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The Efficacy of Using Simulation Based Education on Nurses Performance Regarding Pediatric Basic Life Support

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by

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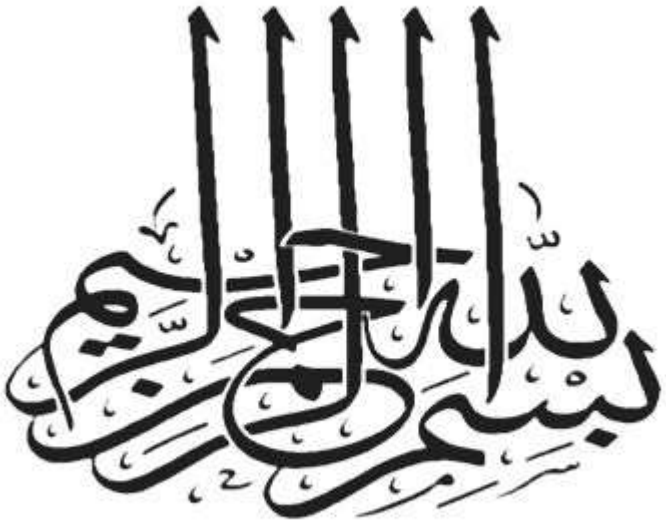

(وَمَنْ أَحْيَاهَا فَكَأَنَّمَا أَحْيَا النَّاسَ جَمِيعًا)

"صدق الله العلي العظيم"

سورة المائدة الآية (٣٢)

Supervisor Certification

This is to certify that the thesis entitled: **(The Efficacy of Using Simulation Based Education on Nurses Performance Regarding Pediatric Basic Life Support)** had been prepared under my supervision at the University of Kerbala, College of Nursing in partial fulfillment of the requirements of the Master Degree in Nursing Sciences.

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Dedication

- To my father with love and respect forever….
- To my mother with love and respect forever….
- To my wife with love and respect forever….
- To my daughter with love and respect forever....
- To my sisters with love and respect forever.....
- To my best Friends.....

(karrar), 2024

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Abstract

Background: Pediatric basic life support is the provision of cardiopulmonary resuscitation for cardiac arrested children until advanced life support can be provided. Simulation is the imitation of a real-world process over time. Theoretical education is not adequate alone for effective cardiopulmonary resuscitation applying. Thus, the application must be given in accordance with training and manual guidelines.

Objective: To evaluate the efficacy of a simulation based education on nurses performance regarding pediatrics basic life support.

Methods: A pretest and post-test quiz-experimental study design was carried out at Al-Zahraa Teaching Hospital and Al Manathera General Hospital at Al_Najaf Al-Ashraf governorate between the periods from 26th September 2023 to 10th June 2024.Two groups of 25 study group nurses and 25 control group nurses were selected based on criteria of the study, **A** structured interview which included three parts related to sociodemographic characteristics, nurses' knowledge, and nurses' practice regarding pediatric basic life support, the education passed through 3 phases as pretest, implementation and posttest phase. The data were analyzed by using the program of Statistical Package of Social Sciences (SPSS) Version 20. Both descriptive and inferential statistical analysis approaches were used in order to analyze the results of the study.

Results: The results showed that the training program significantly improved the knowledge and practice of pediatric basic life support among nurses in the study group, with knowledge scores rising from 0.46 to 0.89 and practice scores from 0.38 to 0.82 after the intervention. In contrast, the control group showed no significant changes, with knowledge scores moving slightly from 0.47 to 0.50 and practice scores from 0.44 to 0.46.

Conclusion: The present study concluded that nurses' performance in pediatric basic life support significantly improved after simulation-based education and the study provides aline to enhance the simulation integration as active education strategies to develop nurses' performance in applying clinical skills.

Recommendations: Based on the results of this study, the researcher recommends further studies with large sample to evaluate the effect of simulation on nurses' education output for more studies that simulation would be valuable for nurses' enhancement. The researcher also recommends encouraging nurses to improve their performances through increasing their participation in basic life support and cardiopulmonary resuscitation courses (at least every 6 months)

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List of Abbreviations and Symbols

Items	Meaning
ACLS	Advanced Cardiac Life Support
AED	Automated External Defibrillator
AHA	American Heart Association
ALS	Advanced Life Support
APA	American Psychological Association
BLS	Basic Life Support
CA	Cardiac Arrest
CAB	Circulation – Airway – Breathing
CDC	Centers for Disease Control
CPR	Cardiopulmonary Resuscitation
ED	Emergency Department
EMS	Emergency Medical Services
FBAO	Foreign Body Airway Obstruction
ICU	Intensive Care Unit
IHCA	In-Hospital Cardiac Arrest
LOC	Loss of Consciousness
OHCA	Out- of- Hospital Cardiac Arrest
SCA	Sudden Cardiac Arrest
VF	Ventricular Fibrillation
VT	Ventricular Tachycardia
WHO	World Health Organization

%	Percentage
&	And
≤	Less than or equal
≥	More than or equal
ANOVA	Analysis of Variance
D.F	Degree of Freedom
HS	High significant
M.S	Mean of Score
NA	Not Avaliable
NS	Not Significant
R	Correlation Coefficient
S	Significant
SD	Stander Deviation
SPSS	Statistical Package of Social Sciences

Chapter One

Introduction

1.1. Introduction:

Pediatric basic life support (BLS) is the provision of cardiopulmonary resuscitation (CPR) for cardiac arrested children with no devices or with bag/mask ventilation or barrier devices, until advanced life support (ALS) can be provided (Tobase et al., 2017).

Pediatric BLS should be a part of community effort that include prevention, basic CPR, prompt access to the emergency medical services (EMS) system and prompt pediatric advanced life support(PALS) , successful restoration of spontaneous circulation and neurologically intact survival in children are linked to rapid and effective CPR performed by bystanders (Sharma et al., 2017).

Recognizing illnesses such as heart attack, stroke, sudden cardiac arrest, or airway blockage, as well as administering CPR and automated external defibrillation (AED) are all part of basic life support (Alkubati et al., 2022).

The goal of BLS is to sustain the flow of oxygenated blood to vital organs, such as the brain and heart , using temporary artificial circulation until normal cardiac function and breathing are regained. Time management is a key aspect of the success of BLS. It is crucial to promptly diagnose and provide treatment (Rajesh, 2020).

Initiating BLS with CPR early is a crucial component in improving survival rates for cardiac arrest. Nurses typically act as the primary responders to cardiac arrest , administering BLS until the advanced cardiac life support team arrives (Mohammed & James, 2019).

Nurses should possess the necessary knowledge and skills to successfully do CPR in order to save lives, as they are typically the first

healthcare professionals to administer BLS in emergency situations. Insufficient initial evaluation, unsuitable therapy, and insufficient supervision lead to bad CPR results (Rajeswaran & Ehlers, 2014).

Nurses are supposed to offer efficient first-aid services. Whether on the job or in the community, nurses may encounter a variety of emergency cases, including sudden cardiac arrest. When nurses are able to effectively administer first aid and basic life support steps in acute conditions, they may reduce the morbidity and mortality rates associated with cardiac arrest (Kose et al., 2020).

Basic cardiac life support (BCLS) and advanced cardiac life support (ACLS) are the two components of resuscitation techniques. The American Heart Association (AHA) establishes the standards for CPR and helps medical professionals learn both ACLS and BCLS. The AHA recommends BLS and ACLS certification for nurses and physicians who work with patients. To become certified, one must attend classes and pass tests that measure motor and cognitive abilities. Initial CPR attempts often fail. It plays a crucial role in ensuring the victim's survival until they can access more advanced assistance (Sharma et al., 2017).

In accordance with the BLS guidelines of the AHA , children who do not react to their surroundings, are not breathing properly or are breathing inappropriately, have no central pulse, or have a central pulse of 60 beats per minute or less should be assessed within 10 seconds; assistance should be asked; and simultaneous administration of respiratory and compression support should be initiated and administered (Tolu Kendir et al., 2021).

A life saving procedure known as CPR can be administered by anyone without specific training, according to the AHA 2020 guideline. This can be done in situations where the victim is unresponsive, not

breathing, and does not have a heartbeat,the chain of survival is a set of interconnected steps that, when followed correctly, lower the mortality rate from cardiac arrest. These actions include rapid defibrillation to restore heart function, early advanced cardiac life support, advanced post-cardiac arrest care and recovery , early detection of cardiac arrest and activation of the emergency response system, and early CPR with a focus on chest compressions. A new change to the standard life support protocol, which goes from C-A-B (compression-airway breathing) to A-B-C (airway breathing-compression) has been made to the CPR guideline (Sunam et al., 2023).

Rescue breathing and chest compressions are the two main components of CPR, which aims to maintain blood oxygenation flowing to the brain and other critical organs until more permanent medical intervention may return the heart rhythm to normal. Damage to the brain can be permanent and irreversible in as little as a few minutes if the heart stops pumping blood death is guaranteed within six minutes (Al-janabi 2014).

Furthermore, CPR is a vital part of BLS, a form of first aid that can be utilized in an emergency until sufferers are taken to a medical facility. If a person seems to be in danger of drowning, choking, or being unconscious, BLS techniques can be launched. Performing BLS correctly could be the difference between life and death. CPR aims to keep the body functioning by removing waste products, ensuring that essential organs and the brain receive enough blood flow to provide nutrients, and supplying oxygen to keep them functioning (Elbaih et al., 2019).

Accidents, injuries, respiratory failure, sudden cardiac arrest, and shock are among the numerous pediatric emergencies that require the

specialized skills of the emergency medical team to provide life-saving treatment (Sharma et al., 2017).

Cardiac arrest (CA) also called circulatory arrest or cardio-pulmonary arrest, is a potentially fatal disorder. Inducing arrhythmia and cutting off blood supply to vital organs including the lungs and brain, CA causes electrical heart dysfunction that ultimately results in death. Typically, it is identified by the following symptoms: no pulse, unconsciousness, and difficulty breathing (Elbaih et al., 2019).

Cardiac arrest can happen outside the hospital, known as out-of-hospital cardiac arrest (OHCA), or inside the hospital, known as in-hospital cardiac arrest (IHCA). It is a significant clinical and public health issue, with low survival rates unless there is prompt recognition and a proficient response, such as CPR , which is a crucial part of BLS (El Sharkawy & Morsy, 2020).

The leading causes of death and serious injury each day are CA and accidents. But the high mortality rate that goes along with it can be easily avoided with some basic knowledge and techniques. With the right training and understanding, these situations can be managed easily (Zayed & Saied, 2020).

As modern technology and educational methods such as simulation progress, it is essential for both new and experienced nurse educators to excel in teaching skills and competencies. Simulation is an evidence-based method of teaching and learning that is commonly utilized in nursing education. Learning BLS techniques such as external chest compressions (ECC) is crucial for laypersons and healthcare personnel for resuscitation purposes (Qalawa et al., 2020).

By encouraging healthcare providers to adhere more strictly to resuscitation protocols based on established principles, BLS training that is based on simulation improves treatment quality and patient safety. Additionally, by utilizing the simulation approach, nurses can enhance their knowledge, skills, and performance in the practice of nursing. They can develop advanced critical thinking abilities and acquire new professional skills without endangering the health of their patients (Fahajan et al., 2023).

1.2. Importance of the Study:

Nurses must be prepared for, and updated on life-saving skills mortality and is more present especially knowledge declined by 6 months and more than 12 months and poor retention of knowledge and skill can negatively effect on their performance and self-efficacy (Bahig Anwr Akl et al., 2021) .

Most notably, in cases of respiratory arrest, the survival rate for individuals with intact neurological systems is less than 70%, and in cases of ventricular fibrillation (VF) , it is 30%. No matter what floor of the hospital a patient is on—the "emergency" or "in-patient" ward—nurses are usually the first to notice a patient experiencing cardiopulmonary arrest CPA. Therefore, their ability to administer CPR is essential for the survival of patients with CPA (Sharma et al., 2017).

According to the AHA, if CPR and defibrillation are administered within three to five minutes following collapse, survival chances can range from 49% to 75%. In cases of abrupt cardiac arrest, CPR has been shown to increase survival rates by two or three times (Alkubati et al., 2022).

Reducing mortality and morbidity in patients after cardiac arrest requires the early beginning of CPR and defibrillation. Delays in administering CPR can reduce the chance of life by 10% for every minute.

As a result, guidelines suggest that healthcare providers get routine CPR training in order to improve their performance and enhance patient outcomes (Mosbah et al., 2019).

Approximately 20,000 children and newborns in the US experience a cardiac arrest annually, around 7,000 children and infants experienced out-of-hospital cardiac arrests (OHCAs) in 2015 (Topjian et al.,2020).

For almost 40 years, hospitals have utilized CPR techniques on children. In the event of a cardiac arrest, the staff nurses often act as first responders, initiating BLS until the ACLS team reaches the scene . A person's chances of immediate survival after a cardiac arrest are improved depending on how quickly and competently first responders arrive at the scene. The staff nurse's expertise and experience may determine how quickly and actively they respond to an emergency (Sharma et al., 2017).

The ability to effectively administer BLS and ALS is a key component in the success rates of cardiac interventions. For this reason, BLS knowledge and practice are essential for nurses to respond to serious medical crises. Therefore, in the end, the result of acute emergency circumstances depends on nurses' ability to learn and use BLS. But even with simple and inexpensive procedures, people die every year because of healthcare providers' lack of understanding and practice about BLS (Kelkay et al., 2018).

Many adjustments have been made to the new guideline in an effort to improve the patient's result. The steps of BLS should be rearranged from Airway, Breathing, Circulation (ABC) to Circulation, Airway, Breathing (CAB) . Additionally, CPR should only be performed with one's hands; high-quality CPR should be prioritized; and post-resuscitation care should be given to patients. When this new resuscitation guideline is used, patient outcomes improve (Sweta Kumari et al., 2022).

Cardiopulmonary resuscitation is an emergency process that nurses must know how to do in order to be able to react quickly and effectively to a cardiac arrest. So, cardiopulmonary rescue training is required for nurses. This is important because nurses often find people who have had a cardiac arrest in the hospital. There is a lot of proof that nurses don't remember what they know about CPR. It's important for nurses to learn and remember CPR skills and information so they can help patients in cardiopulmonary arrest quickly and effectively (Mosbah et al., 2019).

Kasem & Abuhammad (2022), stated that teaching the principles of CPR and BLS through simulation education is crucial. These skills are vital in the event of a cardiac arrest, and nurses' failure to effectively apply them can lead to fatalities or severely impaired quality of life. Online learning courses, simulators, response devices, and simulations have been suggested by the AHA as resources for teaching and learning PBLS since 2015.

The quality of emergency care for pediatric patients can be enhanced with the use of simulation-based education (Kim et al., 2023).

1.3 Statement of the Problem:

Cardiopulmonary arrest is a medical emergency that requires immediate attention in order to save lives and avoid permanent harm to important organs.

Because Nurses are often the first to respond to cardiac arrests in hospitals and community emergency calls, their proficiency in BLS is crucial for better patient outcomes. Nonetheless, there is evidence that nurses lack proficiency in fundamental of BLS skills and knowledge.

Although the requirement for surgical commencement of execution is well-known, health care providers sometimes endure criticism for lacking essential life-saving abilities. The inadequacy of BLS abilities

stems from a combination of factors, including inadequate training, misguided instruction, limited practice, low self-efficacy, and impaired skill memory.

It is imperative that nurses who administer BLS in an emergency continue to educate themselves on how to administer CPR effectively so that they can continue to save lives. Poor CPR outcomes can be attributed to an inadequate initial assessment, treatment that is not appropriate, and monitoring that is not adequate outcomes.

Healthcare staff lack knowledge and abilities in CPR performance, indicating a need for better educational initiatives.

Theoretical education alone is insufficient for effectively applying CPR . So that the application should be provided in accordance with teaching and the guidelines outlined in the training manual.

The correct education concerning procedures for resuscitation and the timely identification of cardiac arrest are essential in order to improve outcomes in children who are experiencing cardiac arrest.

1.4 Objectives of the Study:

1. To assess nurses knowledge regarding pediatric basic life support.
2. To assess nurses practices regarding pediatric basic life support.
3. To evaluate the efficacy of simulation based education on nurses Performance regarding pediatric basic life support.
4. To findout the association between nurses performance (knowledge and practices) at post test score and selected socio-demografic characteristics..

1.5 . Research Question:

Does the application of simulation-based education improve nurses performance regarding pediatric basic life support?

1.6. Definition of terms:

1.6.1 Efficacy

A. **Theoretical definition:** An accomplishing tasks entails the capability to generate a specified level of the intended impact or achieving success in reaching a predetermined objective (Enrique & Marta, 2020).

B. **Operational definition:** The ability of simulation-based education programs to produce the desired outcome ,which is improving nurses' performance regarding providing pediatric basic life support.

1.6.2. Simulation based education:

A. **Theoretical definition:** A teaching approach employing simulated scenarios to mimic real-world situations, enabling learners to practice and enhance their skills (Kim et al.,2020).

B. **Operational definition:** An educational approach that uses realistic simulations to teach and train nurses in the skills necessary for pediatric basic life support in a safe and effective manner.

1.6.3. Nurses performance:

A. **Theoretical deinition:** is described as carrying out an activity, accomplishing a goal, or fulfilling a nurse's responsibility in line with the tasks assigned to him (Supri et al., 2019).

B. **Operational definition:** The ability of nurses to provide pediatric basic life support, including their knowledge, skills, and self-efficacy in performing this critical task.

1.6.4. Pediatric basic life support:

A. Theoretical definition: Refers to administering CPR without equipment or using bag/mask ventilation or barrier devices until advanced life support (ALS) can be given (Sharma et al., 2017).

B. Operational definition: Encompasses essential life-saving techniques and procedures used to sustain the lives of pediatric patients, such as chest compressions, artificial ventilation, and, if needed, the use of electrical shocks in cases of cardiac arrest.

Chapter Two

Review of literature

Chapter two

Review of literature

2.1. Historical Aspect

Cardiac arrest represents a dramatic event that can occur suddenly and often without premonitory signs, characterized by sudden loss of consciousness and breathing after cardiac output ceases and both coronary and cerebral blood flows stop, restarting of the blood flow by CPR potentially re-establishes some cardiac output and organ blood flows. CPR has the potential of re-establishing spontaneous circulation, often in conjunction with electrical defibrillation, but CPR is likely to be successful only if it is instituted within 5 minutes after the heart stops beating (Ristagno et al., 2006).

The American Heart Association concept of the "chain of survival," introduced in 1991 by Cummins and colleagues, addresses the priorities very well. This chain includes four links, namely: calling for emergency medical assistance, (bystander-initiated) BLS , early defibrillation and advanced life support. The first three links are focused on out-of-hospital cardiac resuscitation by nonprofessional providers. The critical time intervals, in part based on the Utstein templates for documenting the sequence of interventions, begin with the call for emergency assistance, documents arrival time of rescuers (including by-standers), the interventions performed by the emergency medical responders at the site of the victim, and the sequences of interventions that follow. In the instance of ventricular fibrillation (VF), automated external defibrillators (AEDs) have enfranchised nonprofessional rescuers to reverse VF. Current evidence supports the value of a well organized program of bystander-initiated CPR and, in some settings, public access defibrillation, within the past year, the

chain of survival has been amended to include an additional link, namely postresuscitation management.(Ristagno & Tang, 2009).

In the 19th century, Doctor Silvestre described a method (The Silvestre Method) shown in (faigure 2-1) of artificial respiration in which patients were laid on their backs, their arms are raised above their head to aid inhalation, and then pressed against their chest to aid exhalation (Baskett, 2007).

Figure (2-1): The Silvester Methood (Baskett, 2007)

The procedure was repeated sixteen times per minute. This type of artificial respiration was occasionally seen in films made in the early parts of the 20th century. A second technique, called the Holger Nielsen technique, described in the first edition of the Boy Scout Handbook in the United States in 1911, reported a form of artificial respiration where the person was laid face down, with their head to the side, resting on the palms of both hands. Upward pressure applied at the patient's elbows raised the upper body while pressure on their back forced air into the lungs, essentially the Silvester Method with the patient flipped over. This form is seen well into the 1950s (it is used in an episode of Lassie during the mid 1950s) , and was often used, sometimes for comical effect. This method would also continue to be shown, for historical purposes, side-by-side with

modern CPR in the Boy Scout Handbook until its ninth edition in 1979. The technique was later banned from first-aid manuals in the U.K (New York Times, 2013).

Cardiopulmonary resuscitation has been created in 1700's. In this year, the Paris Academy of Sciences (PAS) formally advised mouth-tomouth resuscitation for drowning persons. More than one hundred years later. In 1961, resusucitation Pioneers,Drs.Kouwenhoven, Safar, and Jude combine mouth-to-mouth breathing with chest compressions shown in (faigure 2-2) to create CPR, the lifesaving actions we now call CPR (AHA, 2012)

Dr. Safar performs mouth-to-mouth resuscitation in Baltimore, 1957.

Figure(2-2): Dr. Safar performs mouth-to—mouth resuscitation in Baltimore,1957.

However, it was not until the middle of the 20th century that the wider medical community started to recognize and promote artificial respiration combined with chest compressions as a key part of resuscitation following CA. The combination was first seen in a 1962 training video called "The Pulse of Life" created by James, Knickerbocker, and Peter Safar. Jude and Knickerbocker, along with Kouwenhoven and Joseph. Redding had recently discovered the method of external chest compressions, whereas Safar had worked with Redding and James to prove the effectiveness of artificial respiration. It was at Johns Hopkins

University where the technique of CPR was originally developed. The first effort at testing the technique was performed on a dog by Redding, Safar, and Perason. Soon afterward, the technique was used to save the life of a child (Omoding, 2011).

The combined findings of these researchers were presented at the annual Maryland Medical Society meeting on September 16, 1960 in Ocean City, and gained rapid and widespread acceptance over the following decade, helped by the video and speaking tour they undertook. Peter Safar wrote the book ABC of Resuscitation in 1957. In the U.S., it was first promoted as a technique for the public to learn in the 1970s (Singh, 2022).

2.2. Overview of pediatric basic life support and cardiopulmonary resuscitation

Pediatric Basic life support is a level of medical care that is offered to victims of life-threatening illnesses or injuries until they can be given full medical care at a hospital. Considering that life-threatening illnesses or injuries may occur at places where there are no medical practitioners or health service providers (Aldhakhri, 2020).

Basic life support for children differs in several significant ways from adults and so requires specific instruction or training for performing. The mostly important difference is that basic life support for children is required for a respiratory or breathing emergency. This means that the majority of children, we must begin basic life support as soon as possible may require only the breathing part to be given, when heart will not be mainly affected (Savastano and Vanni, 2011).

cardiopulmonary resuscitation is performed to save lives in and out of health foundations around the globe. In addition to adults undergoing

cardiac arrest, CPR has spared the lives of children who were drowning or who had inadvertently ingested a foreign object. CPR is a medical procedure utilized to revive an individual whose heart or lungs have stopped. A heart attack, choking, or drowning could terminate the individual's respiration and pulse rate. His tab instructs healthcare professionals on how to perform CPR and relieve suffocation in patients of all ages, including infants, children, and adults. They are also instructed in the proper operation of an Automated External Defibrillator (AED) and a bag-mask device (Shirley, 2014).

Initiation of BLS in less than four minutes from CA followed by ACLS will increase the success rate. In addition, the quality of CPR performance will affect the outcomes (Talebideloi et al., 2014).

Cardio-Pulmonary Resuscitation (CPR) indicates that 'Cardio' means 'the Heart' and 'Pulmonary' means 'the Lung'. Resuscitation is the medical term that means 'revive' or bring back to life. CPR is a lifesaving procedure that is useful in various medical emergencies condition, where the victim is unresponsiveness has no breathing and no heartbeats, The goal of CPR is to allow cardiac arrest children to receive treatment based on the most recent medical knowledge that is constantly present, with the concept of a chain of survival. AHA recommended early and high-quality chest compressions with artificial ventilation. The new development in the CPR guideline is a change in the BLS sequence of steps from A-B-C to C-A-B and also chest compression (hand only) (Sunam et al., 2023).

Cardiopulmonary Resuscitation is a resuscitative medical procedure that involves a combination of rescue breathing and chest compression to ensure oxygenated blood flow to the brain to preserve brain function until further measures are taken to restore normal spontaneous blood circulation and breathing in a person who is in cardiac arrest. It is a critical component

of BLS and the first line of response in CA before defibrillation and ALS are provided (Poudel et al., 2019).

However, the ability to survive is partially contingent upon the level of CPR administered. Effective CPR ensures a blood flow equivalent to 10–30% of the heart's normal blood flow and 30%–40% of the brain's normal blood flow. The lack of effectiveness in performing CPR highlights the necessity for administering CPR of the utmost quality. The patient's recovery is contingent upon the efficacy of CPR. It is crucial to impart comprehensive CPR information and abilities to nurses in order to ensure the effective use of CPR for patients who suffer from cardiac arrest (Meaney et al., 2013).

Early recognition and intervention in cardiac arrest saves lives, for every minute without CPR and defibrillation, the victim’s chance of survival from cardiac arrest decreases by 7–10%. CPR is now modified into a simple version of skills that can be learned by anyone regardless of formal medical training. Early and effective CPR increases both survival rate and post-arrest quality of life (Kaihula et al., 2018).

2.3. Indications of basic life support

Basic Life Support (BLS) is a level of medical care which is used for victims of life threatening illness or injuries. BLS includes recognition of signs of sudden cardiac arrest, heart attack, stroke, and foreign body airway obstruction, and the performance of cardiopulmonary resuscitation (CPR) and defibrillation with an automated external defibrillator. Indications of basic life support include ,sudden cardiac arrest, respiratory arrest, airway obstruction, drowning, electricalshock, excessive bleeding, head trauma or serious injury, drug overdose, poisoning and suffocation (Almesned et al., 2014).

2.4. Cardiac Arrest (CA) :

Cardiac arrest, (is also known as circulatory arrest) is the cessation of normal circulation of the blood due to failure of the heart to contract effectively. Arrested blood circulation prevents delivery of oxygen to the body. Lack of oxygen to the brain causes loss of consciousness, which then result in abnormal or absent breathing. When unexpected cardiac arrest leads to death this is called sudden cardiac death (Panday et al.,2019)

Bajracharya & Nagarkoti, (2016) stated that cardiac arrest is an important acute emergency situation both in/out of the hospital set ups and carries a high level of mortality risk, however if early BLS and cardio pulmonary resuscitation is initiated, the survival rate can be substantially improved. Knowledge of BLS is a major determinant in the success of resuscitation and plays a vital role in the final outcome of acute emergency situations.

2.4.1. Most common causes of pediatric cardiac arrest

The epidemiology, pathophysiology, and common etiologies of pediatric cardiac arrest are distinct from adult and neonatal cardiac arrest. Cardiac arrest in infants and children does not usually result from a primary cardiac cause; rather, it is the end result of progressive respiratory failure or shock. In these patients, cardiac arrest is preceded by a variable period of deterioration, which eventually results in cardiopulmonary failure, bradycardia, and cardiac arrest. In children with congenital heart disease, cardiac arrest is often due to a primary cardiac cause, although the etiology is distinct from adults (AHA, 2020).

A variety of factors can contribute to cardiac arrest in childern. The causes can be classified into various groups, such as traumatic, infectious, respiratory, and cardiac (Bardai et al ., 2011).

Most frequent are respiratory-related causes. Between categories, there is substantial overlap. Pneumonia and bronchiolitis are examples of respiratory infections that can be its causes. Asthma, apnea, aspiration,, inhalation of smoke, and drowning are additional respiratory causes. Sepsis and meningitis are other infectious causes. Commotio cordis, arrhythmias, cardiomyopathies, and congenital lesions are all heart causes. Head or chest trauma, ingestions, drowning, and child maltreatment are all examples of traumatic causes. Sudden Infant Death Syndrome (SIDS) and Sudden Unexpected Infant Death Syndrome (SUID) are instances of additional causes. In 2015, the United States witnessed an estimated 3,700 sudden unexpected fatalities, as reported by the Centers for Disease Control and Prevention (CDC) (Zeleke et al ., 2019)

Hypoxia, hypovolemia, hydrogen ion (acidosis), hypothermia, hypoxia, and hypovolemia are the Hs. Hyoxia and hypovolemia are the prevailing etiologies in pediatric patients. Toxins, tamponades (cardiac), tension pneumothorax, thromboembolic events, and trauma are examples of the Ts. While the H's and T's are frequently linked to electrical activity devoid of a pulse, it is advisable to contemplate potential etiologies of cardiac arrest, particularly in cases where the present management fails to restore spontaneous circulation (AHA, 2012).

Respiratory arrest is a common morbidity among patients admitted to intensive care units (ICUs) and one of the leading causes of ICU admission. Furthermore, in the United States, it ranks first among pneumonia and chronic obstructive pulmonary disease (COPD)-related causes of mortality. Respiratory failure also occurs when one of the gas-exchange mechanisms responsible for the excretion of Co2 or O2 fails. A higher case-to-address ratio may result in acute respiratory failure due to an acute respiratory infection, for instance. The condition of having respiratory failure can be acute or chronic. Acute failure is characterized by

critical disturbances in arterial blood gases (ABGs) and acid-base balance, which may necessitate immediate intubation for affected individuals. Additionally, respiratory failure may be categorized as hypoxic or hypercapnic (Fornier, 2014).

Respiratory arrest is the most common problem in breathing emergencies which need medical intervention such as first-aid and artificial breathing, i.e. cardiopulmonary resuscitation (Quality,2015).

Asphyxial CA is more common than VF CA in infants and children, and ventilations are extremely important in pediatric resuscitation, recent large pediatric studies show that resuscitation results for asphyxial arrest are better with a combination of ventilations and chest compressions (AHA, 2012).

2.4.2. Incidence of pediatric CA :

More than 20 000 infants and children have a cardiac arrest per year in the United States.1–4 In 2015, emergency medical service–documented out-of-hospital cardiac arrest (OHCA) occurred in more than 7000 infants and children. Approximately 11.4% of pediatric OHCA patients survived to hospital discharge, but outcomes varied by age, with survival rates of 17.1% in adolescents, 13.2% in children, and 4.9% in infants. In the same year, pediatric in-hospital cardiac arrest (IHCA) incidence was 12.66 events per 1000 infant and child hospital admissions, with an overall survival to hospital discharge rate of 41.1% (Topjian et al ., 2020).

Based on data from the AHA, the prognosis for infants and children who experience unwitnessed cardiopulmonary arrest is unfavorable. The survival percentage for pediatric patients who experience out-of-hospital cardiac arrests is just 8.4%, and the majority of survivors suffer from neurological impairments. In contrast, the survival rate for in-hospital

cardiac arrests is 24%, with a more favorable neurological prognosis. Optimal results have been observed in children who promptly receive excellent cardiopulmonary resuscitation, ensuring sufficient ventilation and coronary artery perfusion. Additionally, positive outcomes have been seen in children who experience sudden cardiac arrest under supervision and exhibit ventricular rhythm disturbance, which can be effectively treated with early defibrillation (Andersen et al ., 2019).

2.4.3. Signs and symptoms of pediatric CA

Early recognition is a key step in the early treatment of cardiac arrest.it is important to determine the most accurate method of diagnosing cardiac arrest (Gupta et al ., 2023).

(Sayyed et al., 2021) has reported that CA represents a dramatic event that can occur suddenly and often without premonitory signs, characterized by sudden loss of consciousness and breathing after cardiac output ceases and both coronary and cerebral blood flows stop.

2.4.4. Treatment recommendation

Rescuers should start CPR if the victim is unconscious (unresponsive),not moving,and not breathing. Even if the victim takes occasional gasps, rescures should suspect that cardiac arrest has occured and should start CPR (AHA, 2012).

2.5 . Airway obstruction

2.5.1. Forein-body airway obstruction (Choking) :

Choking, also known as foreign body airway obstruction (FBAO), is the condition where an object (such as food, small hard objects, sweets, etc.) blocks the airway in the respiratory system, Choking typically occurs while someone is eating and their airways become blocked internally. This is different from drowning in water, suffocating with a plastic bag or pillow, or being strangled with a string or scarf, which are all external obstructions or compressions of the airways. Oxygen deprivation, also known as asphyxia, occurs when an obstruction restricts the entry of oxygen into the lungs. This condition can have severe and lasting neurological effects, and if not promptly resolved, it can result in death (Saccomanno et al., 2023).

Tintinalli, (2011) noted that FBAO is a frequent cause of cardiac arrest in victims. It is crucial to acknowledge and have the ability to aid an individual experiencing an airway obstruction caused by foreign objects. when someone's airway is compromised, they often indicate it by using the universal sign for an airway obstruction, which involves gripping their neck firmly with both hands. Foreign substances have the potential to cause either a partial or complete obstruction. In the case of a partial airway closure, the exchange of air may either be sufficient or insufficient. If the individual who has been harmed is capable of verbal communication, coughing, and breathing normally, it is advisable to motivate them to persist in their natural attempts.

2.5.1.1. Epidemiology of choking:

According to the CDC, in 2000, 41% of the 160 US children aged ≤14 years who died from choking did so on food items, while 59% choked

on nonfood items. Food-related choking accounts for the death of 1 child every 5 days in the United States, with hot dogs being the most common specific food associated with pediatric food-related choking death. A10-year retrospective review of choking among children 14 years and younger found that hot dogs were responsible for the most fatalities (16%), followed by candy (10%), grapes (8%), meat (7%), and peanuts (7%). All hot dog-related fatalities occurred in children younger than 4 years. Latex balloons are the leading cause of nonfood-related choking deaths among children. During 2010-2012, at least 47 children died of choking on a toy or toy part, with small balls and toys being the next leading causes after balloons. Magnets, coins, and button batteries have also been implicated in choking deaths among children (Denny et al., 2015).

2.5.1.2. Possible indications of chocking :

Jones, (2012) was stated that the symptoms of choking include grasping the throat with one or both hands, experiencing loud and labored breathing, retching, coughing, and being unable to speak or produce any sound. Choking occurs when there is a strong cough, gagging, and cyanosis.

2.5.1.3. Saving a person with Forein-Body Airway Obstruction

Tintinalli, (2011) reported that techniques used to alleviate blockages caused by foreign bodies include the Heimlich maneuver (subdiaphragmatic abdominal thrusts), chest thrusts, and the finger sweep. The Heimlich maneuver is the recommended technique for alleviating airway obstruction caused by a solid item in most adults who are unconscious. Liquids do not have practical utility. For an unconscious person who is suspected of having inhaled a foreign object, or for

individuals in whom a foreign object is visible, the initial advised action is to perform a finger sweep. Blindly sweeping one's finger is no longer advised, since it can exacerbate airway blockage by inadvertently pushing an invisible object into a more unfavorable position. Alternatively, in the case of an unconscious patient, it is advised to execute the obstructed airway procedure up to 5 times. This involves opening the patient's mouth and conducting a finger sweep if a foreign object is visible, followed by an attempt to provide ventilation. This cycle can be repeated indefinitely until the patient fully recovers or until additional assistance is obtained.

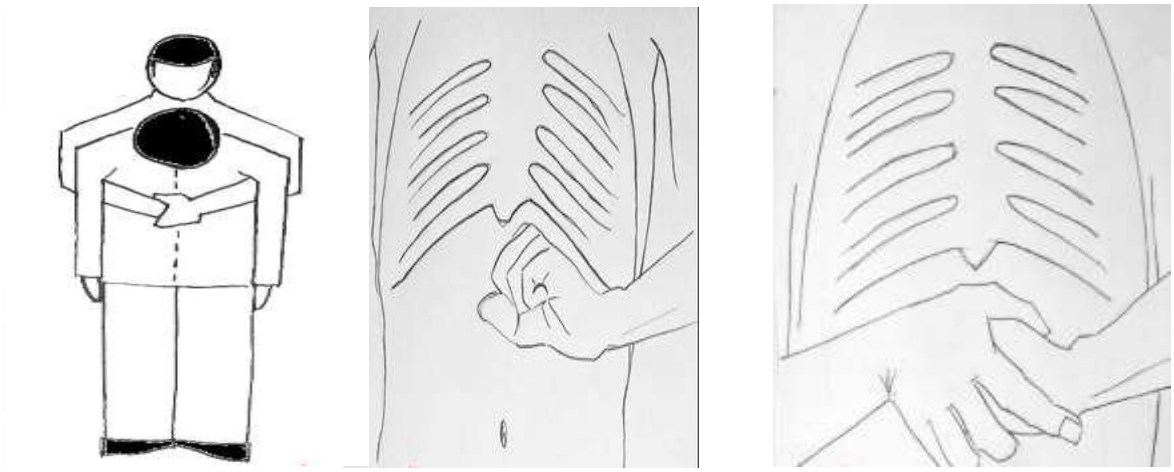


Figure (2-3): The Heimlich maneuver can be a life-saving rescue technique, but it should only be used if the person can’t breathe and is conscious (Panels left, central, right). It can be used on adults and children but isn’t recommended for infants, for whom a different maneuver needs to be implemented.(Image realized by Dr. Samuele Mafucci Orlandini).

2.5.2. Airway obstruction by the tongue

Unconscious individuals may experience airway obstruction even in the absence of foreign objects, damaged tissue, blood, or secretions. The main cause of blockage in these situations is the protrusion of the relaxed tongue and soft palate onto the posterior pharynx due to the lack of muscle tone. Failure to promptly address airway obstruction will inevitably result

in respiratory distress. Hence, the rescuer should strive to ensure the airway remains unobstructed (Jo et al., 2019) .

Daniel, (2012) stated that most airway problems are caused by the tongue. When the head bends forward, the tongue can enter the airway and cause a blockage. If a patient is unconscious, the tongue loses muscle strength and the muscles in the lower jaw relax. Since the tongue is connected to the lower jaw, the risk of airway blockage by the tongue is even higher during unconsciousness. The standard procedures for opening the airway help to reposition the tongue.

2.5.3. Techniques of clearing the airway obstruction by tongue

2.5.3.1. The head-tilt chin-lift maneuver

The healthcare personnel must use this maneuver to clear the airway of a victim without indication of head or neck trauma. The head-tilt/chin-lift (HT/CL) as in (faigure 2-4) is the primary maneuver, and it is used in most cases unless head or neck injury is suspected in the patient (Jo et al., 2019).

Figure (2-4): Head tilt with chin lift in a child (sniffing position)

2.5.3.2. The Jaw-thrust maneuver

Daniel et al., (2012) recorded that a jaw-thrust maneuver is an additional method used to free a blocked airway. This technique is typically

used on an unconscious patient who is suspected to have suffered an injury to the head, neck, or spine. It is employed to remove obstructions from the respiratory passage of an incapacitated individual suffering from head or neck injuries. While this method of opening the airway has certain benefits, it is not as effective as the head-tilt maneuver and can be more tiring. Since this procedure requires the involvement of both hands of the second rescuer in case the patient need ventilation. Unconscious trauma patients with an unclear cause of damage often require the jaw-thrust maneuver without head-tilt.

Figure (2-5): Jaw thrust in a child

2.6. Recovery position

If see regular breathing, the victim does not need CPR. If there is no evidence of trauma, turn the child onto the side (recovery position), which helps maintain a patent airway and decreases risk of aspiration (Douma et al ., 2022).

The recovery position, (semi-prone; lateral recumbent; side-lying; three-quarters prone positions), are widely recommended for persons with a decreased level of responsiveness of varied aetiology. Conditions that the recovery position (including lateral and prone variants) may be employed for include heart stroke, opioid toxicity, COVID19 respiratory failure and post-cardiac arrest return of spontaneous circulation. The logic of the

recovery position is to reduce the risk or effect of airway obstruction, facilitate drainage of the airway, reduce the risk of aspiration, reduce chest pressure that could impair breath-ing, limit neck movement, allow for observation of breathing, and be of low risk to the subject, while being easy to return the subject to a supine position if required (Douma et al., 2022).

2.7.Pediatric chain of urvival (AHA, 2020)

The chain of survival is refer to a series of actions that are properly accomplished and reduces the death rate associated with cardiac arrest.

The Pediatric Chain of Survival according to the 2020 AHA guidelines consists of six steps for in-hospital cardiac arrest (IHCA) and out-hospital cardiac arrest (OHCA) shown in (faigure 2-6), which are designed to improve the chances of survival for pediatric patients experiencing cardiac arrest (AHA, 2020).

Figure (2-6) :Pediatric Chains of Survival for in-hospital (top) and out-of-hospital (bottom) cardiac arrest (AHA, 2020)

To highlight these different aspects of cardiac arrest management, the Pediatric Chain of Survival has been updated (Figure 2-6). A separate

OHCA Chain of Survival has been created to distinguish the differences between OHCA and IHCA. In both the OHCA and IHCA chains, a sixth link has been added to stress the importance of recovery, which focuses on short- and long-term treatment evaluation, and support for survivors and their families. For both chains of survival, activating the emergency response is followed immediately by the initiation of high-quality CPR. If help is nearby or a cell phone is available, activating the emergency response and starting CPR can be nearly simultaneous. However, in the out-of-hospital setting, a single rescuer who does not have access to a cell phone should begin CPR (compressions-airway-breathing) for infants and children before calling for help because respiratory arrest is the most common cause of cardiac arrest and help may not be nearby. In the event of sudden witnessed collapse, rescuers should use an available(AED), because early defibrillation can be lifesaving (Tolu et al., 2021).

2.8. Sequences of cardiopulmonary resusucitation

Historically, the preferred sequence of CPR was A-B-C. The 2010 AHA guidelines recommended a change to the C-A-B sequence to decrease the time to initiation of chest comressions and reduce no blood flow time (AHA, 2020).

Rapid recognition of cardiac arrest, immediate initiation of high-quality chest compressions, and delivery of effective ventilations are critical to improve outcomes from cardiac arrest. Lay rescuers should not delay starting CPR in a child with no “signs of life.” Healthcare providers may consider assessing the presence of a pulse as long as the initiation of CPR is not delayed more than 10 seconds. Palpation for the presence or absence of a pulse is not reliable as the sole determinant of cardiac arrest and the need for chest compressions.In infants and children, asphyxial cardiac arrest is more common than cardiac arrest from a primary cardiac

event; therefore, effective ventilation isimportant during resuscitation of children. When CPR is initiated, the sequence is CAB (Tolu Kendir et al., 2021).

2.9. High quality cardiopulmonary resusucitation

Cardiopulmonary resuscitation has been practiced for over 50 years. It is a set of specifically designed procedures that include chest compressions and artificial ventilation to maintain blood flow to the brain and other organs when someone is not breathing or heartbeat has stopped. This means tissue death is delayed, extending the opportunity for 10 successful resuscitation before healthcare professionals arrive with a more advanced intervention (Theses & Thuy, 2019).

High-quality CPR generates blood flow to vital organs and increases the likelihood of return of spontaneous circulation (ROSC). The 5 main components of high-quality CPR are, adequate chest compression depth (2 inches or 5 cm), optimal chest compression rate (100-120 /min), minimizing interruptions in CPR (ie, maximizing chest compression fraction or the proportion of time that chest compressions are provided for cardiac arrest), allowing full chest recoil between compressions and avoiding excessive ventilation (Tolu et al., 2021).

2.10. Pediatric CPR steps (AHA, 2020)

Pediatric cardiopulmonary resuscitation (CPR) is a crucial lifesaving technique for children who experience cardiac arrest. The AHA 2020 guidelines provide detailed steps for pediatric CPR, emphasizing the importance of high-quality chest compressions and rescue breaths, According to the AHA, pediatric CPR involves cycles of 30 compressions and 2 breaths, with the goal of maintaining blood circulation and oxygenation until advanced life support can be provided. The AHA

guidelines also highlight the need for prompt defibrillation and the use of (AEDs) in pediatric cardiac arrest situations. By following these steps table (2.1), healthcare providers can improve the chances of successful resuscitation and optimal outcomes for pediatric patients in CA (Berg et al, 2020).

Table (2.1) Pediatric CPR steps (AHA, 2020)

Step	Action
1	**Make sure the scene is safe**
2	**Check Responsiveness:** Tap child's Shoulder and shout, "Are you Ok?"
3	**Activate Emergency Response system:** Depending on your situation: Phone ambalance or Call a Code and get an AED **Witnessed Arrest:** If you are alone with no mobile phone, leave the child to activate the emergency response system and get the AED before beginning CPR. Otherwise, send someone and begin CPR immediately: use the AED as soon as it is available **Unwitnessed Arrest:** Give 2 minutes of CPR Leave the child to activate the emergency response system and get the AED Return to the child and resume CPR: use the AED as soon as it is available -If someone comes to help you, have that person call 911 and get an AED. -If you are alone and have a cell phone, call 911 and put the phone on speaker and get an AED if available. -Use the AED as soon as you have it.
4	**Check for breathing**

	-Look from head to chest to see if the person is breathing -Do this for at least 5 seconds but no more than 10. -If the child is unresponsive and isn't breathing normally or is only gasping then START CPR. **Check Pulse:** -Palpate a carotid pulse -If you do not feel a pulse within 10 seconds, begin high-quality CPR, starting with chest compressions.
5	**Give 30 Compressions** -Make sure the child is lying on his back on a firm flat surface. -Move clothes out of the way. If a person's clothes are difficult to remove, you can still provide compressions over clothing. - Use either 1 or 2 hands for chest compressions -Compress at least 1/3 the depth of the chest about 2 inches at a rate of 100 to 120 compressions per minute. -After each compression, allow complete chest recoil.
6	**Open the airway and give breaths** -Provide effective breaths: open the child's airway. Use the appropriate technique to open the airway -Head Tilt-Chin Lift: tilt the head back and lift the chin to open the airway -Jaw Thrust: If a head or neck injury is suspected -Deliver each rescue breath over 1 second -The child's chest should rise with each breath -Avoid excessive ventilation -Use a bag-valve mask or barrier device if available -Once an advanced airway is placed, continuous

	compressions are performed without pause for ventilation. Ventilations are delivered at a rate of 1 breath every 2-3 seconds (20-30 breaths/minute) -If there is a pulse >60 per minute and inadequate breathing: Provide rescue breathing: 1 breath every 2-3 seconds (20-30 breaths/minute)
7	**Continue sets of compressions and breaths** -Continue giving sets of 30 compression and 2 breaths until help arrives or the person becomes responsive. -In two-person CPR the rescuers should change positions after every 2 minutes -Ratio changes for two-person CPR to 15 compressions to 2 breaths -Use the AED as soon as you have it.

2.11. Pediatric BLS Algorithms

Algorithms for 1- and 2-person healthcare provider CPR have been separated to better guide rescuers through the initial stages of resuscitation (Figures 2-7 and 2-8). In an era where cel- lular telephones with speakers are common, this technology can allow a single rescuer to activate the emergency response system while beginning CPR. These algorithms continue to emphasize the high priority for obtaining an AED quickly in a sudden, witnessed collapse, because such an event is likely to have a cardiac etiology (Tolu et al., 2021).

2.11.1. One-rescure BLS algorithm :

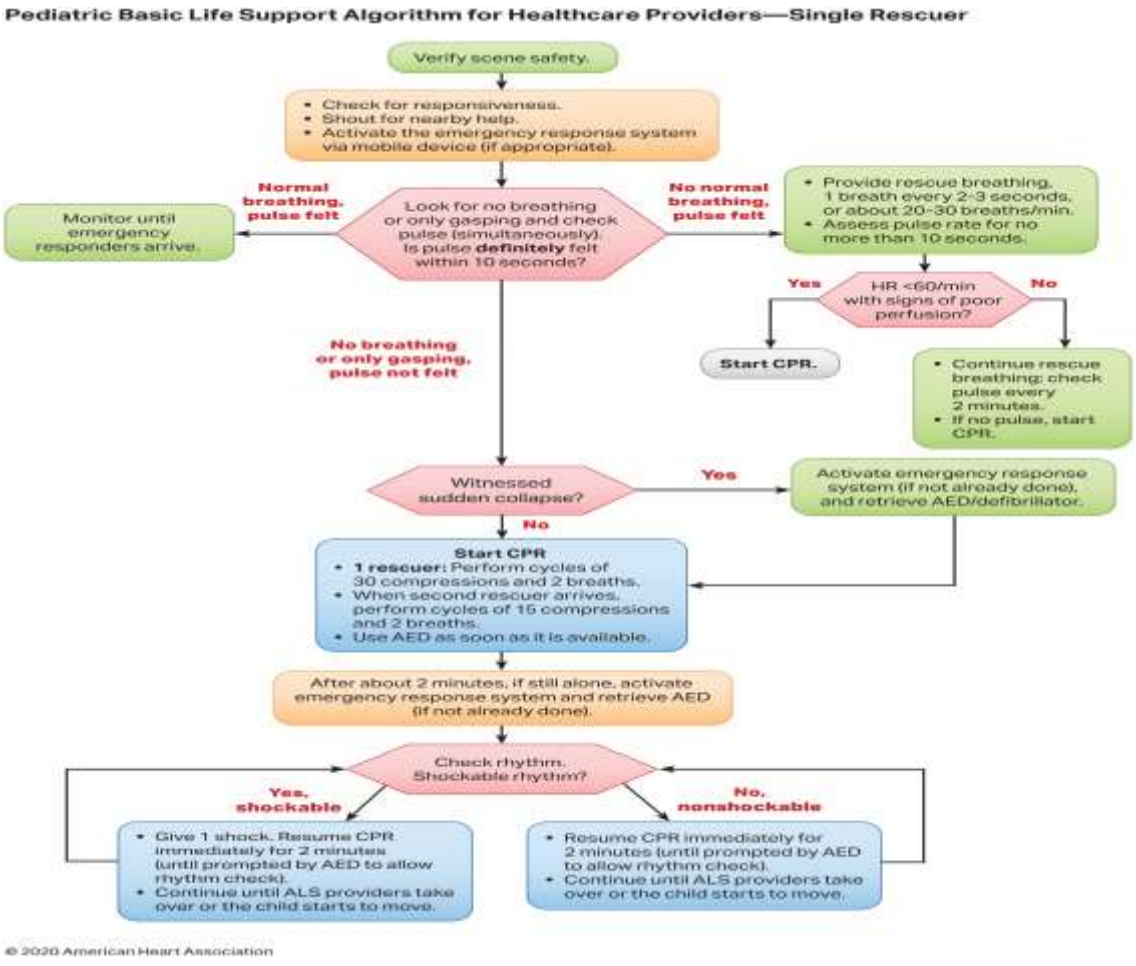


Figure (2-7): Pediatric Basic Life Support Algorithm for Healthcare Providers—Single Rescuer (AHA, 2020).

2.11.2. Two or more-rescure BLS algorithm :

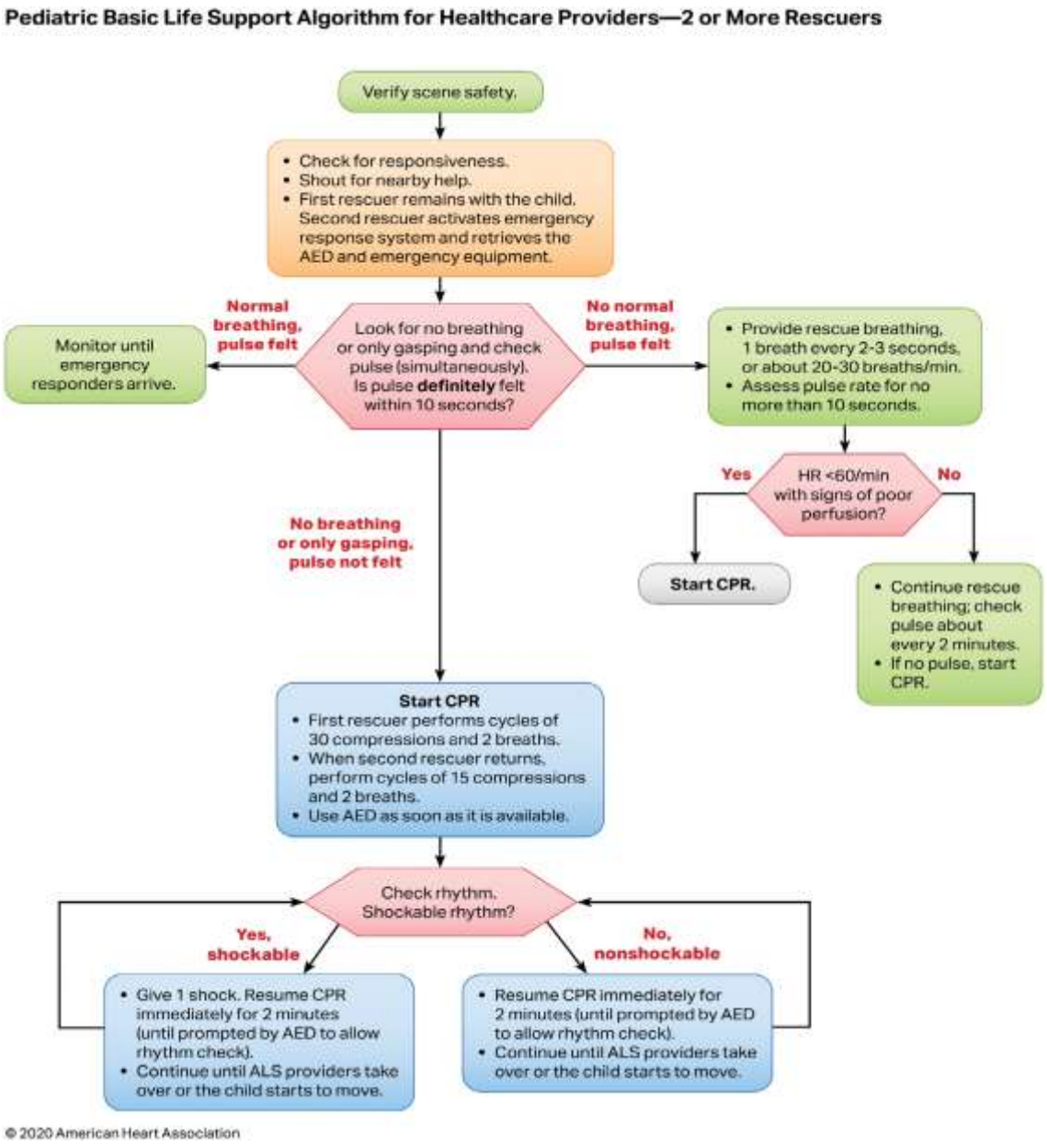


Figure (2-8): Pediatric Basic Life Support Algorithm for Healthcare Providers—2 or More Rescuers (AHA, 2020).

2.12. Chest compressions technique

For most children, either 1 or 2 hands can be used to compress the chest. For most children, the compression technique will be the same as for an adult: 2 hands (heel of one hand with heel of other hand on top of the first hand). For a very small child, 1-handed compressions may be adequate

to achieve the desired compression depth. Compress the chest at least one third the anteroposterior diameter (APD) of the chest (about 2 inches, or 5 cm) with each compression(AHA, 2020).

2.12.1.Compression rate and compression-ventilation ratio:

The universal rate for compressions in all cardiac arrest victims is 100 to 120/min. The compression-to-ventilation ratio for single rescuers is the same (30:2) in children. If 2 rescuers are present for the resuscitation attempt of a child, use a compression-to-ventilation ratio of 15:2 (AHA, 2020).

2.12.2. Compression depth:

The American Heart Association and European Resuscitation Council guidelines of pediatric CPR have suggested a chest compression depth of at least one-third of the APD of the chest and about 5 cm for all children from the age of one to the onset of puberty since 2010. One observational study of pediatric CPR showed that chest compression depth greater than 5 cm was associated with improvement in short-term outcomes. However, children under the age of 8 years were only 8 (10%) among the subjects of this study. This study may not provide enough information for younger children. It is necessary to pay attention to the continuous change of the body shape since the preadolescent child is in the process of growing on. Older children and younger children may have substantial diference in body shape and therefore current guideline of chest compression may be too deep for younger children (Lee et al., 2019).

2.12.3. Decompression:

The physiology of the decompression, or chest recoil, phase of CPR is complex: Its importance during CPR has been only recently better

understood. During the decompression phase, the heart is refilled after it has emptied from the previous chest compression. This refilling process is extremely inefficient during CPR, especially during Standard-CPR when passive chest wall recoil provides the only force able to draw blood back into the right side of the heart. This effect may be even more accentuated in individuals in whom chest recoil is impaired, including patients with broken ribs. In addition to enhancing venous return to the heart, intracranial pressure(ICP) is reduced during the decompression phase. Each time the chest wall recoils, ICP decreases based on the same pressure transference mechanisms that increase ICP during the compression phase. These changes in ICP during the compression and decompression phases help to determine the level of cerebral perfusion during CPR (Lurie et al., 2016).

2.13. Firm Surface for chest compressions :

Delivery of chest compressions on a soft surface, such as a mattress, compressed both the patient's chest and underlying mattress. Manikin studies and mathematical models show that soft surfaces absorb 12-57% of the delivered compression depth, with softer mattresses absorbing a greater proportion of compression force. Failure to recognise and compensate for mattress compression may lead to under compression of the chest. Increasing compression force to overcome the effects of mattress compression requires greater effort from the CPR provider, risking fatigue. On this basis, moving a patient in cardiac arrest to a firmer surface (e.g. backboard, mattress with increased stiffness, moved to the floor) might optimize compression delivery. These processes risk potential harm to both the patient (e.g. through chest compression interruption and dislodgement of indwelling devices) and rescuer (e.g. additional manual handling processes). Given these potential risks, there is a need to quantify the potential benefits of CPR delivery on a firm surface (Holt et al., 2020).

2.14. Duty cycle:

Kim et al.,(2020) stated that the term duty cycle is defined as the fraction of chest compression time in an entire chest compression cycle. Although 50% duty cycle is recommended during CPR according to the current guidelines, shorter duty cycle that allows increased cardiac filling and cardiac output may be beneficial. Duty cycle can't be modulated during manual chest compressions. However, mechanical compression devices are widely used recently and mechanical compression devices can be modulated to provide chest compression with duty cycle other than 50%.

2.15. Opening the airway (airway management):

A patent airway is necessary to transport oxygen to the lungs. Even when airway obstruction is not the primary cause of cardiac arrest, a patient in cardiac arrest cannot maintain a patent airway due to loss of muscle tone and protective reflexes. Gastric content regurgitation with subsequent airway contamination and aspiration also occurs frequently. Therefore, airway management is a key intervention in every resuscitation attempt. We emphasize that airway management affects many other aspects of resuscitation, like scene management, ventilation, chest compression quality (including interruptions), defibrillation, and treating the underlying cause of the arrest. Looking at airway management in isolation from these aspects leads to an oversimplification of the complex setting that prehospital care providers are faced with (Kooij et al., 2020).

Without an opened airway, a patient has no chance of surviving. If the patient's airway is blocked, respiration will not occur, and their heart will stop beating until you can clear the obstruction and begin breathing. Thus, clearing an unconscious patient's airway is one of the most often done procedures. An unconscious sufferer loses muscular tone, which

makes it impossible for him to maintain his own airway open. The base of the tongue and the soft tissue of the neck relax as a result of this decrease of muscular tone. The patient's airway becomes blocked if he is on his back because his tongue gets caught in the back of his throat. Since the tongue and lower jaw are connected, moving the jawforward will elevate the tongue away from the back of the throat (Barbara, 2007).

2.15.1.The head-tilt chin lift maneuver :

The Head Tilt Chin Lift Maneuver is a basic first aid and life-saving technique used to open and maintain an open airway in an unconscious person.. It is a fundamental skill in CPR and BLS. It is essential for ensuring airflow to the lungs when an individual is unconscious and not breathing effectively (Prasarn et al,.2014).

To administer the head-tilt chin lift method, gently extend the patient’s neck by placing one hand under the patient’s neck and the other on the forehead and extending the head in relation to the neck. This procedure must place the patient’s head in the sniffing position with the nose pointing up. In conjunction with the head tilt, perform the chin lift. The chin lift is done by carefully placing the hand that had been supporting the neck for the head tilt under the symphysis of the mandible, taking care not to press the soft tissues of the submental triangle and the base of the tongue. Then lift the mandible forward and up, until the teeth barely touch. This supports the jaw and helps tilt the back (Tintinalli, 2011).

2.15.2. The jaw thrust maneuver

The jaw thrust is preferred over the above mentioned techniques in known or suspected cases of cervical spine injuries because the head and neck remain in a more neutral position when it is applied. When performing a jaw thrust maneuver, the clinician stands behind the head of

the patient, places the fingers of both hands on the left and right sides under the angles of the mandible, and applies forward and upward pressure. As with the head tilt/chin lift, the jaw-thrust maneuver displaces the tongue from the posterior pharynx, but does so while keeping the patient's head and neck in a neutral position, and may allow the patient to resume unobstructed breathing without further intervention. A modified jaw thrust may even be safer for patients with suspected cervical spine injury. This maneuver involves anteriorly displacing the jaw without movement of the head (Davies et al., 2014).

2.16. Ventilation:

Airway management and ventilation assistance are some of the most important aspects when managing out-of-hospital medical emergencies. They directly affect patients' potential for recovery, promote oxygenation, and may protect against aspiration depending on the approach. Optimal controlled ventilation is crucial to optimize inspiratory time, expiratory time, and airflow (Marin, 2021).

2.17. Artificial ventilation techniques in basic life support

2.17.1.Mouth-to-mouth ventilation (CPR-face shield):

Mouth-to-mouth ventilation (MMV) has been used in prehospital CPR for decades. Studies have showed that bystander's willingness toward preforming MMV to stranger is different from each other. Dobbie etc's survey showed that 35% respondent's primary concern about performing CPR is MMV related concerns, despite over half (52%) of them had been trained in CPR courses. One of the main reasons hold back trained adults from preforming MMV on strangers is fears of contracting infection diseases. Another disadvantage of MMV is that oxygen content in expired air (around 16% - 17%) is much lower than oxygen content in the air

(21%), furthermore expired air in MMV also contains 4% of carbon dioxide which can easily lead to hypercapnia (Aini et al., 2021).

To provide mouth-to-mouth rescue breaths to an adult or child, first ensure the scene is safe and the victim is on a firm, flat surface. Tilt the victim's head back slightly and lift the chin to open the airway. Pinch the victim's nose closed with your thumb and index finger, keeping the head tilted. Take a normal breath, then cover the victim's mouth completely with your own, creating a tight seal. Blow into the victim's mouth for about one second, watching to see if their chest rises. If the chest does not rise, reposition the head and try again. Give a second breath, again watching for the chest to rise. If the second breath fails to go in, immediately begin chest compressions as part of CPR (Berg et al., 2010).

2.17.2. Bag-valve-mask ventilation :

Bag-valve-mask (BVM) ventilation is an essential emergency skill. This basic airway management technique allows for oxygenation and ventilation of patients until a more definitive airway can be established and in cases where endotracheal intubation or other definitive control of the airway is not possible. For the emergency medical technician, basic BVM ventilation is most often the only option for airway management.In the pediatric population, BVM may be the best option for prehospital airway suppor (Uhm,2024).

Strzelecki et al., (2020) stated that Bag valve mask ventilation is a skill of utmost important for emergency providers. It is not easy and requires practice to master as it will be utilized in emergent settings. Proper patient positioning is critical to the procedure, the tongue often falls to the back of the pharynx which can occlude the airway. The appropriate head tilt, chin lift maneuver or a jaw thrust helps to keep the airway open. The “sniffing” position is achieved with forward flexion of the neck and

equilibrating the sternal notch and angle of the mandible, an oropharyngeal or nasopharyngeal may be utilized to maintain an open airway. Not only does the sniffing position assist with opening the airway as needed, but it can also help visualize the glottis opening as well as the vocal cords, improving your ability for first pass success during endotracheal intubation, many BVMs are augmented by a one-way valve or a pressure valve. They require an oxygen supply to adequately deliver oxygen to the patient.

Even though BVM system is one of the most common devices used to provide ventilation during transports, it has shown that is complicated, has variable results, makes it difficult to reach the standards in terms of tidal volume and respiratory rate, and may expose to overpressure and thoracic overinflation. Due to the variability in respiratory parameters and changes in hemodynamics during manual ventilation, mechanical ventilatory support with portable devices have become the preferred method for transporting patients in prehospital environments. Mechanical ventilators offer a safe alternative to manual ventilation and allow healthcare providers to deliver consistent care and controlled tidal volumes at a determined rate. Patients can benefit from early initiation of non-invasive treatment in prehospital setting to avoid intubation and to improve patient outcomes (Marin, 2021).

2.18.Automated External Defibrillator (AED):

An Automated External Defibrillator (AED) is a portable device designed to analyse heart rhythms and appropriately deliver a potentially lifesaving defibrillation to the heart in case of a CA. The success of the implementation and use of AEDs is closely tied to the fact that they are safe, effective and easy to use even by untrained civilians or lay responders (Fredman, 2018).

Janet and Torpy, (2010) confirmed that the AED has been a part of out-of-hospital resuscitation efforts. Use an AED saves life in certain phases of heart attack. The AED are most available in schools, athletic venues, airports and other public places. The AED has also been proved effective in reducing deaths attributed to cardiac arrest. The AED has the ability to analyze the heart's rhythm, direct the operator to deliver a shock when appropriate or deliver one automatically, and then reanalyze the rhythm to determine whether it has returned to normal.

The importance of defibrillation has been well confirmed as a vital component of overall resuscitation, in relation with perfect CPR. The AED should only be used for a patient who is unconscious and breathing abnormally. CPR must be current until the AED is turned on and pads attached. The saver must then follow the AED instructions. The time to defibrillate is a key factor that affects living. For every minute defibrillation is postponed, there is about ten percent minimizing in survival if the patient is in cardiac arrest due to VF (Morley et al., 2010).

Kleinman et al., (2015) reported that nurses should coordinate chest compressions and shock delivery to minimize the time between compressions and shock delivery and to resume CPR, beginning with compressions, immediately after shock delivery. The AED will prompt the nurse to re-analyze the rhythm about every 2 minutes. Shock delivery should ideally occur as soon as possible after compressions.

2.19. Defibrillation Sequence Using an AED:

The steps to use an AED are crucial in saving a life during cardiac arrestTo use an AED effectively, follow these steps: Turn on the AED and follow the audio instructions, which will guide you through the process. Ensure the patient's chest is exposed and dry, and if the patient is a child, press the child button or insert the child key into the AED, and attach pediatric pads if available, the proper placement of AED pads on a child is typically anterior-posterior, with one electrode pad in the center of the chest and the other in the center of the back. Allow the AED to analyze the patient's heart rhythm, and if a shock is needed, ensure no one touches the patient as the AED delivers the defibrillation shock. After the shock, perform two minutes of CPR and re-analyze the patient's heart rhythm, following the AED's instructions and Continue to follow the AED's guidance until emergency medical services (EMS) arrive and take over the rescue (Topjian et al.,2020).

2.20. Cardiac arrest rythms:

Cardiac arrest is commonly categorized into shockable and non-shockable types based on the most effective treatment approach. Individuals with shockable rhythms have the potential to recover a pulse following an electrical shock, leading to notably higher survival rates compared to those with non-shockable rhythms (Norvik, 2023).

2.20.1. Non-shockable rythms

2.20.1.1. Asystole:

This is the most common arrest rhythm in children, because the response of the young heart to prolonged severe hypoxia and acidosis is progressive bradycardia leading to asystole (Jat et al., 2011).

Asystole is a cardiac standstill, which is caused by the absence of electrical activity in the heart and leads to cardiac arrest. Asystole is the result of the heart's primary and secondary pacemakers have failed, makes there is no depolarization, no contraction, no cardiac output, and no perfusion to the rest of the body. It's extremely important to distinguish asystole from fine ventricular fibrillation, which is managed differently. Therefore, asystole should be confirmed by switching between several leads or changing the position of the defibrillation paddles. Asystole is also known as the arrhythmia of death. The patient is in cardiopulmonary arrest. Without rapid initiation of CPR and appropriate treatment, death will occur within minutes. Asystole is caused by myocardial hypoxia; severe cardiac damage that causes heart conduction system failure is the most common cause of cardiac arrest. The patient in asystole will be unresponsive with no pulse, blood pressure, or respirations; pupils are fixed and dilated; skin is cyanotic or mottled (Zhou, 2019).

2.20.1.2.Pulseless electrical activity (PEA)

Pulseless electrical activity (PEA) is in a condition which the ECG shows activity that should produce a pulse, but no pulse is detectable in the patient. PEA is not a rhythm itself. It occurs in many rhythms including NSR, tachycardias, and bradycardias. PEA is precisely what it says there is no pulse, but there is still electrical activity going on in the heart, even though electrical activity is preserved, but the heart muscle loses its ability to contract. As a result, the patient goes into cardiac arrest. Most of the sudden cardiac arrest might due to VF, VT, or asystole. So that most efforts have been put into preventing and treating VT and VF. Asystole and PEA are more common presenting rhythm than VT/VF at the time sudden cardiac arrest in non-ischemic cardiac disease. The decreasing trend of

ischemic heart disease as a cause of sudden cardiac arrest may partly explain the increasing trend of PEA and asystole(Zhou, 2019).

2. 20.2. Shockable rythms

These arrhythmias are less common in children but either may be expected in sudden collapse, those suffering from hypothermia, poison by tricyclic antidepressants and with cardiac disease (Thomas et al., 2014).

2.20.2.1 Ventricular fibrillation (VF):

Ventricular fibrillation (VF) is a so-called V-fib, is a life-threatening cardiac arrhythmia which is a chaotic rhythm of electrical activity that results in uncoordinated contraction of the ventricles. As the electrical impulses arise from many different foci, which are firing in a chaotic, ineffective manner, and the heart is unable to contract in response. It does not produce effective muscular contraction and does not produce cardiac output. Untreated ventricular fibrillation is the single largest causes in up to 85% of patients in sudden cardiac death outside the hospital. When the initial rhythm is VF rather than cardiac arrest or PEA, the mortality rate of cardiac arrest is lower. However, if VF occurs as a secondary rhythm after cardiac arrest or PEA, mortality will increase (Zhou, 2019).

2.20.2.2. Ventricular Tachycardia (VT):

Ventricular tachycardia (VT), also known as wide-complex tachycardia or V-tach, refers to the rapid ventricular contraction and the ventricular rate frequency exceeding 100 beats/min. Sometimes up to 250 beats/min, when the heartbeat is this so fast that it’s not able to circulate adequate oxygenated blood to the rest of the body. About 7% of patients with CA are diagnosed with VT. VT is an extremely unstable rhythm because it’s of unpredictable. This arrhythmia may precede VF and sudden

cardiac death. It can occur brief burst of paroxysmal bursts lasting for fewer than 30 seconds and perhaps not cause any symptoms, or it can last for much longer and because symptoms require immediate treatment to prevent death, even in patients who initially able to maintain adequate cardiac output (Zhou, 2019).

2.21. Common errors during chest decompression

The slight vacuum generated inside the thorax during passive chest recoil draws some blood back into the heart and some air into the lungs. This in turn draws blood from the extra thoracic to the intrathoracic space and partially refills the heart before the next compression. If rescue personnel inadvertently lean on the chest, preventing it from fully recoiling after each compression, then intrathoracic pressure remains greater than atmospheric pressure. This common error reduces the refilling of the heart and the reduction in ICP that occurs with full chest wall recoil, studies in animals have shown that incomplete chest recoil, or leaning on the chest after the chest compression motion is complete, markedly reduces perfusion pressures to the brain and myocardium.5 Similarly, compressing and decompressing the chest too rapidly (>120/minute) reduces the venous return time below what is needed to refill the heart. These errors in technique adversely affect survival rates (Lurie et al., 2016).

2.22. Signs of successful CPR:

The key drivers of successful resuscitation from OHCA are lay rescuer CPR. Signs of successful CPR include the return of spontaneous circulation (ROSC), which is indicated by the presence of a palpable pulse and/or a measurable blood pressure, and the return of spontaneous breathing, which is indicated by the presence of normal breathing or spontaneous gasping. However, it is important to note that survival rates

and neurologic outcomes for patients with cardiac arrest are generally poor, and early appropriate resuscitation involving CPR, early defibrillation, and appropriate implementation of post-cardiac arrest care can lead to improved outcomes (AHA,2020).

2.23. Complications of CPR:

The American Heart Association, (2020) emphasizes that CPR should be performed with minimal interruptions, as continuous, high-quality chest compressions are crucial for maintaining blood flow and increasing the chances of survival. Improper application of CPR, such as incorrect hand placement, depth or rate of compressions, or inadequate ventilation, can lead to complications like broken ribs, ineffective lung inflation, and reduced cardiac output, potentially resulting in brain damage or death.

Kaldırım et al. (2016) reported that the quality and number of chest compressions applied during CPR is crucial for effective CPR. Current CPR guidelines recommend delivering 30 chest compressions at a rate of 100-120 per minute, depressing the chest 4-5 cm. These compressions can lead to various injuries, ranging from simple bruising to life-threatening myocardial rupture. Rib fractures are the most common injuries observed in the bone structures and soft tissues. Radiological imaging techniques and autopsy studies have been used to identify these injuries. Age and CPR duration increase, the frequency and number of injuries may also increase. However, the presence of other factors that may affect the occurrence of these injuries remains unclear. It is important to determine whether these injuries are life-threatening and what factors contribute to an increased risk of severe injuries. The study aimed to identify injuries related to CPR from autopsy results of non-traumatic cases where CPR had been performed and

examine the relationship between these injuries and factors such as age, sex, CPR duration, pre-hospital CPR, and advanced airway usage.

2.24. Interrupting CPR:

Standard CPR consists of manual chest compressions to maintain blood flow and positive-pressure ventilation to maintain oxygenation until spontaneous circulation is restored. Chest compressions are interrupted frequently by ventilations given as rescue breathing during the treatment of out-of-hospital cardiac arrest. These interruptions reduce blood flow and potentially reduce the effectiveness of CPR. One strategy to reduce the interruption of compressions is to provide asynchronous positive-pressure ventilation while not pausing for ventilations (Nichol et al., 2015).

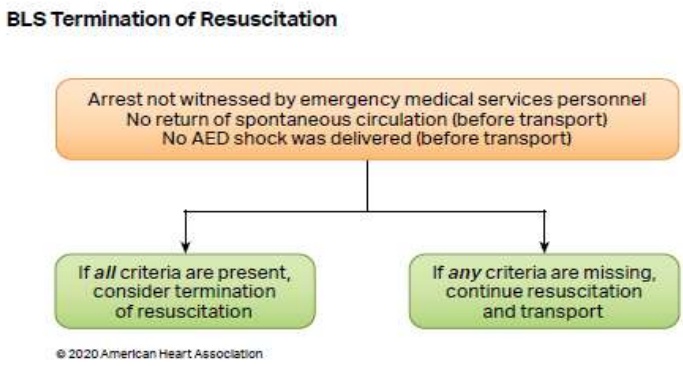
The interruption of chest compressions has been associated with decreased survival in animals and humans with cardiac arrest. In nonasphyxial arrest, continuous compressions were as effective as compressions that were interrupted for ventilations of 4 seconds in duration. Also, the use of continuous compressions resulted in significantly better neurologic function than that with compressions that included longer interruptions for ventilations. In contrast, in asphyxial arrest, ventilation improved outcomes. Observational studies involving humans with out-of-hospital cardiac arrest of presumed cardiac cause have suggested that continuous compressions are associated with higher rates of survival than interrupted compressions (Nichol et al., 2015).

Daniel, (2009) stated that once CPR is initiated, it should be continued with minimal interruptions, except for brief checks of pulse and breathing every few minutes, repositioning the patient or rescuer, moving the patient to a stretcher or ambulance, suctioning the airway, or allowing for defibrillation or advanced cardiac life support measures. The first recommended pulse and breathing check is after the initial two minutes of

CPR, and these vital signs should be assessed every few minutes thereafter. Interruptions to chest compressions should be limited to no more than a few seconds, as continuous, high-quality CPR is crucial for maintaining blood circulation and increasing the chances of survival during cardiac arrest

2.25. CPR Termination (Finishing):

Cardiopulmonary resuscitation should not be performed in situations that endanger the rescuer, when the victim exhibits clear signs of irreversible death, has a valid don't resuscitate order, has regained spontaneous circulation and effective breathing, when resuscitation efforts have been transferred to more skilled providers, when the rescuer is physically unable to continue, if the victim meets criteria for determination of death, or if online medical control advises termination. Performing CPR in these circumstances can cause more harm than good and should be avoided, with the rescuer's safety always being the top priority (Robert et al,.2022).



Figure(2-9): BLS termination of resuscitation (AHA,. 2020)

2.26. Post-cardiac arrest care:

Cardiac arrest is a significant cause of mortality in developed nations, with a notable portion of deaths occurring post-resuscitation due to post-resuscitation syndrome. Integrated post-resuscitation care, including targeted temperature management, early coronary angiography, and comprehensive critical care, is crucial for improving patient outcomes. Targeted temperature management has shown to enhance survival and neurological recovery, particularly in patients unresponsive after out-of-hospital cardiac arrest. Resuscitated individuals often require intensive care involving artificial ventilation, hemodynamic support, and close monitoring of various parameters like blood gases, glucose levels, electrolytes, and seizures. This comprehensive approach aims to address the complexities associated with post-resuscitation care and optimize patient recovery (Girotra et al., 2012).

2.27. Differences between child and adult CPR:

The key differences between child and adult CPR include the compression-ventilation ratio, compression depth, and rescue breath rate. For adult CPR, the ratio is 30:2 compressions to breaths regardless of the number of rescuers, while for child CPR it is 15:2 for two rescuers and 30:2 for a single rescuer. Adult chest compressions should be administered at a rate of 100-120 per minute with a depth of at least 2-2.4 inches (5-6 cm), whereas for children over 1 year, rescuers may use one or two hands depending on the child's size and apply compressions about 2 inches (5 cm) deep. Rescue breaths for children should be provided at a rate of one breath every two to three seconds or 20-30 per minute, while for adults it is one breath every 6 seconds or 10 per minute. Rescuers must support the child's head to keep the airway open and be gentle when administering CPR, as children can be more fragile than adults (Topjian et al., 2020).

2.28. Importance of nurses performance about pediatric BLS and CPR

In the hospital, nurses are often the first healthcare professionals to identify a patient with a life-threatening emergency in the hospital setting and therefore should possess adequate competency to provide effective resuscitation (Considine and Currey, 2015).

The nurse is an important factor in patient outcomes. Nursing staff play an important role in the emergency cardiac resuscitation chain. The nurse is usually among the first people to respond in an emergency at a hospital and the survival rate of patients could depend on the resuscitation skills of the nurse. Thus, improving nurses' resuscitation knowledge and skills retention is essential to ensure nurses have the competencies to provide high quality care at the right time (Oermann et al., 2012).

The critical role of CPR in cardiac emergencies require that health care professionals are knowledgeable and competent in carrying out cardiopulmonary resuscitation. patients face a life threatening event such as cardiopulmonary arrest, successful management rely on the competence and skill of healthcare professionals. The need for health professionals to have adequate knowledge and skill on how to perform basic and advanced life support cannot be overemphasized as they often encounter situations requiring this skill in their practice. Nurses are often the healthcare providers closest to the bed side and the first to respond to patient’s needs, therefore their knowledge of CPR and skills need to be optimal,. Nurses’ competency in cardiopulmonary resuscitation is a critical factor in determining successful patient outcomes from a cardiac arrest (State & Ihunanya, 2020) .

Mosbah et al., (2019) stated that early initiation of CPR and defibrillation are critical for reducing mortality and morbidity in patients after cardiopulmonary arrest. For every minute that CPR is delayed, the likelihood of survival decreases by as much as 10%. Thus, guidelines recommend routine training in CPR for healthcare providers to improve performance and patient outcomes.

Kaihula et al., (2018) conducted a cross-sectional descriptive study to assess the present level of knowledge and proficiency in doing CPR among healthcare providers in hospitals. The participants exhibited a low level of knowledge and abilities, despite the fact that most providers had claimed to have prior expertise with CPR. The authors suggested that it is essential for all healthcare personnel to undergo frequent training and evaluation to maintain their CPR knowledge and skills. This is crucial to ensure their preparedness in delivering high-quality and safe resuscitation services.

The ability to respond quickly and effectively to a cardiac arrest situation rests on nurses being competent in the emergency life-saving procedure of cardiopulmonary resuscitation (Nori et al., 2012).

2.29. Simulation based education:

Simulation-based education (SBE) in health is now a well-established method and accepted as an effective teaching modality for the education of health professional students and healthcare professionals (Cook et al., 2018)

Simulation is the process of designing a model of a real system and conducting experiment with this model for the purpose of either understanding the behavior of the system or evaluating various strategies for the operation of the system, Simulation in nursing education has

become an important element specifically teaching the necessary skills and knowledge to develop competent nurse(Sweta Kumari et al., 2022).

2.30. Effectiveness of simulation-based nursing education

Simulation-Based Nursing Education is a technique that replicates real life events and is used for the training of undergraduate and postgraduate healthcare professionals. This teaching method, with the use of manikins, part task trainers, virtual reality and simulated patients enables the learner to practice both technical skills and non-technical skills such as communication, team work and crisis resource management all within a safe learning environment. The result of this training is improved patient outcomes (Labrague et al., 2019)

Kim et al., (2016**)** stated that the use of simulation for education can be adapted and applied to a large variety of medical, nursing and allied health specialties. It allows healthcare professionals to experience both simple and complex life-like clinical situations, which creates the opportunity to improve assessment, diagnosis and management skills. Using SBE to teach healthcare professionals improves outcomes for patients without causing them harm.

The adaptation of simulation as an effective teaching tool in SBE, and the benefits of this method have now been widely incorporated into health professional education. The advantage of this type of pedagogical approach is that it allows both preregistration and post-registration healthcare professionals to be educated in a safe learning environment. It exposes learners to both common and uncommon clinical events as well as improving clinical skills, teamwork and communication (Garratt, 2023)

The benefits of SBE in health education are widely documented and include, but are not limited to, the ability of learners to practice both

common and uncommon complex skills and techniques in clinical settings, and importantly, to reduce harm to patients (Abas & Juma, 2016).

Simulation based education includes the use of manikins for education, part-task trainers and other modalities, including virtual reality, standardised patients, haptic trainers, in situ simulations as well as hybrid simulations involving standardised patients together with part-task trainers and/or manikins (Murray, 2014).

Jeffries & Clochesy (2013) reported that SBE in healthcare provides a strong contextual link between structured learning activities and how healthcare professionals learn through experiential exposure in clinical settings.

An important aspect of the simulation is the debrief; considered a vital part of the exercise, this is where rich learning is consolidated. The debrief is a conversation that is facilitated by an educator, and typically occurs straight after a simulation. This allows the participants to express their feelings, behaviours and actions as well as reflecting on what had just transpired. Educators can explore what motivated learners to do what they did in the simulation, commonly called the ‘frames’ of the learners. This gives insight into why a learner performed a certain action. Debriefing also allows for reflection and potential changes in future behaviours. The goal of the educator is to identify and bridge the learner’s gaps in knowledge and skills (Garratt, 2023).

Rupert et al., (2022) concluded that Simulation-based training can provide in situ training opportunities for participants to recreate real-life application of skills, knowledge, attitudes, and behaviors and enhance team-based learning in a safe environment. The improvement of CPR competence and teamwork skills in the Urgent Care Clinic (UCC) can increase its patient population survival rate and patient safety during

cardiovascular emergencies. A highfidelity simulation-based program with trained facilitators that assess the healthcare providers' CPR competency and teamwork skills could enhance the delivery of high-quality CPR and execution of effective teamwork skills in their workplace.

Panday et al. (2019) conducted to assess the effectiveness of simulation in terms of knowledge and skill Regarding BLS by using quasi-experimental design, systematic review and meta-analysis evaluating simulation technology for resuscitation training recommend that simulation-based training for resuscitation is highly effective. There was a significant change in mortality rate outside hospital cardiac arrest thus it is effective methods for acquiring skill and knowledge for BLS.

2.31. Previous studies:

First study: A Quasi-experimental research study in Egypt about effectiveness of applying simulation based learning on nurses' performance and self-efficacy regarding Advanced BLS. The outcome of the study revealed that there were marked increases in nurses' total knowledge, practice and self-efficacy post implementation of advanced basic life support compared to pretest with statistically significant differences. The researchers conclude that simulation based learning improved nurses' performance and self-efficacy related advanced BLS and the study provides aline to enhance the simulation integration as active learning strategies to develop nurses' performance in applying clinical skills (Qalawa et al., 2020).

Second Study: Imran et al .(2023) conducted a study to determine the effectiveness of BLS training workshop on nurses knowledge and practice. This study aimed to evaluate the effectiveness of basic life support training workshop on nurse's knowledge and practice at a private tertiary care hospital of Karachi.The study utilized a pre/post-quasi-experimental

research design. the estimated sample size was 35 nurses. The results of the study showed that Before the basic life support training session, only 13 (27.1%) participants performed good in the knowledge test, while after training, 35 (100%) participants achieved a good result in the knowledge. In the skill test, the percentage of participants passing the scenarios increased signi?cantly by 94.3%, with a p-value=0.001. The study reached the conclusion that BLS training workshops signifcantly improved the nurses' knowledge and performance related to CPR. Hence, it is recommended that periodical training of BLS is essential for nurses to enhance their knowledge and skills that improve victim survival.

Third study: Fahajan et al.(2023) conducted a study to investigate the effect of a simulation-based training program in BLS on the knowledge of Palestinian nurses. A quasi-experimental, pre & post-test design was used. 700 nurses were recruited proportionally using a simple random sampling method among 2980 nurses from 13 public hospitals in the Gaza Strip. This study was conducted from June to August 2022. A practical BLS test consisting of 10 multiple-choice questions according to AHA guidelines (2020) was collected and sociodemographic characteristics. The study revealed that the nurses' knowledge increased after applying simulation-based training program. The mean of knowledge scores was statistically significant between the pre and post-test on the basis of the current work hospital (P-value < 0.001). This study provides significant evidence of the positive effects of the BLS training program in improving nurses' knowledge; we recommend advanced BLS training for all healthcare providers, doctors, and nurses working in hospitals and healthcare centers. Training in BLS must be systematic and continuous to increase confidence in the use of CPR and potentially save lives. Healthcare profes- sionals must work together to ensure that these courses are successfully received and completed.

Fourth study : A randomized control trial on simulation versus standard training for medical student was conducted by Eric McCoye et al. (2019). Sample size of the study was 74 and they were divided into two groups, on group for simulation and other for standard training. The use of high-fidelity simulation has also shown benefit in CPR knowledge, skills, acquisition, retention, and advanced resuscitation in the disciplines of nursing and pharmacy. An early systematic review and meta-analysis evaluating simulation technology for resuscitation training recommend that simulation-based training for resuscitation is highly effective.

Fifth study: Zayed & Saied, (2020**)** performed a cross-sectional study to assess the knowledge concerning BLS among nursing professionals at Tanta University Hospitals. For a period of 6 months upon 510 randomly chosen nurses working in various ICUs, emergency department and wards of Tanta University Hospitals using stratified sampling. a self-administered validated questionnaire was used to collect data. The knowledge level of BLS was found to be inadequate among the majority of nursing staff working at Tanta University Hospitals. Regular in- service training and recertification of BLS competency are greatly recommended as well as rotating work schedule between ICUs, emergency departments and other non-emergency hospital wards.

Sixth study: A Quasi–experimental study was carried out in Ibn Al-Atheer teaching hospital (study group) and Al-Khansaa Teaching Hospital (control group) in Mosul city from October 28th 2013 to 31th December 2014. The purpose of this study is to assess the effect of an educational program on nurses' knowledge about pediatric CPR and determine relationship between nurses' knowledge and demographic information (sex, age, educational level, years of employment, place of work). The study sample was selected randomly consisting of 60 nurses from both hospitals after

taking their consent. The results showed also that the presence of statistically highly significant differences in the knowledge of nurses after implementation of the educational program about pediatric CPR compared to their knowledge in the period preceding the implementation of the program in the study group. The study concluded that the existence of a clear and significant correlation between knowledge about pediatric CPR among nurses and the majority of the demographic characteristics (Attallah Ahmed & Al-Sawaf, 2017).

Seventh study: A study to assess the efficiency of the BLS training program provided for nurses in a university hospital. Through a quasi-experimental study , a total of 404 nurses who received BLS training were enrolled. The study was performed in two stages. In stage one, the participant nurses were given a pre-test that consisted of 25 questions, four points each, before the training on the first day of the 2-day BLS training. The post-test was conducted in addition to practical exams on manikins to determine nurses' practice skills on BLS. The result was a statistically significant difference between the nurses with previous BLS training and the difference between their pre- and post-test results ($p<0.05$), and high statistically significant difference was found between the nurses with previous. the study reached the conclusion that nurses should receive BLS training in hospitals and the training should be repeated on a regular basis. The BLS training that the nurses received in this study was effective and increased their knowledge level on BLS (Terzi et al., 2017).

Eighth study: Bajracharya & Nagarkoti (2016) performed a descriptive cross-sectional study to assess knowledge regarding BLS among nurses of a tertiary level hospital of Nepal was conducted in 50 nurses working in various intensive and high care units of our teaching hospital to assess their Knowledge on BLS. Non-probability purposive sampling technique was used for data collection for which self-administered semi-structured

questionnaire was used. The researchers conclude that most of the nurses working in high care units of our teaching hospital didn't have adequate knowledge about BLS and CPR. Only 2% had adequate knowledge about BLS.There was no association between the knowledge and academic qualification or work experience.

Ninth study: Sachdeva, (2020) conducted a study to assess knowledge and practice of basic life support among nurses working in tertiary care hospital, New Delhi, India. The aim was to assess the knowledge and practice of BLS among nursing officers working in tertiary care hospital, Delhi, India. A cross sectional survey analysis was carried out among 112 nursing officers working in various departments, in March 2019, using convenient sampling technique. A semi structured questionnaire containing knowledge and skill items were used to assess knowledge and skill related to CPR. The results showed average knowledge and poor skill among subjects. Whereas the subjects working in ICU and emergency departments had better knowledge and performance than other selected areas. Both Knowledge and skill were significantly associated with variables like clinical area, in-service training on BLS at $p<0.05$. The results strongly recommend the need for regular BLS training sessions for health care professionals.

Tenth study: Zainel, (2014) reported that quick and effcient resuscitation (CPR) enhances the opportunities of survival life in heart attack victims. An experimental study was carried out at Talafar general hospital between the 1st October to 1st February 2014. Aimed to evaluate the effectiveness of an educational program on nurses practices concerning adult CPR in Talafar general hospital. The study concluded that the effectiveness of educational program regarding nurses' practice concerning the adult CPR is a positive and clear.

Chapter Three

Methodology

Chapter Four

Methodology

Chapter three presents the methodological procedures which applied in this study to reach the objectives, the administrative arrangement, setting of the study, sample selection, instrument construction, methods of data collection and data analysis.

3.1. Design of the study:

To achieve the aims of this study, a quasi-experimental study design was used, with pre and post-tests applied. which conducted for the period from 26th September 10th June 2024.

3.2. Administrative arrangements:

The official permissions were obtained from relevant authorities before collecting the study data as follow:

1- Protocol of research and official permission taken from University of Kerbela / College of Nursing to conduct the study.

2- An official approval was obtained from the Health Directorate in Al-Najaf Governorate. An official letter by the Training and Human Development Center in the Al-Najaf Health Directorate was issued to Al Zahraa Teaching Hospital and Al Manathera General Hospital , facilitating cooperation with the researcher for completing his thesis (Appendix A).

3.3. Ethical considerations:

The title, program and questionnaire were presented to the Ethics Committee formed within the College of Nursing, which reviewed the

study tools (program and questionnaire), and therefore agreed to conduct the study (Appendix B).

Ethical obligations are one of the most important things that the researcher must follow and abide it when doing the study.

This study were presented to the Ethics Committee formed within the College of Nursing who agreed it will not cause any harm to anyone.

Before the starting of gathering the data from the sample who are participating in the study, the researcher given a brief explanation about the scientific background of the research and what is the role of the nurses who agree to participate in this study, to give them a complete and clear picture about the study to be carried out. The researcher clarified the main purpose and desired goal of conducting this study for the sample to be including in the study, as well as adhere to the strict confidentiality of the data taken from the study sample and pledge to use it for scientific purposes related to the study only.

On the other hand, the researcher emphasized that all nurses who are participating in the study had the right to not complete their participation and withdraw from this study in the event that they felt uncomfortable or annoyed with some of the items in the questionnaire that was prepared as a research tool or the researcher's method of collecting data or anything else.

3.4. The setting of the study:

The study was conducted in Al-Najaf Governorate /Al-Najaf Health Directorate /Al Zahraa Teaching Hospital and Al Manathera General Hospital.

The hospitals were chosen for the following reseaons:

- Al Zahraa Teaching Hospital is the main pediatric hospital in Al-Najaf AL-Ashraf city that accepts sick children from all Iraqi governorates as well as displaced children. It has an inpatient and emergency unit for the treatment of various pediatric illnesses, including some hereditary conditions like hemophilia and thalassemia.
- Al Manathera General Hospital is considered one of the most prominent hospitals in Najaf AL-Ashraf that receives all sick children from all districts in the Najaf and Diwaniyah governorates. It contains emergency ward, pediatric wards, preterm units and operating room.

The program was implemented in Al-Manathera General Hospital due to physical needs, including classrooms, chairs, computers, data displays, speakers, manikins, and AEDs, being available.

3.5. The sample of the study:

Sixty nurses were selected as a non-probability "convenience" sample in order to acquire representative data. The sample consisted of (60) nurses who were divided into two groups: 25 nurses in the experimental group and 25 nurses in the control group. These nurses worked in ICUs, pediatric units, emergency rooms, and operation rooms.

The total number of nurses included in these study criteria was (60), (27) males and (23) were females. Ten nurses were included in the pilot study.

3.5.1. Inclusion Criteria:

1. Nurses who are presenting nursing care to children at these hospitals.
2. Nurses who agreed to participate in the study.
3. Nurses that had at least one year of experience or more.

3.5.2. Exclusion Criteria:

1. Nurses who had less than one year of experience.

2. Nurses were selected for a pilot study and preliminary assessment test.

3.6. Steps of The study

The present study conducted at the following steps

3.6.1. Preliminary assessment of nursing staff concerning pediatric basic life support:

This study's phase was completed using a closed-ended questionnaire approach. The format's content was developed by reviewing relevant literature and gauging respondents' subjective perceptions of the knowledge questions. This assessment's goals were to gauge participants' understanding of pediatric BLS. Ten nurses who were caring for children were used as a sample in the test. After their needs were assessed, the nurses were excluded from the study.

The questionnaire which related to the nurses needs assessment composed of 20 questions concerning pediatric BLS. Under a strict supervision of the investigator, each nurse was given a time period between (15-20) minutes to answer the questions (Appendix C).

The results of the assessment revealed that the majority (60%) of the nurses have poor knowledge, therefore this preliminary assessment revealed the necessity of constructing the program in order to improve their knowledge and practices toward PBLS.

3.6.2. Construction of the simulation education program:

The program was created based on data from earlier studies and research as well as the demands of nurses. program evaluation by specialists in several fields (Appendix E). The content of the program form was modified in accordance with the recommendations of these specialists. They concur that the curriculum was effectively created to enhance nurses' performance about pediatric BLS (Appendix D III).

The American method of heart and lungs resuscitation based on the (AHA) program for CPR and Emergency of Cardiovascular Care (ECC) which was updated with new algorithm in 2020. This program construction involves C-A-B chain instead of A-B-C chain which is adopted by other methods especially the Australian & British one. The letters in the chain refer to Airway, Breathing, and Circulation in Australian system while the American approach sets the C letter in the beginning. Here, C doesn't represent Circulation but it means Chest compression and this is the main difference between the American & the Australian method.

The researcher has adopted the American Method of Cardiopulmonary Resuscitation in his thesis for many reasons one of them is the first easiness of making chest massage in any time and by anyone even when the rescuer is not qualified to do the resuscitation in case of sudden cardiac arrest in pediatrics. The second is that the chest compression execution firstly decreased the mortality rate in America. Already, many American large statistical studies were conducted have demonstrated worse outcomes for presumed asphyxial cardiac arrests in and out of hospitals and when compression-only CPR was delivered, the result was positive. So the AHA & other American Heart Foundations

recommend that rescuers should perform compression-only CPR for adults, infants and children in cardiac arrest.

3.6.3. Study Instrumenst:

The questionnaire is one of the means to help collect data that contribute to achieving the results expected by the study, so the researcher designed this questionnaire, which aims to clarify the study's objectives and significance by obtaining answers to the study's questions. It consisted of three parts as the following:

3.6.3.1. First part: socio-demographic characteristics

Socio-demographic information sheet and related factors included Age, sex, education level, years of experience, and participation in training sessions regarding pediatric BLS.

3.6.3.2. Second part: nurses knowledge regarding pediatrics basic life support.

This part was constructed to assess nurses knowledge about pediatric BLS.It consisted of (32) items of multiple choice and(5) true or false questions to measure nurses knowledge that covered airway obstruction and cardiac arrest, pediatric cardio-pulmonary resuscitation and using an AED.

The Scoring system of this part included (37) items. The knowledge of respondents of each question was scored with two points. The semantic scale was used for the purpose of items' rating which are scored as follows: (1) for correct answer and (0) for incorrect answer. The level of knowledge was estimated by calculating the mean of score and the cutoff point for the total score of knowledge as follow: poor knowledge (0-12), moderate

knowledge (13-25), and good knowledge (26- 37). The level of knowledge assessment for each item was estimated by calculating the cutoff point for the mean of score and scored as follows: poor (0-0.33), moderate (0.34-0.67), and good (0.68-1).

3.6.3.3. Third part: practical observational checklist for nurses practice about pediatric basic life support.

This part aim to evaluate the nurses practices regarding pediatric BLS (from 1-18 years old),the researcher observed and checked through using standardized observational checklist based on AHA guidelines 2020 .

The scoring system, the checklist sheet covered 23 items, one to two scores as zero for wrong answer (not done), one for right answer (done). The level of practice was estimated by calculating the mean of score and the cutoff point for the total score of practice as follow: poor (0-7), moderate (8-15), and good (16-23). The level of practice assessment for each item was estimated by calculating the cutoff point for the mean of score and scored as follows: poor practice (0-0.33), moderate practice (0.34-0.67), and good practice (0.68-1).

3.7. Assignment for a group

3.7.1. Control Group: Nurses participants in the control group were not involved in the program lectures. The group was exposed only to the usual activities of teaching and their information according to their practice and theoretical study.

3.7.2. Study Group: Nurses in this group had similar characteristics to the control group they had been given lectures (theory and practice) on pediatric BLS.

3.8 Validity of the Questionnaire and the program:

The content validity of the study instruments (knowledge and practice) and the program were determined by a group of Ten experts(Appendix E), to investigate the content of program and to determine the clarity, relevancy, and adequacy of the questionnaire in order to achieve the study objectives. They were (4) experts of the College of Nursing / University of Kerbala, (3) experts were from College of Nursing / University of Kufa, (2) experts were from College of Nursing / University of Baghdad, (1) expert was emergency doctor working in Al-furat Al-awsat Teaching Hospital.

Results indicated that the majority of experts agreed that the questionnaire and the program were appropriately designed and developed to measure the phenomena of the study. Changes and modifications were made in respect to the expert's suggestions and recommendations and the final draft of the constructed questionnaire and the program were completed to be an appropriate tool for conducting the study.

Creswell, (2014) has mentioned that the panel typically consist of at least three experts, but a larger number may be advisable if the construct is complex.

3.9. Pilot study:

A pilot study was conducted on Ten nurses who had the same criteria of the study sample during period from (1st to 10th December 2023) to obtain data regarding clarity of the questionnaire, program and time needed for completing. The nurses shared in the pilot study were not included in the study sample.

This study is reported in two parts, namely, part A and part B:

Part A: The purpose of the pilot study:

The pilot study aimed to achieve the following objectives.

1. To enhance the reliability (internal consistency and test-retest) of the scales used in the study .
2. Improve the study tool if there are any inconsistencies. The first test has been conducted, and data are gathered using a structured questionnaire.
3. Examining the proposed data analysis methods to identify possible problems.
4. Estimate range of time during collected data by the researcher.

Part B: The results of the pilot study:

1. The program and questionnaire are clear.
2. The time required for practice for observing each nurse is 5-10 minutes.
3. All items of questionnaire are clear and understood.

3.10. Reliability of the study instrument:

Reliability is concerned with the consistency and dependability of a research instrument to measure a variable of interest. Determination of reliability of the scales is based on the internal consistency reliability (Alpha Cronbach technique) as shown in (table 3.1).

Table (3.1) Reliability (internal consistency) coefficient of the studied scale

Reliability Coefficients		Standard Lower Bound	Actual Values	Assessment
Nurses' Knowledge	**Internal Consistency (Cronbach Alpha)**	**0.70**	**0.81**	**Accepted**
Nurses' Practice	**Internal Consistency (Cronbach Alpha)**	**0.70**	**0.91**	**Accepted**

The calculated results of the questionnaire show that all the studied tools (knowledge and practice) are reliable to study the phenomenon on the same population at any time in the future (Creswell, 2014).

3.11. Data collection:

The data is collected through the use of a structured questionnaire (Arabic version) between 26th September 2023 to 10 th February 2024.

The data were collected during study implementation and included the following techniques:

1. All participants were interviewed and informed about the study purposes and objectives.
2. All participants in the study and control group exposed to pre-test (Pre-test assessment and pre-observation checklist) to detect the nurses performance about pediatric BLS.
3. The program consisted of two parts (theory and practice) and lasted a period of one week.
4. The study group (25 nurse) was exposed to the program about pediatric BLS.
5. The control group (25 nurse) has not been exposed to the program about pediatric BLS.
6. The study and control group were exposed to the post-test (post-test assessment and posttest-observation checklist) approximately from 3 weeks to one month after implementation of program.
7. Nurses knowledge test consisted of 32 multiple choice questions and 5 questions (yes or no)
8. The period to answer all questions to assess nurses knowledge is approximately (15-20) minutes.
9. Pediatric Basic Life Support practical checklist for nurses was performed on a manikin to check nurses practices.
10. The time of practice checklist for each nurse took about 5-10 minutes ,it was composed of 23 items (done or not done)

3.12 Implementation of the program:

The following phases have been adopted to achieve the purposes of the current study: pre-test phase, implementation phase and post-test phase:

1. **Pre- test phase**:

This phase was established on 17th December 2023 and extends to 27 th December 2023 and included the following:

A. **Pre-test assessment** for nurses to complete the pediatrics BLS knowledge questionnaire.

B. **Pre-test observation checklist** for nurses in order to complete every step of BLS before pediatrics BLS program attended. The researcher measure nurses' practical skills during nurses' performance of each step of BLS practice on a model observation checklist for three times.

2. **Implementation phase:**

This phase consisted of two parts (theoretical and practical parts), the program developed by the researcher and was implemented for 4 days period during the period from (2 th to 7 th January, in 2024) for one week.

A. Theoretical part :

This part consisted of four sessions

Methods of presentation:

Lectures
Discussion
Computer
Data show (power point)
Manikin

AED device

Place : Al-Manathera General Hospital \ Continuing medical education hall.

First session :

Title: Anatomy & physiology of cardiovascular system &cardiac conduction system & physiology of respiratory system

Session time: 9:00 - 10:00 A.M, in 2ed January, 2024

Topics:

- Welcome and acquaintance.
- Introduction of cardiovascular system.
- Anatomy & physiology of cardiovascular system.
- Cardiac conduction system.
- Anatomy of the respiratory system.
- Respiration functions.

The lecture aims to:

- Building the relationship between researcher, and the group members.
- To give nurses informations about anatomy & physiology of cardiovascular system
- Agree with them on a set of rules to regulate the guidance and commitment hearings.

Second session:

Title: Airway obstruction

Session time: 10:00 - 11:00 A.M, in 2ed January, 2024

Topics:

- Foreign body airway obstruction (FBAO).
- Airway obstruction by the tongue.
- Airway opening methods.
- Recovey position.
- Cardiac and respiratory arrest.

The lecure aims to:

- Identify foreign body airway obstruction types (causes), airway opening methods, recovery position & cardiac & respiratory arrest causes.
- Educate nurses how to differentiate between cardiac & respiratory arrest signs.

Third session:

Title: Basic life support and cardiopulmonary resuscitation

Session time: 9:00 - 10:00 A.M, 3rd January, 2024

Topics:

- Basic Life Support.

- Chain of Survival.
- Primary cardiopulmonary resuscitation steps
- Chest compression.
- Post cardiac arrest care.
- Interrupting CPR.
- CPR termination
- Cardiopulmonary Resuscitation risks

The lecure aims to:

- Educate nurses how to differentiate between basic life support and advanced cardiac life support
- Enumerate and know the chain of survival.
- Identify primary cardiopulmonary resuscitation steps.
- Identify chest compressions, CPR interruption, CPR stopping , resuscitation risks.

Fourth session:

Title : Electrical therapy.

Session time: 10:00 - 11:00 A.M , 3rdJanuary, 2024

Topics:

- Automated External Defibrillator (AED).
- Shockable rhythms
- Non-shockable rhythms

The lecure aims to:

- Teach nurses how to work on automated external defibrillator device
- Educate nurses how to differentiate between shockable and non-shockable rhythms.

B. Practical part:

The second part involved practical training on pediatrics BLS according to AHA guidelines 2020, the researcher with in the context of the practical program, the researcher demonstrated each step of basic life support practices. Afterward, every nurse was asked to perform every step of BLS in order. The practical part was repeated until the nurse could effectively perform every step of BLS. This parts lasted for two days.

Table (3-2) Steps of the implementation phase

Part	Days	Time
Theoretical	Two days	2-3 January 2024
Sessions 1and 2	One day	2 January 2024
Sessions 3 and 4	One day	3 January 2024
Practical	Two days	4 and 7 January 2024

3. Post-Test phase:

Posttest phase was done approximately from 3 weeks to one month after post applying simulation program. This phase from (30th January to 10 th February, 2024) depnd on post-test assessment and post observation assessment as following :

A. Post-test assessment:

The participants were asked to complete pediatrics BLS knowledge questionnaire after the program for the second time.

B. Post-observation assessment:

After complete the program, every nurse asked to perform every step of BLS in order on a model following pediatrics BLS program. The researcher assessed the nurses practice skills during nurses' demonstration of each step of pediatrics BLS on a model using the pediatrics BLS observation checklist for three times.

3.13. Statistical Methods:

All the data in the current study were entered into the SPSS program (version 20). The minimum values, frequencies ,percent, the maximum values, the means, and the standard deviation were calculated. Chi-square (non-parametric test) was used for qualtitative data. One way ANOVA, independent t test, Paired t test, Kruskal–Wallis test, Mann-Whitney U-test were used for quantitative data according to the fulfillment of the conditions required for each test. P-value ≤ 0.05 was considered statistically significant.

3.13.1 Descriptive approach:

Descriptive statistics are used to summarize or describe the basic features of a dataset. They provide simple summaries about the sample and the measures. These statistics help to understand the distribution, central tendency, and variability within the data.

A. Minimum values: The smallest value in the dataset.

B. Maximum values: The largest value in the dataset.

C. Frequencies: The count of occurrences for each value or category.

D. Percent: The proportion of each category or value in the dataset, expressed as a percentage.

E. Means: The average value of the dataset.

F. Standard deviation: A measure of the amount of variation or dispersion in the dataset.

3.13.2 Inferential approach :

Inferential statistics are used to make inferences or generalizations about a population based on a sample. They involve hypothesis testing to determine the probability that an observed pattern in the data occurred by chance.

A. Chi-square (non-parametric test): Used for testing relationships between categorical variables.

B. One-way ANOVA: Compares the means of three or more independent groups to determine if there is a statistically significant difference between them.

C. Independent t-test: Compares the means of two independent groups to see if they are statistically different.

D. Paired t-test: Compares the means of two related groups (e.g., the same group at two different times) to see if there is a statistically significant difference.

E. Kruskal–Wallis test: A non-parametric version of one-way ANOVA used when the data do not meet the assumptions required for ANOVA.

F. Mann-Whitney U-test: A non-parametric test used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed.

Chapter Four

Results and Findings

Chapter Four

Results and Findings

This chapter displays the results of the data analysis systematically in tables, and these correspond with the objectives of the study as follows:

Table (4.1): Distribution of socio-demographic and occupational characteristics for both study and control groups participants (N=50; 25 for each group)

Socio-Demographic Characteristics	Rating and Intervals	Study Group		Control Group		P-value
		F.	%	F.	%	
Age Groups (Years)	≤ 25	1	4	1	4	0.98 [a] (NS)
	26 – 30	17	68	16	64	
	31 – 35	3	12	3	12	
	36 – 40	2	8	3	12	
	41 and More	2	8	2	8	
	Mean ± SD	30.24 ± 5.88		31.12 ± 6.01		
Sex	Males	14	56	13	52	0.77 [b] (NS)
	Females	11	44	12	48	
Level of education	Nursing School	4	16	5	20	0.93 [a] (NS)
	Diploma	8	32	6	24	
	Bachelor	12	48	13	52	
	Master and Doctorate	1	4	1	4	
Years of Experience (Years)	≤ 5	12	48	13	52	0.49 [a] (NS)
	6 – 10	8	32	6	24	
	11 – 15	3	12	1	4	
	≥16	2	8	5	20	
	Mean ± SD	6.92 ± 4.46		7.84 ± 5.67		
Having previous training for pediatric BLS?	Yes	14	56	13	52	0.77 [b] (NS)
	No	11	44	12	48	

Total	**25**	**100%**	**25**	**100%**	

%= percentage, F. = frequency, d.f = degree of freedom, P = probability value. NS= Non Significant at (P > 0.05), [a] Fisher's Exact test, [b] Chi-square

Table **(4.1)** summmerize the frequency distribution between the study and control groups by their socio-demographic data. This table explains that most of the nurses in both groups are those in the ages group (26-30) years old. In addition, the table shows that the high percentages of participants in both groups 56% and 52% were males in the study and control groups respectively.

Concerning the level of education, 48% and 52% of the study and control groups, respectively, both have a bachelor degree in nursing.

Regarding the years of experience in the nursing field, the table shows that 48% of the sample in the study group and 52% of the sample in the control group have (≤5) years.

Regarding participation in training courses in pediatric BLS, 56%of the study group had training course, and 52% of the control group had training course.

Statistically, there is no significant difference between the study and control groups (age group, sex, achievement education, years of service in the nursing field, and training courses) when analyzed by Chi-square test.

Table (4.2): Evaluation of the study and control groups knowledge regarding pediatric basic life support at the pre-test and post-test level.

Knowledge Regarding PBLS		Study Group (*n*=25)									Control Group (*n*=25)									
		Pre-Test					Post-Test				Pre-Test					Post-Test				
		F.	%	MS	SD	Assess.	F.	%	MS	SD	Assess.	F.	%	MS	SD	Assess.	F.	%	MS	SD	Assess.
Q1	Incorrect	7	28	.72	.46	Good	1	4	.96	.20	Good	6	24	.76	.44	Good	8	32	.68	.48	Good
	Correct	18	72				24	96				19	76				17	68			
Q2	Incorrect	11	44	.56	.51	Moderate	3	12	.88	.33	Good	13	52	.48	.51	Moderate	12	48	.52	.51	Moderate
	Correct	14	56				22	88				12	48				13	52			
Q3	Incorrect	11	44	.56	.51	Moderate	3	12	.88	.33	Good	9	36	.64	.49	Moderate	8	32	.68	.48	Good
	Correct	14	56				22	88				16	64				17	68			
Q4	Incorrect	8	32	.68	.48	Good	4	16	.84	.37	Good	11	44	.56	.51	Moderate	11	44	.56	.51	Moderate
	Correct	17	68				21	84				14	56				14	56			
Q5	Incorrect	5	20	.80	.41	Good	0		1.00	.00	Good	9	36	.64	.49	Moderate	9	36	.64	.49	Moderate
	Correct	20	80				25	100				16	64				16	64			
Q6	Incorrect	15	60	.40	.50	Moderate	6	24	.76	.44	Good	13	52	.48	.51	Moderate	13	52	.48	.51	Moderate
	Correct	10	40				19	76				12	48				12	48			

Q7	**Incorrect**	**16**	**64**	**.36**	**.49**	**Moderate**	**4**	**16**	**.84**	**.37**	**Good**	**11**	**44**	**.56**	**.51**	**Moderate**	**12**	**48**	**.52**	**.51**	**Moderate**
	Correct	**9**	**36**				**21**	**84**				**14**	**56**				**13**	**52**			
Q8	**Incorrect**	**19**	**76**	**.24**	**.44**	**Poor**	**7**	**28**	**.72**	**.46**	**Good**	**17**	**68**	**.32**	**.48**	**Poor**	**18**	**72**	**.28**	**.46**	**Poor**
	Correct	**6**	**24**				**18**	**72**				**8**	**32**				**7**	**28**			
Q9	**Incorrect**	**21**	**84**	**.16**	**.37**	**Poor**	**0**		**1.00**	**.00**	**Good**	**18**	**72**	**.28**	**.46**	**Poor**	**20**	**80**	**.20**	**.41**	**Poor**
	Correct	**4**	**16**				**25**	**100**				**7**	**28**				**5**	**20**			
Q10	**Incorrect**	**4**	**16**	**.84**	**.37**	**Good**	**2**	**8**	**.92**	**.28**	**Good**	**7**	**28**	**.72**	**.46**	**Good**	**7**	**28**	**.72**	**.46**	**Good**
	Correct	**21**	**84**				**23**	**92**				**18**	**72**				**18**	**72**			
Q11	**Incorrect**	**12**	**48**	**.52**	**.51**	**Moderate**	**5**	**20**	**.80**	**.41**	**Good**	**14**	**56**	**.44**	**.51**	**Moderate**	**14**	**56**	**.44**	**.51**	**Moderate**
	Correct	**13**	**52**				**20**	**80**				**11**	**44**				**11**	**44**			
Q12	**Incorrect**	**7**	**28**	**.72**	**.46**	**Good**	**0**		**1.00**	**.00**	**Good**	**12**	**48**	**.52**	**.51**	**Moderate**	**12**	**48**	**.52**	**.51**	**Moderate**
	Correct	**18**	**72**				**25**	**100**				**13**	**52**				**13**	**52**			
Q13	**Incorrect**	**22**	**88**	**.12**	**.33**	**Poor**	**3**	**12**	**.88**	**.33**	**Good**	**18**	**72**	**.28**	**.46**	**Poor**	**17**	**68**	**.32**	**.48**	**Poor**
	Correct	**3**	**12**				**22**	**88**				**7**	**28**				**8**	**32**			
Q14	**Incorrect**	**19**	**76**	**.24**	**.44**	**Poor**	**4**	**16**	**.84**	**.37**	**Good**	**17**	**68**	**.32**	**.48**	**Poor**	**17**	**68**	**.32**	**.48**	**Poor**
	Correct	**6**	**24**				**21**	**84**				**8**	**32**				**8**	**32**			
Q15	**Incorrect**	**10**	**40**	**.60**	**.50**	**Moderate**	**2**	**8**	**.92**	**.28**	**Good**	**8**	**32**	**.68**	**.48**	**Good**	**8**	**32**	**.68**	**.48**	**Good**
	Correct	**15**	**60**				**23**	**92**				**17**	**68**				**17**	**68**			

Q16	Incorrect	14	56	.44	.51	Moderate	1	4	.96	.20	Good	14	56	.44	.51	Moderate	13	52	.48	.51	Moderate
	Correct	11	44				24	96				11	44				12	48			
Q17	Incorrect	14	56	.44	.51	Moderate	0		1.00	.00	Good	13	52	.48	.51	Moderate	13	52	.48	.51	Moderate
	Correct	11	44				25	100				12	48				12	48			
Q18	Incorrect	11	44	.56	.51	Moderate	6	24	.76	.44	Good	12	48	.52	.51	Moderate	13	52	.48	.51	Moderate
	Correct	14	56				19	76				13	52				12	48			
Q19	Incorrect	10	40	.60	.50	Moderate	0		1.00	.00	Good	9	36	.64	.49	Moderate	9	36	.64	.49	Moderate
	Correct	15	60				25	100				16	64				16	64			
Q20	Incorrect	14	56	.44	.51	Moderate	0		1.00	.00	Good	16	64	.36	.49	Moderate	15	60	.40	.50	Moderate
	Correct	11	44				25	100				9	36				10	40			
Q21	Incorrect	12	48	.52	.51	Moderate	4	16	.84	.37	Good	14	56	.44	.51	Moderate	13	52	.48	.51	Moderate
	Correct	13	52				21	84				11	44				12	48			
Q22	Incorrect	15	60	.40	.50	Moderate	5	20	.80	.41	Good	12	48	.52	.51	Moderate	13	52	.48	.51	Moderate
	Correct	10	40				20	80				13	52				12	48			
Q23	Incorrect	8	32	.68	.48	Good	2	8	.92	.28	Good	8	32	.68	.48	Good	8	32	.68	.48	Good
	Correct	17	68				23	92				17	68				17	68			
Q24	Incorrect	7	28	.72	.46	Good	3	12	.88	.33	Good	17	68	.32	.48	Poor	17	68	.32	.48	Poor
	Correct	18	72				22	88				8	32				8	32			

Q25	Incorrect	18	72	.28	.46	Poor	0		1.00	.00	Good	19	76	.24	.44	Poor	18	72	.28	.46	Poor
	Correct	7	28				25	100				6	24				7	28			
Q26	Incorrect	20	80	.20	.41	Poor	5	20	.80	.41	Good	16	64	.36	.49	Moderate	16	64	.36	.49	Moderate
	Correct	5	20				20	80				9	36				9	36			
Q27	Incorrect	15	60	.40	.50	Moderate	0		1.00	.00	Good	13	52	.48	.51	Moderate	13	52	.48	.51	Moderate
	Correct	10	40				25	100				12	48				12	48			
Q28	Incorrect	15	60	.40	.50	Moderate	3	12	.88	.33	Good	15	60	.40	.50	Moderate	15	60	.40	.50	Moderate
	Correct	10	40				22	88				10	40				10	40			
Q29	Incorrect	16	64	.36	.49	Moderate	1	4	.96	.20	Good	15	60	.40	.50	Moderate	15	60	.40	.50	Moderate
	Correct	9	36				24	96				10	40				10	40			
Q30	Incorrect	11	44	.56	.51	Moderate	3	12	.88	.33	Good	7	28	.72	.46	Good	7	28	.72	.46	Good
	Correct	14	56				22	88				18	72				18	72			
Q31	Incorrect	9	36	.64	.49	Moderate	2	8	.92	.28	Good	14	56	.44	.51	Moderate	14	56	.44	.51	Moderate
	Correct	16	64				23	92				11	44				11	44			
Q32	Incorrect	13	52	.48	.51	Moderate	5	20	.80	.41	Good	11	44	.56	.51	Moderate	11	44	.56	.51	Moderate
	Correct	12	48				20	80				14	56				14	56			
Q33	Incorrect	17	68	.32	.48	Poor	1	4	.96	.20	Good	19	76	.24	.44	Poor	19	76	.24	.44	Poor
	Correct	8	32				24	96				6	24				6	24			

Q34	Incorrect	20	80	.20	.41	Poor	5	20	.80	.41	Good	14	56	.44	.51	Moderate	12	48	.52	.51	Moderate
	Correct	5	20				20	80				11	44				13	52			
Q35	Incorrect	13	52	.48	.51	Moderate	0		1.00	.00	Good	9	36	.64	.49	Moderate	9	36	.64	.49	Moderate
	Correct	12	48				25	100				16	64				16	64			
Q36	Incorrect	17	68	.32	.48	Poor	3	12	.88	.33	Good	21	84	.16	.37	Poor	21	84	.16	.37	Poor
	Correct	8	32				22	88				4	16				4	16			
Q37	Incorrect	20	80	.20	.41	Poor	7	28	.72	.46	Good	18	72	.28	.46	Poor	17	68	.32	.48	Poor
	Correct	5	20				18	72				7	28				8	32			

%= percentage, F. = Frequency, M.S: Mean of score, Poor (mean of scores 0-0.33), Moderate (mean of scores 0.34-0.67), Good (mean of scores 0.68 and more), SD: Standard Deviation, Assess.: Assessment.

Table (4.2) demonstrates the means of scores and assessment of study and control groups responses to the items related to knowledge regarding pediatric BLS. In the pre-test, this table shows that the study group recorded good knowledge for item number (1, 4, 5, 10, 12, 23, qnd 24), poor level of knowledge for items (8, 9, 13, 14, 25, 26, 33, 34, 36, and 37), and all other items were moderate level of knowledge. The table also shows excellent improvement in the study group at post-test good knowledge.

The scores and assessment of control group responses to the questions related to knowledge regarding pediatric BLS in pre-test were good assessment for items (1, 10, 15, 23, and 30), poor assessment for items (8, 9, 13, 14, 24, 25,

33, 36, and 37), and all other items were moderate level of knowledge. With the exception of item number (3), the results were the same in the post-test knowledge.

Table (4.3): Overall assessment of the study and control groups knowledge regarding pediatric basic life support at the pre-test and post-test level.

Overall Knowledge Items		Study Group (*n*=25)										Control Group (*n*=25)									
		Pre-Test					Post-Test					Pre-Test					Post-Test				
		f.	%	MS	SD	Assess.	f.	%	MS	SD	Assess.	f.	%	MS	SD	Assess.	f.	%	MS	SD	Assess.
Knowledge Regarding PBLS	Poor	8	32	.46	.16	Moderate	0	0	.89	.08	Good	7	28	.47	.15	Moderate	6	24	.47	.15	Moderate
	Moderate	14	56				1	4				16	64				16	64			
	Good	3	12				24	96				2	8				3	12			

%= percentage, F. = Frequency , M.S: Mean of score, Poor (mean of scores 0-0.33), Moderate (mean of scores 0.34-0.67), Good (mean of scores 0.68 and more), SD: Standard Deviation, Assess.: Assessment.

Table (4.3) shows the overall assessment of study group knowledge regarding pediatric basic life support at the Pre-test was a moderate (0.46) mean score) and the post-test was a good (0.89) mean score (see figure 4.1 and 4.2), while for the control group, the study result shows that the overall assessment of control group knowledge regarding pediatric basic life support at the both pre-test and post-test were moderate (0.47) mean score.

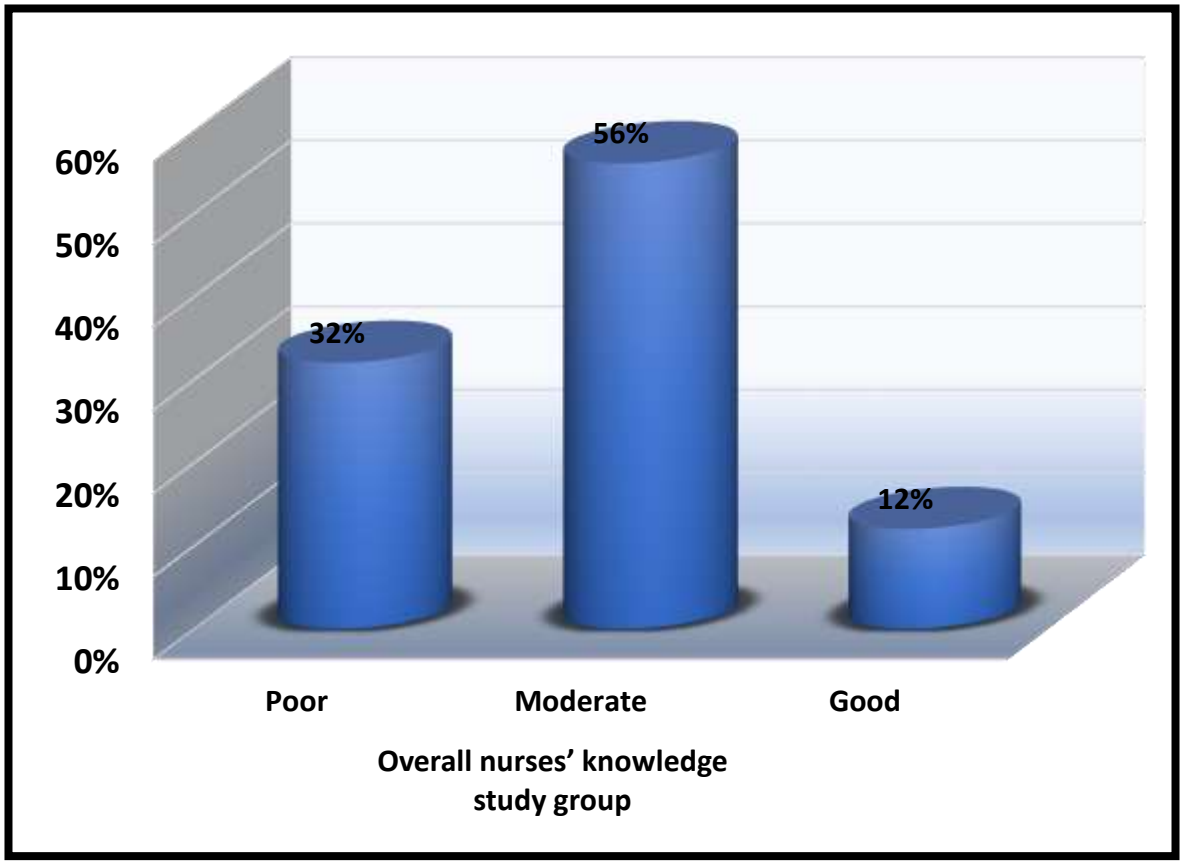


Figure (4.1): overall assessment of nurses' knowledge for study group at the **pre-test**

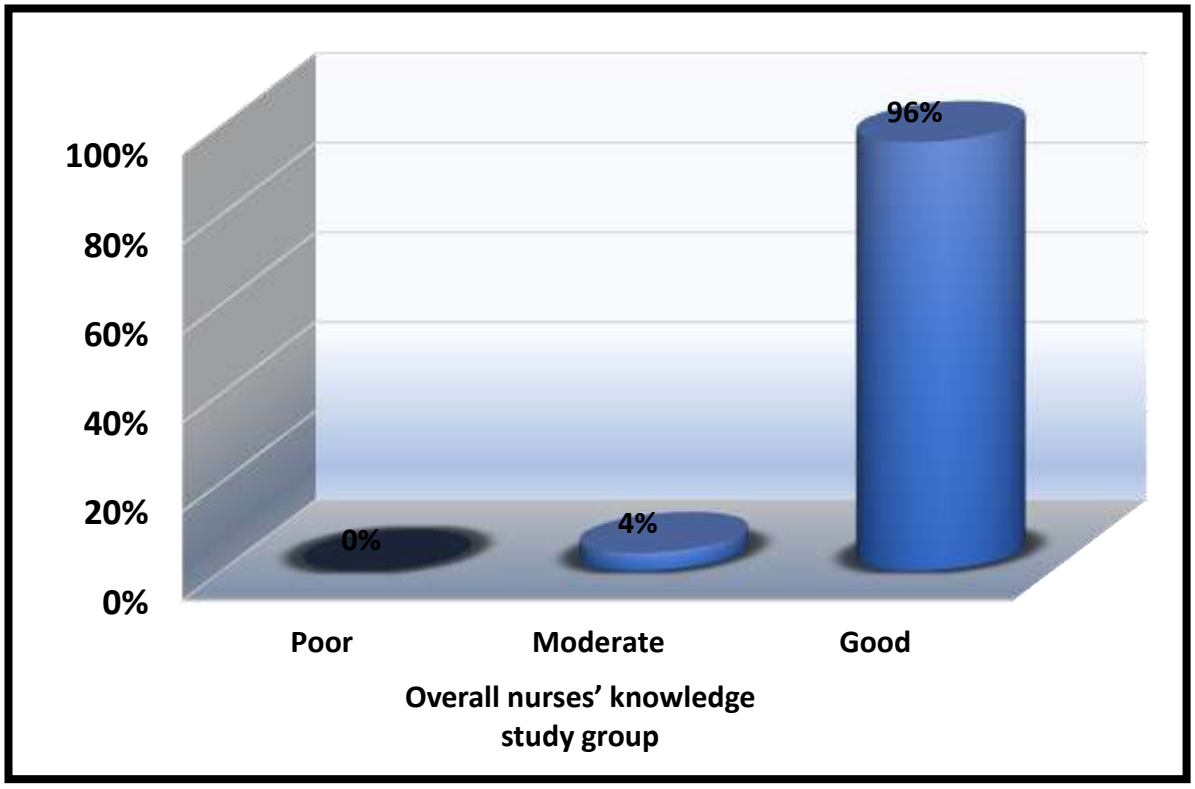


Figure (4.2): overall assessment of nurses' knowledge for study group at the post-test

Table (4.4): Mean difference (Paired T-Test) of the study and control groups knowledge at two periods of measurements (pre-test and post-test).

Overall Items	Groups	Periods of Measurements	M.S.	SD	t-value	d.f.	p-value
Nurses' Knowledge	Study	Pre-test	.46	.15	18.947	24	0.0001 HS
		Post-test	.89	.08			
	Control	Pre-test	.47	.15	0.249	24	0.805 NS
		Post-test	.47	.15			

M.S.= Mean of Score; SD = Standard deviation; d.f = degree of freedom, P = probability value. NS= Non Significant at (P > 0.05), HS: High Significant at (P< 0.01).

Table 4.4 reveals the differences in knowledge assessment between the pre-test and post-test of both the study and control groups; it shows a highly significant difference (P <0.01) between pre-test and post-test assessments in the study group, while the assessment of nurses' knowledge shows no significant difference at a P-value more than (0.05) among pre-test and post-test assessments in the control group. This mean that there is an improvement in the nurses' knowledge in the study group after the program.

Table (4.5): Mean difference (Independent Sample T-Test) of the study and control group's knowledge at two periods of measurements (pre-test and post-test)

Overall Items	Periods of measurements	Groups	Mean	SD	t-value	d.f.	p-value
Nurses' Knowledge	Pre-test	Study	.46	.15	0.172	48	.864 NS
		Control	.47	.15			
	Post-test	Study	.89	.08	12.06	48	.0001 HS
		Control	.47	.15			

Table 4.5 demonstrates statistically non-significant differences between the study and control groups in the pre-test for nurses' knowledge. On the other hand, this table shows statistically significant differences between the study and control groups in nurses' knowledge after applying the program.

Table (4.6): Evaluation of the study and control groups practices regarding pediatric basic life support at the pre-test and post-test level.

Practices Regarding PBLS			Study Group (*n*=25)										Control Group (*n*=25)									
			Pre-Test					Post-Test					Pre-Test					Post-Test				
			F.	%	MS	SD	Assess.	F.	%	MS	SD	Assess.	F.	%	MS	SD	Assess.	F.	%	MS	SD	Assess.
Check and call Domain	Q1	Not done	23	92	.08	.28	Poor	6	24	.76	.44	Good	21	84	.16	.37	Poor	21	84	.16	.37	Poor
		Done	2	8				19	76				4	16				4	16			
	Q2	Not done	15	60	.40	.50	Moderate	2	8	.92	.28	Good	3	12	.88	.33	Good	4	16	.84	.37	Good
		Done	10	40				23	92				22	88				21	84			
	Q3	Not done	17	68	.32	.48	Poor	8	32	.68	.48	Good	17	68	.32	.48	Poor	17	68	.32	.48	Poor
		Done	8	32				17	68				8	32				8	32			
Check for breathing Domain	Q4	Not done	7	28	.72	.46	Good	4	16	.84	.37	Good	6	24	.76	.44	Good	5	20	.80	.41	Good
		Done	18	72				21	84				19	76				20	80			

	Q5	Not done	9	36	.64	.49	Moderate	3	12	.88	.33	Good	7	28	.72	.46	Good	6	24	.76	.44	Good
		Done	16	64				22	88				18	72				19	76			
Check pulse Domain	Q6	Not done	13	54.17	.46	.51	Moderate	2	8	.92	.28	Good	11	44	.56	.51	Moderate	11	44	.56	.51	Moderate
		Done	11	45.83				23	92				14	56				14	56			
	Q7	Not done	10	40	.60	.50	Moderate	1	4	.96	.20	Good	8	32	.68	.48	Good	8	32	.68	.48	Good
		Done	15	60				24	96				17	68				17	68			
Compressions Domain	Q8	Not done	22	88	.12	.33	Poor	6	24	.76	.44	Good	20	80	.20	.41	Poor	21	84	.16	.37	Poor
		Done	3	12				19	76				5	20				4	16			
	Q9	Not done	20	80	.20	.41	Poor	3	12	.88	.33	Good	16	64	.36	.49	Moderate	16	64	.36	.49	Moderate
		Done	5	20				22	88				9	36				9	36			
	Q10	Not done	23	92	.08	.28	Poor	5	20	.80	.41	Good	20	80	.20	.41	Poor	20	80	.20	.41	Poor
		Done	2	8				20	80				5	20				5	20			

Open the airway and give breaths Domain	Q11	Not done	7	28	.72	.46	Good	1	4	.96	.20	Good	4	16	.84	.37	Good	5	20	.80	.41	Good
		Done	18	72				24	96				21	84				20	80			
	Q12	Not done	19	76	.24	.44	Poor	6	24	.76	.44	Good	19	76	.24	.44	Poor	18	72	.28	.46	Poor
		Done	6	24				19	76				6	24				7	28			
	Q13	Not done	4	16	.84	.37	Good	3	12	.88	.33	Good	5	20	.80	.41	Good	5	20	.80	.41	Good
		Done	21	84				22	88				20	80				20	80			
	Q14	Not done	12	48	.52	.51	Moderate	7	28	.72	.46	Good	12	48	.52	.51	Moderate	15	60	.40	.50	Moderate
		Done	13	52				18	72				13	52				10	40			
	Q15	Not done	25	100	.00	.00	Poor	10	40	.60	.50	Moderate	22	88	.12	.33	Poor	22	88	.12	.33	Poor
		Done	0	0				15	60				3	12				3	12			
Continue sets of compressions	Q16	Not done	7	28	.72	.46	Good	2	8	.92	.28	Good	5	20	.80	.41	Good	5	20	.80	.41	Good
		Done	18	72				23	92				20	80				20	80			

and breaths Domain	**Q17**	**Not done**	**22**	**88**	**.12**	**.33**	**Poor**	**5**	**20**	**.80**	**.41**	**Good**	**22**	**88**	**.12**	**.33**	**Poor**	**21**	**84**	**.16**	**.37**	**Poor**
		Done	**3**	**12**				**20**	**80**				**3**	**12**				**4**	**16**			
	Q18	**Not done**	**20**	**80**	**.20**	**.41**	**Poor**	**7**	**28**	**.72**	**.46**	**Good**	**20**	**80**	**.20**	**.41**	**Poor**	**20**	**80**	**.20**	**.41**	**Poor**
		Done	**5**	**20**				**18**	**72**				**5**	**20**				**5**	**20**			
AED steps domain	**Q19**	**Not done**	**17**	**68**	**.32**	**.48**	**Poor**	**4**	**16**	**.84**	**.37**	**Good**	**13**	**52**	**.48**	**.51**	**Moderate**	**13**	**52**	**.48**	**.51**	**Moderate**
		Done	**8**	**32**				**21**	**84**				**12**	**48**				**12**	**48**			
	Q20	**Not done**	**17**	**68**	**.32**	**.48**	**Poor**	**4**	**16**	**.84**	**.37**	**Good**	**14**	**56**	**.44**	**.51**	**Moderate**	**14**	**56**	**.44**	**.51**	**Moderate**
		Done	**8**	**32**				**21**	**84**				**11**	**44**				**11**	**44**			
	Q21	**Not done**	**23**	**92**	**.08**	**.28**	**Poor**	**6**	**24**	**.76**	**.44**	**Good**	**24**	**96**	**.04**	**.20**	**Poor**	**23**	**92**	**.08**	**.28**	**Poor**
		Done	**2**	**8**				**19**	**76**				**1**	**4**				**2**	**8**			
	Q22	**Not done**	**7**	**28**	**.72**	**.46**	**Good**	**5**	**20**	**.80**	**.41**	**Good**	**12**	**48**	**.52**	**.51**	**Moderate**	**12**	**48**	**.52**	**.51**	**Moderate**
		Done	**18**	**72**				**20**	**80**				**13**	**52**				**13**	**52**			

	Q23	Not done	19	76	.24	.44	Poor	5	20	.80	.41	Good	22	88	.12	.33	Poor	21	84	.16	.37	Poor
		Done	6	24				20	80				3	12				4	16			

%= percentage, F. = frequency, M.S: Mean of score, Poor (mean of scores 0-0.33), Moderate (mean of scores 0.34-0.67), Good (mean of scores 0.68 and more), SD: Standard Deviation, Assess.: Assessment.

Table (4.6) demonstrates the means of scores and assessment of study and control groups responses to the items related to Practices regarding pediatric basic life support. In the pre-test, this table shows that the study group recorded good Practice for item number (4, 11, 13, 16, and 22), poor level of practice for items (1, 3, 8, 9, 10, 12, 15, 17, 18, 19, 20, 21, and 23), and all other items were moderate level of practice. The table also shows excellent improvement in the study group at post-test good practice excep item number (15) that it was moderate.

The scores and assessment of control group responses to the questions related to practices regarding pediatric BLS in pre-test were good practice for items (2, 4, 5, 7, 11, 13, and 16), poor practice for items (1, 3, 8, 10, 12, 15, 17, 18, 21, and 23), and all other items were moderate level of Practice. With the exception of items (4, 11, 13, and 16), the results were the same in the post-test practice.

Table (4.7): Overall evaluation of the study and control groups practices regarding pediatric basic life support at the pre-test and post-test level.

Overall Practices Items		Study Group (*n*=25)									Control Group (*n*=25)									
		Pre-Test					Post-Test				Pre-Test					Post-Test				
		F.	%	MS	SD	Assess.	F.	%	MS	SD	Assess.	F.	%	MS	SD	Assess.	F.	%	MS	SD	Assess.
Check and call Domain	Poor	15	60	.27	.36	Poor	0	0	.79	.21	Good	2	8	.45	.23	Moderate	3	12	.44	.25	Moderate
	Moderate	2	8				2	8				13	52				12	48			
	Good	8	32				23	92				10	40				10	40			
Check for breathing Domain	Poor	5	20	.68	.41	Good	0	0	.86	.23	Good	3	12	.74	.36	Good	3	12	.78	.36	Good
	Moderate	6	24				7	28				7	28				5	20			
	Good	14	56				18	72				15	60				17	68			
Check pulse Domain	Poor	8	32	.54	.43	Moderate	0	0	.94	.17	Good	4	16	.62	.36	Moderate	4	16	.62	.36	Moderate
	Moderate	7	28				3	12				11	44				11	44			
	Good	10	40				22	88				10	40				10	40			
Compressions Domain	Poor	20	80	.13	.29	Poor	1	4	.81	.27	Good	13	52	.25	.32	Poor	13	52	.24	.30	Poor
	Moderate	1	4				2	8				7	28				7	28			
	Good	4	16				22	88				5	20				5	20			
Open the	Poor	7	28	.46	.24	Moderate	0	0	.78	.22	Good	5	20	.50	.20	Moderate	6	24	.48	.23	Moderate

airway and give breaths Domain	Moderate	14	56				7	28				16	64				14	56			
	Good	4	16				18	72				4	16				5	20			
Continue sets of compressions and breaths Domain	Poor	7	28	.35	.30	Moderate	0	0	.81	.24	Good	4	16	.37	.24	Moderate	4	16	.39	.27	Moderate
	Moderate	12	48				3	12				15	60				15	60			
	Good	6	24				22	88				6	24				6	24			
AED steps domain	Poor	16	64	.34	.32	Moderate	0	0	.81	.18	Good	12	48	.32	.20	Poor	12	48	.34	.22	Moderate
	Moderate	5	20				7	28				12	48				11	44			
	Good	4	16				18	72				1	4				2	8			
Overall Practices Regarding PBLS	Poor	14	56	.38	.24	Moderate	0	0	.82	.12	Good	6	24	.44	.11	Moderate	6	24	.44	.12	Moderate
	Moderate	7	28				5	20				18	72				18	72			
	Good	4	16				20	80				1	4				1	4			

%= percentage, F. = frequency , M.S: Mean of score, Poor (mean of scores 0-0.33), Moderate (mean of scores 0.34-0.67), Good (mean of scores 0.68 and more), SD: Standard Deviation, Assess.: Assessment.

Table (4.7) shows the study group's assessment according to their pre-test and post-test practices. Based on the overall statistical mean of scores (0.38), the study results indicated that the practices at the pre-test were moderate in all domains except (Check for breathing and Compressions) domains were good and poor respectivelly. While at the post-test,

the study results indicated that those nurses' practices in general were good in all domains due to the effectiveness of the program on nurses' practices post-test (see figure 4.3 and 4.4). Also, the same table shows the control group's assessments according to their pre-test and post-test practices. Based on an overall statistical mean of scores (0.44), the control results indicated that the practices at the pre-test and post-test were moderate in all domains except (Check for breathing and compressions) domains were poor in Pre-test and Post-test as well as AED steps domain was poor in only Pre-test.

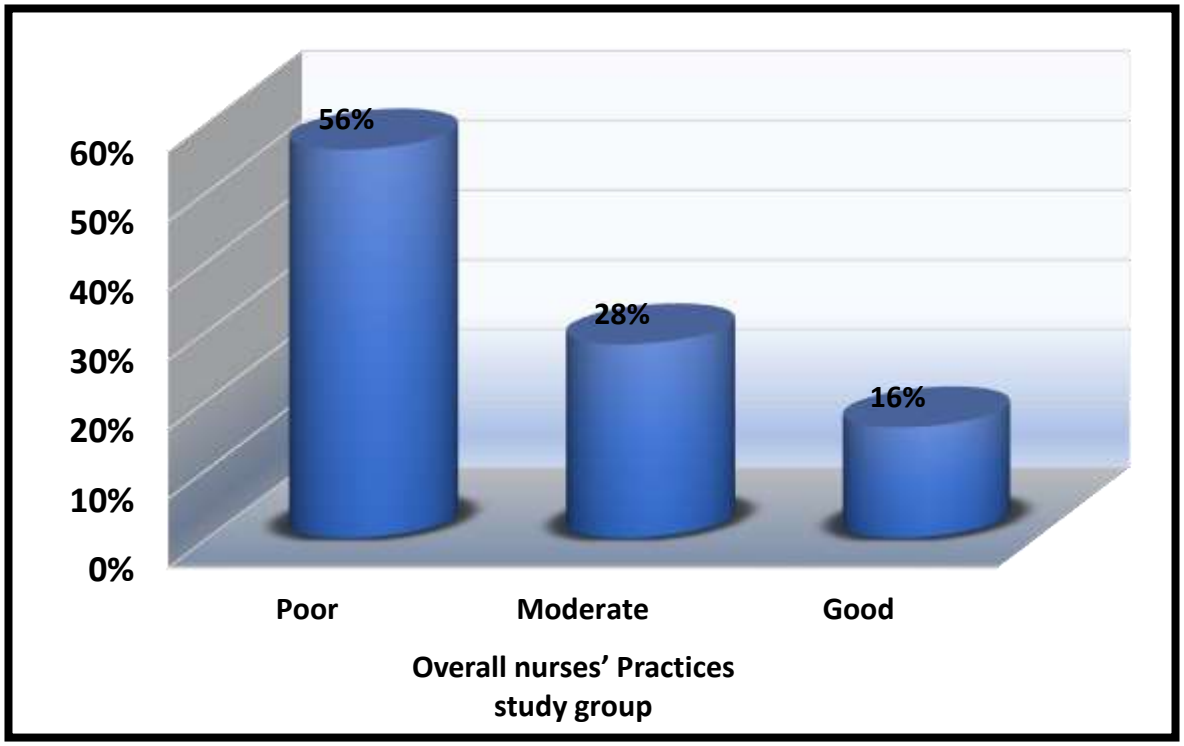


Figure (4.3): Overall assessment of nurses' Practices for study group at the **pre-test**

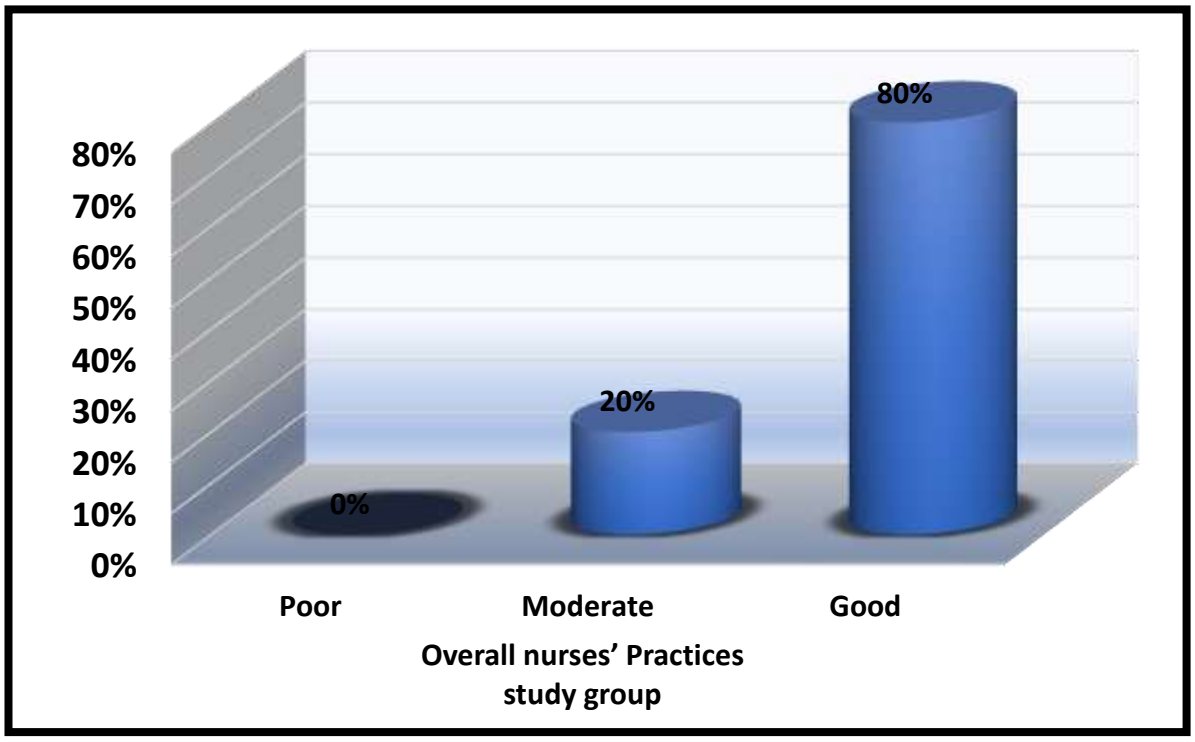


Figure (4.4): Overall assessment of nurses' practices for study group at the **post-test**

Table (4.8): Mean difference (Paired T-Test) of the study and control groups practices at two periods of measurements (pre-test and post-test).

Overall Items	Groups	Periods of Measurements	M.S.	SD	t-value	d.f.	p-value
Check and call Domain	Study	Pre-test	.27	.36	7.201	24	0.0001 HS
		Post-test	.79	.21			
	Control	Pre-test	.45	.23	1.000	24	.327 NS
		Post-test	.44	.25			
Check for breathing Domain	Study	Pre-test	.68	.41	2.092	24	0.0001 HS
		Post-test	.86	.23			
	Control	Pre-test	.74	.36	1.445	24	.161 NS
		Post-test	.78	.36			
Check pulse Domain	Study	Pre-test	.54	.43	4.000	24	0.001 HS
		Post-test	.94	.17			
	Control	Pre-test	.62	.36	N/A		
		Post-test	.62	.36			
Compressions Domain	Study	Pre-test	.13	.29	10.428	24	0.0001 HS
		Post-test	.81	.27			
	Control	Pre-test	.25	.32	.440	24	.664 NS
		Post-test	.24	.30			
Open the airway and give	Study	Pre-test	.46	.24	5.779	24	0.0001 HS
		Post-test	.78	.22			

breaths Domain	**Control**	**Pre-test**	**.50**	**.20**	**1.141**	**24**	**.265 NS**
		Post-test	**.48**	**.23**			
Continue sets of compressions and breaths domain	**Study**	**Pre-test**	**.35**	**.30**	**8.573**	**24**	**0.0001 HS**
		Post-test	**.81**	**.24**			
	Control	**Pre-test**	**.37**	**.24**	**1.000**	**24**	**.327 NS**
		Post-test	**.39**	**.27**			
AED steps domain	**Study**	**Pre-test**	**.34**	**.32**	**7.742**	**24**	**0.0001 HS**
		Post-test	**.81**	**.18**			
	Control	**Pre-test**	**.32**	**.20**	**1.445**	**24**	**.161 NS**
		Post-test	**.34**	**.22**			
Overall Nurses' Practices	**Study**	**Pre-test**	**.38**	**.24**	**10.097**	**24**	**0.0001 HS**
		Post-test	**.82**	**.12**			
	Control	**Pre-test**	**.44**	**.11**	**0.001**	**24**	**1.00 NS**
		Post-test	**.44**	**.12**			

M.S.= Mean of Score; SD = Standard deviation; d.f = degree of freedom, P = probability value. NS= Non Significant at (P > 0.05), HS: High Significant at (P< 0.01), N/A: not avaliable.

Table 4.8 reveals the differences in Practices assessment between the pre-test and post-test of both the study and control groups; it shows a highly significant difference at a P-value (0.0001) between pre-test and post-test assessments in the study group, while the assessment of nurses' Practices shows no significant difference at a P-value (1.00) among pre-test and post-test assessments in the control group. This mean that there is an improvement in the nurses' Practices in the study group after the program.

Table (4.9): Association between socio-demographic characteristics of the study group and nurses' knowledge at the Post-test.

Socio-Demographic Characteristics	Rating and Intervals	Study Group		Statistical Test	P-Value
		Mean	SD		
Age Groups (Years)	<= 25	.84	0	0.698#	0.602 (NS)
	26 – 30	.88	.08		
	31 – 35	.88	.11		
	36 – 40	.96	.06		
	41 and More	.95	.00		
Sex	Males	.92	.07	1.81^	0.083 (NS)
	Females	.86	.09		
Level of education	Nursing School	.77	.09	8.781Ψ	0.032 (S)
	Diploma	.89	.08		
	Bachelor	.93	.03		
	Master and Doctorate	.95	0		
Years of Experience (Years)	<= 5	.89	.09	.198#	0.897 (NS)
	6 – 10	.88	.07		
	11 – 15	.90	.13		
	16 and More	.93	.02		
Having previous training for PBLS?	Yes	.93	.03	2.685Ï	0.008 (S)
	No	.84	.10		

#: Statistics was done using One Way ANOVA, ^: Statistics was done using independent t test, Ψ: Statistics was done using Kruskal–Wallis test, Ï: Statistics was done using Mann-Whitney U-test

Table (4.9) shows a non-significant difference in the study group's knowledge according to their socio-demographic characteristics, at a p-

value of more than 0.05, except level of education and having previous training, at a p-value of less than 0.05.

Table (4.10): Association between socio-demographic characteristics of the study group and nurses' practices at the post-test.

Socio-Demographic Characteristics	Rating and Intervals	Study Group		Statistical Test	P-value
		Mean	SD		
Age Groups (Years)	<= 25	.87	0	0.433#	0.783 (NS)
	26 – 30	.82	.13		
	31 – 35	.84	.20		
	36 – 40	.87	.06		
	41 and More	.72	.09		
Sex	Males	.81	.13	.165^	0.87 (NS)
	Females	.82	.13		
Level of education	Nursing School	.79	.13	0.862#	0.476 (NS)
	Diploma	.78	.14		
	Bachelor	.84	.11		
	Master and Doctorate	.96	0		
Years of Experience (Years)	<= 5	.86	.09	1.095#	0.373 (NS)
	6 – 10	.79	.16		
	11 – 15	.77	.15		
	16 and More	.74	.12		
Having previous	Yes	.85	.11	1.56^	0.133

training for PBL S?	**No**	**.77**	**.13**		**(NS)**

[#]: Statistics was done using One Way ANOVA, [^]: Statistics was done using independent t test

Table (4.10) shows a non-significant difference in the study group's practices according to their socio-demographic characteristics, at a p-value of more than 0.05.

Chapter Five

Discussion of the Results, Conclusions and Recommendation

Chapter Five

5.1 Discussion of the results

Pediatric cardiac arrest, while rare, demands a high level of proficiency to effectively save children's lives, a skill that can be readily honed. The causes of cardiac arrests in children often differ from those in adults, with a significant proportion stemming from respiratory or circulatory failure rather than primary arrhythmias.

Basic life support (BLS) with cardiopulmonary resuscitation (CPR) provided at the right time greatly improves survival following cardiac arrest. Effective and timely CPR reduces the likelihood of death following sudden cardiac arrest. Adequate knowledge and skills related to BLS are essential requisites for nurses. Simulation can improve patient safety by creating a safe and controlled environment. Also, the use of the simulation approach can improve the knowledge, skills, and performance of nurses. They can reach high levels of critical thinking and acquire new professional skills without endangering the patient's health, simulation-based education allows educators to make and educate from mistakes, review their performance, and receive feedback without endangering actual patients.This chapter has debated the results which were presented in chapter four and makes comparisons between the results of this study and the existing international literature found.

5.1.1. Part I: A discussion of the Socio-Demographic Characteristics of the Study Sample.

The results of socio-demographic data of fifty nurses who have participated in the study are reported in **(table 4.1)**, shows no significant difference between the study and the control groups regarding the socio-demographic data indicating their homogeneity.

The findings presented that most of the nurses age in study and control groups are those in the ages group (26-30) years old. No significant differences were in age groups for participants in both groups (p=0.98), this absence of a significant difference means that the sample is homogeneous between the two groups. These findings are compatible with the study of Mosbah et al., (2019) who found that more than one third of the nurses aged from 25 - 30 years old and more than other groups. Our findings are slightly different from the results of the study of Sundess, et al., (2014) who stated that the age (21-30) formed the majority of nurses because it was more than the others.

Relative to the nurses sex, the present study reveals that the high percentages of participants in both groups (56% and 52%) were males in the study and control groups respectively. The absence of a significant difference means a strong point that serves the simulation education program for the purpose of comparison. In support to this study, Sundess, et al., (2014) reported that the males were more than females.

Concerning the level of education, (48%) and (52%) of the study and control groups, respectively, both have a Bachelor degree in nursing. There were no-significant differences in educational level for sample in both groups (p=0.933). These findings were compatible with the study of Ahmed & Al-Sawaf (2017) who showed more than one third of the nurses in the study group had a Bachelor of Science in Nursing . these findings opposite to numerous studies including the study of Mahmood (2015) who reported that the level of secondary school in nursing made the highest score in his study.

Regarding the years of experience in the nursing field, the study concluded that (48%) of the sample in the study group and (52%) of the sample in the control group have (≤5) years. There were no-significant

differences in years of experience for nurses in both groups (p=0.455), this may due to most nurses are young and gratuated from institutes and colleges. This result come consisting with Qalawa et al (2020) who showed that 50% of samples had experience 1-5 years.

In terms of training course participation, 56% of the study group and 52% of the control group had taken courses. There were no-significant differences in training for nurses in both groups (p=0.777). These results are consistent with a study conducted by Nisha (2011), which found that 52% of the participants had attended a resuscitation training program and 48% had not.The study by Qalawa et al., (2020), which revealed that 92.9% of nurses had no training courses, is compared with our results.

5.1.2. Part II : Discussion the nurses knowledge of the study and control groups regarding pediatric basic life support at the pre-test and post-test level.

Table (4.3) shows the overall assessment of study group knowledge regarding pediatric BLS at the pre-test was a moderate (0.46) mean score and the post-test was a good (0.89) mean score, while for the control group, the study result shows that the overall assessment of control group knowledge regarding pediatric basic life support at the both pre-test and post-test were moderate for both periods.

The researcher confirmed that nurses knowledge regarding pediatric basic life support monitoring within this study was moderate at the pretest period. These results have come along with the findings of the study of Eubayd (2017) who confirmed that the nurses' knowledge toward CPRin the study was fair at the pretest period. The present study is also congruent with Bahig Anwr Akl et al., (2021) stated that the majority of nurses' knowledge were increased after implementation of simulation training.

Also this result is agree with Partiprajak & Thongpo, (2016) who presented that retention of basic life support knowledge, self-efficacy and chest compression performance, who found that CPR training has a vital direct effect on knowledge.

From point of researcher's insight, this type of education that used in this study were effective in improving knowledge of the nurses in the study group and reinforced their learning.

5.1.3. Part III : Discussion the nurses practices of the study and control groups regarding pediatric basic life support at the pre-test and post-test level.

Given the importance of skills to perform an effective CPR a well designed practical course is the widely accepted solution.

According to the overall nurses practices as shown in table (4-7) reveals that nurses in the study group show a moderate practice towards pediatric BLS during the pre-test period with a mean score (0.38) and their practice is increased to a good level during the post-test period with a mean score (0.82) after receiving the simulation education program. Also, the same table shows the overall nurses practices for the control group's assessments according to their pre-test and post-test scores remained essentially the same with a moderate level for both periods.

The study reveals that the majority of nurses' practice in study group were improved in posttest after implementation of simulation based education compared to pre-test.

According to the researcher's observations, simulation is essential to raising the skill levels of nursing staff members. It also seems to be a very

effective teaching tool for increasing practice satisfaction and improving performance.

The result of the present study was in the same line with Qalawa et al., (2020) who stated that the majority of nurses' practice were improved posttest after implemented simulation based learning. Similarly, Toubasi et al (2015) conducted a study to assess the effectiveness of a BLS simulation training on Jordanian nurses' skill improvement in cardiopulmonary resuscitation and found that nurses had better scores after the BLS training program and there was a statistically significant difference which suggested the effectiveness of the BLS simulation program in improving the skills. Also the result of the present study was in the same line with Sankar et al (2013) who found that skills scores immediately post-training improved and with Maurya (2015) who indicated that simulation teaching group improved in the post test score.

This study reveals that in the intervention group compared with the control group, the knowledge and practice scores were increased after the intervention, this finding might be because of that simulations increase critical thinking talents, enhances nurses learning experience, and skill performance. Also the improvement in nurses' knowledge may be due to the use of combination of various instructional methods in addition to simulation. Qalawa et al., (2020) support the importance of simulation based education and recommended to using this type of education on a regular basis . This study suggests that in order to carry out CPR skills effectively, regardless of training program used, clinical nurses should be undergo retraining every 6 months.

5.1.4. Discussion of the association between the efficacy of the simulation program on nurses knowledge with their socio-demographic characteristics of the study group.

Table (4.10) shows a non-significant difference in the study group's Knowledge with to their socio-demographic characteristics, at a p-value of more than 0.05, except level of education and having previous training, the p-value of less than 0.05.

In relation to correlation between knowledge and their age group, our findings have revealed that there is no significant differences between nurses' knowledge concerning pediatric BLS with their age within the case group after the program at a p-value of more than 0.05. This goes along with Ahmed & Al-Sawaf ,(2017) show no significant differences between the post-test scores of pediatric CPR knowledge with regard to nurses age.

Regarding sex, the findings showed no significant differences between nurses' knowledge concerning pediatric BLS with their sex within the case group after the program at a p-value of more than 0.05. These results agree with Blessy, (2011) who reported that there were no significant differences between the post educational program scores regarding CPR knowledge and sex.Also these results agree with Ahmed & Al-Sawaf, (2017) who revealed no significant differences between the post-test scores of pediatric CPR knowledge with regard to sex of nurses. Also our results are consistent with the study of Nori et al., (2012) in Iran who stated that there was no significant relationship between nurses' gender with respect to their knowledge.

Concerning to educational level, our findings revealed that there is significant differences between nurses' knowledge concerning pediatric BLS with their level of education within the case group after the program at

a p-value of less than 0.05. This finding corroborate results established by Hend et al., (2012) who proved that there was a significant correlation between post-test scores and the level of education of nurses.

The findings showed no significant differences between nurses' knowledge concerning pediatric BLS with their years of experience within the case group after the program at a p-value of more than 0.05. This result agrees with parajulee et al., (2011) did not found a significant association between the total knowledge scores and the duration of experience. On the other hand this finding was different from Ahmed & Al-Sawaf,. (2017) who showed that there was a highly significant statistical difference in post – test scores between nurses knowledge with regard to their duration of experience /years.

The findings revealed that there is significant differences between nurses' knowledge concerning pediatric BLS with their having previous training for pediatric BLS within the case group after the program at a p-value of less than 0.05. These results have come along with the findings of the study of Eubayd (2017) who stated there is high significant relationship between nurses' knowledge toward CPR with respect to participation in CPR training courses.

5.1.5. Discussion of the association between the efficacy of the simulation program on nurses practice with their socio-demographic characteristics of the study group.

Table (4.11) reveals a non-significant difference in the study group's Practices according to their socio-demographic characteristics, at a p-value of more than 0.05. These results have come along with the findings of the study of Zainel, (2014) who confirmed that the nurses' practices in

experimental group were not affected by socio-demographic variables after implementation of the program.

In the present study, simulation based education program is not affected by participant age, sex, years of experience, educational levels, and training course because all of them were attentive, helpful and interested in program, especially when they applied the steps on the manikin more than once until each one of them mastered the main steps correctly, so it can be applied to increase same of nurses who participated in study group practices regardless of these variables.

Finally, the researcher confirmed that all of the studied nurses do not apply the correct methods of BLS and CPR in the pre-test, this may be due to lake of knowledge, guidance and supervision from the head nurse on nurses' performance as this was the major role and become busy with administrative duties and absence of standardized guidelines the nurse can use to review any procedure.

5.2 Conclusions:

According to the present study findings and on the bases of the discussion and interpretation, the following conclusions have been drawn up:

1. There was a significant development in nurses performance regarding pediatrics BLS after simulation based education program for the study group and the study provides aline to enhance the simulation integration as active education strategies to develop nurses' performance in applying clinical skills.
2. There were a significant association at post-test between nurses' knowledge and the sample's socio-demographic characteristics (level of education, and participation in pediatric BLS Courses), while there was no correlation found between the nurses' knowledge and characteristics (age, sex & years of experience).
3. There is a non-significant relationship at post-test between nurses' practices and the sample's demographic characteristics.
4. The simulation education program concerning pediatric BLS was highly effective for the study group.

5.3 Recommendations:

Based on the results and conclusions of the present study, the researcher recommends the following:

1. Further studies with large sample to evaluate the effect of simulation on nurses' education output for more studies that simulation would be valuable for nurses' enhancement.
2. Encouraging nurses to improve their performances through increasing their participation in BLS and CPR courses at least every 6 months.
3. It's very necessary to set up (build) a specialized center for emergency services and First Aid and supply it with the latest medical devices and an enough number of manikins to ease the missions of post graduate students in their inservices training
4. Further researches need to be conducted to evaluate the effect of simulation education program for advanced CPR.
5. Ministry of Health & Ministry of Higher Education & Scientific Research should be supplied with data of this achieved study to execute policy implementation at the highest governmental level as a part of the medical city accreditation and workforce standard setting.
6. The head nurse should provide adequate guidance, supervision and regular feedback to improve nurses' performance
7. Nursing training programs should use simulation education and training undergraduate, and support the introduction of simulation based education as a vital step when develop curriculum.

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Appendices

Appendix (A)

Administrative Arrangements

Republic of Iraq
Ministry of higher education & scientific research
University of Karbala
College of Nursing
Graduate studies Division

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جـــامعة كربلاء
كـلية التـمريـض
شعبة الدراسات العليا

العـدد : د.ع/ ٣٥٦

التاريخ: 25 / ١٠ / 2023

الى / دائرة صحة النجف الأشرف – مستشفى الزهراء التعليمي

م/ تسهيل مهمة

تحية طيبة...

يرجى التفضل بالموافقة على تسهيل مهمة طالب الدراسات العليا / الماجستير (كرار صالح محيسن) في كليتنا للعام الدراسي (2023-2024) لغرض جمع العينات الخاصة برسالته الموسومـــة :

" كفاءة التعليم القائم على المحاكاة في تحسين أداء الممرضين فيما يتعلق بدعم الحياة الأساسي للأطفال "

"The Efficacy of Using Simulation-Based Education on Nurses Performance Regarding Pediatric Basic Life Support "

** مع التقدير **

أ.م.د. سلمان حسين فارس الكريطي
معاون العميد للشؤون العلمية و الدراسات العليا
2023 / ١٠ / 25

نسخة منه الى :
- مكتب السيد المعاون العلمي المحترم .
- شعبة الدراسات العليا .

العنوان : العراق - محافظة كربلاء المقدسة – حي الموظفين - جامعة كربلاء
Mail: nursing@uokerbala.edu.iq website:

Republic of Iraq
Ministry of health
Najaf Health Directorate
Training and Human Development Center
No.
Date:

جمهورية العراق
وزارة الصحة
دائرة صحة النجف
مركز التدريب و التنمية البشرية
العدد: ٤٣٤٩
التاريخ: ٨/ ١١/ ٢٠٢٣

الى/ مستشفى الزهراء التعليمي،مستشفى المناذرة العام

/ تسهيل مهمة

تحية طيبة ..

استنادا الى كتاب جامعة كربلاء ذي **العدد ٣٠٤ في ٢٠٢٣/١٠/٢٥** يرجى تسهيل مهمة الباحث (**كرار صالح محيسن**) **ل**إجراء البحث الموسوم :-

The Efficacy of using simulation _based education on nurses performance regarding pediatric basic life support

نرجو بيان رأيكم حول اجراء البحث في مؤسستكم وتزويدها بالبيانات والمعلومات المطلوبة لإجراء البحث واعلامنا ليتسنى لنا اجراء ما يلزم **علما انه لا يجوز اخراج العينات خارج المؤسسة الصحية**.

مع التقدير والاحترام.

المرافقات :
استمارة الموافقة على اجراء البحث توقع وتعاد الينا

الدكتور
حيدر خضير عباس
مدير مركز التدريب والتنمية البشرية
٨/ ١١/ ٢٠٢٣

نسخة منه الى
- مركز التدريب والتنمية البشرية / شعبة ادارة المعرفة والبحوث/مع الاوليات
- مستشفى الزهراء التعليمي،مستشفى المناذرة العام

Republic of Iraq
Ministry of health
Najaf Health Directorate
Training and Human Development Center
No.
Date:

جمهورية العراق
وزارة الصحة
دائرة صحة النجف
مركز التدريب و التنمية البشرية
العدد: ٤٦/٤٤
التاريخ: ٩/١١/٢٠٢٣

إلى / جامعة كربلاء_ كلية التمريض

م / تسهيل مهمة

تحية طيبة ...

إشارة الى كتابكم ذي العدد**304 في ٢٠٢٣/١٠/٢٥** بخصوص تسهيل مهمة الباحث (**كرار صالح محيسن**)للحصول على الموافقة الاخلاقية لإجراء البحث العلمي الموسوم :

The Efficacy of using simulation _based education on nurses performance regarding pediatric basic life support

حصلت موافقة اللجنة العلمية للبحوث في مركز دائرتنا على اجراء البحث في (**،مستشفى المناذرة العام، مستشفى الزهراء التعليمي**) في دائرتنا مع التأكيد على الالتزام الكامل بتعليمات السلامة الحيوية والضوابط الاخلاقية والحصول على موافقة المشاركين قبل الشروع بالبحث والحفاظ على خصوصيتهم وعدم افشاء البيانات او استخدام العينات لغير اغراض البحث العلمي ...
على ان لا تتحمل دائرتنا اية تبعات مادية ولا يسمح بإخراج العينات خارج مختبرات المؤسسة .

للتفضل بالاطلاع .....مع الاحترام

الدكتور
عبدالله محمد الغزالي
المدير العام
٢٠٢٣/١١/٩

نسخة منه الى /
- مركز التدريب و التنمية البشرية /شعبة ادارة المعرفة والبحوث..... مع الأوليات
- ،مستشفى المناذرة العام ، ،مستشفى الزهراء التعليمي،

تسلسل الاستمارة ٢٩٠

Appendix B

Ethical Considerations

Ethical Considerations

Ministry of Higher Education and Scientific Research
University of Karbala / College of Nursing
Scientific Research Ethics Committee

Ethical Committee Code:
Date: / /2023

Research Ethical Approval Form

Title of the research project	
In the English language	**In the Arabic language**
The Efficacy of Using Simulation Based Education on Nurses Performance Regarding Pediatric Basic Life Support	كفاءة التعليم القائم على المحاكاة في تحسين أداء الممرضين فيما يتعلق بدعم الحياة الأساسي للأطفال

Data About the Main Researcher /Student:			
Full Name	**Scientific Title**	**Mobile Number**	**Email**
Karrar Saleh Muhaisen	Bachelor's degree in nursing	07829437766	Karrar.alyasri.1994@gmail.com

Data About the Co-author /Supervisor:			
Full Name	**Scientific Title**	**Mobile Number**	**Email**
Khamees Bandar Obaid	Prof.Dr	07703943988	Khamees.b@uokerbala.edu.iq

Study objectives

1. Assess nurses performance regarding pediatric basic life support.
2. Evaluate the efficacy of simulation based education on nurses performance regarding pediatric basic life support.
3. Findout the relationship between post-test levels of nurses performance and selected socio-demografic characteristics..

Time and Setting of the Study

Time: Starts 26st of September 2023 to August 2024

AL-Najaf Health Department \(Al Zahraa Teaching Hospital _ AL-Manathera General Hospital)

Study Design

A quiz-experimental study design

Sampling method and sample size

A non-probability "convenience" Control group (25), Study group (25)

Statement of Ethical Commitment

The study will be conducted in accordance with what was mentioned in the protocol above and to commitment that all rules set by the ethical committee are followed in present research process. The researcher also makes a commitment to abide by ethical principles, moral values, law and instruction of the institutions. There is no bias will be during collecting the data, gender, regional aspects and is totally impartial and objective. The researcher will have taken an informed consent from the participants, and provide clarifications and information about the study to the sample members. The researcher deals with the data of the sample members in complete confidentiality.

كرار صالح حسين

Name and signature of the researcher

Recommendation of the College's Research Ethical Committee

☑ **Agreement to conduct the study** ☐ **Disagreement to conduct the study**

Instructor Dr. Sajidah Saadoon Oleiwi
Member

Ass. Prof. Dr. Zeki Sabah Musihb
Member

Ass. Prof. Dr. Ghazwan Abdalhussein
Member

Ass. Prof. Dr. Hassan Abdullah Athbi
Chairman of the Committee

اختصاص تمريض صحة البالغين

Appendix C

Assessment Need Scale

Appendix C – I

Assessment Need Questionnaire

المعلومات الديموغرافية للمرضين

١.العمر: (سنه) يرجى كتابة عمرك بالسنين

٢.الجنس : ذكر ☐ انثى ☐

٣. مستوى التعليم (التحصيل الدراسي):

اعدادية تمريض	
دبلوم تمريض	
بكالوريوس تمريض	
شهادة عليا في التمريض	

٤.عدد سنوات الخدمة : ☐

٥.هل اشتركت في دورات تدريبية سابقة فيما يتعلق بدعم الحياة الاساسي للأطفال:

☐ ☐

Appendix C- II

تقييم احتياجات الملاك التمريضي ازاء دعم الحياة الاساسي للأطفال

ت	الاسئلة	نعم	%	لا	%
1	اغلب الأسباب التي تؤدي إلى توقف القلب عند الأطفال هي خلل أو أمراض الجهاز التنفسي المؤدية لنقص الأوكسجين.	4	40	6	60
2	بعد توقف القلب والرئتين يحدث تلف خلايا الدماغ خلال 4-6 دقائق	3	30	7	70
٣	من اعراض توقف القلب هو فقدان الوعي ,فقدان التنفس, توقف القلب	5	50	5	50
٤	اذا لم يكن باستطاعة المصاب التكلم او السعال فهذا يعني ان المجرى التنفسي لديه مغلق تماما والمصاب في هذه الحالة بحاجة ماسة للمساعدة	4	40	6	60
٥	الانعاش القلبي الرئوي الاساسي هو مزيج بين الضغط على صدر المريض والتنفس الاصطناعي	4	40	6	60
٦	اول خطوة في الانعاش الابتدائي(الاساسي) هو التأكد من انك والمصاب بمكان امن خال من الاخطار	3	30	7	70
٧	تسلسل الخطوات الحديثة لإجراء الإنعاش القلبي الرئوي وفقا لجمعية القلب الأمريكية لعام (٢٠20 م) هي ضغط الصدر، فتح المجرى التنفسي، اعطاء التنفس (CAB).	3	30	7	70
٨	ينبغي أن لا يستغرق فحص النبض لطفل فاقد للوعي أكثر من ٥-١٠ ثواني.	4	40	6	60
٩	يقدم الانعاش القلبي الرئوي لأي شخص فقد نبضه وتنفسه	5	50	5	50
١٠	عند عملية الضغط على الصدرنضع المصاب على جسم صلب ومستو	4	40	6	60
١١	عند أداء الضغط على صدر الطفل، يكون مقدار الضغط بما يقارب ٥ سم	4	40	6	60
١٢	يقوم الممرض بفتح المجرى الهوائي عند الطفل فاقد الوعي إذا لم تكن هناك علامات حادث أو إصابة في ألراس بإمالة ألراس للخلف بلطف ورفع الذقن للأعلى	3	30	7	70

١٣	إن الطريقة الصحيحة لفتح مجرى الهواء إذا وجدت إصابة بالرقبة هي تثبيت الرقبة ودفع الفك السفلي إلى الإمام	4	40	6	60
١٤	يتم فحص نبض الطفل عند اجراء الانعاش القلبي الرئوي عادةً من الشريان السباتي في الرقبة	5	50	5	50
١٥	نسبة ضغطات الصدر الى التنفس للطفل من قبل مسعف واحد هي ٣٠ ضغطة صدرية ثم إعطاء التنفس مرتين (٢:٣٠)	5	50	5	50
١٦	نسبة ضغطات الصدر الى التنفس للطفل من قبل مسعفين او اكثر هي ١٥ ضغطة صدرية ثم إعطاء التنفس مرتين(١٥: ٢)	4	40	6	60
١٧	يمكن للممرض التأكد من أن الطفل الفاقد الوعي يتنفس عن طريق حركة الصدر	5	50	5	50
١٨	عند القيام بعملية الإنعاش القلبي الرئوي للطفل يكون معدل الضغط الخارجي على الصدر هو١٠٠-١٢٠ في الدقيقة	3	30	7	70
١٩	من علامات نجاح عملية الإنعاش القلبي الرئوي هي عودة النبض عند فحصه, رجوع اللون الطبيعي للطفل واختفاء الازرقاق ,عودة التنفس عند فحصه	5	50	5	50
٢٠	عند فحص طفل فاقد الوعي ولديه نبض اكثر من ٦٠ نبضه بالدقيقة ولكنه لا يتنفس يجب الابداء بفتح المجرى الهوائي وإنعاش الطفل بإعطائه التنفس بمقدار نفس واحد كل (٢-٣) ثواني	3	30	7	70
	المجموع		٤٠%		%٦٠

Appendix D

Appendix D

Questionnaire in Arabic

صفحة موافقة المبحوث

اخي العزيز..

بين يديك استبانة لدراسة...

(كفاءة التعليم القائم على المحاكاة في تحسين اداء الممرضين فيما يتعلق بدعم الحياة الاساسي للاطفال)

(The Efficacy of Using Simulation Based Education on Nurses Performance Regarding Pediatric Basic Life Support)

لذا يرجى التفضل ملئ المعلومات المتعلقة بالبحث اعلاه واود اعلامك بأن المعلومات التي ستدلي بها ستكون في غاية السرية فقط لغرض البحث هل توافق بالمشاركة..؟

نعم ☐

لا ☐

اسم الباحث :

كرار صالح محيسن

طالب الماجستير \ تمريض الاطفال

"استمارة الاستبانة"

الجزء الاول : المعلومات الديموغرافية :

١. العمر: (سنه) يرجى كتابة عمرك بالسنين ☐

٢. الجنس : **ذكر** ☐ **انثى** ☐

٣. مستوى التعليم (التحصيل الدراسي):

اعدادية تمريض	
دبلوم تمريض	
بكالوريوس تمريض	
شهادة عليا في التمريض	

٤. عدد سنوات الخدمة : ☐

٥. هل اشتركت في دورات تدريبية سابقة فيما يتعلق بدعم الحياة الاساسي للأطفال:

نعم ☐ **لا** ☐

الجزء الثاني : الاسئلة المتعلقه بمعارف الممرضين حول دعم الحياة الأساسي للأطفال:

عزيزي الممرض يرجى الاجابه على الاسئلة التالية بعناية ثم ضع دائرة حول الاجابة الصحيحة

١. أعراض و علامات توقف القلب هي :

أ- فقدان الوعي عدم وجود نبض وتوقف التنفس.

ب- انخفاض ضغط الدم .

ج- زيادة عدد مرات التنفس عن النسبة الطبيعية.

٢. عادة ما يكون للسكتة القلبية لدى الأطفال سبب رئيسي يتعلق بفشل الجهاز التنفسي أو الصدمة.:

أ. صح

ب .خطأ

٣. تحدث السكتة القلبية عند الأطفال والبالغين لنفس الأسباب:

أ. صح

ب.خطأ

٤. بعد توقف القلب والرئتين يحدث تلف خلايا الدماغ بعد:

أ.(٤ – ٦ دقائق).

ب. (١٠ – ١٥ دقيقة).

ج. (٢٠ – ٢٥ دقيقة)

٥. انسداد المجرى التنفسي يحدث نتيجة:

أ. انسداد المسالك التنفسية بالطعام أو السوائل مثل القيء أو الدم أو الإفرازات في حالات التهابات الجهاز التنفسي أو امتلاء المسالك التنفسية بالماء والطين كما يحدث في حالة الغرق.

ب. ابتلاع جسم غريب مثل العملات المعدنية – المسامير وغيرها كما يحدث مع الأطفال.

ج. كل ما ذكر أعلاه .

٦. إن عدد مرات التنفس الطبيعي في الدقيقة بالنسبة لطفل عمره مابين ١- ٣ سنوات:

أ.(٢٠- ٣٠ نفس بالدقيقة).

ب.(٤٠ – ٤٥ نفس بالدقيقة) .

ج. (٥٠ – ٥٥ نفس بالدقيقة).

٧. إن عدد مرات التنفس الطبيعي في الدقيقة بالنسبة لطفل عمره مابين ٦- ١٢ سنة .

أ.(٢٠- ٣٠ نفس بالدقيقة).

ب.(٤٠ – ٤٥ نفس بالدقيقة) .

ج. (١٥ – ٢٣ نفس بالدقيقة).

٨. النبض الطبيعي في الدقيقة الواحدة بالنسبة لطفل مابين ١-٣ سنوات:

أ.(٦٠ – ١٢٠ نبضة بالدقيقة).

ب.(٨٠ - ١٣٠ نبضة في الدقيقة)

ج. (٧٠ – ١١٠ نبضة بالدقيقة)

٩. الخطوات الموصى بها من قبل جمعية القلب الامريكية عند إجراء الإنعاش القلبي الرئوي لمرضى السكتة القلبية هي؟:

أ.فتح المجرى التنفسي، اعطاء التنفس، ضغط الصدر(ABC)

ب.ضغط الصدر، فتح المجرى التنفسي، اعطاء التنفس (CAB)

ج. اعطاء التنفس، فتح المجرى التنفسي ، ضغطات الصدر(BAC)

١٠. يتوجب اجراء انعاش القلب مباشرة لاي شخص:

أ. فقد تنفسه لكن لديه نبض

ب. فقد وعيه وتوقف نبضه.

ج. نزف كثيراً

١١. ينبغي أن لا يستغرق فحص التنفس لطفل فاقد للوعي أكثر من:

أ.10- 15 ثانية

ب.5-١٠ ثانية

ج. ١٥-٢٠ ثانية

١٢. نسبة الضغط إلى التنفس في الانعاش القلبي الرئوي إذا تواجد (منقذ واحد) هي:

أ.٣٠ ضغطة صدرية ثم إعطاء التنفس مرتين (30:2)

ب.٢٠ ضغطة صدرية ثم إعطاء التنفس مرتين (٢٠:٢)

ج. ١٥ضغطة صدرية ثم إعطاء التنفس مرتين (١٥:٢)

١٣. نسبة الضغط الى التنفس في الانعاش القلبي الرئوي إذا تواجد (منقذان او اكثر)هي :

أ. ٣٠ ضغطة صدرية ثم إعطاء التنفس مرتين (30:2)

ب. ٢٠ ضغطة صدرية ثم إعطاء التنفس مرتين (٢٠:٢)

ج. ١٥ضغطة صدرية ثم إعطاء التنفس مرتين (١٥:٢)

١٤. عند أداء الضغط على صدر الطفل، يكون مقدار الضغط بما يقارب :

أ. 1سم

ب. 3 سم

ج. 5 سم

١٥. في حالة تواجد ممرضين اثنين عند إنعاش الطفل وبعد طلب الإسعاف:

أ.يقوم احدهم بفتح المجرى الهوائي وفحص النبض ويجري الأخر الإنعاش القلبي الضغط على الصدر.

ب.يقوم احدهم بعمل الإنعاش القلبي الرئوي حتى يتعب ويكمل الأخر مكانه .

ج. يقوم احدهم بعمل الإنعاش القلبي الرئوي والأخر يتأكد من السبب المؤدي لتوقف القلب.

١٦. يتم الضغط على الصدر لعمل الإنعاش القلبي الرئوي في:

أ.أعلى حلمة الثدي.

ب.مركز الصدر (عظم القص) .

ج. في الجهة اليسرى للصدر .

١٧. فقدان الوعي وتوقف التنفس وعدم وجود النبض للمصاب يحتاج إلى:

أ.وضع المصاب في مكان مناسب .

ب.الاتصال بالإسعاف وانتظار وصوله .

ج. البدء بالإنعاش القلبي الرئوي فورا .

١٨.كم مرة يجب على المنقذين تبديل الأدوار أثناء إجراء الإنعاش القلبي الرئوي؟:

أ. تقريبًا كل دقيقة واحدة

ب. تقريبًا كل دقيقتين

ج- تقريبًا كل خمس دقائق

١٩.كم عدد الضغطات على الصدر يجب تقديمها في الانعاش القلبي الرئوي خلال دقيقة واحدة:

أ. ٥٠-٧٠ ضغطة

ب.١٠٠-١٢٠ ضغطة

ج.١٥٠-١٨٠ ضغطة

٢٠.مكان فحص نبض الطفل يكون من الشريان الفخذي (femoral pulse) و :

أ.الشريان الصدغي (temporal pulse)

ب.الشريان العضدي (brachial pulse)

ج. الشريان السباتي(carotid pulse)

٢١.يبدأ الإنعاش القلبي الرئوي عن طريق:

أ.فتح المجرى الهوائي

ب. إعطاء ٢ تنفسات

ج. إعطاء ضغطات على الصدر

٢٢.ينبغي أن لا يستغرق فحص النبض لطفل فاقد للوعي أكثر:

أ. (٥ - ١٠ ثواني) .

ب. (١٠ - ٢٠ ثانية).

ج. (٢٥- ٣٠ ثانية).

٢٣.يشير حرف "C" في CAB في الانعاش القلبي الرئوي:

أ.ضغط الصدر (compression)

ب.الاتصال (calling)

ج. الدورة الدموية (circulation)

٢٤.في اختصار CAB في الانعاش القلبي الرئوي، يشير الحرف "A" إلى التنفس:

أ. صح

ب. خطأ

٢٥.يتم تدليك القلب للطفل اثناء الانعاش القلبي الرئوي بيد واحدة او كلتا اليدين :

أ.صح

ب. خطأ

٢٦.ما هي الخطوة التي لا تعد جزءًا من الخطوات الخمس في سلسلة البقاء على قيد الحياة:

أ.الأنعاش القلبي الرئوي المبكر

ب.ازالة الرجفان السريع

ج. وضع مجرى الهواء المتقدم

٢٧.يجب استخدام رفع الذقن بإمالة الرأس(Head Tilt-Chin Lift)اثناء الانعاش القلبي الرئوي إذا لم تكن هناك علامات حادث أو إصابة في ألراس:

أ.صح

ب.خطأ

٢٨.يقوم الممرض او المنقذ بفتح المجرى الهوائي عند الطفل فاقد الوعي اذا كانت هناك علامات حادث أو إصابة في ألراس او الرقبة:

أ.رفع الجبهة للخلف ودفع الذقن للأعلى .

ب.تثبيت الرقبة ودفع الفك السفلي إلى الإمام .

ج. ترك رأس المصاب في خط مستقيم .

٢٩. اثناء أداء إنعاش قلبي رئوي(مسعفين او اكثر) لشخص يعاني من سكته قلبية، يجب تقديم كل نفس خلال ___:

أ. ١ ثانية

ب. ٢ ثانية

ج. ٣ ثانية

٣٠.كم مرة يجب عليك إعادة تقييم حالة الضحية والحاجة إلى الإنعاش القلبي الرئوي المستمر؟:

أ.كل دقيقتين

ب.كل ٥ دقائق

ج. فقط في بداية ونهاية الإنعاش القلبي الرئوي

٣١. من علامات نجاح عملية الإنعاش القلبي الرئوي هي:

أ.عودة النبض والتنفس عند فحصه.

ب.رجوع اللون الطبيعي للطفل واختفاء الازرقاق

ج. كل ما ذكر أعلاه

٣٢. إذا بدأ المصاب بالتقيؤ أثناء القيام بعملية الإنعاش القلبي الرئوي يجب على الممرض.

أ.إيقاف عملية الإنعاش القلبي الرئوي .

ب.الاستمرار بعملية الإنعاش القلبي الرئوي .

ج. تغيير وضعية الطفل إلى إحدى الجهتين لإخراج القيء وبعدها الاستمرار بعملية

الإنعاش القلبي الرئوي .

٣٣. من المضاعفات التي تنتج عن عملية الإنعاش القلبي الرئوي الخاطئ هي :

أ.تأذي الرئة.

ب.كسور في عظم القص والأضلاع.

ج. كل ما ذكر أعلاه

٣٤. من أسباب فشل الإنعاش القلبي الرئوي :

أ.استخدام طريقة خاطئة .

ب.تأخر إجراء الإنعاش القلبي الرئوي .

ج. كل ما ذكر أعلاه .

٣٥. AED يرمز الى :

أ.مزيل الرجفان الخارجي الآلي.

ب.قسم الطوارئ المتقدم

ج.تشخيص الطوارئ التلقائي

٣٦. الخطوات الصحيحه لتشغيل جهاز مزيل الرجفان الخارجي الالي (AED)هي :

أ.أ.قم بتشغيل جهاز AED، وقم بتوصيل وسادات القطب الكهربائي، وقم بصدم الشخص، وقم بتحليل الإيقاع

ب.قم بتشغيل جهاز AED، ثم قم بتوصيل وسادات الأقطاب الكهربائية، وقم بتحليل الإيقاع، ثم قم بصدم الشخص

ج.قم بتشغيل جهاز AED، وقم بصدم الشخص، ثم قم بتوصيل منصات القطب الكهربائي، وقم بتحليل الإيقاع

٣٧. ماذا تفعل مباشرة بعد توجيه صدمة للشخص باستخدام جهاز مزيل الرجفان الخارجي الالي (AED)؟:

أ. إعادة التقييم للنبض

ب. استئناف الإنعاش القلبي الرئوي

ج. إجراء التنفس فقط

<u>الجزء الثالث</u>: قائمة مراقبة الملاحظات العملية لممارسة الممرضين تجاه دعم الحياة الأساسي للأطفال :

التسلسل	الخطوات	طبقت	لم تطبق
	التحقق والاتصال		
١.	التحقق من سلامة البيئة المحيطه له وللشخص المصاب		
٢.	التحقق من الاستجابة (ضرب كتف الطفل وصرخ "هل أنت بخير؟")		
٣.	إذا لم يكن الضحية مستجيبًا ، فصرخ للحصول على المساعدة القريبة. والقيام بتنشيط نظام الاستجابة الطارئة عبر الجهاز المحمول		
التحقق من التنفس:			
٤.	التحقق من التنفس من الرأس إلى الصدر(القيام بذلك لمدة ٥ ثوانٍ على الأقل ولكن لا تزيد عن ١٠ ثوان)		
٥.	اذا كان الطفل غير مستجيب ولا يتنفس بشكل طبيعي أو يتنفس فقط ، البدأ في إجراء الإنعاش القلبي الرئوي.		
التحقق من النبض:			
٦.	التحقق من نبض الشريان السباتي لمدة ٥-١٠ ثوانٍ.		
٧.	إذا لم يكن هناك نبض: البدأ في إجراء الإنعاش القلبي الرئوي عالي الجودة (٢ دقيقة)		
البدء بالإنعاش القلبي الرئوي **اعطاء ضغطات الصدر:**			
٨.	وضع الطفل على سطح مستوٍ وصلب.		
٩.	الضغط على الأقل ٣/١ عمق الصدر حوالي ٢ بوصة (٥ سم) بمعدل ١٠٠ إلى ١٢٠ ضغطة في الدقيقة.		
١٠.	بعد كل ضغطة ، السماح بانتعاش الصدر الكامل.		
فتح المجرى التنفسي وإعطاء التنفس: **توفير التنفسات الفعالة: فتح مجرى الهواء للطفل. استخدام التقنية المناسبة لفتح المجرى التنفسي:**			

١١.	**رفع الرأس والذقن:** رفع الرأس للخلف ورفع الذقن لفتح المجرى التنفسي **رفع الفك:** إذا كان هناك شك في وجود إصابة في الرأس أو العنق		
١٢.	اعطاء التنفس من الفم إلى الفم للطفل لمدة ثانية واحده ومراقبة اذا كان صدره يرتفع ام لا ومن ثم اعطاء النفس الثاني اذا ارتفع الصدر		
١٣.	في حالة عدم ارتفاع الصدر فكرر الحركة بأمالة الرأس ورفع الذقن او رفع الفك ثم اعط النفس الثاني		
١٤.	إذا كان هناك نبض أكثر من ٦٠ نبضة في الدقيقة وتنفس غير كاف، فيجب تقديم التنفس الاصطناعي: نفس واحد كل ٢-٣ ثوانٍ (٢٠-٣٠ نفسًا في الدقيقة)		
	مواصلة مجموعات الضغط والتنفس:		
١٥.	مواصلة إعطاء مجموعات من ٣٠ ضغطة و ٢ تنفسات		
١٦.	إذا كان الإنعاش القلبي الرئوي بشخصين ، فإن المنقذين يتغيرون بعد كل دقيقتين		
١٧.	إذا كان الإنعاش القلبي الرئوي بشخصين ، فإنه يتم إعطاء ١٥ ضغطة لكل ٢ تنفسات		
١٨.	توقف كل ٢ دقيقة لتقييم (التحقق) من حالة المريض		
خطوات استخدام مزيل الرجفان الخارجي الالي AED:			
١٩.	معرفة كيفية تشغيل جهاز AED		
٢٠.	وضع أقطاب AED بشكل صحيح		
٢١.	قراءة تشخيص AED بشكل صحيح وتمييز الحالة القابلة للصدمة (VF و VT) عن الحالة غير القابلة للصدمة (PEA و Asystol)		
٢٢.	تنبيه الأشخاص بالقول "واضح" وتقديم صدمة إذا لزم الأمر		

٢٣.	استئناف الإنعاش القلبي الرئوي على الفور.		

Questionnaire in English Language

First part: Demographical data for nurse

1. Age (Years) : ☐

2. Sex : Male ☐ **Female** ☐

3. Educational Level :

a. Nursing school ☐

b. Diploma ☐

c. Bachelor's ☐

d. Master and Doctorate ☐

4. Years of Experiences : ☐

5. Having Previous Training Courses Regarding Pediatric Basic Life Support :

YES ☐ **NO** ☐

Second part : Questions related to nurses knoweledge

Please answer the following questions carefully and then circle the correct answer:

1. Symptoms and signs of cardiac arrest include:

a. Loss of consciousness, absence of pulse, and cessation of breathing

b. Decreased blood pressure

c. Increased respiratory rate beyond normal

2. Usually, cardiac arrest in children is primarily related to respiratory failure or shock.

a. True

b. False

3. Cardiac arrest occurs in children and adults for the same reasons.

a. True

b. False

4. Brain cell damage occurs after cardiac arrest and respiratory arrest within:

a. 4–6 minutes

b. 10–15 minutes

c. 20–25 minutes

5. Airway obstruction occurs as a result of:

a. Blockage of the airways by food, liquids, vomit, blood, or respiratory secretions in respiratory infections, or filling of the airways with water and mud, as in drowning.

b. Swallowing a foreign body such as coins, nails, and others, as can happen with children.

c. All of the above.

6. The normal respiratory rate per minute for a child aged 1–3 years is:

a. (20–30 breaths per minute

b. 40–45 breaths per minute

c. 50–55 breaths per minute

7. The normal respiratory rate per minute for a child aged 6–12 years is:

a. 20–30 breaths per minute

b. 40–45 breaths per minute

c. 15–23 breaths per minute

8. The normal heart rate per minute for a child aged 1–3 years is:

a. 60–120 beats per minute

b. 80–130 beats per minute

c. 70–110 beats per minute

9. The recommended steps by the American Heart Association in 2020 for CPR in heart attack patients are:

a. Open the airway, give breaths, chest compressions (ABC)

b. Chest compressions, open the airway, give breaths (CAB)

c. Give breaths, open the airway, chest compressions (BAC)

10. Cardiopulmonary resuscitation (CPR) should be performed immediately on anyone who:

a. Lost consciousness but has a pulse

b. Lost consciousness and pulse

c. Is bleeding profusely

11. The respiratory check for an unconscious child should not take more than:

a. 10–15 seconds

b. 5–10 seconds

c. 15–20 seconds

12. The compression-to-ventilation ratio in CPR if there is one rescuer is:

a. 30 chest compressions, then 2 breaths (30:2)

b. 20 chest compressions, then 2 breaths (20:2)

c. 15 chest compressions, then 2 breaths (15:2)

13. The compression-to-ventilation ratio in CPR if there are two or more rescuers is:

a. 30 chest compressions, then 2 breaths (30:2)

b. 20 chest compressions, then 2 breaths (20:2)

c. 15 chest compressions, then 2 breaths (15:2)

14. When performing chest compressions on a child, the depth of compression is approximately:

a. 1 cm

b. 3 cm

c. 5 cm

15. In the presence of two nurses during child CPR and after calling for emergency help:

a. One opens the airway and checks the pulse, while the other performs chest compressions.

b. One performs CPR until tired, and the other takes over.

c. One performs CPR, and the other ensures the cause of the cardiac arrest is addressed.

16. Chest compressions during pediatric CPR should be performed:

a. Above the nipple line.

b. At the center of the chest (sternum)

c. On the left side of the chest.

17. Loss of consciousness, cessation of breathing, and absence of pulse in a victim require:

a. Placing the victim in a suitable place.

b. Calling emergency services and waiting for their arrival.

c. Initiating CPR immediately.

18. How often should rescuers switch roles during CPR?

a. Approximately every minute.

b. Approximately every two minutes.

c. Approximately every five minutes.

19. How many chest compressions should be delivered in one minute during CPR?

a. 50–70 compressions

b. 100–120 compressions

c. 150–180 compressions

20. The location to check a child's pulse is from the femoral artery and:

a. Temporal pulse

b. Brachial pulse

c. Carotid pulse

21. CPR begins with:

a. Opening the airway

b. Giving two breaths

c. Chest compressions

22. The pulse check for an unconscious child should not take more than:

a. 5–10 seconds

b. 10–20 seconds

c. 25–30 seconds

23. The "C" in CAB in CPR stands for:

a. Compression (Chest compressions)

b. Calling (for help)

c. Circulation (Blood circulation)

24. In the CPR abbreviation CAB, the letter "A" refers to breathing.

a. True

b. False

25. Chest massage for a child during CPR can be performed with one hand or both hands.

a. True

b. False

26. Which step is not part of the five steps in the survival chain?

a. Early CPR

b. Rapid defibrillation

c. Advanced airway placement

27. The use of head tilt-chin lift during CPR is indicated if there are no signs of injury to the head or neck.

a. True

b. False

28. The nurse or rescuer opens the airway for an unconscious child if there are signs of head or neck injury by:

a. Lifting the forehead backward and pushing the chin upward.

b. b.Stabilizing the neck and pushing the lower jaw forward.

c. Leaving the victim's head in a straight line.

29. During CPR for a person experiencing a heart attack, each breath should be delivered within:

a. 1 second

b. 2 seconds

c. 3 seconds

30. How often should you reassess the victim's condition and the need for continuous CPR?

a. Every two minutes

b. Every 5 minutes

c. Only at the beginning

31. Signs of successful cardiopulmonary resuscitation (CPR) include:

a. Return of pulse and breathing upon examination.

b. Restoration of the child's natural color and disappearance of cyanosis.

c. All of the above.

32. If the victim begins to vomit during cardiopulmonary resuscitation (CPR), the nurse should:

a. Stop the CPR process.

b. Continue with the CPR process.

c. Change the child's position to either side to allow for vomit expulsion, and then continue with CPR.

33. Complications resulting from improper cardiopulmonary resuscitation (CPR) include:

a. Lung injury.

b. Fractures in the sternum and ribs.

c. All of the above.

34. Causes of failed cardiopulmonary resuscitation (CPR) include:

a. Using the wrong technique.

b. Delaying the initiation of cardiopulmonary resuscitation (CPR).

c. All of the above.

35. AED stands for:

a. Automated External Defibrillator.

b. Advanced Emergency Department.

c. Automatic Emergency Diagnosis.

36. The correct steps for operating an Automated External Defibrillator (AED) are:

a. Turn on the AED, connect the electrode pads, deliver the shock, and analyze the rhythm.

b. Turn on the AED, connect the electrode pads, analyze the rhythm, and then deliver the shock.

c. Turn on the AED, deliver the shock, then connect the electrode pads and analyze the rhythm.

37. What should you do immediately after delivering a shock to a person using an Automated External Defibrillator (AED)?

a. Reassess the pulse.

b. Resume cardiopulmonary resuscitation (CPR).

c. Perform ventilation only.

Third Part: Practical observational checklist for nurses practice toward pediatric basic life support : This checklist is based on American Heart Association Guidelines,2020 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. it was translated into Arabic language by the researcher. It was used to assess nurses' practice regarding pediatric basic life support (pre\posttests).

No.	Steps	Done	Not done
	Check and call:		
1.	Verify the scene is safe for you and the victim		
2.	Check for responsiveness (Tap child's Shoulder and shout, "Are you Ok?)		
3.	If the victim is not responsive, shout for nearby help. Activate the emergency response system via mobile device		
Check for breathing:			
4.	Look from head to chest to see if the person is breathing(do this for at least 5 seconds but no more than 10 seconds).		
5.	If the child is unresponsive and isn't breathing normally or is only gasping then S**TART CPR**.		
	Check pulse:		
6.	Check a carotid pulse for 5-10seconds.		
7.	If no pulse: start high quality 5 CPR (2 minute)		
Compressions:			
8.	Make sure the child is lying on his back on a firm flat surface.		

9.	Compress at least 1/3 the depth of the chest about 2 inches (5 cm) at a rate of 100 to 120 compressions per minute.		
10.	After each compression, allow complete chest recoil.		
Open the airway and give breaths:			
11.	Provide effective breaths: open the child's airway. Use the appropriate technique to open the airway: • Head Tilt-Chin Lift: tilt the head back and lift the chin to open the airway • Jaw Thrust: If a head or neck injury is suspected		
12.	Give mouth-to-mouth breaths to the child for one second and observe if the chest rises; then, give the second breath if the chest rises.		
13.	If the chest does not rise, repeat the maneuver by tilting the head and lifting the chin or lifting the jaw before giving the second breath.		
14.	If there is a pulse of more than 60 beats per minute and insufficient breathing, provide artificial ventilation: one breath every 2-3 seconds (20-30 breaths per minute).		
Continue sets of compressions and breaths:			
15.	Continue giving sets of 30 compression and 2 breaths		
16.	If two-person CPR the rescuers changing positions after every 2 minutes		
17.	If two-person CPR giving 15 compressions to		

	2 breaths		
18.	Stop every 2 minutes to assess (check) the condition of the patient		
	AED steps:		
19.	Power on the AED		
20.	Put the AED pads correctly		
21.	Reading the diagnosis of AED correctly and distinguish shokable (VF and VT) from Non shokable (PEA and Asystol) condition		
22.	Alert people bn advocating “Clear” and deliver a shock if needed		
23.	Immediately resume CPR.		

The program in Arabic

عنوان البرنامج

برنامج قائم على المحاكاة حول اداء الممرضين فيما يتعلق بدعم الحياة الاساسي للأطفال

الهدف العام من البرنامج

أن الهدف العام هو تنفيذ البرنامج المتعلق بدعم الحياة الاساسي للأطفال وايجاد أثره على اداء الممرضين.

الهدف الخاص من البرنامج

عند الانتهاء من البرنامج سيكون الممرض قادر على:

١. معرفة فسلجه وتشريح القلب وجهاز الدوران

٢. يفهم فسلجه وتشريح الجهاز التنفسي

٣. يتعرف على اعراض انسداد المجرى التنفسي

٤. كيفية انقاذ مصاب بانسداد المجرى التنفسي

٥. يتعرف على اعراض توقف القلب

٦. الانعاش القلبي الرئوي الاساسي

٧. كيفية استخدام جهاز صدمات القلب (مزيل الرجفان الخارجي الالي)

الطريقة التعليمية والوسائل التوضيحية المساعدة:

- طريقة المحاضرة القصيرة
- استخدام برنامج point Power العداد وعرض المحاضرة
- استخدام البوستر والصور التوضيحية
- استخدام السبورة
- دمية(manikin)

ت	محتويات البرنامج
	المحاضرة الاولى
١.	مكونات الجهاز القلبي الوعائي
٢.	نظام الضخ القلبي الكهربائي
٣.	تنظيم آلية التنفس
٤.	مكونات الجهاز التنفسي
٥.	آلية التنفس
٦.	وظائف التنفس
	المحاضرة الثانية
١.	انسداد المجرى التنفسي بواسطة جسم غريب
٢.	انسداد المجرى التنفسي بواسطة اللسان
٣.	طرق فتح المجرى التنفسي
٤.	وضع الانقاذ
٥.	توقف القلب والتنفس
	المحاضرة الثالثة
١.	دعم الحياة الاساسي والانعاش القلبي الرئوي للاطفال
٢.	سلسلة البقاء على قيد الحياة
٣.	خوارزمية مقدمي الرعاية الصحيه لدعم الحياة الاساسي للاطفال- منقذ واحد
٤.	خوارزمية مقدمي الرعاية الصحيه لدعم الحياة الاساسي للاطفال- منقذان او اكثر
٥.	خطوات اجراء الانعاش القلبي الرئوي الاساسي
٦.	تقنية الضغط (التدليك القلبي)
٧.	تقنيات التهوية الاصطناعية في الانعاش الاساسي
٨.	مقاطعة عملية الانعاش
٩.	نهاية الانعاش
١٠.	مخاطر إجراء الانعاش القلبي الرئوي
	المحاضرة الرابعة
١.	العلاج الكهربائي
٢.	مزيل الرجفان الالي الخارجي
٣.	الذبذبات القلبية القابلة للصدمة والغير قابلة للصدمة

الاولى

عنوان المحاضرة: مكونات الجهاز القلبي الوعائي والجهاز التنفسي

محتويات المحاضرة:

- الترحيب والتعارف
- مقدمة عن الدورة واهدافها
- مقدمة حول الجهاز القلب الوعائي والجهاز التنفسي
- الية التنفس
- نظام الضخ القلبي الكهربائي
- وظائف التنفس

مدة المحاضرة: ساعه واحدة.

أهداف المحاضرة:

- بناء العلاقة بين الباحث وأفراد المجموعة التجريبية من ناحية, وبين أفراد المجموعة بعضهم البعض من ناحية أخرى.
- أكساب الممرضين معلومات صحيحة حول فسلجة وتشريح الجهاز القلبي الوعائي والجهاز التنفسي.
- تنمية مهارة حرية التعبير والمناقشة لدى الممرضين في جو من التسامح والثقة المتبادلة مع الباحث.
- الاتفاق معهم على مجموعة من القواعد لتنظيم جلسات التثقيف والالتزام بها.

المقدمة :

كل إنسان معرض لأن تحدث أمامه حالة توقف قلب لسبب من الأسباب، وقد يكون الشخص الذي توقف قلبه زميلك في العمل أو والدك او جدك، وقد يكون المصاب شخصا غريبا لا علاقة لك به شاهدته لتوك يسقط أرضا.

تعتمد إمكانية إنقاذ انسان توقف قلبه على أول شخص شاهد ما قد حدث. حيث ان كل دقيقة تمر على المصاب دون اسعاف تقلل من فرص هذا المصاب في النجاة او البقاء على قيد الحياه، لذا فان الوقت هنا يعني الفرق بين الحياة والموت.

ان دماغ الانسان وقلبه لا يستطيعان تحمل انقطاع الدم والاوكسجين عنهما لآكثر من (٦) ستة دقائق حيث ان خلايا الدماغ والقلب تبدأ بالموت بعد مرور هذه الدقائق السته.

تجدر الاشارة الى انه حتى في الدول المتقدمة فان وصول سيارة الاسعاف الى مكان الشخص المصاب يستغرق فترة ثمانية الى عشر دقائق.

ان كل دقيقة تأخير في البدء بعملية اسعاف المصاب او محاولة الانعاش القلبي الرئوي له تقلل من فرص اعادة قلبه للعمل بما نسبته ١٠ بالمئة اي انه بمرور ١٠ دقائق دون البدء بالإسعاف تصبح فرصة المصاب في البقاء على قيد الحياة ضئيلة جدا ان لم تكن معدومة.

تتجلى اهمية إنعاش القلب والرئتين في انها تزود القلب والدماغ بالدم والاوكسجين لزيادة فرص بقاء المصاب على قيد الحياه.

في مجتمعنا المعاصر أصبح في حكم الالتزام الاخلاقي ان يقوم الشخص البالغ بتقديم العون لمن هم بحاجة لهذا العون، ومعرفة الشخص والمامه بكيفية اسعاف المصاب او انقاذه ضرورية للغاية. قد تعتمد حياة انسان (قريبا كان ام بعيدا) على ما يمكن ان يقدم له من عون، ولا يقتصر ثواب انقاذك لحياة انسان على الثواب في الدنيا فالله يجزيك خير الجزاء لعظم هذا العمل عند الله حيث يقول في كتابه الكريم " ومن احياها فكأنما احيى الناس جميعا."

الجهاز القلبي الوعائي:Cardiovascular system

يتألف الجهاز القلبي الوعائي من القلب وهو مضخة عضلية ذات اربعة تجاويف اثنان في الاعلى تسمى الاذينات واثنان في الاسفل وتسمى البطينات. يقع القلب في منتصف التجويف الصدري بين الرئتين وفوق عضلة الحجاب الحاجز تماما. والذي يتألف من اربعة اوعية هي الاذينات والبطينات. وكذلك يتألف من الشرايين والوردة والشعيرات الدموية.

١. القلب (Heart) :

مضخة عضلية ذات اربعة تجاويف اثنان في االعلى تسمى االذينات واثنان في االسفل وتسمى البطينات. يقع القلب في منتصف التجويف الصدري بين الرئتين وفوق عضلة الحجاب الحاجز تماما.

٢. أجزاء القلب (Heart Chambers)

الأذينات(Atria)

اوعية القلب العلوية التي تقوم باستلام الدم العائد من الجسم الى القلب بواسطة الاوردة. تكون جدران الاذين أرق بكثير من جدران البطين كما إن جدرانها تمتلك اقل انسجة عضلية بالنسبة للبطينات. يفصل بين الاذينين حاجز عضلي يسمى الحاجز البين اذينيInteratrial Septum

❖ **الأذين الأيمن(Right Atrium):**

يتصل بالبطين الأيمن بواسطة الصمام الثلاثي وتوجد فيه فتحة تسمح للدم بالرجوع من جدار القلب عبر الجيب الاكليلي, يحتوي الاذين الايمن على الدم غير المؤكسج.

❖ **الأذين الايسر(Left Atrium):**

يتصل بالبطين الأيسر عن طريق الصمام الثنائي التاجي مما يسمح للدم بالمرور منه الى البطين الأيسر ولايسمح بعودته اليه. يحتوي هذا الأذين على الدم المؤكسج.

البطينات(Vetricles):

هما تجويفا القلب السفلية واللذان يقومان بضخ الدم الى انحاء الجسم عبر الشرايين. تحاط البطينات بجدران عضلية اسمك بكثير من تلك التي في الأذينات لكي تتحقق قوة كافية لدفع الدم خارج القلب. يفصل بين البطينين حاجز يسمى الحاجز البين البطينيInterventricular Septum .

❖ **البطين الأيمن(Right Ventricle) :**

يتصل بالأذين الأيمن بواسطة الصمام الثلاثي وتوجد فيه فتحة تسمى الفتحة الرئوية يخرج منها الدم الى الرئة ولايعود بالاتجاه المعاكس. يحتوي على الدم غير المؤكسج.

❖ **البطين الأيسر(Left Ventricle):**

يتصل بالأذين الأيسر عن طريق الصمام التاجي ويقع في القسم الخلفي من القلب ويحتوي على الدم المؤكسج.

صمامات القلب(Heart Chambers) :

يملك القلب اربع صمامات هي:

❖ **الصمام الثنائي (Bicuspid or Mitral valve)**

يفصل بين االذين االيسر والبطين االيسر ويسمح للدم بالمرور باتجاه واحد من االذين الى البطين

❖ **الصمام الابهري (Aortic Valve):**

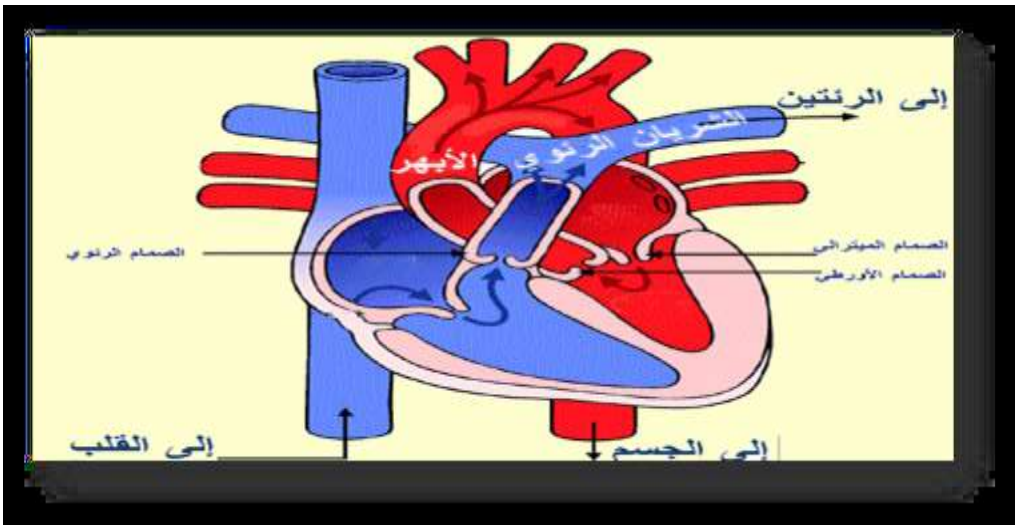
يفصل بين البطين الايسر والشريان الابهر .عندما ينفتح هذا الصمام فانه يسمح بمرور الدم من البطين الايسر الى الشريان الابهر.

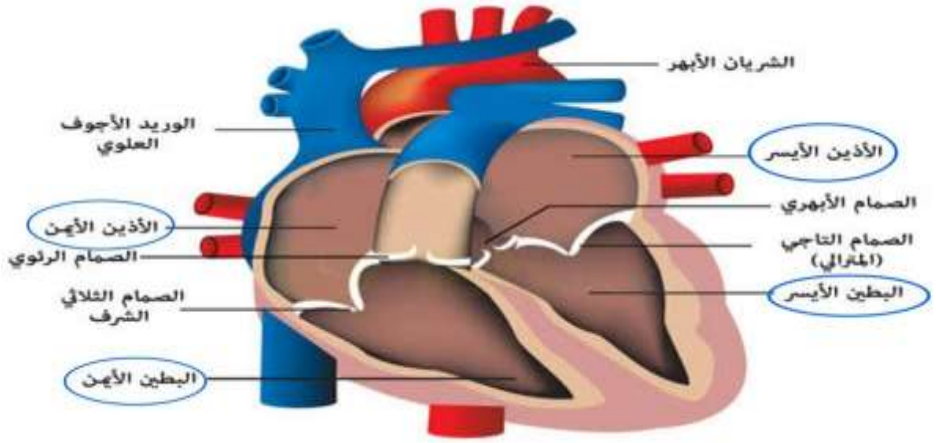
❖ **الصمام الثلاثي(Tricuspid Valve) :**

يقع ما بين الأذين الأيمن والبطين الأيمن ويسمح بمرور الدم من الأذين الى البطين باتجاه واحد.

❖ **الصمام الرئوي(Pulmonary Valve):**

مكانه بين البطين الأيمن والشريان الرئوي (Pulmonary Artery) وخلاله يجري الدم من البطين الى الشريان ومن ثم الى الرئتين.





<u>الأوعية الدموية(Blood Vessels):</u>

هنالك ثلاثة انواع من الاوعية الدموية في جسم الانسان :

❖ الشرايين(Arteries)

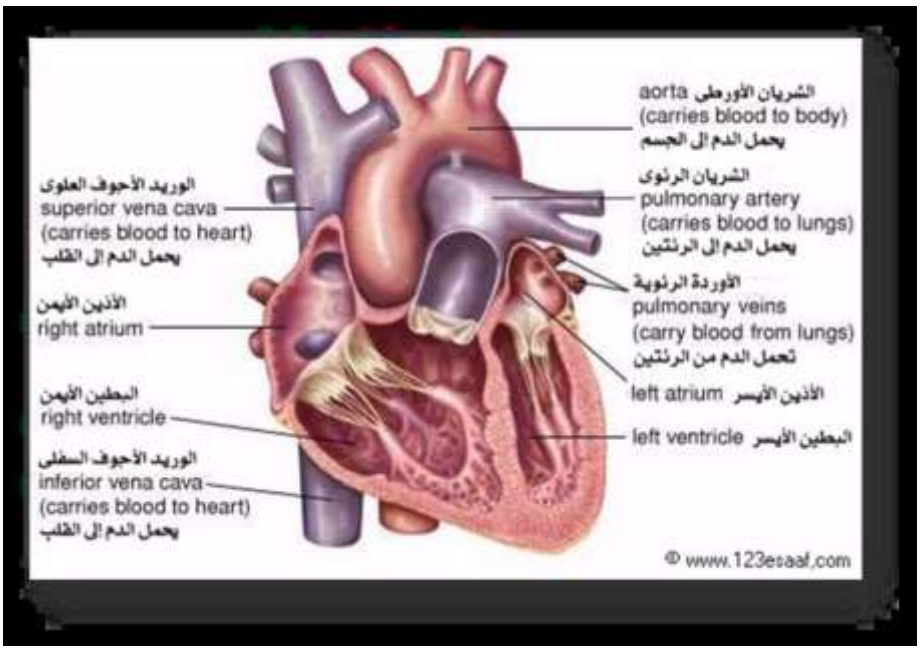
اوعية الدم التي تنقل الدم المؤكسج بعيدا عن القلب باتجاه باقي انحاء الجسم . يندفع الدم داخل الشرايين عند تقلص القلب .تمتلك الشرايين طبقة سميكة الجدران لأنها تنقل الدم تحت ضغط مسلط عالٍ .ويمكن تفحص النبض من خلال ملامسة سطح الجلد الذي تمر بقربه تلك الشرايين.

❖ الأوردة(Veins):

الأوعية التي تقوم بإرجاع الدم الغيرمؤكسج الى القلب بعد دورانه في مختلف انسجة الجسم. تمتاز الأوردة بكونها اكثر عدداً واوسع من الشرايين ولا نبض فيها.

❖ الشعيراتُ الدموية(Capillaries) :

أوعية دموية دقيقة يبلغ قطرها حوالي ٠,٠٠٨ ملم. تقوم هذه الأوعية بتوصيل نهايات الشرايين الصغيرة (الشرينات)مع بدايات الأوردة الصغيرة (الوريدات).



الدورة الدموية (Blood Cycle) :

كما عرفنا سابقاً, فان القلب هو عضو عضلي اشبه بالمضخة المزدوجة التي تدفع الدم عبر طريقين هما

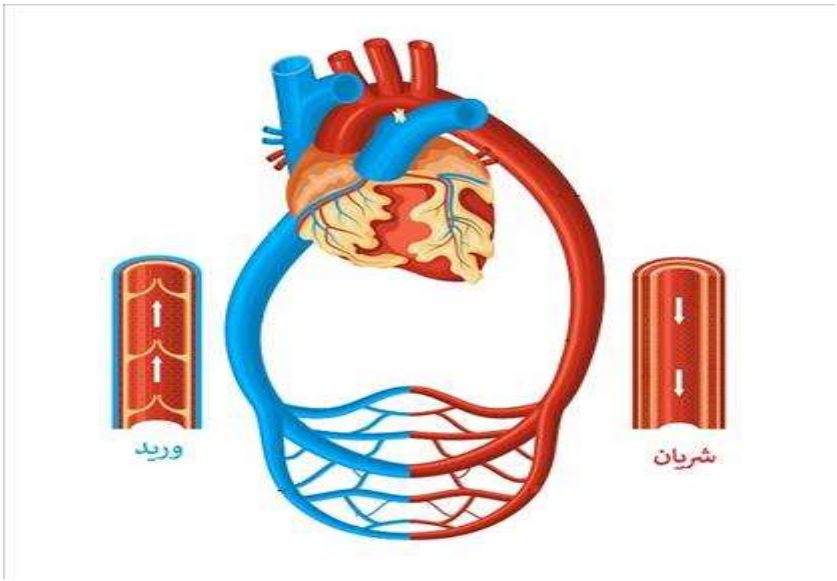
١. الدورة الدموية الصغرى (الرئوية)

يتم خلال هذه الدورة حمل الدم الغير مؤكسج الى الرئتين. حيث يدفع الاذين الايمن الدم عبر البطين الايمن ومن ثم الى الشريان الرئوي الذي ينقسم الى الشريان الرئوي الايسر والايمن خلال الصمام الرئوي وكل شريان يدخل رئة ويستمر الانقسام منتهيا بالشرينات. حيث يتم تبادل الاوكسجين وثاني اوكسيد الكاربون بين الدم والهواء داخل الرئتين وتحديدا ينتشر الاوكسجين َ في الحويصلات الهوائية .من هواء الحويصلة الهوائية باتجاه الشعيرات الدموية. كما ينتشر غاز ثنائي اوكسيد الكاربون من الدم الى هواء الحويصلة الرئوية. بعدها ينساب الدم من الشعيرات الدموية الى الوريدات التي تندمج لتكون اوردة صغيرة والتي بدورها تتحد لتكون الاوردة الكبيرة. وريدان رئويان يخرجان من كل رئة ليحملان الدم المؤكسج الى الاذين الايسر من القلب .

٢. الدورة الدموية الكبرى(الجهازية) :

وفيها يتم حمل الدم المؤكسج الى خلايا انسجة الجسم واعادة الدم الغير مؤكسج الى القلب .يقوم البطين الايسر بضخ الدم المؤكسج القادم من الرئة عبر الشريان الابهر الى كافة انحاء الجسم ماعدا الرئتين .يتفرع الشريان الابهر لينتج عدداً من الشرايين الرئيسية والتي ايضاً تنقسم لتنتج اوعية اصغر هي الشرينات ومن ثم شعيرات دموية حيث يتم خلالها تبادل بين المواد الموجودة في الدم

والسوائل الموجودة داخل الانسجة .ينتشر الاوكسجين من الشعيرات باتجاه خلايا انسجة الجسم المختلفة بينما ينتشر ثاني اوكسيد الكاربون من الخلايا الى الدم . يدخل بعدها الدم الى الوريدات بواسطة الشعيرات الدموية والتي تندمج معاً لتنتج الاوردة الكبيرة والتي هي بصورة رئيسة اوردة الجزء العلوي من الجسم(الراس , العنق , الاكتاف , الاطراف العليا)تجتمع هذه الاوردة لتكون الوريد الاجوف العلوي (**Superior Vena Cava**)والذي يأخذ الدم من الاجزاء المذكورة تو اً باتجاه القلب ويصب في الاذين الايمن .وبصورة متشابهة ,فان اوردة الجزء السفلي(الاطراف السفلي والجذع الاسفل)تدخل الوريد الاجوف السفلي(**Inferior Vena Cava**) والذي يقوم بإعادة الدم ايضا الى الاذين الايمن.



<u>نظام الضخ الكهربائي القلبي(Cardiac Conduction System) :</u>

يقال بان خلايا العضلات القلبية تتميز بكونها ذاتية الايقاع(الضربات)لأنها مستقطبة ومشحونة كهربائياً بفترات زمنية منتظمة .بعض من هذه الخلايا المتخصصة تفقد قدرتها على التقلص

وتصبح متخصصة لتوليد وحث تلك الاشارات الكهربائية مكونةً بذلك النظام الكهربائي للقلب , حيث تتحكم بطريقة وتوقيت التحفيز الكهربائي لضمان تناسق تجاويف القلب الاربعة كهربائيا .ان الاشارات الكهربائية تنشا وتنتقل في النظام الكهربائي للقلب بواسطة عدة اواصر وهي:

❖ **العقدة الجيبية الاذينية (Sinoatrial Node SA) :**

هي نقطة مكونة من خلايا كهربائية معدلة في الاذين الايمن تحت نخاب القلب Epicardium قرب الوريد الاجوف الاعلى .تمثل هذه العقدة بداية انطلاق التيار الكهربائي خلال القلب والتي تحفز القلب على الخفقان(العمل)ويسيطر على معدل الضربات.

❖ **العقدة االذينية البطينية (Atrioventricular Node AV):**

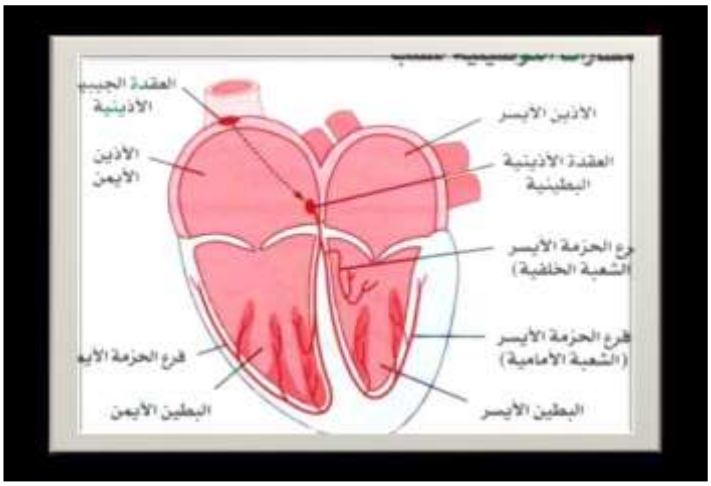
مشابهة للعقدة الاذينية, تقع في النهاية السفلى للحاجز الداخلي الاذيني Interatrial septum قرب الصمام الاذيني البطيني الايمن. وتمثل الطريق الكهربائي للبطينات. حيث ان كل الاشارات الكهربائية المنتقلة الى البطينين يجب ان تمر خلال عقدة AV لان نظام تركيب الالياف العضلية الموصلة للتيار الكهربائي داخل القلب يكون عازل يمنع اي حث كهربائي الانتقال الى البطينات عن طريق اخر غير العقدة الاذينية البطينية.

❖ **حزمة هس (His Bundle)**

حزمة من االالياف الواصلة للكهربائية تهبط من العقدة الاذينية نزولا الى الحاجز البطيني الداخلي حيث تتفرع هناك الى حزمة هس اليسرى التي تدخل حاجز القلب باتجاه قمة القلب.

❖ **الياف بركنجي(Purkinje Fibers):**

الياف تتكون من خلايا قلبية خاصة لها القدرة على نقل جهد الفعل القلبي بسرعة وكفاءة اكبر من بقية خلايا القلب. تكون هذه الالياف شبكة كبيرة كثيفة من الحزم الليفية في البطين الايسر اكثر منها في البطين الايمن.



الجهاز التنفسي (Respiratory System) :

تنظيم آلية التنفس (Regulation of Respiration)

تتم السيطرة على التنفس من قبل الجهاز العصبي والتنظيم الكيميائي, حيث تتجلى سيطرة الجهاز العصبي في مركز التنفس في الدماغ والذي يقع في جذع الدماغ .Brainstem اي منطقتي النخاع المستطيل Oblongata Medulla والجسر Pons الذي يربط النخاع المستطيل بالمهاد Thalamus. اما السيطرة الكيميائية فتتضمن المستلمات الكيميائية والتي تستجيب الى حامضية الدم pHومستوى CO2, O2 في الدم. ان هذه المستلمات توجد بالقرب من مركز التنفس في الدماغ. في الشرايين السباتية وفي قوس الأبهرAortic Arch.

وظيفته:

اهم وظائف الجهاز التنفسي الرئيسة هي ايصال الدم المؤكسج الى خلايا الجسم المختلفة من الهواء الجوي الخارجي. ومن الوظائف االخرى نقل غاز ثنائي اوكسيد الكاربون الناتج من وظائف خلايا الجسم عبر الممرات التنفسية الى خارج الجسم.

أجزاء الجهاز التنفسي:

الأنف (Nose) :

وهو الجزء البارز ويقع في منتصف الوجه, يتألف من فتحتين تسمى الخياشيم أو المنخرين (Nares or ,Nostrils)واللتان تسمحان للهواء بالدخول والخروج من الانف. توجد بداخل الانف شعيرات سميكة تقوم بمنع الحشرات وجزيئات الغبار الدقيقة من الدخول الى داخل المجرى التنفسي.

الفم (Mouth):

تجويف يوجد في منتصف اسفل الوجه, يمتلك عدة وظائف اهمها واكثرها تعقيدا علىَ هي قدرته استقبال الهواء المحمل بالاوكسجين من المحيط الخارجي وادخاله للرئتين عن طريق التجويف الفمي المتصل بالحنجرة.

البلعوم(Pharynx) :

هو الممر الذي يقوم بإيصال التجويف الانفي والفمي بالحنجرة والمريء. ويعتبر جزء مشترك للجهاز الهضمي والجهاز التنفسي معاَ. وظيفته في الجهاز التنفسي هي ايصال الهواء القادم من الانف او الفم الى الحنجرة.

الحنجرة (Larynx):

تركيب يشبه الصندوق(صندوق الصوت). يتألف من عدد من الغضاريف والتي تكون ممراَ للهواء بين البلعوم والقصبة الهوائية.

القصبة الهوائية (Trachea):

ممر هوائي انبوبي الشكل يمتد من الحنجرة نزولا الى التجويف الصدري حيث يتفرع هناك الى القصبة الهوائية اليسرى واليمنى التي تدخل كل منهما الى رئة. يكون جدار القصبة الهوائية مدعم بغضاريف على شكل حرف C والتي تحمي الممر الهوائي من الانهيار (الانكماش) **Collapse** نتيجة التغير في الضغط الهوائي اثناء التنفس.

الشعيبات الهوائية (Bronchioles) :

شبكة من الانابيب ناتجة من انقسام القصبة الهوائية الرئيسية. وظيفتها ايصال الهواء الى مختلف اجزاء الرئتين ويجب ان تبقى مفتوحة على الدوام للسماح بمرور الهواء اثناء عمليتي الشهيق والزفير.

الهوائية اليمنى (Right Bronchus) :

اقصر من الشعبة اليسرى واوسع منها وتعتبر

امتداداَ للقصبة الهوائية الرئيسية ولذلك فإن

اي جسم غريب ينزل خلال القصبة الرئيسية

غالباً ما يجد طريقه نحو هذه الشعبة .

الشعبة اليسرى (Left Bronchus):

أطول من اليمنى وأضيق منها واكثر انحرافاً عن اتجاه القصبة الرئيسة.

تمتد كل من الشعبتين اليسرى واليمنى الى الجهة الظهرية حتى مدخل

فتحة الرئة ثم تنقسم الى شعب أصغر فأصغر الى ان تنتهي في داخل الرئة بأكياس صغيرة تسمى الحويصالت الهوائية.

الرئتان (Lungs) :

عضوان كبيران يحويان معظم التجويف الصدري وذات قوام سميك ولهما شكل مخروطي. يفصل كل رئة عن االخرى بواسطة الغشاء المنصف Mediastinum .تقسم كل رئة الى فصوص حيث ان الرئة اليمنى تتألف من ثلاث فصوص بينما تتكون اليسرى من فصين اثنين لانحراف قمة القلب باتجاهها. تحتوي الرئتان على الغرف الهوائية, أوعية دموية ولمفية, أعصاب,وانسجة رابطة معطية بذلك للرئتين قواما اسفنجيا ناعما سميكا.

الحوصلة الهوائية(Alveoli) :

يوجد في الرئتين ما يقرب من **٣٠٠** مليون حوصلة هوائية محاطة بشبكة دقيقة جداً من الشعيرات الدموية وهذا التداخل والتناسق ما بين الهواء القادم من الجو الخارجي والمحمل بالأوكسجين والدم القادم من القلب والمحمل بغاز ثنائي اوكسيد الكاربون يسمح بانتقال الاوكسجين من الحويصلات الهوائية الى الشعيرات الدموية ومنها الى كافة انحاء الجسم وكذلك انتقال غاز ثنائي اوكسيد الكاربون من الشعيرات الدموية الى الحويصلات الهوائية بخاصية الانتشار البسيط.

التنفس(Muscles of Respiration)

الحجاب الحاجز(Diaphragm) :

العضلة الكبرى الرئيسة للتنفس لها شكل يشبه القبة مقعر من جهة البطن ومحدب من جهة الصدر. تستخدم اثناء التنفس(الشهيق والزفير) . تفصل هذه العضلة التجويف الصدري عن التجويف البطني.

عضلات ما بين الاضلاع(Muscles Intercostal) :

عضلات خارجية وداخلية تقوم برفع وخفض عظم القص والاضلاع اثناء عملية التنفس.

العضلات الثانوية(Muscles Accessory) :

عضلات توجد بين العنق والكتف وعضالت البطن تستخدم في عملية التنفس عند الحاجة .

القفص الصدري(Thoracic Cage) :

يتألف القفص الصدري من الفقرات الصدرية, الاضلاع, الغضاريف بين الاضلاع, وعظم القص . يحمي القفص الصدري الاعضاء الحيوية الداخلية كالقلب والرئتين كما انه يدعم ويسند الجزء العلوي , حزام الصدر, والاطراف العليا. يتألف القفص الصدري من ١٢ زوج من الاضلاع.

عظم القص(Sternum) :

ويسمى ايضا عظم الصدر , Breastbone وهو عظم مسطح وطويل يقع في المنتصف (الجزء االمامي من التجويف الصدري). يتألف عظم القص من ثلاثة عظام هي العظم العلوي ويسمى المقبض Manubrium والذي يتمفصل مع اول زوجين من الاضلاع العلوية للقفص الصدري , وجزء وسطي وهو اكبر عظام القص ويسمى البدن ,Body والجزء الثالث وهو عظم سفلي صغير يسمى الخنجري Process Xyphoid .

الية التنفس

ترتفع عضلات الصدر الى الاعلى وتتوسع بالعرض والطول ويتقلص الحجاب الحاجز وينبسط ليزيد من سعة الصدر وهذا يؤدي الى انخفاض الضغط داخل القفص الصدري بالنسبة للضغط الجوي فيدخل الهواء بعملية الشهيق. ثم تعود العضلات والحجاب الحاجز الى وضعها فتقذف بالهواء الى الخارج بعملية الزفير. وتقسم عملية التنفس الى مرحلتين متتابعتين بشكل متلاحق ومستمر, هما:

عملية الشهيق(Inspiration, or Inhalation):

عملية نشطة **Active Process** تتضمن تقلص عدة عضلات لزيادة حجم التجويف الصدري . تتقلص العضلات مابين الاضلاع (العضلات الوربية الخارجية)ويتقلص الحجاب الحاجز .ينخفض الحجاب الحاجز ويتسطح وتتحرك الاضلاع للاعلى وللخارج. تسبب زيادة حجم التجويف الصدري عند تمدده واتساعه دخول الهواء الى الرئتين

عملية الزفير(Expiration, or Exhalation) :

عملية سلبية **Passive Process** تتضمن استرخاء الحجاب الحاجز والعضالت الوربية الداخلية . تتحرك االضالع للداخل ولألسفل بينما يتمدد الحجاب الحاجز ويتقعر. تسبب هذه الحركة نقصان حجم وسعة التجويف الصدري مجبرةَ الهواء على االنسياب خارج الرئتين.

وظائف التنفس:

- تزويد الجسم بالاوكسجين من الرئتين
- اكسجة الدم في الرئتين بفعل الضغط الجزيئي للأوكسجين في الحويصلات الهوائية والاوعية الدموية.
- طرح ثنائي اوكسيد الكاربون وذلك بفعل فرق الضغط الجزيئي له في الخلايا والاوردة والحويصلات الهوائية.
- المحافظة على الرقم الهيدروجيني pH (التوازن الحامضي – القاعدي)
- المحافظة على حرارة الجسم: نتيجة لعمليات الاحتراق والهدم والبناء داخل الجسم ترتفع درجة حرارة الجسم الداخلية فيعمل بعدة طرق للتخلص من الحرارة الزائدة وهذه الوسائل هي: الجهاز العصبي, الغدد الصماء, الرئتان.
- انتاج الصوت: ان حركة الهواء خلال المجرى التنفسي مروراً بالحبال الصوتية تسبب تغيراً في الضغط وهذا يجعل الصوت والكلام ممكنا
- امكانية الشعور بالروائح من خلال دخول الهواء الى التجويف الانفي.
- تعزيز مناعة الجسم: من خلال منع دخول الجراثيم وازالتها إن وجدت خارج السطوح التنفسية.

المحاضرة الثانية

عنوان المحاضرة: انسداد المجرى التنفسي.

محتويات المحاضرة:

- ما هو انسداد المجرى التنفسي
- انسداد المجرى التنفسي بواسطة جسم غريب
- انسداد المجرى التنفسي بواسطة اللسان
- طرق فتح المجرى التنفسي
- وضع الانقاذ
- توقف القلب والتنفس

مدة المحاضرة: ساعه واحدة.

أهداف المحاضرة:

- التعرف على انسداد المجرى التنفسي.
- شرح انسداد المجرى التنفسي بواسطة جسم غريب وكذلك انسداد المجرى التنفسي بواسطة اللسان.
- التعرف على طرق فتح المجرى التنفسي.
- تثقيف الممرضين على كيفية وضع المريض بوضع الانقاذ والتعرف على عالمات توقف القلب وتمييزها عن علامات توقف التنفس.

أنسداد المجرى التنفسي Airway Obstruction :

انسداد المجرى التنفسي للانسان يمكن ان ينجم عن أسباب عدة. ومن هذه الاسباب وجود جسم غريب في المجرى التنفسي كأن تكون لقمة من طعام أو لعبة صغيرة يضعها طفل في فمه، وكذلك فقد يغص الانسان بكمية من الدم او القيء عندما يكون فاقدا للوعي.ومن اهم أسباب انسداد المجرى التنفسي لسان الانسان نفسه، فاللسان عبارة عن عضلة كبيرة في الفم تكون في حالة

استرخاء عندما يكون الانسان فاقداً للوعي، واذا كان الانسان مستلقيا على ظهره عند فقده للوعي فان اللسان قد يرتد للخلف ليغلق المجرى التنفسي اغلاقاً تاماً ، اذن فاللسان قد يكون من الناحية الفعلية سبباً في اختناق الانسان.

انسداد نتيجة وجود جسم غريب(FBAO Obstruction Airway Body Foreign) :

يعتبر من احد أسباب توقف القلب للضحية من المهم التمييز والقدرة على مساعدة شخص ما يعاني من انسداد مجرى التنفس نتيجة وجود جسم غريب. ان انسداد المجرى التنفسي الجزئي يكون فيه التبادل الغازي كافٍ أو غير كافٍ.

علامات انسداد المجرى التنفسي بجسم غريب:

- وضع الضحية إحدى يديه أو كلتيهما على رقبته محاولا انتزاعها
- يكون صوت التنفس لديه صوت صريري, مزعج, متقاقم, ومصحوب بسعال ومحاولة تقيؤGagging Reflex
- ازرقاق الجلد Cyanosis
- عدم القدرة على إظهار الكلام أو اظهار الصوت.

إنقاذ مصاب بانسداد مجرى التنفس بجسم غريب:

ان كيفية التصرف إزاء وجود جسم غريب في المجرى التنفسي يعتمد على كون المصاب في وعيه ام فاقدا للوعي :

-بالنسبة للشخص الذي يكون في وعيه:

- هل انسداد المجرى التنفسي لديه كامل ام جزئي؟
- اذا كان بإمكان المصاب ان يتكلم أو يسعل يكون انسداد المجرى التنفسي لديه جزئيا. في هذه الحالة لا تفعل له شيئا سوى تشجيعه على السعال ومحاولة فتح مجرى تنفسه بنفسه. إبق معه لتساعده في حال ساءت حالته.
- أذا لم يستجيب الضحية للكلام والنداء, نطبق طريقة هيملك (**Heimlich Maneuver**) وتتضمن هذه الطريقة الوقوف خلف الضحية ولف كلتا الذراعين للمنقذ حول بطن الضحية(فوق منطقة السرة), اما اذا كان الضحية بدينا أو امرأة حامل, نلف الذراعين حول منطقة الصدر.

طريقة دفع الصدر(**Chest Thrust**) نجعل الذراع السائدة على شكل قبضة والذراع الاخرى تمسك بها وندفع قبضة اليد بقوة نحو بطن المريض وباتجاه الاعلى , نكرر العملية الى ان يخرج الجسم الغريب من فم المريض او الى ان يفقد المريض وعيه فاذا فقد وعيه, نضعه بوضع الاستلقاء على سطح صلب ونجلس فوقه بحيث يكون فخذي المنقذ منفرجين فوق الضحية, نضع قاعدة اليد السائدة تحت سرة المريض والاخرى على قمة اليد الاولى ونضغط للاسفل وللاعلى حتى خروج المسبب للانسداد.

من المضاعفات المتوقعة لهذه الطريقة هي اصابة الصدر أو البطن أو خروج محتويات المعدة للخارج. كما ان هذه الطريقة لا تستخدم في حالة انسداد المجرى الهوائي بالسوائل.

نتبع طريقة مد الاصبع **(Finger sweep)** فاذا كان باستطاعة المسعف رؤية الجسم الغريب (اجزاء الطعام مثلاً) بإمكانه مد االصبع وسحب بقايا الطعام, واذا لم يستطع فلا يوصى بمد االصبع الى داخل الفم لتجنب عض المنقذ من قبل الضحية. ومن مضار هذه الطريقة هي دفع الطعام او اي جسم غريب الى داخل البلعوم عن طريق الخطأ ومضاعفة العبء على الضحية.

نضغط على صدر المريض ٣٠ ضغطة مقابل نفسين إنقاذيين لمدة دقيقتين ثم نتوقف ونلاحظ رجوع علامات التنفس , السعال أو الحركة. اذا لم يرجع التنفس او الحركة , نستأنف الانعاش القلبي الرئوي الى حين وصول المساعدة. فاذا وصل المنقذ الثاني يقوم هو بإعطاء التنفس الانقاذي

Rescue Breathing والمسعف الاول يستأنف عملية التدليك القلبي فاذا عادت الحركة ولم يعد التنفس نعطي ١٢-١٠ نفس/ دقيقة , وعند عودة التنفس نقوم بمراقبة المريض لحين وصول المساعدة.

انسداد المجرى التنفسي باللسان(Obstruction by the Tongue):

أن معظم مشاكل المجرى التنفسي تكون بسبب اللسان. عندما ينثني الراس للامام قد ينزلق اللسان الى داخل المجرى التنفسي (**البلعوم**) مسبباً انسداده, اذا كان المريض فاقداً للوعي فان اللسان يفقد قابليته العضلية للتقلص كما ان عضلات الفك السفلي تنبسط. وبما ان اللسان يكون ملتصقاً بالفك السفلي, فان خطر انسداد المجرى التنفسي باللسان يكون اكثر خطورة عند فقدان الضحية وعيه .ان الاجراء الاساسي الابتدائي لفتح المجرى التنفسي يهدف الى تصحيح موقع اللسان وارجاعه لوضعه الطبيعي لفتح ذلك المجرى الحيوي.

هناك طريقتان شائعتا االستخدام لفتح المجرى الهوائي المغلق بسبب اللسان, هما:

طريقة امالة الراس ورفع الذقن للاعلى(head tilt-chin lift Maneuver):

تحقق هذه الطريقة اقصى حد لفتح المجرى التنفسي ويمكن اجراؤها باتباع الخطوات التالية:

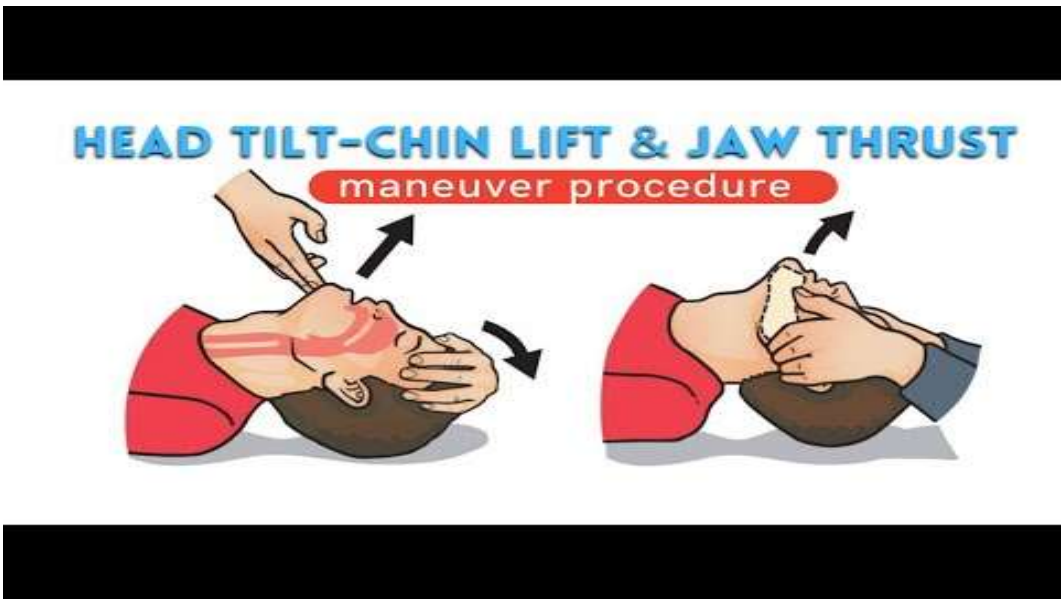
- حالما يتم وضع الضحية في وضع الاستلقاء **Supine Position** , يضع المسعف احدى يديه على جبهة المريض ويضع اعلى نهايات الاصابع لليد الاخرى على المنطقة العظمية الوسطى للفك الاسفل للضحية (منطقة الذقن)
- دفع الراس الى الخلف من خلال تسليط قوة معتدلة على جبهة الضحية
- يستخدم المسعف اطراف اصابعه لليد الاخرى لرفع الذقن للاعلى واسناد الفك الاسفل.
- ثم يرفع الفك للامام الى درجة بحيث تلتصق الاسنان السفلية بالاسنان العلوية.
- ولا يجب الضغط على المنطقة تحت الفك الاسفل لانها منطقة رخوة لان هذا الضغط سيسبب انسداد مجرى التنفس وتفاقم المشكلة.
- يجب على المسعف ان لا يسمح لفم الضحية بان يغلق, ولتحقيق فتحة كافية في الفم, يستخدم المسعف اصبع الابهام لاسناد الذقن وسحبه للاسفل وذلك بسحب الشفه السفلى. ولا يدخل المسعف إصبع يده داخل فم الضحية لتجنب العض

ملاحظة// لا تستخدم هذه الطريقة في حالات اصابة الضحية في مناطق الراس, العمود الفقري ,أو العنق.

طريقة دفع الفك وليس رفع الراس(Jaw Thrust Maneuver):

من الطرق الشائعة في حالات الاصابة في الراس , العمود الفقري, او العنق. وتتم كما يلي:

- بحذِر شديد, يقوم المسعف بالمحافظة على مناطق الراس , العنق, ومنطقة الفقرات العنقية بوضع مستقيم.
- ونضعه بوضع الاستلقاء قدر االمكان بتحريكه الامكان كقطعة واحدة.
- الركوع خلف اعلى راس المريض. ولتوفير راحة طويلة الامد اثناء الانقاذ يكون من المفيد ان يضع المسعف مفصلي مرفقيه (كلتا يديه) على نفس السطح الذي وضع عليه راس الضحية
- وضع احدى اليدين على احد جوانب الفك الاسفل والاخرى على الجانب الاخر وتحديداَ في منطقة زاويتي الفك السفلي (تحت الاذنين)
- اسناد راس الضحية بواسطة الذراعين من الداخل
- وضع اصابع الابهام لكلتي اليدين على وجنتي الضحية ثم وضع الاصابع القائمة الاخرى تحت الفك السفلي ودفعه للامام من زاويتي الفك السفلي.
- سحب الشفة السفلى للضحية بإحدى اصابع الابهام لابقاء الفم مفتوحاَ.
- عدم القيام بتدوير أو ثني راس الضحية



وضع المريض في وضع الإنقاذ(Recovery, Rescue, or Left-Lateral Position) :

هو الوضع الآمن والمستقر الذي يوفر الحماية للمجرى التنفسي للمصاب الفاقد الوعي .عند وضع المصاب الفاقد للوعي بشكل يكون فيه شبه منكب على وجهه لن يرتد اللسان الى الخلف ليسد مجرى التنفس، كما ان القيىء والافرازات المخاطية لن تدخل الى المجرى التنفسي بل ستخرج من الفم.

عند فتح المجرى التنفسي يتم اعطاء المريض نفساً انقاذياً وذلك بعدة طرق مثل الفم-للفم, والقناع-للفم, وذلك بواقع ١٢-١٠ نفس/دقيقة, وبعد رجوع الضحية الى وعيه واستقرار علاماته الحيوية نقوم بوضعه في وضعية الانقاذ (وضع االفاقة). تساعد هذه الوضعية على خروج السوائل من الفم وتمنع سقوط اللسان ونزوله الى اسفل البلعوم مسببا الانسداد.

خطوات وضع المريض بوضع الانقاذ:

لوضع المصاب في وضع الانقاذ يجب اتباع الخطوات التاليه:

- ضع المصاب مستلقيا على الارض
- إرفع الذراع اليسرى للمصاب الى اعلى بزاوية قائمه.
- ضع اليد اليمنى للمصاب على خده الايسر بحيث يكون باطن يده الى الخارج.
- إثن ركبة المصاب اليمنى الى اعلى بزاوية قائمه.
- أدر المصاب باتجاهك وضعه على جنبه الايسر وذلك بسحبه من ركبته اليمنى وكتفه الايمن.

- تأكد من ان المصاب في وضع مريح.

توقف القلب(Cardiac Arrest) :

مقدمة:

اذا توقف القلب عن النبض, لم يعد هناك دم يسري في الاوعية الدموية للجسم, وبالتالي فان الاوكسجين سوف لن يصل الى خلايا انسجة الجسم المختلفة. وعند توقف القلب عن النبض يقال بان المريض في حالة نوبة توقف قلبية. ولان اعضاء الجسم الحيوية يجب ان تحصل على قدرها من الاوكسجين, فان هذه الاعضاء تبدأ بالتلف والموت حالما يتوقف القلب عن العمل. تلف الدماغ قد يبدأ خلال ٤-٦ دقائق بعد توقف القلب مباشرةَ وعدم وصول الاوكسجين اللازم لحياة هذه الاعضاء.

تعريف توقف القلب:

هو التوقف المفاجيء للقلب عن النبض وبذلك تتوقف عملية ضخ الدم الى الرئتين والدماغ والاعضاء الاخرى.

علامات توقف القلب:

- فقدان الوعي.
- توقف التنفس.
- توقف النبض.

الاسباب المحتملة لحدوث التوقف القلبي:

- امراض القلب واالوعية الدموية (الجلطة القلبية أو الدماغية) Stroke ,MI.
- التنفس توقف او الاختناق
- نوبات الصرع وتشنج الاعصاب Seizures
- نوبات ارتفاع السكر في الدمDiabetic Emergency
- رد فعل تحسسي شديد Severe Allergic Reaction
- الصعق بالتيار الكهربائي عالي الشدة
- التسمم بالمواد الكيميائية (السوائل أو الغازات السامة) أو تناول جرعة عالية من الادوية أو المخدرات .
- حالات الغرق اثناء السباحة او السقوط في الماء Drowning
- الاختناق بالغازات أو الاكياس البلاستيكية أو حالات الانتحار . ضربة (شدة) خارجية على منطقة الصدر (الحوادث بانواعها) Chest Trauma.
- النزف الحاد Severe Bleeding.
- التشوهات الخلقية عند الولادةAbnormalities present at Birth

<u>توقف التنفس(Respiratory Arrest) :</u>

هو توقف التنفس الطبيعي بسبب فشل تقلص الرئتين بفعالية.

وايضا هو التوقف المفاجيء للرئتين عن العمل (التنفس) وبذلك يتوقف دخول الهواء الى الرئتين وبالتالي ينقطع الاوكسجين عن الرئتين وباقي اعضاء الجسم.

اعراض توقف الرئتين التام:

- فقدان الوعي
- فقدان التنفس

ملاحظة// توقف التنفس يختلف عن توقف القلب ولكن قد يكون سببه.

اسباب حدوث التوقف الرئوي:

اختلال وظيفي في الرئتين(Dysfunction Pulmonary)

- الربو Asthma
- انتفاخ الرئةEmphysema
- المرض الرئوي الانسداي المزمن**Chronic Obstructive Pulmonary Disease**
- التهاب الرئة (ذات الرئة) Pneumonia
- الاستروا ح الصدريPneumothorax
- رئوية كدمة Pulmonary Contusion
- وجود الدم والقيح داخل التجويف الصدريHemothorax
- متلازمة الضائقة التنفسية الحادة Acute Respiratory Distress Syndrome ARDS
- التليف الكيسي Cystic Fibrosis

الاضطراب الوظيفي للقلب(Cardiac Dysfunction) :

- الوذمة الرئويةPulmonary Edema
- حادثة وعائية دماغيةCerebrovascular Accident CVA
- أضطراب الكهربائية القلبيةCardia Arrhythmias
- الفشل القلبي الاحتقانيCongestive Heart Failure CHF
- مشاكل في عمل الصمامات Diseases Valvular
- التسمم ببعض العقاقير (المورفين, الكحول, ... الخ)
- اضطرابات عصبيةNeurological Disorders
- الغرق \الاختناق Suffocation/Drowning

مقارنة بين اعراض توقف القلب وتوقف الرئتين		
الأعراض	توقف القلب	التوقف الرئوي
فقدان الوعي	نعم	نعم
توقف التنفس	نعم	نعم
توقف النبض	نعم	لا

المحاضرة الثالثة

عنوان المحاضرة: دعم الحياة والانعاش القلبي الرئوي الاساسي

محتويات المحاضرة:

- ما هو دعم الحياة الاساسي
- ما هو الانعاش القلبي الرئوي
- ما هي سلسلة النجاة
- ما هي خوارزمية مقدمي الرعاية الصحيه لدعم الحياة الاساسي للاطفال- منقذ واحد
- ما هي خوارزمية مقدمي الرعاية الصحيه لدعم الحياة الاساسي للاطفال- منقذان او اكثر
- خطوات اجراء الانعاش القلبي الرئوي الاساسي
- تقنية الضغط (التدليك القلبي)
- تقنيات التهوية الاصطناعية في الانعاش الاساسي
- مقاطعة عملية الانعاش
- نهاية الانعاش
- مخاطر إجراء الانعاش القلبي الرئوي

مدة المحاضرة: ساعه واحدة.

أهداف المحاضرة:

- معرفة دعم الحياة الاساسي
- معرفة الانعاش القلبي الرئوي
- معرفة سلسلة النجاة
- التعرف على خطوات الانعاش القلبي الاساسي
- التعرف على التدليك القلبي.
- معرفة تقنيات التهوية الاصطناعية.
- معرفة ماهي مقاطعة عملية الانعاش
- معرفة كيف ومتى يتم انهاء عملية الانعاش
- التعرف على مخاطر عملية الانعاش.

مقدمة:

عرف دعم الحياة الأساسي بشكل عام بإسم **CPR** (الإنعاش القلبي الرئوي) وهو أحد الاجراءات التي يتم تطبيقها على شخص توقف قلبه عن العمل. الهدف من هذا الإجراء هو كسب الوقت الكافي لحين وصول خدمات الطوارئ. يمكن إجراؤه بواسطة الطاقم الطبي أو أي شخص مؤهل في الإسعافات الأولية.

لماذا يعد هذا الإجراء أمراً مهمّاً للغاية؟

يعتبر دعم الحياة الأساسي **BLS** أمراً بالغ الأهمية في إنقاذ الأرواح. وهو إجراء لا يمكن الإستهانة بأهميته إذ يساهم بشكلٍ جذري في زيادة معدل فرص البقاء على قيد الحياة للأشخاص الذين تعرضوا للسكتة القلبية. تتلقى خدمات الإسعاف آلاف المكالمات من حالات السكتة القلبية المشتبه بها كل عام. وبالرغم من ذلك، لم يتمكّنوا من إنقاذ سوى نصفهم على أبعد تقدير إذ أنّ الباقين لم يتمكنّوا من النجاة جراء عدم تلقيهم للإنعاش القلبي الرئوي.

في كل يوم حول العالم, يستخدم الانعاش القلبي الرئوي داخل وخارج المستشفيات لانقاذ حياة الناس. وبفضل هذا الاجراء الحيوي المهم يتم انقاذ الكثير من الاطفال الذين يغرقون اثناء السباحة او اولئك الذين يبتلعون شيئاً غريباً بالصدفة, وكذلك يتم انقاذ حياة اولئك البالغين الذين يقعون ضحية

السكتة القلبية . يتم اجراء الانعاش القلبي الرئوي لشخص ما عندما يفقد ذلك الشخص نبضه وتنفسه معاً, والهدف من هذا الاجراء هو لدفع الدم المشبع بالاوكسجين الى الدماغ والقلب لمنع حدوث موت الدماغ وتوقف القلب.

لقد استخدم الباحث في برنامجه التثقيفي المتعلق بالانعاش القلبي الرئوي النظام الامريكي للانعاش القلبي الرئوي الذي صممته الجمعية الامريكية للقلب Heart American Association وتقوم هذه الجمعية بتحديث هذا النظام كل ٥ سنوات. ان اخر تحديث كان في عام ٢٠.20 يختلف هذا النظام عن الانظمة الاخرى باعتبار ان الضغطات الصدرية لها الاولوية عند البدأ باجراء الانعاش القلبي الرئوي اي **C-A-B** بدلا **A-B-C** في بقية الانظمة.

<u>سلسلة النجاة (الانقاذ)(Chain of Survival) :</u>

سلسلة مثالية من الخطوات المتسلسلة كاألحداث والتي يجب اتباعها بحذر واتقان وعلى الفور بعد اكتشاف أو تحديد اي اصابة أو مرض مفاجئ.

الشكل10 سلاسل إجراءات إنقاذ حالات توقف القلب داخل المستشفى **(IHCA)** وحالات توقف القلب خارج المستشفى **(OHCA)** لدى الأطفال المقدمة من جمعية القلب

الأمريكية(**AHA**) .

وسمي بالابتدائي لانه اول ما يبتدأ به الانعاش, ويمكن اجروؤه دون الحاجة الى معدات او اجهزة متطورة اخرى. حيث يمكن اجراؤه من قبل رجال الشرطة ورجال الدفاع المدني ووحدات الطبابة

في الجيش ورجال الانقاذ في المسابح , وحتى الاشخاص المتواجدين في الحدائق والاماكن العامة والاسواق وسائر الدوائر الاخرى .ان كل شخص غير مدرب سواء كان يعمل في مجال الصحة ام لا يتوجب عليه ان يكون مطلعاً على ماهية الانعاش القلبي الرئوي الابتدائي كمستجيب اول للحادث الذي قد يقع امام عينيه وايضاً لانقاذ حياة الاشخاص الى ان تصل المساعدة الطبية أو اتخاذ اجراءات اكثر تعقيداَ. يتضمن انعاش القلب والرئتين الاساسي تقييم الشخص الذي فقد وعيه ودخل في نوبة انهيار بدني **(Collapse)** اجراء التدليك القلبي, ادامة المجرى التنفسي, واعطاء تهوية رئوية انقاذية.

تعريف الانعاش القلبي الرئوي:

هي تقنية لانقاذ الحياة تجرى للشخص الذي فقد النبض والتنفس. ان الغرض الاساسي من هذا الاجراء هو لتحريك الدم المتوقف في الاوعية الدموية والذي يكون محتوياً على الاوكسجين الى الدماغ والقلب لتجنب تلف الدماغ. يتضمن انعاش القلب والرئتين ثلاث خطوات اساسية متتابعة وذلك حسب دليل الجمعية الامريكية للقلب AHA.

C – Compression	**Compressing the person's chest to keep (move) blood circulation.**
A - Airway	**Airway opening (the passageway between the nose, the mouth, and the lungs).**
B – Breathing	**Giving Rescue Breaths that fill the lungs with air.**
CAB chain sequence	

الغرض من الانعاش القلبي الرئوي:

الغرض الرئيسي هو الحفاظ على تدفق الدم المؤكسد إلى الدماغ و القلب ، وكلاهما ضروري لمعظم الاجهزة في جسم الانسان والتي تكون أكثر عرضة للضرر من نقص الاكسجين. كما انه

يساعد على تأخير موت الانسجة وتوسيع فرصة إنعاش ناجحة بدون تلف مستقبلي في الدماغ.

<u>خطوات اجراء الانعاش القلبي الرئوي الاساسي:</u>

قبل أن تبدأ

قبل بدء إجراء الإنعاش القلبي الرئوي، تأكَّد من:

- هل البيئة المحيطة آمنة للشخص المصاب؟
- هل الشخص المصاب واعٍ أم فاقد للوعي؟
- إذا كان الشخص المصاب يبدو فاقدًا للوعي، فربِّت على كتفه أو هزه، ثم اسأله بصوت مرتفع "هل أنت بخير؟"
- اذا كنت بمفردك ولم تشهد لحظة انهيار الطفل، ابدأ بضغطات الصدر لمدة دقيقتين تقريبًا. ثم اتصل فورًا برقم الطوارئ المحلي، واجلب مزيل الرجفان الخارجي الآلي إذا كان متوفّرًا لديك..
- أما إذا كنت بمفردك وشهدت لحظة انهيار الطفل، فاتصل أولًا برقم الطوارئ المحلي. ثم اجلب مزيل الرجفان الخارجي الآلي، إن كان متوفّرًا لديك، وابدأ بإجراء الإنعاش القلبي الرئوي . إذا كان معك مرافق، فاطلب منه الاتصال لطلب المساعدة وإحضار مزيل الرجفان الخارجي الآلي بينما تبدأ أنت في إجراء الإنعاش القلبي الرئوي.

<u>نقوم بفحص النبض والتنفس للضحية:</u>

لمدة ٥ إلى ١٠ ثواني. فينظر الممرض إلى حركة صدر وبطن المصاب ويستمع لصوت التنفس (دخول وخروج الهواء)ويتحسس بخده خروج الهواء من الفم والانف. إذا كان المصاب يتنفس بشكل تلقائي يجب الحفاظ على مجرى الهواء مفتوحا لان انسداده باللسان أو الافرازات هو سوف يسبب توقف التنفس وإذا لا يتنفس نكمل الخطوة التالية وهي إجراء التنفس الاصطناعي

اما فحص النبض يكون من منطقة الشريان السباتي **Carotid Artery** لانه اخر مكان ينتهي فيه نبض القلب وبمدة لا تزيد عن ١٠ ثانية ويفضل ان تكون اقل.

استخدام ٣-٢ أصابع ووضعها تحت الفك الاسفل لكلتا الجهتين ونتحسس النبض بين الحنجرة وعضلات البلعوم وتجنب من الضغط المستمر على عضلات البلعوم لانه يؤدي الى غلق المجرى التنفسي.

اذا كان هناك نبض + تنفس:

نضع الضحية بوضع الانقاذ **(Recovery Position)** وتتم مراقبة المريض لحين وصول المساعدة الطبية.

☒ إذا كان الطفل لا يستجيب ولا يتنفس بشكل طبيعي أو يلهث فقط, بعد ذلك ابدأ الإنعاش القلبي الرئوي.

☒ إذا لم تشعر بالنبض خلال ١٠ ثوانٍ، فابدأ بإجراء عملية الإنعاش القلبي الرئوي عالية الجودة،بدءاً بالضغط على الصدر.

تقنية الضغط (التدليك القلبى) Chest Compression:

- ضع الطفل مستلقيًا على ظهره فوق سطح متين ثابت.
- اجلس على ركبتيك بجوار رقبة الطفل وكتفيه.
- حرك الثياب جانبًا. إذا كان من الصعب إزالة ملابس الشخص، يمكنك مع ذلك تقديم ضغطات عبر الثياب.
- اضغط بكلتا يديك (أو بيد واحدة فقط إذا كان حجم الطفل صغيرًا جدًا) على الجزء السفلي من عظم صدر الطفل.
- استخدم أسفل راحة إحدى يديك أو كلتا يديك لدفع الصدر إلى أسفل مباشرةً لمسافة لا تقل عن بوصتين (٥ سنتيمترات تقريبًا)، ولا تزيد عن ٢,٤ بوصة (٦ سنتيمترات تقريبًا). اضغط بقوة وبسرعة بمعدل يتراوح بين ١٠٠ و ١٢٠ ضغطة في الدقيقة.
- والسماح بارتداد الصدر بعد كل ضغطة Chest recoil والتقليل من التداخلات اثناء اجراء التدليك القلبي بحيث يكون الضغط بسرعة وبقوة Push hard & Push fast .

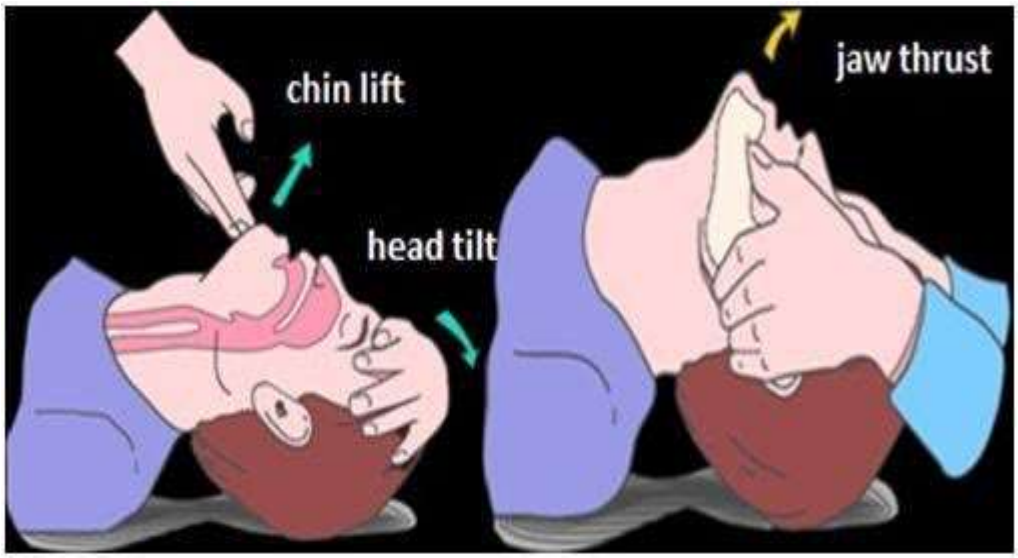
مجرى الهواء: افتح مجرى الهواء:

✓ **الطريقة الاولى (Head Tilt-Chin Lift) :**

- ضع راحة يدك على جبهة الطفل وأمِل رأسه برفق إلى الخلف.
- ارفع الذقن برفق باليد الأخرى لفتح مجرى الهواء.

✓ **الطريقة الثانية (Jaw Thrust) :**

دفع الفك: في حالة الاشتباه في إصابة الرأس أو الرقبة



اعطاء التنفس: ساعد الطفل على التنفس :

١. وبعد إجراء مناورة إمالة الرأس ورفع الذقن لفتح مجرى الهواء، اضغط على المنخرين لغلقهما. وضع فمك على فم الطفل بإحكام.

٢. أعطِ النَفَس داخل فم الطفل لمدة **ثانية واحدة**. وراقب إن كان صدره يرتفع أم لا. ثم أعطِ النَفَس الثاني إذا ارتفع الصدر. أما في حال عدم ارتفاع الصدر، فكرر حركة إمالة الرأس ورفع الذقن. ثم أعطِ النفَس الثاني. احذر من إعطاء عدد أكبر من اللازم من الأنفاس أو التنفس بقوة كبيرة.

٣. استخدم جهاز كيس صمام(**bag-valve mask**)أو جهاز الحاجز (**barrier device**)إذا كان متاحاً.

٤. عند وضع مسالك هوائية متقدمة(**advanced airway**)، يتم إجراء ضغطات مستمرة دون توقف للتهوية. يتم تقديم التهوية بمعدل تنفس واحد كل ٢-٣ ثوانٍ (٢٠-٣٠ تنفسًا في الدقيقة).

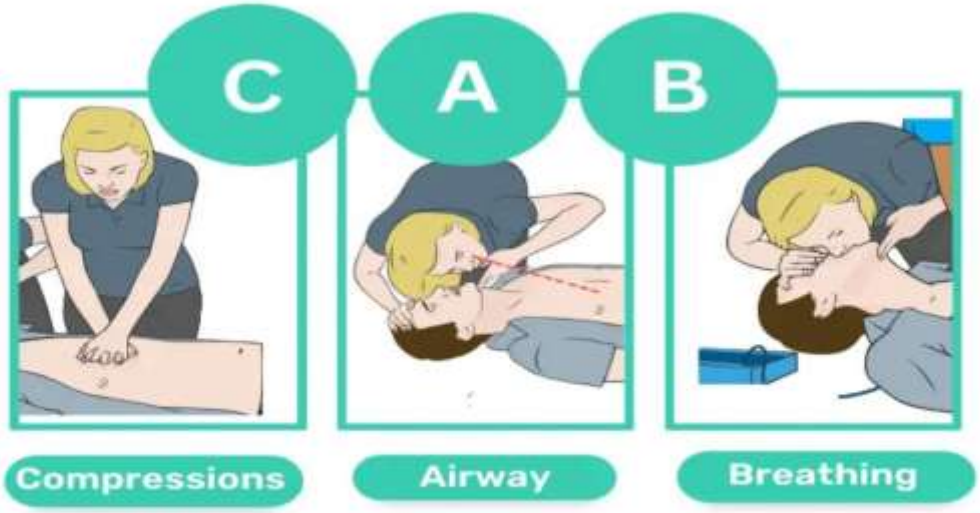
٥. بعد إعطاء أول نفَسَين، ابدأ على الفور الدورة الثانية من الضغطات والأنفاس.

(في حالة وجود نبض أكثر من ٦٠ نبضة في الدقيقة وتنفس غير كاف. يتضمن الإجراء تقديم التنفس الاصطناعي بمعدل واحد نفس كل ٢-٣ ثوانٍ، ما يعادل ٢٠-٣٠ نفسًا في الدقيقة.)

ملاحظة: في حال وجود شخصين لإجراء الإنعاش القلبي الرئوي للطفل، على المنقذَين أن يتناوبا فيما بينهما كل دقيقتين، أو أقل من ذلك إذا شعر المنقذ بالإرهاق، مع إعطاء نفس أو اثنين بعد كل ١٥ ضغطة(١٥:٢).

اما في حال وجود شخص واحد تكون نسبة ضغطات الصدر الى التنفس (٣٠:٢)

وفور توفّر مزيل الرجفان الخارجي الآلي، شغله واتبع التعليمات. يمكن استعمال اللاصقات الخاصة بالأطفال مع مَن تزيد أعمارهم عن ٤ أسابيع وحتى عمر ٨ سنوات. وفي حال عدم توفر لاصقات الأطفال استعمل اللاصقات المخصصة للبالغين. وجّه صدمة واحدة، ثم أعِد الإنعاش القلبي الرئوي -بدءًا بالضغطات على الصدر- لمدة دقيقتين إضافيتين قبل إعطاء الصدمة الثانية. وإذا لم تكن مدربًا على استخدام مزيل الرجفان الخارجي الآلي، فيمكن أن يقدم لك مسؤول خدمة الطوارئ الطبية في منطقتك الإرشادات لاستخدام هذا الجهاز عبر الهاتف.



ينبغي مواصلة الإسعافات إلى أن يتحرك الطفل أو لحين وصول المساعدة.

المكونات الحاسمة للإنعاش القلبي الرئوي عالي الجودة :

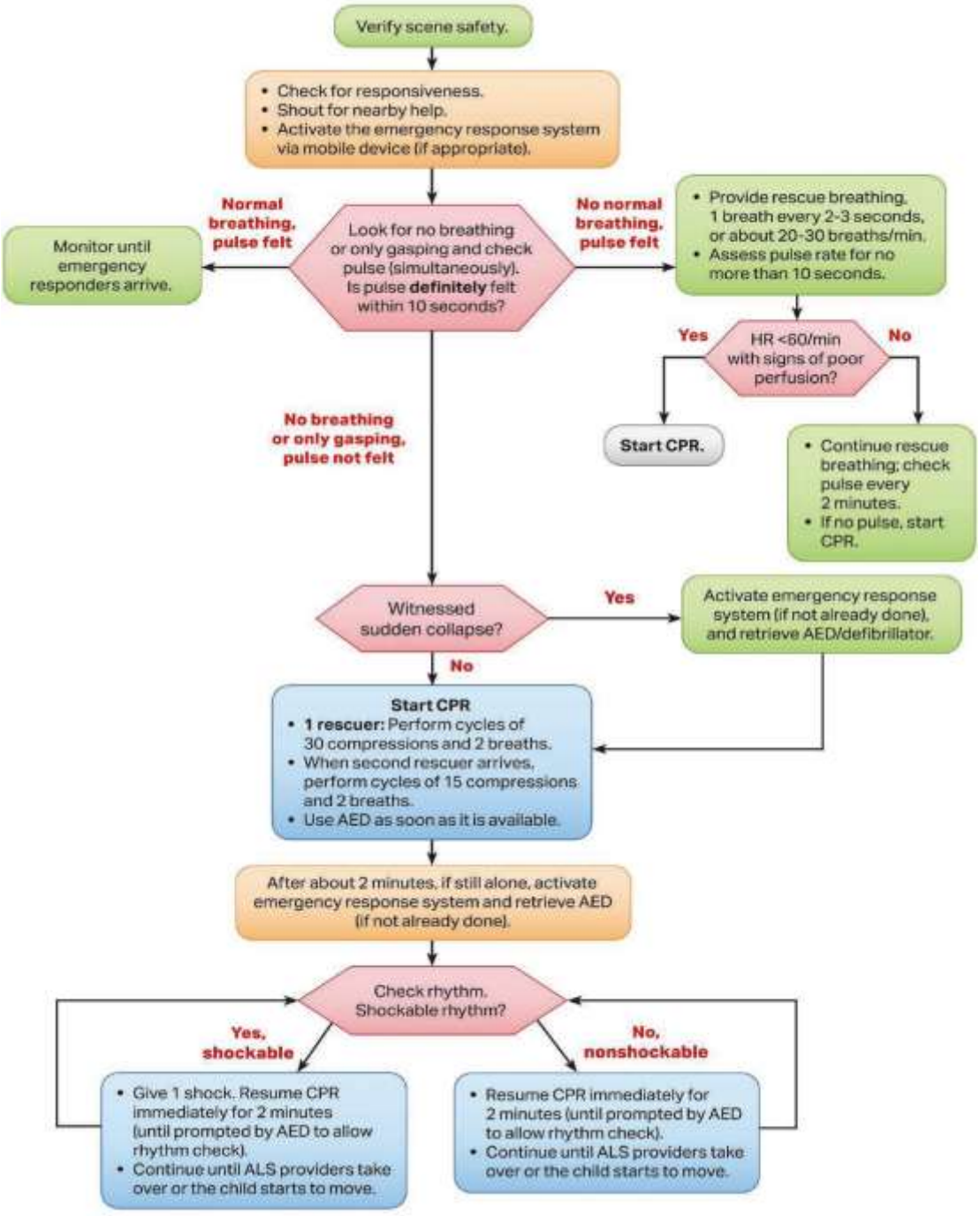
✓ تقليل الانقطاعات في الضغطات على الصدر

✓ قم بإجراء ضغطات على الصدر بعمق ومعدل مناسبين

- ✓ لا تتكئ على الضحية بين الضغطات
- ✓ التأكد من وضع اليد بشكل صحيح
- ✓ تجنب التهوية المفرطة

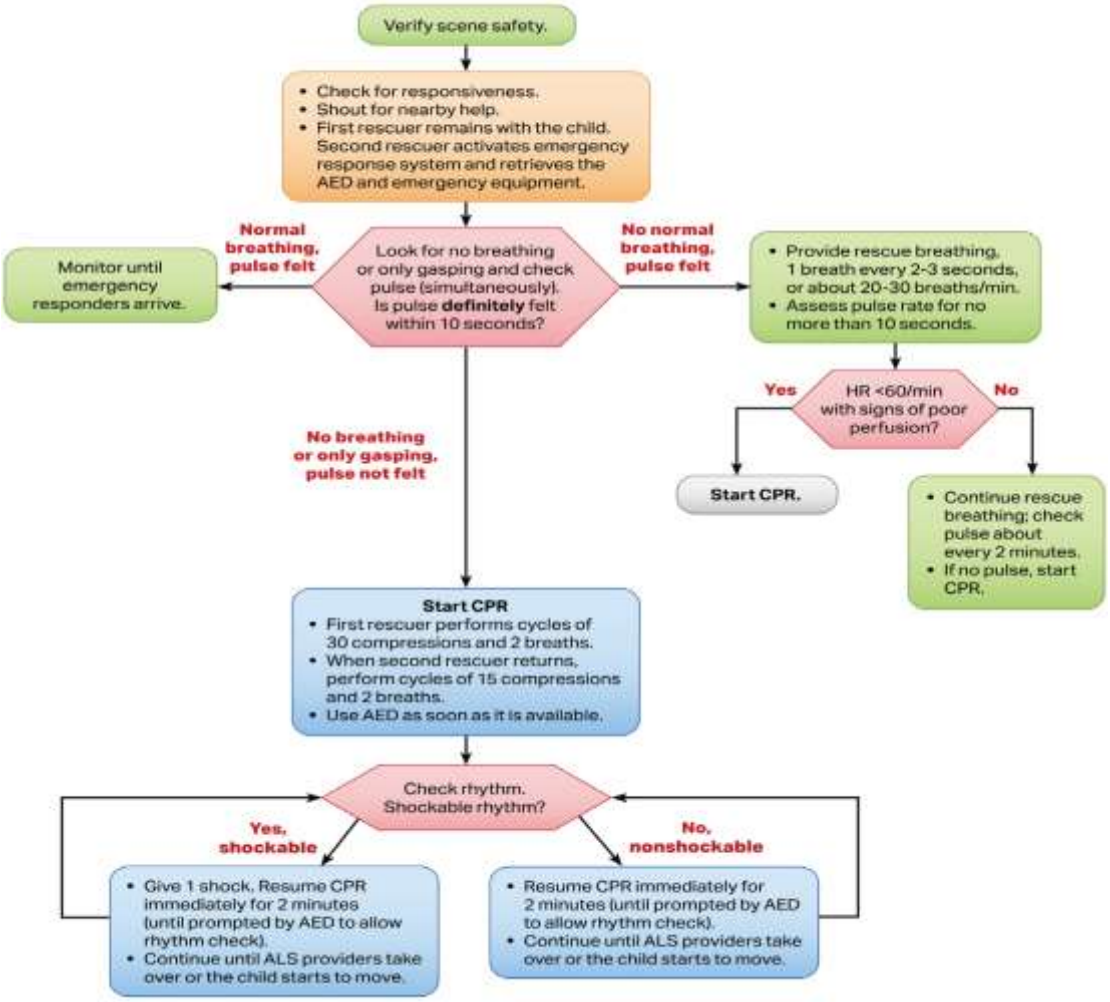
ما هي خوارزمية مقدمي الرعاية الصحيه لدعم الحياة الاساسي للاطفال- منقذ واحد؟:

Pediatric Basic Life Support Algorithm for Healthcare Providers—Single Rescuer



ما هي خوارزمية مقدمي الرعاية الصحيه لدعم الحياة الاساسي للاطفال- منقذان او اكثر؟:

Pediatric Basic Life Support Algorithm for Healthcare Providers—2 or More Rescuers



مقاطعة عملية الإنعاش(Interrupting CPR) :

حالما تبدا عملية الانعاش, فان مقاطعة العملية يجب ان لا تستغرق اكثر من ١٠ ثوان لغرض فحص النبض والتنفس وتبديل مكان المسعف أو تغيير وضعية المصاب. ان التاخير او الانقطاع الحاصل يجب ان يكون سببه احدى النقاط الاتية الغير:

- ☒ عند فحص النبض من منطقة الشريان السباتي.
- ☒ تحريك المريض على المحمل (النقالة)
- ☒ نقل المريض صعوداً او نزولاً على السلالم Stairs أو خلال باب أو ممر ضيق
- ☒ وضع المريض في سيارة الاسعاف او انزاله منها
- ☒ اثناء سحب السوائل من الفم لازالة القيء او اي شيء اخر يغلق المجرى التنفسي
- ☒ السماح للبدء بإعطاء الصدمة الكهربائية او السماح بإجراء احدى خطوات الانعاش المساهمة في انقاذ الحياة
- ☒ وعند انتهاء مسببات الانقطاع المذكورة, يجب الاستئناف بالانعاش مجدداً والبداية بإجراء الضغطات القلبية اولاً ومن ثم اعطاء التنفس الاصطناعي

نهاية الإنعاش(When not to continue or to terminate (stop) CPR) :

يجب التوقف عن الاستمرار بعملية الانعاش فقط عند:

- ☒ عودة النبض والتنفس للمريض بشكل طبيعي
- ☒ يصبح المحيط(الظروف الانية) حول المصاب غير آمنة
- ☒ تعب واجهاد المسعفين
- ☒ نقل (تحويل) عملية العناية بالمريض الى فريق عناية محترف بنفس الدرجة او اعلى
- ☒ ظهور علامات الوفاة المؤكدة خصوصا في حالة الحوادث الخطيرة.
- ☒ بعد إجراء الانعاش القلبي الرئوي لاكثر من ٣٠ دقيقة من دون رجوع النبض والتنفس.

مخاطر إجراء الانعاش القلبي الرئوي:

مخاطره على المسعفين والمتدربين (كثيرة الحدوث بسبب اجراء تقنية التنفس من الفم للفم):

- الاصابة بعدوى مرض السل الرئوي Tuberculosis
- الاصابة بفايروس المناعة المكتسبة Human Infectious Virus HIV
- الاصابة بالضائقة التنفسية الحادة Acute Respiratory Distress Syndrome ARDS

الاصابة بالامراض التالية:

- الاصابة بعصيات بكتيريا السحاياNeisseria meningitis
- الاصابة بفايروس التهاب الكبد الفايروسي نوعHBV
- التهاب الحلق والقصبات الهوائية الحاد.

مخاطره على المصابين:

وهذه المخاطر لها عالقة بحالة المصاب وعمره وطبيعة جسمه وكفاءة المسعفين او تعرضهم للاجهاد نتيجة التطبيق المتواصل للانعاش, وتشمل:

✓ **كسور في الاضلاع:**

وهي كثيرة الحدوث وشائعة لدى المسنين الذين يكون لديهم القفص الصدري متصلباً يعانون من او امراض هشاشة العظام . ويفترض ان ال تحدث هذه الكسور او ان تكون قليلة لدى اعمار الشباب المصابين ويكون حدوثها بسبب خطأ في االجراء)سوء مهارة(مثل ان يكون الضغط اعلى القص خارجه, او ان يكون الضغط عنيفاً جدا ٥ سم.

✓ **التدليك القلبي عديم الجدوى:**

يجب ان ال يجرى التدليك القلبي اال في حال توقف القلب تماماً عن النبض والتجرى الضغطات القلبية في حالة اصابة الشخص بضيق عارض او غثيان وجيز)وعكة(الن الدورة الدموية في هكذا حاالت قد تعود بعد دقيقة او دقيقتين.

✓ **التقيؤ:**

مشكلة شائعة جدا وبقوة شديدتينَ حيث يندفع الهواء الى المعدة ويسبب انتفاخها وخروج محتوياتها بسبب رد الفعل العصبي المحفز لها. فيجب اثناء ذلك تقليل شدة اعطاء النفس االنقاذي , وفي حالة تقيؤ المريض نضعه على الجانب االيسر الى ان يتوقف القيء وازالته من فم المريض باالصابع مع ارتداء القفازات المعقمة ثم ارجاع المريض الى وضعه االول)على ظهره(واستئناف االنعاش القلبي الرئوي اذا تطلب ذلك

✓ **<u>الاسترواح الصدري:</u>**

دخول السوائل الى الرئتين(Pneumothorax)

✓ **ايذاء الكبد والطحال واصابتهم بالنزيف نتيجة الضغط المستمر**

المعدل الطبيعي لضربات القلب والتنفس حسب العمر كما هو موضح في الجدول أدناه.

العمر	معدل التنفس الطبيعي نفس / الدقيقة	معدل نبض القلب الطبيعي نبضة/ الدقيقة
حديثي الولادة	٤٠-٧٠	١٢٠-١٧٠
0- 3 شهور	٣٥-٥٥	١٠٠-١٥٠
3- 6 أشهر	٣٠-٤٥	٩٠-١٢٠
6- 12 شهر	٢٥-٤٠	٨٠-١٢
1- 3 سنوات	٢٠-٣٠	٧٠-١١٠
3- 6 سنوات	٢٠ - ٢٥	٦٥-١١٠
6 -12 سنوات	١٥ - ٢٣	٦٥- ١٠٥
أكثر من 12 سنة	١٢ - ١٨	٦٠- ١٠٠

<u>المحاضرة الرابعة</u>

<u>عنوان المحاضرة:</u> العلاج الكهربائي(جهاز صدمات القلب)

<u>محتويات المحاضرة:</u>

- مزيل الرجفان الخارجي الالي (AED)

- خطوات تشغيل مزيل الرجفان الخارجي الالي
- الذبذبات القلبية القابلة للصدمةShockable Rhythms
- الذبذبات القلبية الغير القابلة للصدمة Shockable Rhythms

مدة المحاضرة: ساعه واحدة.

أهداف المحاضرة:

- التعرف على جهاز مزيل الرجفان الخارجي الالي (AED).
- معرفة خطوات تشغيل واستخدام جهاز مزيل الرجفان الخارجي الالي (AED).
- التعرف على الذبذبات القلبية القابلة والغير قابلة للصدمة والتمييز بينهما.

العلاج الكهربائى(Electrical Therapy)

جهاز مزيل الرجفان الالى الخارجى(Automated External Defibrillator (AED) :

هو آلة صغيرة خفيفة الوزن يتم استخدامها من قبل الناس العامة او المسعفين المحترفين لتقييم موجة القلب بواسطة التحليل الالكتروني, واستخدام الصوت والتحفيز المرئي, ان وظيفة هذا الجهاز هي اعطاء صدمة كهربائية اذا تطلب الامرلارجاع الضربة او الذبذبة الطبيعية للقلب للمرضى الذين يقعون ضحية التوقف القلبي المفاجئ. تعطى الصدمة الكهربائية من قبل هذا الجهاز تلقائياً فقط اذا كانت طبيعة الموجة الظاهرة عندئِذ تشير الى حدوث الارتجاف او التسارع البطيني عديم النبض.

متى يجب استخدام جهاز مزيل الرجفان الخارجي الآلي (AED):

تُستخدم أجهزة مزيل الرجفان الخارجي الآلية لإنقاذ شخص مصاب بتوقف القلب المفاجئ. ويحدث ذلك عادةً عندما يتسبب اضطراب النشاط الكهربائي للقلب في سرعة ضربات القلب بصورة خطيرة (تسرّع القلب البطيني) أو حدوث ضربات قلب سريعة غير منتظمة (الرجفان البطيني). فضربات القلب غير المنتظمة هذه تمنع القلب من ضخ الدم بكفاءة مما تتسبب في توقف القلب.

عندما يحدث ذلك، لا يحصل الدماغ والأعضاء الحيوية الأخرى على الدم والأكسجين الضروريين. ويتطلب ذلك العلاج في غضون دقائق لمنع حدوث وفاة. كلما تمت استعادة النظم الطبيعي للقلب في وقت مبكر، زادت فرصة عدم إصابة الدماغ والأعضاء الأخرى بشكل دائم.

إذا كان هناك جهاز مزيل للرجفان الخارجي الآلي بالقرب من شخص ما مصاب بالرجفان البطيني أو تسرع القلب البطيني، يمكن لأحد المارة في الأماكن العامة أو أحد أفراد العائلة استخدام هذا الجهاز لإعادة القلب إلى النظم الطبيعي. فاستخدام هذا الجهاز قد ينقذ حياة أحد الأشخاص.

يمكن أن يحافظ الإنعاش القلبي الرئوي بعد الإصابة بتوقف القلب على تدفق الدم إلى القلب والدماغ لفترة من الوقت. ولكن في الكثير من الأحيان، لا يمكن استعادة نظم القلب الطبيعي إلا من خلال إزالة الرجفان. ومن خلال دمج هذه العلاجات معًا، يمكن تعزيز فرص البقاء على قيد الحياة.

كيف يعمل الجهاز؟:

- معرفة وتمييز المصاب الذي لديه توقف في القلب وذلك بفحص النبض والتنفس, يقوم احد المسعفين بعملية الانعاش القلبي الرئوي بينما يقوم المسعف الاخر بتحضير الجهاز للعمل ووضعه بالقرب من المصاب.
- تشغيل الجهاز واتباع الاوامر الصوتية والرسائل الصورية على شاشة الجهاز.
- فتح الطرد الذي يحوي بداخله على وسادتي الاقطاب الكهربائية ولصق الوسائد على صدر المريض.
- حلاقة صدر الضحية بواسطة شفرة حلاقة موجودة في حقيبة الجهاز اذا كان للمريض شعر كثيف على صدره.
- تفحص الملصقات الدوائية على صدر المريض وارتداء القفازات.
- لا تقم بوضع الوسائد Paddles على مكان مزروع فيه ملصقات جهاز المونيتر او جهاز تنظيم الضربات التلقائي Pacemaker .

- اذا كان صدر المريض رطب او مبلل, قم بتجفيفه حتى لا تصنع الطاقة الكهربائية المعطاة دورة كاملة عندما تعطى الصدمة.

- تأكد من ان الوسادتين غير ملتصقتين ببعضهما البعض (تكون المسافة بينهما ٢,٥٤ سم على الاقل.

- ضع الجانب اللاصق للوسائد مباشرة على صدر المريض, الصق احدى الوسائد في الجانب الايمن لعظم القص (الجزء العلوي- الامامي للصدر), ووضع الاخرى على اليسار (منطقة القمة Apex) وهو الجزء الجانبي السفلي للصدر.

- اتباع الرسوم البيانية الموجودة على اقطاب الجهاز

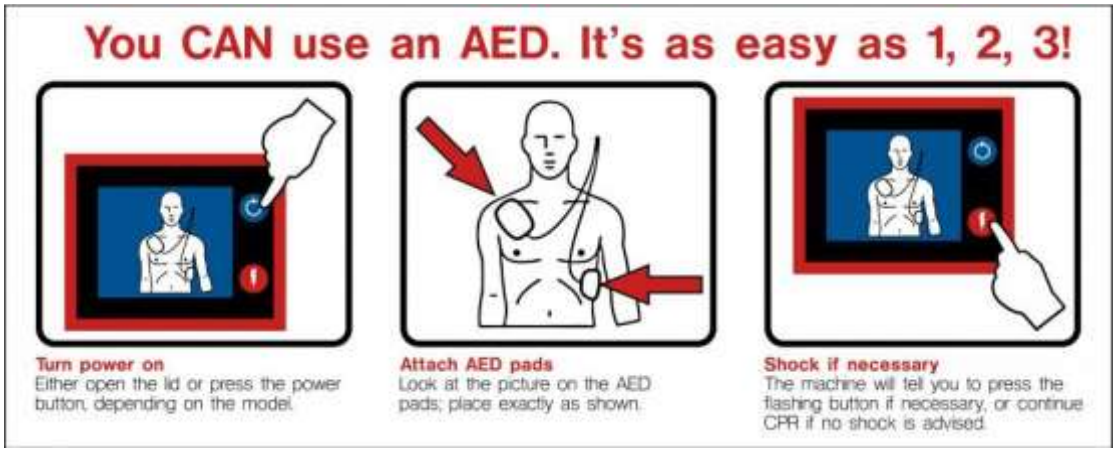
- اربط اسلاك الوسائد الى جهاز مزيل الرجفان.

- قم بإزالة جميع الاشياء الموصولة من حول المريض, والتوقف مؤقتاً عن عملية الانعاش القلبي الرئوي, وازالة مصدر الاوكسجين ان وجد.

- سيقوم الجهاز تلقائياً بتحليل موجة القلب الانية , فاذا اراد الجهاز اعطاء صدمة كهربائية بحضور بعض الاشخاص , قم بتحذيرهم على البقاء بعيداً عن المريض وانت ايضا.

- اذا اردت اعطاء صدمة بنفسك بدل الجهاز, الفظ عبارة سوف اعطي صدمة . وبعد مرور ٣ ثوا ها قم بضغطٍن واحد: انا جاهز, اثنان: هل انتم جاهزون, ثالثة: هل الجميع جاهزون, وبعد زر Shock الموجود على الجهاز ليقوم الجهاز بإعطاء الصدمة.

- بعد إعطاء الصدمة, استأنف عملية الانعاش القلبي الرئوي بالبدء بالضغطات القلبية.



اضطرابات نظم القلب:

إذا أصيب أحد الأشخاص بانهيار مفاجئ فقد يكون مصابًا بسكتة قلبية مفاجئة (SCA). وهذا أمر خطير، فهو يعني أن قلب هذا الشخص قد توقّف عن ضخ الدم وأنه يحتاج إلى مساعدة سريعة.

ويُعدّ العامل الأكثر أهمية في علاج السكتة القلبية المفاجئة هو توفير صدمة سريعة للقلب تُعرف باسم الصدمات الكهربائية. ويساعد جهاز خارجي آلي لصدمات القلب الكهربائية (AED) الأفراد العاديين على توفير الصدمات الكهربائية بشكل سريع.

هنالك اربعة ايقاعات لتوقف القلب:

الايقاعات القابلة للصدمة (Shockable Rhythms):

تسرُّع القلب البطيني **Ventricular Tachycardia (VT):**

تسرع القلب البطيني هو اضطراب ضربات القلب الذي يحدث نتيجة وجود إشارات كهربائيّة غير طبيعيّة في الحجرة السفلى للقلب (البطينين). في حالة تسرع القلب البطيني، تؤدي الإشارات الكهربائية غير الطبيعية في البطينين إلى ضربات أسرع من المعدل الطبيعي، عادةً يتجاوز ١٠٠ نبضة أو أكثر في الدقيقة الواحدة. في بعض الأحيان يصل إلى ٢٥٠ نبضة/دقيقة، عندما يكون نبض القلب بهذه السرعة بحيث لا يكون كذلك قادرة على تعميم الدم المؤكسج الكافي لبقية الجسم. حوالي ٧٪ من المرضى مع السكتة القلبية يتم تشخيصها مع VT.

الرجفان البطيني Ventricular Fibrillation (VF):

وهو عدم انتظام ضربات القلب الذي يهدد الحياة ,وهو إيقاع فوضوي للنشاط الكهربائي يؤدي إلى تقلص غير منسق للبطينين. غالبًا ما يحدث الرجفان البطيني أثناء النوبة القلبية أو بعدها بفترة قصيرة ، وهو السبب الرئيسي للموت القلبي المفاجئ.

كل من V-Tach و V-Fib يمنع القلب من توصيل الدم إلى أعضاء الجسم الحيوية، ولهذا السبب فإن الإنعاش القلبي الرئوي الفوري ضروري. يعد الإنعاش القلبي الرئوي ضروريًا لكل من حالات عدم انتظام ضربات القلب من أجل الحفاظ على دوران الدم يدويًا في جميع أنحاء الجسم في حالة عدم وجود ضربات قلب منتظمة.

الايقاعات الغير قابلة للصدمة (Non-Shockable Rhythms):

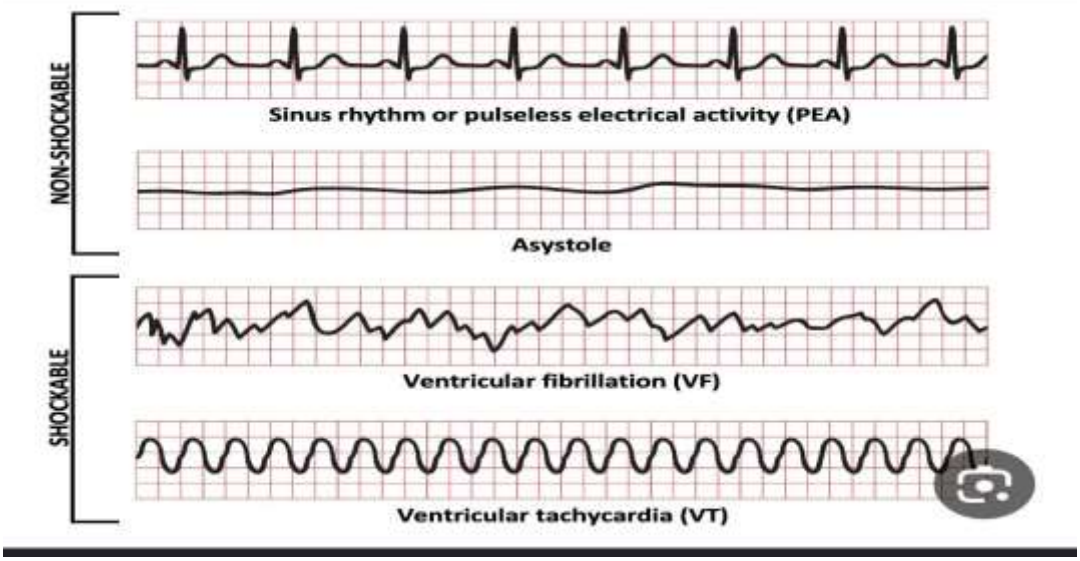
توقف الانقباض(Asystol):

الإيقاع يعني أن النظام الكهربائي للقلب قد توقف عن العمل ولا يوجد نبض للقلب. يمكن أن يكون توقف الانقباض نتيجة لـ VT أو VF غير المعالج. إذا تعرض شخص ما لانقباض، فيجب البدء بالإنعاش القلبي الرئوي على الفور لتوفير أفضل فرص البقاء على قيد الحياة.

يحدث توقف الانقباض عندما يُصاب النظام الكهربائي للقلب بخلل ما، وقد يحدث اضطراب نظم بطيني عندما تنقطع الإشارات الكهربائية الواردة إلى البطينين، ويتنج عنه عدم قدرة البطينين على ضخ الدم إلى بقية أنحاء الجسم، وهذا ما يؤدي بدوره إلى توقف القلب.

النشاط الكهربائي عديم النبض(**Pulseless Electrical Activity (PEA)) :**

وهي السكتة القلبية التي تُظهر نظمًا قلبيًا، في تخطيط كهربائية القلب، مثل الذي يصدر عنه النبضات القلبية، ولكن لا يوجد نبض فعليًا .يحدث النشاط الكهربي عديم النبض في البداية عند ٥٥٪ تقريبًا من مرضى السكتة القلبية.



رسالة هامة إلى كل من يقرا هذا الكتيب:

يمكنك أن تساهم بإنقاذ حياة شخص تعرفه أو لا تعرفه في حالة توقف قلبه أو تنفسه سواء كان في المستشفى أو خارجها إذا تعلمت ونقلت هذه المعلومة إلى من حولك. هذا ومن الله التوفيق ، و نسأل الله تعالى لنا و لكم دوام الصحة و العافية ، و أن يشفي سائر مرضى المسلمين ويحفظ العراق والعراقيين إن شاء الله رب العالمين ، وتقبلوا فائق التقدير و الاحترام على قراءتكم لهذا الكتيب على أمل الاستفادة ، و لا تنسونا من صالح دعائكم...

والحمدلله رب العالمين

Appendix E

Panel of Experts

خبراء تحكيم الاستبانة

ت	اسم الخبير	اللقب العلمي	الشهادة	الاختصاص الدقيق	مكان العمل	سنوات الخبرة
١	د.فاطمة مكي محمود	أستاذ	الكتوراه	تمريض البالغين	جامعة كربلاء كلية التمريض/	٢٨
٢	د.ختام مطشر حطاب	أستاذ	الدكتوراه	تمريض الاطفال	جامعة بغداد كلية التمريض/	٢٦
٣	د.علي عبد الزهرة	أستاذ	الدكتوراه	فسلجة	جامعة الكوفة كلية التمريض/	١٥
٤	د.ساجدة سعدون عليوي	استاذ مساعد	الدكتوراه	تمريض الام والوليد	جامعة كربلاء كلية التمريض/	٣١
٥	د.زكي صباح مصيحب	استاذ مساعد	الدكتوراه	تمريض الاطفال	جامعة كربلاء كلية التمريض/	٢٦
٦	د.حسن عبدالله عذبي	استاذ مساعد	الدكتوراه	تمريض البالغين	جامعة كربلاء كلية التمريض/	٢١
٧	د.محمد باقر حسن	استاذ مساعد	الدكتوراه	تمريض الاطفال	جامعة الكوفة كلية التمريض/	٢٠
٨	د.زيد وحيد عاجل	استاذ مساعد	الدكتوراه	تمريض الاطفال	جامعة بغداد كلية التمريض/	١٦
٩	د.وميض حامد شاكر	استاذ مساعد	الدكتوراه	تمريض الاطفال	جامعة الكوفة كلية التمريض/	١٠
١٠	د.حسام مزار عزوز	استشاري	البورد	طب الطوارئ	وزارة الصحة /والبيئة مستشفى الفرات الاوسط التعليمي	١٤

Appendix F

Appendix F

Approval of the linguistic expert

Republic of Iraq
Ministry of higher education & scientific research
University of Karbala
College of Nursing
Graduate studies Division

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جـــامعة كربلاء
كـلية التـمريـض
شعبة الدراسات العليا

إقرار الخبير الإحصائي

أشهد بـأن الرسالـة الموسومـة :

" كفاءة التعليم القائم على المحاكاة في تحسين أداء الممرضين فيما يتعلق بدعم الحياة الأساسي للأطفال "

" The Efficacy of Using Simulation-Based Education on Nurses Performance Regarding Pediatric Basic Life Support "

قد تم الإطـلاع علـى الإسلـوب الإحصـائـي المتّبـع فـي تحليـل البيانـات و إظهـار النتائـج الإحصائيـة وفق مضمـون الدراسـة و لأجلـه وقعت .

توقيع الخبير الإحصائي :

الإسم و اللقب العلمي : م.د. ايناس عبد الحافظ

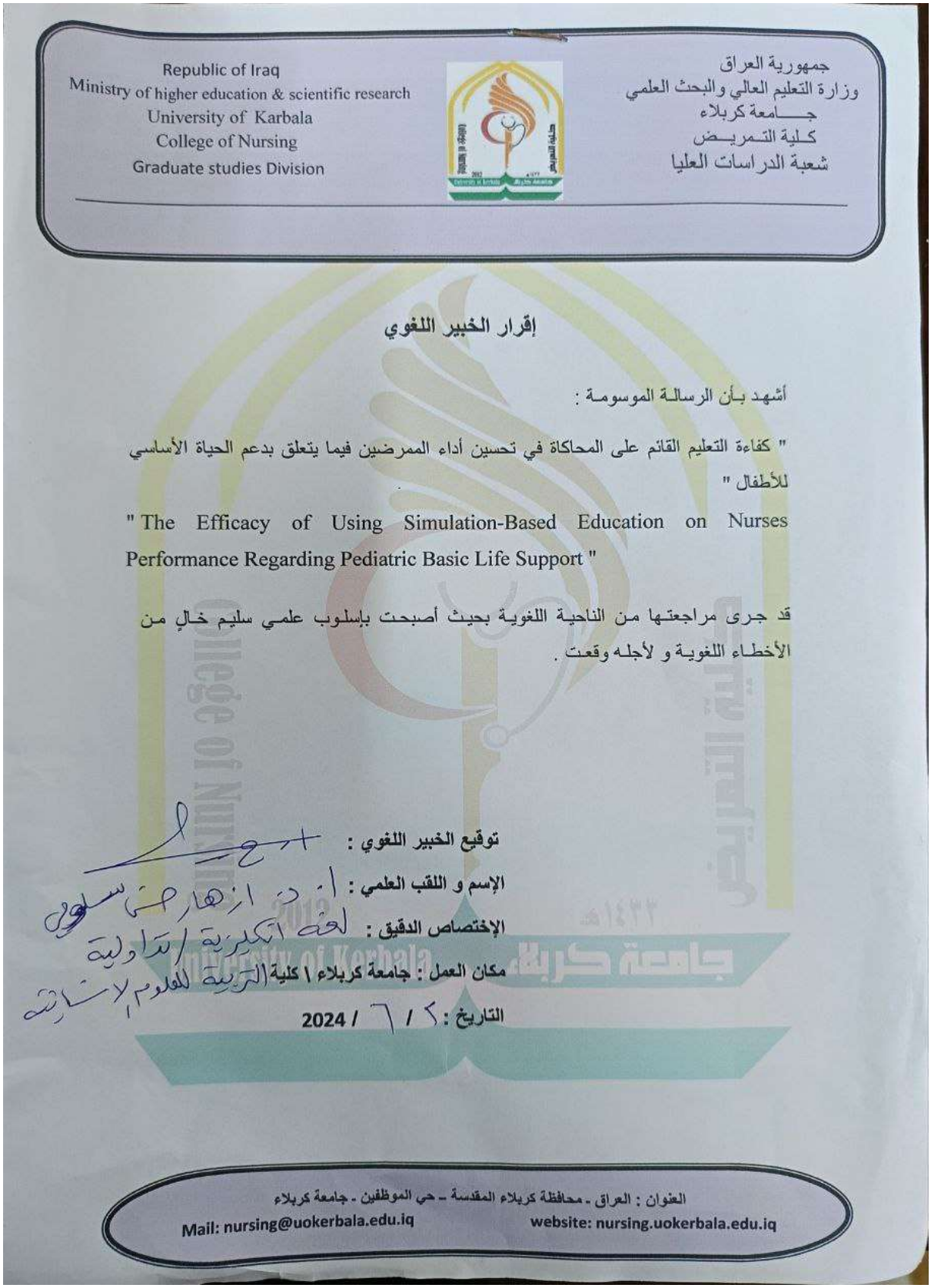
الإختصاص الدقيق : احصاء رياضي

مكان العمل : جامعة كربلاء / كلية الادارة والاقتصاد

التاريخ : ٨ / ٤ / 2024

العنوان : العراق - محافظة كربلاء المقدسة – حي الموظفين - جامعة كربلاء
Mail: nursing@uokerbala.edu.iq
website: nursing.uokerbala.edu.iq

Statistical expert's approval



Republic of Iraq
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Graduate studies Division

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جـــامعة كربلاء
كـلية التـمريـض
شعبة الدراسات العليا

إقرار الخبير اللغوي

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" The Efficacy of Using Simulation-Based Education on Nurses Performance Regarding Pediatric Basic Life Support "

قد جرى مراجعتها من الناحية اللغوية بحيث أصبحت بإسلوب علمي سليم خالٍ من الأخطاء اللغوية و لأجله وقعت .

توقيع الخبير اللغوي :

الإسم و اللقب العلمي : أ. د. ازهار حسن سلوم

الإختصاص الدقيق : لغة انكليزية / تداولية

مكان العمل : جامعة كربلاء / كلية التربية للعلوم الإسلامية

التاريخ : ٢ / ٦ / 2024

العنوان : العراق ـ محافظة كربلاء المقدسة ـ حي الموظفين ـ جامعة كربلاء
Mail: nursing@uokerbala.edu.iq website: nursing.uokerbala.edu.iq

الخلاصة

الخلفية العلمية: دعم الحياة الأساسي للأطفال هو تقديم إجراءات إنعاش القلب والرئتين للأطفال الذين توقفت قلوبهم حتى يتم توفير توفير الدعم الحيوي المتقدم .المحاكاة هي تقليد لعملية في العالم الحقيقي على مر الزمن. التعليم النظري ليس كافيا وحده لتطبيق الإنعاش القلبي الرئوي بشكل فعال. لذا يجب أن يتم تطبيق التعليم وفقًا للتدريب والإرشادات التوجيهية.

الاهداف : تهدف هذه الدراسة الى تقييم كفاءة التعليم القائم على المحاكاة في أداء الممرضين فيما يتعلق بدعم الحياة الأساسي للأطفال.

المنهجية: تم إجراء دراسة شبه تجريبية قبل ر وبعد الاختبار في (مستشفى الزهراء التعليمي ومستشفى المناذرة العام) في مدينة النجف الاشرف خلال الفترة من ٢٦ ايلول ٢٠٢٣ إلى 10 حزيران ٢٠٢٤. تم اختيار مجموعتين من الممرضين (٢٥) في مجموعة الدراسة و(٢٥) في مجموعة الضابطة استنادًا إلى معايير الدراسة. المقابلة المنظمة التي تضمنت ثلاثة أجزاء تتعلق بالخصائص الاجتماعية والديموغرافية، ومعرفة الممرضين، وممارسة الممرضين فيما يتعلق بدعم الحياة الأساسي للأطفال. مر التعليم بثلاث مراحل كانت الاختبار الأولي، ومرحلة التنفيذ، والاختبار النهائي. . تم تحليل البيانات باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية (SPSS) الإصدار ٢٠. تم استخدام كل من النهج الإحصائي الوصفي والاستدلالي لتحليل نتائج الدراسة.

النتائج: أظهرت النتائج أن البرنامج التدريبي أدى إلى تحسن كبير في المعرفة والممارسات المتعلقة بدعم الحياة الأساسي للأطفال بين الممرضين في المجموعة الدراسية، حيث ارتفعت درجات المعرفة من ٠,٤٦ إلى ٠,٨٩، وارتفعت درجات الممارسة من ٠,٣٨ إلى ٠,٨٢ بعد التدخل. في المقابل، لم تشهد المجموعة الضابطة تغييرات كبيرة، حيث تحركت درجات المعرفة بشكل طفيف من ٠,٤٧ إلى ٠,٥٠ ودرجات الممارسة من ٠,٤٤ إلى ٠,٤٦.

الاستنتاجات: خلصت الدراسة الحالية إلى أن أداء الممرضين في دعم الحياة الاساسي للأطفال قد تحسن بشكل كبير بعد التعليم القائم على المحاكاة، وتوفر الدراسة خطاً لتعزيز دمج المحاكاة كاستراتيجيات تعليمية نشطة لتطوير أداء الممرضين في تطبيق المهارات السريرية.

التوصيات: استنادًا إلى نتائج هذه الدراسة، يوصي الباحث بإجراء مزيد من الدراسات مع عينه اكبر لتقييم تأثير المحاكاة على ناتج تعليم الممرضين لمزيد من الدراسات التي قد تكون المحاكاة قيمة لتعزيز الممرضين. كما يوصي بتشجيع الممرضين على تحسين أدائهم من خلال زيادة مشاركتهم في دورات دعم الحياة الأساسي وإنعاش القلب والرئتين (على الأقل كل ٦ أشهر).

جامعة كربلاء

كلية التمريض

كفاءة التعليم القائم على المحاكاة في تحسين اداء الممرضين فيما يتعلق بدعم الحياة الاساسي للأطفال

رسالة مقدمة الى مجلس كلية التمريض / جامعة كربلاء وهي جزء من متطلبات نيل درجة الماجستير في علوم التمريض

بواسطة

كرار صالح محيسن

بأشراف

أ. د. خميس بندر عبيد

ذو الحجة ١٤٤٥ هـ **حزيران ٢٠٢٤ م**