشريان الابهر		
ت- يكون الدورة الدموية الصغرى		
ث- (ا) و (ب) كلاهما صحيح		

7 - صمامات القلب تسمح للدم بالجريان في اتجاه واحد وهي

أ- تعتمد على حركة اتجاه الدم وتغيير الضغط داخل القلب		
ب- تتألف من منشورات رقيقة من النسيج الليفي		

ت- (ا) و (ب) كلاهما صحيح		
ث- ليس مما ذكر أعلاه		

8 - النتاج القلبي (cardiac output) هو؟

أ- كمية الدم التي يضخها الأذين في الدقيقة		
ب- يحسب عن طريق (كمية الدم المدفوعة خلال كل ضربه) × (ضربات القلب خلال دقيقة)		
ت- في حالة الراحة عند الإنسان البالغ يكون (5لتر/دقيقة)		
ث- (ب) و (ت) كلاهما صحيح		

9 – كمية الدم المدفوعة من القلب خلال كل الضربة الواحدة

أ- تساوي (نتاج القلب في الدقيقة) / (عدد ضربات القلب في الدقيقة)		
ب- حولي 70 مل		
ت- (ا) و (ب) كلاهما صحيح		
ث- ليس مما ذكر أعلاه		

10 - أين يقع مركز التنفس؟

أ- المخ		
ب- جذع الدماغ		
ت- الحبل ألشوكي		
ث- الأعصاب المحيطية		

11 – الرئتان

أ- عضوان أسفنجيان مرنان		
ب- محاطتين بالغشاء البلوري الحشوي		
ت- تتكون الرئة اليسرى فصين والرئة اليمنى من ثلاثة فصوص		
ث- كل ما ذكر أعلاه		

ب – ما يتعلق بتوقف القلب وعملية الإنعاش القلبي الرئوي

12 - أي من الحالات المرضية أدناه التي قد تؤدي إلى تطبيق الإنعاش القلبي الرئوي؟

أ- السرطان		
ب- الفشل الكلوي		
ت- احتشاء عضلة القلب		
ث- الايدز		

13 – ما هي أكثر المضاعفات شيوعا لضحية يتم تطبيق عملية الإنعاش القلبي الرئوي عليها؟

أ- موت خلايا الدماغ		
ب- كسر إضلاع متعددة في القفص الصدري		
ت- شلل نصفي		
ث- كدمة القلب		

14 – إي من التدخلات التالية لها تأثير كبير في تحسين البقاء على قيد الحياة خلال السكتة القلبية المفاجئة؟

أ- الإنعاش القلبي الرئوي		
ب- الإنعاش القلبي الرئوي في وقت مبكر (خلال 5 دقائق) واستخدام جهاز الصدمة الكهربائية		
ت- استخدام جهاز الصدمة الكهربائية بدون الإنعاش القلبي الرئوي		
ث- الإنعاش القلبي الرئوي (خلال 10 دقائق) واستخدام جهاز الصدمة الكهربائية		

15 - ما هو السبب الأكثر احتمالا لتوقف القلب بعد احتشاء عضلة القلب؟

أ- الرجفان ألبطيني		
ب- الرجفان الأذيني		
ت- توقف الانقباض		
ث- تقلص البطين السابق لأوانه		

16 – الضحية التي لديها السكتة القلبية يجب ان تكون لديها العلامة الاتية

أ- الم حاد في الصدر		
ب- انقطاع التنفس		
ت- انقطاع النبض		

ث- (ب) و (ت) كلاهما صحيح		

17 – أول عضو في جسم الإنسان يتأثر بنقص الأوكسجين هو؟

أ- القلب		
ب- الرئة		
ت- الدماغ		
ث- (أ) و (ت) كلاهما صحيح		

18 - توقف القلب يحدث

أ- عندما يتوقف القلب عن إنتاج نبضات فاعلة ودم كافي		
ب- بشكل مفاجئ		
ت- نتيجة لتوقف التنفس		
ث- كل ما ذكر أعلاه		

19 - كم من الوقت يمكن للدماغ البقاء بدون أوكسجين؟

أ- 6- 8 دقيقة		
ب- 1-2 دقيقة		
ت- 3- 5 دقيقة		
ث- 8- 9 دقيقة		

20 - الخطوة الأولى و الضرورية في علاج السكتة القلبية هي التمييز الفوري، ينبغي على المسعف

أ- تحقق من النبض والتنفس		
ب- تحقق من ضغط الدم		
ت- النقر على كتف الضحية و سؤاله "هل أنت بخير"		
ث- تحقق من درجة الحرارة		

21 - عند تقييم النبض لضحية فاقدا للوعي، أي مما يلي هو الشريان أفضل للتحقق من النبض؟

أ- ألشعاعي		

ب- الفخذي		
ت- ألسباتي		
ث- العضدي		

22 - كم مرة يجب أن يتم فحص عربة الطوارئ في الردهة أو اي مكان في مستشفى؟

أ- في بداية كل أسبوع		
ب- عند كل مناوبة		
ت- مره واحده كل شهر		
ث- كل يوم		

23 - ما هو أول دواء يعطى في حالات السكتة القلبية؟

أ- فاسوبريسين		
ب- الأتروبين		
ت- الأدرينالين		
ث- كبريتات المغنيسيوم		

24 - ماذا يعني لك مختصر CPR ؟

أ- Call, Plan, Respond		
ب- Coronary Pathogen Revival		
ت- Cardio-Pulmonary Resuscitation		
ث- Capillary Process Review		

25 – (the chain of survival) سلسلة وسائل البقاء على قيد الحياة تعني ؟

أ- الوصول المبكر لخدمات الطوارئ		
ب- عملية الإنعاش القلبي الرئوي في وقت مبكر		
ت- الصدمات الكهربائية في وقت مبكر		

ث- كل ما ذكر أعلاه		

26 - سلسلة وسائل البقاء على قيد الحياة تتضمن

أ- (early basic life support) قواعد دعم الحياة المبكر		
ب- (advanced life support) دعم الحياة المتقدم		
ت- (No life support) عدم دعم الحياة		
ث- (أ) و(ب) كلاهما صحيح		

27 – ما هو الهدف الأساسي لعملية الإنعاش القلبي الرئوي

أ- للحفاظ على التروية الدماغية		
ب- لتخفيف الألم		
ت- للحفاظ على التروية القلبية		
ث- (أ) و (ب) كلاهما صحيح		

28 – مكونات الإنعاش القلبي الرئوي تشمل الأتي

أ- الضغط على الصدر والتنفس الاصطناعي فقط		
ب- الضغط على الصدر والصدمات الكهربائية فقط		
ت- الصدمات الكهربائية فقط		
ث- الضغط على الصدر والتنفس الاصطناعي والصدمات الكهربائية		

29 – ما هي الفترة المسموح بها للمسعف للنظر للضحية قبل تطبيق الإنعاش القلبي الرئوي؟

أ- 10 ثانية		
ب- 15 ثانية		
ت- 25 ثانية		
ث- 30 ثانية		

30 - ما هي أفضل طريقة لفتح المجرى التنفسي لضحية فاقد للوعي ولا يعاني من أصابه في العمود الفقري ؟

أ- Jaw thrust		

ب- the head tilt– chin lift maneuver		
ت- Use the tongue lift-finger sweep method		
ث- ليس مما ذكر أعلاه		

31 – الهدف الرئيسي من تدعيم عملية التنفس خلال عملية الإنعاش القلبي الرئوي هو؟

أ- زيادة الضغط على القلب		
ب- المحافظة على الأوكسجين الكافي قدر الإمكان		
ت- تقليل نسبة ثنائي اوكسيد الكربون		
ث- (ب) و (ت) كلاهما صحيح		

32 – ينبغي على المسعف تجنب التهوية المفرطة لأنه قد يؤدي إلى؟

أ- انتفاخ المعدة		
ب- نقصان الدم الراجع من الاورده إلى القلب		
ت- (أ) و (ب) كلاهما صحيح		
ث- ليس مما ذكر أعلاه		

33 – تقنية التنفس الاصطناعي تنجز عن طريق

أ- فم المسعف إلى فم الضحية بشكل مباشر		
ب- فم المسعف إلى فم الضحية بواسطة أداة التنفس الاصطناعي		
ت- فم المسعف إلى انف الضحية		
ث- كل ما ذكر أعلاه		

34 - ينبغي على المسعف أن يعطي التنفس الاصطناعي بمعدل

أ- مره واحده كل 2- 3 ثانية		
ب- مره واحده كل 4- 5 ثانية		
ت- مره واحده كل 5- 6 ثانية		
ث- مره واحده كل 8- 9 ثانية		

35 – ينبغي على المسعف إعطاء التنفس الاصطناعي بمعدل

أ- 10 مرات في الدقيقة		
ب- 12 مره بالدقيقة		
ت- 14 مره بالدقيقة		
ث- 16 مره بالدقيقة		

36 – عندما يعطي المسعف التنفس الاصطناعي بواسطة الفم للفم ما هو الإجراء الأفضل لضمان نجاح تلك الطريقة؟

أ- وضع الفم على فم الضحية وإعطائه نفس واحد قليل		
ب- وضع الفم على فم الضحية وإعطائه نفسين مع مراقبة صعود وهبوط القفص الصدر		
ت- وضع الفم على فم الضحية وإعطائه 5 أنفاس خلال 2 ثانية		
ث- وضع الفم على فم الضحية وإعطائه نفس واحد بطئ خلال 5 ثانية		

37 – الهواء خلال التنفس الاصطناعي سوف يذهب إلى معدة الضحية في حالات ؟

أ- إعطاء النفس حتى يرتفع صدر الضحية		
ب- إعطاء نفس قوي		
ت- عدم إرجاع الرأس إلى الخلف		
ث- (ب) و (ت) كلاهما صحيح		

38 - واحد مما يلي هو أداة تنفس اصطناعي

أ- bag and mask device		
ب- supraglottic device		
ت- a stethoscope		
ث- (أ) و(ب) كلاهما صحيح		

39 - ما هي نوعية التنفس الاصطناعي الذي ينبغي إعطائه عند عملية الإنعاش القلبي الرئوي؟

أ- نفس سطحي		
ب- نفس طبيعي		

ت- نفس عميق		
ث- نفس عميق جدا		

40 – ما هو المكان الصحيح للضغط على الصدر في عملية الإنعاش القلبي الرئوي؟

أ- 10(سم) تحت عظم القص		
ب- وسط الصدر		
ت- الجانب الأيسر من الصدر (تحت الحلمة)		
ث- في أي مكان من الصدر		

41 – ما هي النسبة ما بين الضغط على الصدر والتنفس الاصطناعي؟

أ- 1:10		
ب- 2:30		
ت- 2:15		
ث- 3:20		

42 - لتحقيق أقصى قدر من الفعالية من الضغط على الصدر، ضع الضحية

أ- على سرير مرن		
ب- على ظهره والمسعف بجانب السرير		
ت- على سطح صلب		
ث- (ب) و (ت) كلاهما صحيح		

43 - الأداء الصحيح لعملية الضغط على الصدر يتطلب مهارات الأساسية عدة. وينبغي أن يكون عمق الضغطة الواحدة على الأقل ؟

أ- 2 بوصة (5سم)		
ب- 3 بوصة (7.5سم)		
ت- 1 بوصه (2.5سم)		
ث- 0.5 بوصة (1.25سم)		

44 - ما هو معدل الصحيح للضغطات على الصدر في دقيقة واحدة؟

أ- 60 مره		
ب- 80 مره		
ت- 100 مره		
ث- 120 مره		

45 - الضغط على الصدر ينبغي أن يكون ؟

أ- سريع وعميق		
ب- سطحي وبطيء		
ت- سطحي وسريع		
ث- بطيء وعميق		

46 - ما هي العلامات المهمة التي تستوجب اللجوء إلى الضغط على الصدر؟

أ- الضحية لديه نبض ولكنه يواجه صعوبة في التنفس		
ب- الضحية لا يستجيب، لا يتنفس وليس لديه نبض		
ت- الضحية يستجيب ولكن يشكو من ألم في الصدر		
ث- الضحية لا تستجيب بشكل كاف ولكن يتنفس		

47 - ما هي الفائدة من تقليل الانقطاع أثناء الضغط على الصدر خلال الإنعاش القلبي الرئوي؟

أ- ليست هناك حاجة للقلق حول الانقطاع أثناء الضغط على الصدر		
ب- تقليل الانقطاع يعني أن المسعف سوف يكون غير متعب خلال عملية الإنعاش القلبي الرئوي		
ت- فقط المختصين والعاملين في تقديم الرعاية المتقدمة عليهم القلق من تقليل الانقطاع		
ث- تقليل الانقطاع أثناء الضغط على الصدر يزيد فرصة إنقاذ الضحية		

48 - ما يعني اليد فقط "hand only cpr" ؟

أ- تنفس اصطناعي فقط		
ب- فتح المجري التنفسي فقط		
ت- الصدمات الكهربائية فقط		

ث- ليس مما ذكر أعلاه		

49 - يستخدم وضع الاستشفاء (recovery position) في حالات الآتية

أ- عندما لاستجيب الضحية الذي لديه تنفس طبيعي ودوره دمويه طبيعية		
ب- للحفاظ على كفاءة المجرى التنفسي وتقليل خطورة انسداده		
ت- (أ) و (ب) كلاهما صحيح		
ث- ليس مما ذكر أعلاه		

50 - إزالة الرجفان (defibrillation) ؟

أ- هي عملية توصيل جهاز كهربائي و تسليط صدمات كهربائية قويه على القلب		
ب- يجب أن تنفذ بشكل مباشر بعد أن يشخص أن المريض يعاني من مشكلة طارئة في القلب		
ت- تطبق لتصحيح ارتجاف القلب الذي يؤدي إلى السكتة القلبية		
ث- كل ما ذكر أعلاه		

APPENDICES 2: Ethical approval from Çankırı karatekin Üniversitesi

APPENDICES 3: Ethical approval from Iraq

APPENDICES 4: : English proofreading

APPENDICES 5: : Plagiarism Report.

APPENDICES 6 : C.V

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