Napata College

Faculty of Medicine

Assessment of knowledge of Basic Life Support among Napata Students 2022

A thesis submitted for partial fulfillment of the requirement of MBBS

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Dedication

To our families, teachers, friends and peers we dedicate our work.

Acknowledgment

We would like to express our sincere gratitude to our supervisor **Dr. Hadeel Ahmed**, for hers keen supervision, and proper guidance. Which would not have been done without her .No words can describe my thanks to our fathers and mother who gave us valuable comments, love and support. Special thanks to our peers who helped us in data collection.

Abbreviations:

AEDS	Automatic External Defibrillation.
AHA	American Heart Association.
BLS	Basic Life Support.
CDC	Centers for Disease Control.
CPR	Cardiopulmonary Resuscitation.
ECC	Emergency Cardiovascular Care.
EMS	Emergency Medical Services.
EMT	Emergency Medical Technician.
ERS	Emergency Response System.
ILCOR	International Liaison.
MCQs	Multiple Choice Questions.
MI	Myocardial Infection.
ROSC	Return Spontaneous Circulation.
SCA	Sudden Cardiac Arrest.
SPSS	statistical package for statistical social science

Abstract

Background: One of the most common causes of death worldwide is sudden cardiac arrest. Basic life support (BLS) training rates vary globally, and there are generally few surveys evaluating students' knowledge and understanding of BLS in Middle Eastern nations, particularly Jordan, Syria, and Iraq.

Objective: The aim of this study is to assess medical students' knowledge of basic life support.

Method: This is observational descriptive cross sectional study conducted at Napta University, faculty of medicine Khartoum, Sudan. In undergraduate students at different levels at November 2022 , using standardized questionaire. The sample size was 494 and 500 sample was collected. The knowledge score was calculated.

Results: This study included 500 participants all of them were students Only 5% of them have done a training course and 95% haven't done a training course .17.8% of the participated students had good knowledge about BLS while 82.2% of them had poor knowledge regarding knowledge of effective resuscitation 8.2% of them had good knowledge ,knowledge about complication of CPR 29.4 %had good knowledge.53% had good knowledge about signs of shock and 16.6% had good knowledge about BLS in children and infants .26% of the students had positive attitude about asphyxia while 74% of them had negative attitude There is a strong association between knowledge, academic specialization, training and academic level (P value .000)

Conclusion: The results indicate that students' knowledge toward BLS is not significant and require more training. So there is urgent need to include BLS courses in undergraduate curriculum particularly in preclinical stage.

ملخص البحث

خلفية علمية :من اكتر اسباب الوفاة في العالم السكتة القلبية المفاجأة. تعليم إنقاذ الحياة الاساسي يختلف كثيرا من مكان لمكان في العالم وهناك القليل من البحوث في الشرق الأوسط في هذا الموضوع.

الهدف : هذه الدراسة تهدف لقياس معرفة طلبة الطب بطريقة إنقاذ الحياة الاساسية.
الطريقة : تمت الدراسة في كلية الطب نبتة في الخرطوم في نوفمبر ٢٠٢٢ حيث وزعت استبيانات تحوي على اسئلة لقياس المعرفة والوعي بين الطلبة وجمعت عينات قدرها ٥٠٠ عينة ثم حللت بواسطة برنامج التحليل الإحصائي

النتائج : ٥٪ فقط من المشاركين تلقو تدريب في إنقاذ الحياة الاساسي و٩٥٪ لم يحصلو، ١٧٪ لديهم معرفة جيدة و ٨٣٪ لديهم معرفة ضعيفة في دعم إنقاذ الحياة الاساسي .
٢٩,٤٪ لديهم معرفة جيدة بالانعاش القلبي الرئوي و ٥٣٪ بالعلامات الدالة على هبوط الدورة الدموية ٦.١٦ لديهم معرفة جيدة بكيفية إنقاذ الحياة الاساسي في الأطفال والرضع و ٧٤٪ يعرفون كيفية التعامل مع الاختناق

الخاتمة : النتائج تشير إلى أن المعرفة بطرق إنقاذ الحياة الاساسية ضعيفة بين الطلبة وتحتاج إلى ادخاله في المنهج والتدريب عليه.

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CHAPTER ONE

1.0 introduction:

1.1 background:

Basic life support (BLS) is defined as a variety of noninvasive emergency procedures performed to assist in the immediate survival of a patient, including cardiopulmonary resuscitation, hemorrhage control, stabilization of fractures, spinal immobilization, and basic first aid. Some of these procedures can be lifesaving and are often important to implement early. Specifically in the case of cardiopulmonary resuscitation (CPR) and defibrillation with automatic external defibrillators (AEDs), BLS procedures can have a significant impact on survival, and are typically delivered by initial responders (sometimes referred to as first-responders) until more advanced and definitive medical care can be implemented. BLS is typically provided by either first responders or emergency medical technician. (1)

The purpose of CPR is to temporarily provide effective oxygenation of vital organs, especially the brain and heart, through artificial circulation of oxygenated blood until the restoration of normal cardiac and respiratory activity occurs.(1)

. The intended effect is to stop the degenerative processes of ischemia and anoxia caused by inadequate circulation and inadequate oxygenation (2)

A key component of the 2005 American heart association guidelines was the recognition that immediate high-quality CPR is crucial for optimal patient outcome after sudden cardiac arrest. (2)

However, the 2010 American heart association guidelines identify several barriers to providing immediate high-quality CPR and address them. Furthermore, even after defibrillation, most victims demonstrate asystole or pulseless electrical activity for several minutes, and high quality CPR

immediately following defibrillation can convert nonperfusing rhythms to perfusing rhythms. (2, 3) the time sensitivity of CPR in sudden cardiac death is emphasized in the American heart association. (2)

Worldwide, shock is a leading cause of morbidity and mortality in the pediatric population, Shock is defined as a state of acute energy failure due to inadequate glucose substrate delivery, oxygen delivery, or mitochondrial failure at the cellular level. (3)

The clinical state of shock is diagnosed on the basis of vital signs, physical examination, and laboratory data, although its recognition in the pediatric patient can be difficult. Delay in recognizing and quickly treating a state of shock results in anaerobic metabolism, tissue acidosis, and a progression from a compensated reversible state to an irreversible state of cellular and organ damage. Morbidity from shock may be widespread and can include central nervous system (CNS) failure, respiratory failure (i.e., from muscle fatigue or acute respiratory distress syndrome [ARDS]), renal failure, hepatic dysfunction, gastrointestinal ischemia, disseminated intravascular coagulation (DIC), metabolic derangements, and ultimately death. (3)

1.2 problem statement:

Cardiac arrest is one of the leading causes of death worldwide. there are >135 million cardiovascular passes every year, it was estimated that the incidence of cardiac arrest between 50 to 100 per 100,000 in the general population according to the centers for disease control (CDC), heart disease continues to be the leading cause of death in the united states and is responsible for over 600,000 deaths every year outcome and prognosis of cardiac arrest can be significantly improved post timely administration of cardiopulmonary resuscitation (4)

Approximately 10 to 15 percent of patients admitted to intensive care units have ARDS.

The incidence of ARDS rises with age, ranging from 16 per 100,000 person-years among individuals 15 to 19 years of age to 306 per 100,000 person-years among individuals 75 to 84 years (5)

1.3 Justification:

Adequately knowledge of BLS is necessary for all the university attending students. No study in napata medical college about BLS awareness, this study to evaluate the awareness of BLS knowledge and attitude towards BLS training among the students in napata college to make a plan for basic life support training.

1.4 Objective:

General objective:

To assess the knowledge of the students about the situation that needs BLS.

Specific objectives:

To assess level of knowledge about effective resuscitation.

To assess the knowledge of the students about situations need AED

To assess the source of information in students that affect of knowledge

To assess the knowledge of students about complications result of CPR

To assess knowledge of students about BLS in children and infants.

CHAPTER TWO

2.0 Literature review:

2.1 introduction and General Concepts of basic life support:

The heart pumps blood through the lungs, where blood takes in oxygen and releases carbon dioxide. This blood then returns to the heart where it is pumped out to vital organs—the heart and brain—as well as the rest of the body. When the heart stops, blood flow stops, and the person quickly becomes unconscious. Without blood flow, the heart and the brain quickly become damaged due to lack of oxygen. (6)

The actions that make up BLS try to prevent or slow the damage until the cause of the problem can be corrected. BLS improves a person's' chance of surviving until advanced care becomes available. (6)

Keys for BLS:

Quickly start the Chain of Survival.

Deliver high-quality chest compressions to circulate oxygen to the brain and vital organs.

Know when and how to use an Automated External Defibrillator (AED).

Provide rescue breathing.

Understand how to work with other rescuers as part of a team.

Know how to treat choking. (4)

2.1.1 Initiating the chain of survival:

2.1.1.1 Four link chain of survival:

The chain of survival summarizes the vital links needed for successful resuscitation. Most of these links apply to victims of both primary cardiac and asphyxia arrest.

. Early recognition and call for help:

Chest pain should be recognized as a symptom of myocardial ischemia. Cardiac arrest occurs in a quarter to a third of patients with myocardial ischemia within the first hour after onset of chest pain.

Recognizing the cardiac origin of chest pain, and calling the emergency services before a victim collapses, enables rapid activation of emergency response system (ERS).(6)

If cardiac arrest has occurred, early recognition is critical to enable rapid activation of the ERS and prompt initiation of bystander CPR.

The key observations are unresponsiveness and not breathing normally. Emergency medical dispatchers can improve recognition by focusing on these keywords. (6)

Early bystander CPR:

The immediate initiation of CPR can increase the survival rate from cardiac arrest. If able, bystanders with CPR training should give chest compressions together with ventilations.

Early defibrillation:

Defibrillation within 3–5 minutes of collapse can produce survival rates as high as 50–70%.

Each minute of delay to defibrillation reduces the probability of survival to discharge by10–12%.

The links in the chain work better together: when bystander CPR is provided, the decline in survival is more gradual and averages 3–4% per minute delay to defibrillation. (6)

Early advanced life support and post-resuscitation care:

Early initiation of advanced life support and post resuscitation care will improve the survival of the victims (6)

2.1.1.2 Sixth link chain of survival:

The six links in the adult out-of-hospital Chain of Survival is:

Recognition of cardiac arrest and activation of the emergency response system.

Early cardiopulmonary resuscitation (CPR) with an emphasis on chest compressions.

Rapid defibrillation.

Advanced resuscitation by Emergency Medical Services and other healthcare provides.

Post-cardiac arrest care.

Recovery (including additional treatment, observation, rehabilitation, and psychological support). (7)

2. 1.2 2010 BLS guidelines changes:

In 2010, the American Heart Association (AHA) released a revision of the BLS Guidelines. Approximately every five years the AHA updates the guidelines for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care (ECC).

The content contained here in is based on the most recent AHA publications on BLS and will periodically compare old versus new recommendations for a comprehensive review. (6)

These changes include:

Previously, the initial steps were A-B-C (Airway, Breathing, Compressions). The literature indicates that starting compressions early in the process will increase survival rates. Therefore, the steps have been changed to C-A-B (Compressions, Airway, Breathing). this is intended to encourage early CPR and avoid bystanders interpreting agonal breathing as signs of life and with holding CPR.(6)

Look, listen and feel for breathing is no longer recommended. Instead of assessing the victims breathing, begin CPR if the victim is not breathing (or is only gasping for breath), has no pulse (or if you are unsure), or if the victim is unresponsive. Do not perform an initial assessment of respirations. The goal is early delivery of chest compressions to cardiac arrest victim.(6)

High-quality CPR is key and is defined as:

Compression rate of at least 100 per minute for all victims

Compression depth of at least 2 inches for adults/children and about 1.5 inches for infants Allow complete chest recoil after each compression

Minimize interruptions in CPR except to use an AED or change rescuer positions.

Do not over ventilate.

Provide CPR as a team when possible.

Cricoids pressure is NO longer routinely performed.

Pulse checks are shorter feel for a pulse for 10 seconds then begin compressions if a pulse is absent or if you are not sure you feel a pulse. Even trained clinicians cannot always reliably tell if they can feel a pulse.

For infants, use a manual defibrillator if one is available. If one is not available, an AED with pediatric dose attenuator should be used for an infant. If an AED with dose attenuator is not available, you may use an adult AED even for an infant.(6)

2.1.3 2020 CPR GUIDELINE CHANGES:

Approximately every five years the international liaison committee on resuscitation (ILCOR) updates the guidelines for CPR and ECC (emergency cardiac care). The content contained here in is based on the most recent ILCOR publications on BLS. Recommendations for adult basic life support (BLS) from the 2020 guidelines for CPR and ECC, includes the following:(6)

The importance of early initiation of CPR by lay rescuers has been re-emphasized. The risk of harm to the patient is low if the patient is not in cardiac arrest. Bystanders should not be afraid to start CPR even if they are not sure whether the victim is breathing or in cardiac arrest.

A sixth link, recovery, was added to the chains of survival for both pediatric and adults. (6)

• Care of the patient after return of spontaneous circulation (ROSC) requires close attention to oxygenation, blood pressure control, evaluation for percutaneous coronary intervention, targeted temperature management, and multi modal neuroprognostication.

Because recovery from cardiac arrest continues long after the initial hospitalization, patients should have formal assessment and support for their physical, cognitive, and psychosocial needs.

After a resuscitation, debriefing for lay rescuers, EMS providers, and hospital-based healthcare workers may be beneficial to support their mental health and well-being.

Management of cardiac arrest in pregnancy focuses on maternal resuscitation, with preparation for early perimortem cesarean delivery if necessary to save the infant and improve the chances of successful resuscitation of the mother. (6)

2.1.4 overview of anatomy & physiology:

The main components of the heart are:

Heart muscles -contract to pump blood.

Heart chambers -collect and channel blood flow.

Heart valves -allows only one-way flow of blood.

Conduction system -coordinate heart muscle contraction

Coronary blood vessels -supply blood to the heart.

The cardiovascular system maintains blood flow to deliver oxygen and nutrients to every cell and removes the carbon dioxide and waste products made by those cells.

The heart is a muscular organ which pumps a continuous flow of blood through the blood vessels of the circulatory system Importance of adequate chest recoil due to this simple way of how the flow of blood occurs, when the heart stops pumping during cardiac arrest, effective external chest compressions push blood out of heart chambers and thus maintain blood flow and oxygen delivery to the heart, brain and other vital organs.(6)

The contraction of the heart is coordinated by its conduction system. The heart will fail to maintain a good blood flow if it pumps at a too slow rate (less than 60/min), too fast (more than 150/min) or unorganized rhythm (ventricular fibrillation).

In a child, heart rate of less than 60/min may require chest compressions to maintain adequate perfusion.

The coronary blood vessels supply oxygen to the heart muscles and conduction system.

Most of blood flow (perfusion) to the heart muscles occurs during the diastole (relaxation) phase.

This is the reason why the recommended maximum rate of chest compression is 120/min and full chest recoil is important to allow for adequate perfusion to the heart muscles and blood filling of the heart chambers during the relaxation (diastole) phase.(6)

Anatomy & Physiology of the Respiratory System:

The human body needs oxygen to sustain life. After about four minutes without oxygen, brain cells start dying and can lead to irreversible brain damage and ultimately death.

The main components in respiratory system are:

.Airways - to channel air to the lungs.

.Lungs and blood vessels - for gas exchange.

. Muscles for breathing - to move air in and out of the lungs.

Room air contains 21% oxygen. Rescue breathing using exhaled air contains 16% oxygen.

Most child-related cardiac arrests occur as a result of a hypoxic event. Therefore, breathing and oxygenation are important for a successful resuscitation. (6)

The tongue may occlude the upper airway in an unconscious patient. Thus, opening the airway is essential.

However, due to anatomical differences between an adult, children and neonate airway, head-tilt- chin lift maneuver may differ slightly. Over extension of the neck in an unconscious infant may occlude the airway. (6)

During cardiac arrest, the body's metabolic demand for oxygen is decreased. Therefore, a smaller amount of air is needed. When giving ventilation, a visible chest rise indicates adequate volume of air has been given. over ventilation and hyperventilation should be avoided because with each ventilations, intrathoracic pressure increases.(6)

The detrimental effects are:

. Decrease in atrial/ ventricular filling.

. Reduction in coronary perfusion pressures (blood flow to heart muscles).

. Distention of the stomach with air which will reduce diaphragm mobility an increase risk of regurgitation and aspiration.

Sudden Cardiac Arrest:

Sudden cardiac arrest (SCA) is a condition in which the heart suddenly and unexpectedly stops beating. If this happens, blood stops flowing to the brain and other vital organs. SCA usually causes death if it's not treated within minutes.

Signs and symptoms of cardiac arrest:

If there is abnormal or absent of breathing, no pulse and the patient is unresponsive, the patient is in cardiac arrest. Other signs of life - coughing & movement, will also be absent Myocardial Infarction.

A myocardial infarction (MI) or heart attack refers to the necrosis (death) of heart tissue as a result of a loss of oxygenated blood. (6)

Signs and Symptoms of MI:

Chest discomfort or pain that is severe, lasts longer than 3 to 5 minutes, goes away and comes back, or persists even during rest.

Discomfort, pressure or pain that is persistent and ranges from discomfort to an unbearable crushing sensation in the chest, possibly spreading to the shoulder,

Arm, neck, jaw, stomach or back, and usually not relieved by resting, changing position or taking medication.

Pain that comes and goes (such as angina pectoris)

Difficulty breathing, such as at a faster rate than normal or noisy breathing.

Pale or ashen skin, especially around the face.

Sweating, especially on the face.

Dizziness or light-headedness.(6)

2.2 BLS for adults:

BLS for adults focuses on doing several tasks simultaneously. In previous versions of BLS, the focus was primarily on one-rescuer CPR. In many situations, more than one person is available to do CPR. This simultaneous and choreographed method includes performing chest compressions, managing the airway, delivering rescue breaths, and using the AED, all as a team. By coordinating efforts, a team of rescuers can save valuable seconds when time lost equals damage to the heart and brain. (4)

2.2.1 Steps for CPR:

Check for the carotid pulse on the side of the neck. Remember not to waste time trying to feel for a pulse; feel for no more than10 seconds. If you are not sure you feel a pulse, begin CPR with a cycle of 30 chest compressions and two breaths. (4)

Use the heel of one hand on the lower half of the sternum in the middle of the chest

Put your other hand on top of the first hand.

Straighten your arms and press straight down. Compressions should be AT least two inches into the victims chest and at a rate of at least 100 per minute

Stop pressing and let the chest expand after each compression this will allow blood to return back into the heart.

After 30 compressions, stop compressions and open the airway by tilting the head and lifting the chin.

Put your hand on the victim’s forehead and tilt the head back.

Lift the victim’s jaw by placing your index and middle fingers on the lower jaw; lift up.

Do not perform head tilt/chin lift if you suspect the victim may have a neck injury.

Give a breath while watching the chest rise. repeat while giving a second breath. breaths should be delivered over 1 second.

Resume chest compressions.(4)

2.2.2 Two-rescuer adult BLS/CPR:

Many times there will be a second person available that can act as a second team member. Send this person to call EMS and find an AED while you begin CPR. When the second rescuer returns, the CPR

Tasks can be shared:

1. Have the second rescuer prepare the AED for use.
2. Begin chest compressions and count the compressions aloud.
3. The second rescuer applies the AED pads
4. The second rescuer opens the victim's airway and gives rescue breaths.
5. Switch positions after every five cycles of compressions and breaths.

One cycle consists of 30 compressions and 2 breaths.

6. When the AED is connected, minimize interruptions of CPR by switching rescuers while the AED analyzes the heart rhythm.(4)

2.2.3 Adult mouth-to-mask ventilation:

In one-rescuer CPR, breaths should be supplied using a pocket mask, if available.

Give 30 high-quality chest compressions.

Seal the mask against the victim's face by placing four fingers of one hand across the top of the mask and the thumb of the other hand along the bottom edge of the mask.

Using the fingers of your hand on the bottom of the mask, open the airway using a head tilt/chin lift (do not do this if you suspect the victim may have a neck injury).

4. Press firmly around the edges of the mask and ventilate by delivering a breath over 1 second as you watch the victims chest rise. (4)

2.2.4 Adult bag-mask ventilation in two-rescuer CPR:

If two people are present and a bag-mask device is available, the second rescuer is positioned at the victims head while the other rescuer performs high-quality chest compressions.

Deliver 30 high-quality chest compressions while counting aloud.

The second team member holds the mask with one hand using the thumb and index finger in the shape of a C on one side of the mask to form a seal between the mask and the face, while the other fingers open the airway by lifting the victims lower jaw.

The second team member gives two breaths over one second each. (4)

2.3 Use of the automated external defibrillator (AED):

Ventricular fibrillation is a common cause of cardiac arrest. The treatment for ventricular fibrillation is defibrillation, or the delivery of an electric shock to the heart through the victims chest wall.

The automated external defibrillator (AED) is a device that recognizes ventricular dysrhythmias and delivers an electric shock at the right time. The AED has become a common sight in public buildings.

The AED is nearly fool proof and will not allow you to make a mistake. It is safe for anyone to use.

Using the team concept, one person should coordinate the available rescuers so that one person performs chest compressions while the second person prepares the AED for use. Although there are many different brands of AEDs, all are utilized in essentially the same way.

Remember to move the victim and yourself to a safe place before using the AED. Electricity and water can be lethal when combined.

Ensure the victim is not wet (quickly wipe dry) or in close proximity to water before using the AED.

The AED can be used if the victim has a pacemaker, transdermal medication patches, a hairy chest, and even if the patient is lying in snow.(4)

AED Steps:

Retrieve the AED.

Open the case.

Turn on the AED.

Expose the victims chest.

If wet, dry chest.

Remove medication patches.

Open the AED pads.

Peel off backing.

Check for pacemaker or defibrillators.

Apply the pads.

Upper right chest above breast.

Lower left chest below armpit.

Ensure wires are attached to AED box .

Move away from the victim .

Stop CPR.

Clear the patient.

Tell others not to touch victim.

AED analyzes the rhythm.

Message Check electrodes.

-Ensure electrodes make good contact.

Hairy chest? Pull off pad and replace.

Message Shock.

Ensure electrodes make good contact.

Resume CPR for 2 minute.(4)

2.4 Airway management:

Until an advanced airway is inserted, the rescue team should use mouth-to-mouth, mouth-to-mask, or bag-mask ventilation. An advanced airway (supraglottic airway, laryngeal mask airway, or endotracheal tube) provides a more stable way of providing breaths and should therefore be inserted as early as possible in a resuscitation effort.

Once an advanced airway is in place, the compression/breath ratio should be adjusted as noted below.

The compression rate for all victims is always at least 100/minute. (4)

2.4.1 Mouth-to-mouth rescue breathing:

When a pocket mask or bag-mask is not available, it may be necessary to give mouth-to-mouth breaths during CPR. Mouth-to-mouth breathing is very effective in delivering oxygen into the victims lungs without putting the rescuer at a high level of risk.

The rescuers exhaled air contains approximately 17% oxygen and 4% carbon dioxide. This is in contrast to the 100% oxygen available with ventilation with 100% high flow oxygen.

Do not give breaths too rapidly or too forcefully. Doing this may cause air to be forced into the stomach,

Resulting in distention and less room for lung expansion, and vomiting may occur.(4)

Open the airway using the head tilt/chin lift.

Pinch the victims nose closed with your hand on the victims head.

Create a seal when using your lips to surround the victims mouth.

Blow into the victims mouth for one full second and watch for their chest to rise. tilt the victims head further back if the chest does not rise.

Give an additional breath over one second.

If you cannot see the chest rise in two breaths, continue giving chest compression.

Rescue breathing; in many cases, cardiac arrest is preceded by respiratory arrest. therefore, it is important to be able to

Recognize respiratory issues in order to take steps to prevent cardiac arrest.

When a victim of any age has a pulse but is not breathing (or is not breathing well), immediately open the airway using head tilt/chin lift and begin rescue breathing.(4)

2.5 Relief of choking:

Choking is a common preventable cause of cardiac arrest.

The correct response for a choking victim depends on the degree of airway obstruction, whether the victim is responsive or not, and the age of the victim.

2.5.1 Abdominal thrusts (Heimlich maneuver):

The Heimlich maneuver should only be used when a victim is responsive and older than one year of age.

To properly perform the Heimlich maneuver:

Stand behind the responsive victim; wrap your arms around their waist under their ribcage.

Put the side of your fist above the victims navel in the middle of their belly. Do not press on the lower part of the sternum.

With your other hand, hold the first fist and press forcefully into the victims abdomen and up toward their chest.

Continue performing these thrusts until the obstruction is relieved or the victim becomes unresponsive.(4)

2.5.2 Successful relief of choking:

If you can see a foreign object in the victims mouth and can easily remove it, remove it. Watch and feel for breathing to begin. If the victim does not begin breathing, continue to provide CPR and rescue breathing until help arrives. (4)

2.6 BLS for children: (age 1 to 8 years old)

Many similarities exist between the BLS guidelines for adults and Children.

. The main differences between the two are:

For children, if two rescuers are available to do CPR, the compression to breaths ratio is 15:2; if only one rescuer is available, the ratio is 30:2 for all age groups.

For very small children, you can use one-handed chest compressions.

The depth of compression may be different. For a child, compress the chest at least one-third the depth of the chest. This may be less than two inches for small children, but will be approximately two inches for larger children.

If you are the only person at the scene and find an unresponsive child, perform CPR for two minutes BEFORE you call EMS or go look for an AED.

In children, primary cardiac events are not common. Cardiac arrest is most commonly preceded by respiratory problems. Survival rates improve with early intervention for respiratory problems. Remember that prevention is the first link in the Pediatric Chain of Survival.

If you witness a cardiac arrest in a child, call EMS and get an AED just as you would in the Adult BLS sequence.(4)

2.7 BLS for infants: (0 to 12 months old)

BLS for both children and infants is almost identical. For example, if two rescuers are available to perform CPR, the breath to compression ratio is 15:2 for both infants and children (the ratio is 30:2 for all age groups if only one rescuer is present).

The main differences between BLS for children and BLS for infants are:

Check the pulse in the infant using the brachial artery on the inside of the upper arm between the infants elbow and shoulder.

During CPR, compressions can be performed on an infant using two fingers (if only one rescuer) or with two thumb-encircling hands .(if there are two rescuers and rescuers hands are big enough to go around the infants chest).

Compression depth should be ⅓ of the chest depth; for most infants, this is about 1½ inches.

If you are the only person at the scene and find an unresponsive infant, perform CPR for two minutes befor calling EMS or using an AED.

In infants, primary cardiac events are not common. usually, cardiac arrest will be preceded by respiratory problems. survival rates improve when you intervene with respiratory problems as early as possible. Remember that prevention is the first link in the Pediatric Chain of Survival

If you witness a cardiac arrest in an infant, call EMS and get an AED just as you would in the BLS sequence for adults or children.(4)

COMPLICATIONS OF CPR:

Ventilations can cause insufflation of the stomach, leading to regurgitation and aspiration and possibly to gastric rupture. Closed chest compressions can lead to fractures of the sternum or the ribs, separation of the ribs from the sternum, pulmonary contusion, pneumothorax, myocardial contusion, hemorrhagic pericardial effusions, splenic laceration, or liver laceration.

Proper techniques can minimize these complications but cannot totally prevent them. Late complications include pulmonary edema, GI hemorrhage, pneumonia, and recurrent cardiopulmonary arrest. Anoxic brain injury can occur in a resuscitated individual subjected to prolonged hypoxia; it is the most common cause of death in resuscitated patients.(2)

2.8 respiratory distress:

In its simplest form, respiratory distress is a condition in which pulmonary activity is insufficient to bring oxygen to and to remove carbon dioxide from the blood. Challenge arises with the recognition of respiratory distress when the person appears to be breathing but is not actually breathing effectively. Proper rate and depth of breathing is important to assess when evaluating whether the person is effectively breathing. The two main actions involved in breathing are ventilation and oxygenation. (9)

2.8.1Causes of respiratory distress or failure:

Respiratory distress or failure generally falls into one of four broad categories: upper airway, lower airway, lung tissue disease, and central nervous system (CNS) issues.

This list is not comprehensive, and specific conditions should be addressed with specific therapy, but these represent the most common causes of respiratory distress or failure in a pediatric population.

In general, providers commonly work from the least to the mostinvasive intervention (top to bottom). (9)

If the person presents with severe distress, proceed directly to maneuvers that are more aggressive.

Albuterol is the most common medication used via nebulizer to cause bronchodilation.

Common causes of acute community-acquired pneumonia include Streptococcus pneumonia Mycoplasma pneumonia, Haemophilus influenza, and Chlamydia pneumonia.

High fever is the most common cause of quiet tachypnea(9).

2.9 shock:

2.9.1RECOGNIZING SHOCK:

Shock is defined as a condition in which peripheral tissues and end organs do not receive adequate oxygen and nutrients.

While it is sometimes used interchangeably with severe hypotension, shock does not only occur in the setting of severely low blood pressure.

Importantly, the body will attempt to compensate for shock through various mechanisms, most commonly through increased heart rate.

The heart rate will increase in an attempt to increase cardiac output (stroke volume x heart rate).

Blood flow will be shunted from less vital organs such as the skin to more vital organs, such as the kidneys and the brain. In these cases, the child or the infant may be experiencing shock, but have high, normal, or low-normal blood pressure. This is called compensatory shock and may only persist for minutes to hours before progressing to frank uncompensated shock unless treatment is initiated. Without treatment, these compensatory systems can become overwhelmed and result in the child progressing quickly to critical hypotension and cardiac arrest.

Therefore, the simple assessment of blood pressure is not a sufficient way to evaluate potential shock in pediatrics.(9)

HYPOVOLEMIC SHOCK:

Hypovolemic shock is the most common type of shock And perhaps the easiest to understand.

Hypovolemic shock results from insufficient blood in the cardiovascular system. This can be due to hemorrhage externally, or into the peritoneum or into the gastrointestinal system. hypovolemic shock in children can also occur from water loss, perspiration, diarrhea, vomiting, or when fluid moves into the tissues (third-spacing). In hypovolemic shock, preload to the heart is decreased (less

volume to fill the heart), though contractility is normal or increased. Likewise, afterload is increased since the vessels have constricted in an attempt to increase blood pressure (9)

DISTRIBUTIVE SHOCK:

Distributive shock is a condition in which the majority of blood is inappropriately distributed in the vasculature. A common way to conceptualize distributive shock is as a condition in which the vasculature has relaxed and dilated to the point of inadequacy.

The arterial blood supply needs to maintain a certain tension in order to maintain blood pressure. Likewise, the venous system must maintain tension as well, so as not to retain too much of the total blood supply.

In distributive shock, the blood is not being maintained in the required and needed useful blood vessels. Distributive shock is most commonly caused by sepsis, anaphylaxis, or a neurological problem, all of which cause vascular dilation or loss of blood vessel tone.

In distributive shock, the preload, contractility, and afterload vary depending on the etiology.

Distributive shock is difficult to recognize because the signs and symptoms vary greatly depending on the etiology.

Common symptoms include tachypnea, tachycardia, low to normal blood pressure, decreased urine output, and decreased level of consciousness.

Distributive shock is further categorized into warm and cold shock. if the person is experiencing warm shock, they commonly will have warm, erythematous peripheral skin and a wide pulse pressure in the setting of hypotension. If the person is experiencing cold shock, they commonly will have pale, vasoconstrictive skin and narrow pulse pressure hypotension.

In each case, distributive shock is generally considered when the person is likely to have one of the three main causes: sepsis, anaphylaxis, or neurological problem. (9)

CARDIOGENIC SHOCK:

Cardiogenic shock is caused by inadequate contractility of the heart. One of the key differences between hypovolemic and cardiogenic shock is the work of breathing. In both cases, there will be tachypnea, but in hypovolemic shock the effort of breathing is only mildly increased. However, in cardiogenic shock, the work of breathing is often significantly increased as evidenced by grunts, nasal flaring, and the use of accessory thorax muscles. Also, since the heart is pumping ineffectively, blood remains in the pulmonary vasculature.

This causes pulmonary congestion and edema, which can clinically be heard as crackles in the lungs and visualized as jugular vein distension. Pulses are often weak, capillary refill is slow, extremities are cool and cyanotic, and there may be a decrease in the level of consciousness. (9)

OBSTRUCTIVE SHOCK :

Obstructive shock is similar to cardiogenic shock in that the impaired heart function is the primary abnormality.

In cardiogenic shock, the contractility is impaired; but in obstructive shock, the heart is prevented from contracting appropriately.

Common causes of obstructive shock are cardiac tamponade, tension pneumothorax, congenital heart malformations, and pulmonary embolism.

Obstructive and cardiogenic shock is most easily distinguished by the contractility of the heart. In obstructive shock, heart contractility is normal, although pumping function is not.

Cardiac tamponade is associated with muffled heart sounds since blood is present in the pericardial space. Pulsus paradoxus (e.g. a drop in blood pressure on inspiration) may also be present.

Tension pneumothorax is a clinical diagnosis. The trachea may have deviated away from the side of the lesion, and there are absent breath sounds over the affected side of the chest. Consider a pulmonary embolism when the person is

cyanotic and/or hypotensive, experiences chest pain, and has respiratory distress without lung pathology or airway obstruction.

Risk factors include obesity, hormone use, family history of abnormal clotting, and coagulation factor abnormalities. (9)

2.9.2RESPONDING TO SHOCK:

The goal of shock management is to get oxygen to the tissues and to the organs. This requires having enough oxygen in the blood, getting the blood to the tissues, and keeping the blood within the vasculature.

Thus, shock management is dedicated to achieving these three critical goals. In Objective terms, this means returning the person to the correct blood pressure and heart rate for their age, restoring normal pulses, capillary refill, and mental status along with a urine output of at least 1mL/kg an hour. Shock treatment varies according to etiology. (9)

HYPOVOLEMIC SHOCK :

The primary means of responding to hypovolemic shock is to provide additional volume. For children, an isotonic crystalloid such as normal saline or Lactated Ringers is the preferred fluid for volume resuscitation. While volume repletion is somewhat straightforward in adults, great care must be taken when administering intravenous fluids to children and infants. Careful estimates should be made concerning the amount of volume lost (e.g. blood loss), the size of the person, and the degree of deficit. Current recommendations are to administer 20 mL/kg of fluid as a bolus over 5 to 10 minutes and repeat as needed.

In hypovolemic (or hemorrhagic) shock, administer 3 mL of fluid for every 1 mL of estimated blood losta 3:1 ratio. If fluid boluses do not improve the signs of hypovolemic, hemorrhagic shock, consider the administration of packed red blood cells without delay. Albumin can also be considered for additional intravenous volume for shock, trauma, and burns as a plasma expander. If fluid

boluses do not improve the signs of hypovolemic, hemorrhagic shock, re-evaluation of proper diagnosis and occult blood loss (e.g. into the GI tract) should be considered. The remaining interventions are aimed at restoring electrolyte imbalances (e.g. acid/base, glucose, etc.).(9)

DISTRIBUTIVE SHOCK:

The initial management of distributive shock is to increase intravascular volume. The intent is to provide enough volume to overcome the inappropriate redistribution of existing volume. As with hypovolemic shock, administer 20 mL/kg of fluid as a bolus over 5 to 10 minutes and repeat as needed. Beyond initial management, therapy is tailored to the cause of the distributive shock. (9)

Septic Shock:

In septic shock, aggressive fluid management is generally necessary. Broad-spectrum intravenous antibiotics are a key intervention and should be administered as soon as possible. In addition, a stress dose of hydrocortisone (especially with adrenal insufficiency) and vasopressors may be needed to support blood pressure. After fluid resuscitation, vasopressors are given if needed and according to the type of septic shock. Normotensive persons are usually given dopamine, warm shock is treated with norepinephrine, and cold shock is treated with epinephrine. Transfusing packed red blood cells to bring hemoglobin above 10 g/dL treats decreased oxygen-carrying capacity. As blood cultures return, focus antibiotic therapy to the particular microbe and its resistance patterns. (9)

Anaphylactic Shock:

Intramuscular epinephrine is the first and most important treatment for anaphylactic shock. In severe cases, a second dose of epinephrine may be needed or intravenous administration may be required. Crystalloid fluid can be administered judiciously. Remember that in anaphylactic shock, capillary permeability may increase considerably. Thus, while it is important to support

blood pressure overall, there is significant likelihood that third spacing and pulmonary edema will occur.

Antihistamines and corticosteroids can also blunt the anaphylactic response. If breathing challenges arise, consider albuterol use to achieve bronchodilation. In very severe cases of anaphylactic shock, a continuous epinephrine infusion in the Neonatal Intensive Care Unit (NICU) or Pediatric Intensive Care Unit (PICU) may be required(9).

Neurogenic Shock:

Neurogenic shock is clinically challenging because often there is limited ability to correct the insult.

Injury to the autonomic pathways in the spinal cord results in decreased systemic vascular resistance and hypotension. An inappropriately low pulse or bradycardia is a clinical sign of neurogenic shock.

Therefore, treatment is focused on fluids first: 20 mL/kg bolus over 5 to 10 minutes; then reassess the person for a response. If hypotension does not respond to fluid resuscitation, vasopressors are needed. (9)

This resuscitation should be done in conjunction with a broader neurological evaluation and treatment plan. (9)

CARDIOGENIC SHOCK:

Since children in cardiogenic shock have a problem with cardiac contractility, the primary goal of therapy is to restore contractility. Unlike most other types of shock, fluid resuscitation is not a primary intervention in cardiogenic shock. Often medications to support contractility and reduce afterload are first-line treatments.

In normotensive persons, this means vasodilators and diuretics (both decrease intravascular volume). Contractility is supported with inotropes. Milrinone is often used to decrease peripheral vascular resistance. When additional volume is needed, fluid can be administered slowly and cautiously: 5 to 10 mL/kg over 10

to 20 minutes. A pediatric cardiologist or critical care specialist should manage persons with cardiogenic shock. (9)

OBSTRUCTIVE SHOCK:

Causes of obstructive shock require rapid and definitive care since they are acutely life-threatening. Cardiac tamponade requires pericardial drainage. Tension pneumothorax requires needle decompression and subsequent placement of a chest tube (tube thoracotomy). Pediatric heart surgeons can address vascular abnormalities, and ductus arteriosus can be induced to remain open by administering prostaglandin E1 analogs. Pulmonary embolism care is mostly supportive, though trained personnel can administer fibrinolytic and anticoagulant agents (9)

2.10 Previous studies:

several studies have analyzed the awareness of BLS knowledge among the university students and various communities in the different countries of the world including Sudan

Awareness of Basic Life Support among Egyptian Medical

Students(June 2018): a Cross-Sectional Studydone by Esraa Ghanemet al.

A total of 823 medical students with the mean age of 20.3 ± 2.7 years, from Al-Azhar medical schools completed the questionnaire (463 and 360 in academic and clinical years, respectively). About 72% and 84% of students failed to recognize the proper point of chest compression in adults and infants, respectively. moreover, the majority (80%) did not know how to give rescue breathing in infants. Only 18% of students correctly identified early signs of shock and only 22% knew how to help patients with myocardial infarction. being in clinical years, previous BLS training or practical experience were significantly associated with higher BLS knowledge scores ($p < 0.001$)(9)

Student's Knowledge, Attitudes, and Practices Related to Cardiopulmonary Resuscitation at Qassim University, Saudi Arabia (November2019): cross-sectional study done by Ali Mansouer al.

The total sample size of the participating students was 1148, of which 589 (51.3%) were female and the remaining were male (559, 48.7%). the common age was between 20 and 23 years old and most were from non-medical colleges (54.1%); the remaining (45.9%) were from medical colleges. the majority of female students (45.7%) in medical colleges knew the right location for chest compression better than the males, with a significant difference ($p<0.05$). No significant difference existed between males and females ($p>0.05$) regarding most CPR practices. On the other hand, there was a significant increase among medical students as compared to non-medical students ($p<0.05$) regarding most knowledge, attitudes, and practice items of CPR. (10)

Awareness of basic life support among medical students in Syria, Iraq and Jordan(November2020): a cross sectional study done by Mohammad Nour Shashaa et al.

1656 of the participants (78.3%) stated that they did not attend a basic life support course. There was a signi¦cant difference between the participants from different countries where the mean score in Syria, Jordan and Iraq was 18.3, 24.3 and 18.8 respectively ($p < 0.05$). The participants were divided into 3 level according to total score; low (0-12), moderate (13-24) and high (25-37). In total, 18.3%, 72.8% and 8.9% of participants had high, intermediate and low level respectively.(11)

Knowledge and Attitude about Basic Life Support and Emergency Medical Services amongst Healthcare Interns inUniversity Hospitals (April 2017): A Cross-Sectional Studydone by Shahabe A. Saquib et al.

Out of 865 subjects, 698 com mleted the survey with a response rate of (80.69%). the male to female sex ratio in the entire group of respondents was 1.44:1.00. mean score about the awareness and knowledge of BLS and other emergency services among the participants was 2.74 ± 1.02 and 4.02 ± 1.56 respectively. Female participants revealed signifcantly higher awareness score than male (P-value<0.05). Medical interns showed higher awareness level compared to rest of all the faculty interns (P-value<0.01) There was no signifcant diference in the attitude of interns among the diferent faculties. 60 to 70% of interns had recommended to include BLS training in the university carriculum. (12)

Do medical students studying in the United Kingdom have an adequate factual knowledge of basic life support? (August 2019): cross-sectional study done by Robert D. Willmoreet al.

A total of 3,732 complete responses were received from 21 medical schools. Eighty percent (n=2,999) of students completed a BLS course as part of their undergraduate medical studies. there was a significant difference (P<0.001) in the percentage of the fourth-year students selecting the correct answer in all the MCQ’s compared to the first-year students except in identifying the correct depth of compressions required during CPR (P=0.095). Overall 10.3% (95% CI 9.9% to 10.7%) of respondents correctly identified the answer to 5 MCQ’s on BLS: 9% of the first-year students (n=194) and 12% of the fourth-year students (n=190). On an institutional level the proportion of students answering all MCQ’s correctly ranged from 2% to 54% at different universities. Eighty-one percent of students (n=3,031) wished for more BLS training in their carriculum. (13)

Basic Life Support: Need of the Hour—A Study on the Knowledge of Basic Life Support among Young Doctors in India(November 2020) : cross-sectional study done by Karapparambil Vineeth Chandran, Siju V Abraham

Among the participants, 96% of students had attended nonstructured BLS classes in the past but the knowledge and skill in BLS and ability to recognize arrest were very low. knowledge about the essential components of effective cardiopulmonary resuscitation (CPR) was poor among students, which improved to near 100% . Awareness about cervical spine stabilization, log rolling, and management of choking was poor among the students, which improved after the class. Although attrition had occurred, the knowledge was significantly better than pretest (p value < 0.05). (14)

Current Status of Knowledge about Cardiopulmonary Resuscitation among the University Students in the Northern Region of Saudi Arabia(June 2018) : a cross-sectional study done by Abdulmajeed Owaid Alshararet al.

A total of 947 students from four universities completed the questionnaire: Jouf (57%), Hail (15%), Northern Borders (13%), and Tabuk (15%). Although 72% of students have previous knowledge about CPR, 49% of them lack knowledge about a medical emergency. Moreover, 59% failed to answer regarding CPR where only 41% wrote the ABC steps in the correct sequence. However, 67% of the participants had very poor knowledge, 89% of participants desired to receive additional CPR training course, and 49% of the students thought that CPR training should be a mandatory graduation requirement for all universities. ,ere were no significant differences between male and female students.

Students from medicine-related colleges have significantly ($p < 0.001$) more knowledge and scored better compared with nonmedicine-related colleges. Tabuk University scored better compared to the others, but the overall knowledge and attitude scored were low.(15)

College students’ knowledge and attitudes toward

bystander cardiopulmonary resuscitation (may 2017): A crosssectional survey done by Maria Shuk Yu Hunget al.

Results: Of 351 respondents, 73 (21.8%) were male and 278 (79.2%) were female. The mean knowledge score was 4.97 out of 10 with a standard deviation of 1.61. Over half of the respondents (n = 194, 55.3%) had attended a CPR course before. the mean attitude score was 26.53 out of 30, and the standard deviation was 2.68. Most of the respondents (87.0%) showed a willingness to perform CPR. The reasons for attending CPR training were mainly "interest" (n = 106, 46.5%), followed by "extra-curricular activity" (n = 37, 16.2%), "to help family and friends in need" (n = 37, 16.2%) and "others" (n = 29, 12.7%) such as to fulfill job or academic requirement. The most frequently reported inhibitors of performing bystander CPR were a lack of confidence due to forgetting CPR procedures (28.8%) and lack of confidence due to not having received any CPR training (19.1%). (16)

Awareness of basic life support among medical, dental, nursing students and doctors (September2012): cross-sectional study done by Shanta Chandrasekaranet al.

Out of 1,054 responders 345 were medical students, 75 were medical interns, 19 were dental students, 59 were dental interns, 105 were homeopathy interns, 319 were nursing students, 72 were doctors, 29 were dentists, 25 were nursing faculty and six were homeopathy doctors. No one among them had complete knowledge of BLS. Only two out of 1054 (0.19%) had secured 80 – 89% marks, 10 out of 1054 (0.95%) had secured 70 – 79% marks, 40 of 1054 (4.08%) had secured 60 – 69% marks and 105 of 1054 (9.96%) had secured 50 – 59% marks. A majority of them, that is, 894 (84.82%) had secured less than 50% marks. Awareness of BLS among students, doctors and nurses of medical, dental, homeopathy and nursing colleges is very poor.(17)

Impact of Educational Program on Sudanese Nurses' Performance Regarding CPR in ALGadarif State Hospitals (December 2020): cross-sectional study done by ELTURABI ELSAYED EBRAHIM*, AHMAD M. SALEH

The study showed that percentage of nurse’s knowledge regarding general information about CPR; The mean pretest of general information is (2.14) and STD (0.688) and direction of mean to Satisfied knowledge and the mean of posttest of general information is (1.2) and STD (0.40) and direction of mean to good knowledge and the mean pretest of nurses knowledge about assessment pre and during CPR is (2.26) and STD (0.69) and direction of mean to satisfied knowledge and the mean posttest of nurses knowledge about assessment pre and during CPR is (1.28) and STD (0.36) and direction of mean to good knowledge.(18)

CHAPTER THREE

3.0Methodology:

3.1 study design:

This is observational descriptive cross-sectional facility base study.

3.2 study area:

This study was conducted at Napata University, Faculty of Medicine, Khartoum /Sudan.

(Napata college has two branchs in two area in Khartoum one in the Al-reyad Al-mashtal and another one in kafory)

3.3 study period :

From October to December 2022

3.4 study population:

Participants were undergraduate students enrolled at different levels/ departments of Napata College.

3.4.1 Inclusion criteria:

Undergraduate students in napata college.

3.4.2 Exclusion criteria:

undergraduate students.

3.5 sampling:

3.5.1 Data collection:

A questionnaire was designed to fulfill the objectives of the study.

3.5.2 Sample size:

At confidence level of 95% and degree of precision 0,04

n= N/1+N(D)2= 2367/4.7872 =494

The sample size collected is 500

where

n= sample size

N= total population (2367)

D= degree of precision (.04)

3.5.3 Variable:

In the study, the following variables are screen.

Dependant variable and independant variable:

Age

Level of education

College of students

3.5.4 Data management:

Data has entered clean analyzed by using SPSS software program 26.00

3.6: Ethical consideration:

Ethical approval from Napata University. Written consent is distribute among medical student containing privacy of the data collected is consider (No names, data were coded; data were interpret in the form of statement tables figures) and all the collected data were used for scientific purposes.

CHAPTER FOUR

Results:

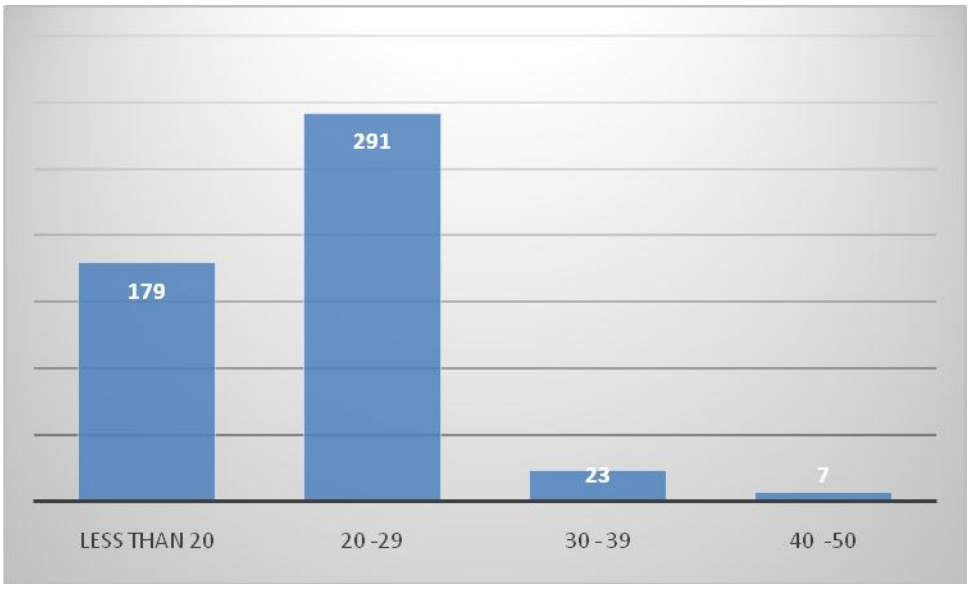

Figure 1 :age of student in years

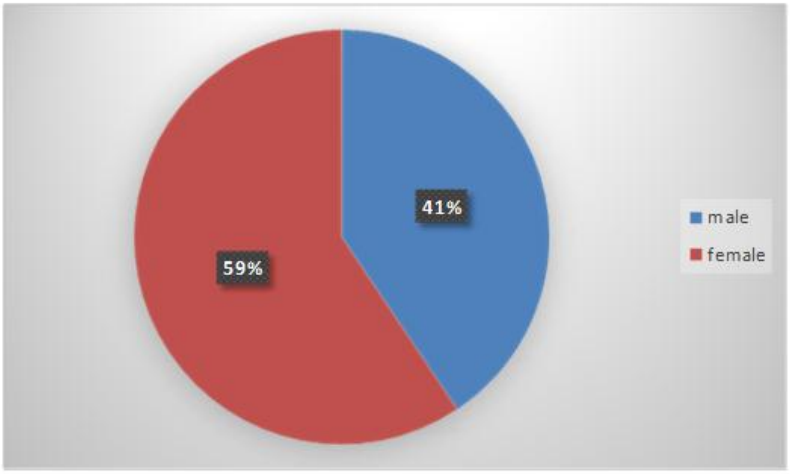

Figure 2:gender

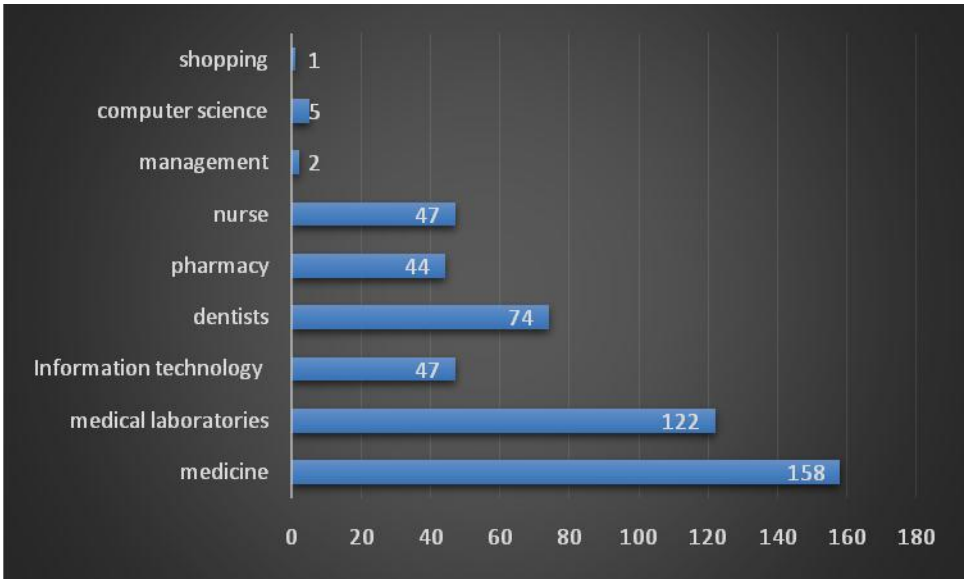

Figure 3: academic specialization

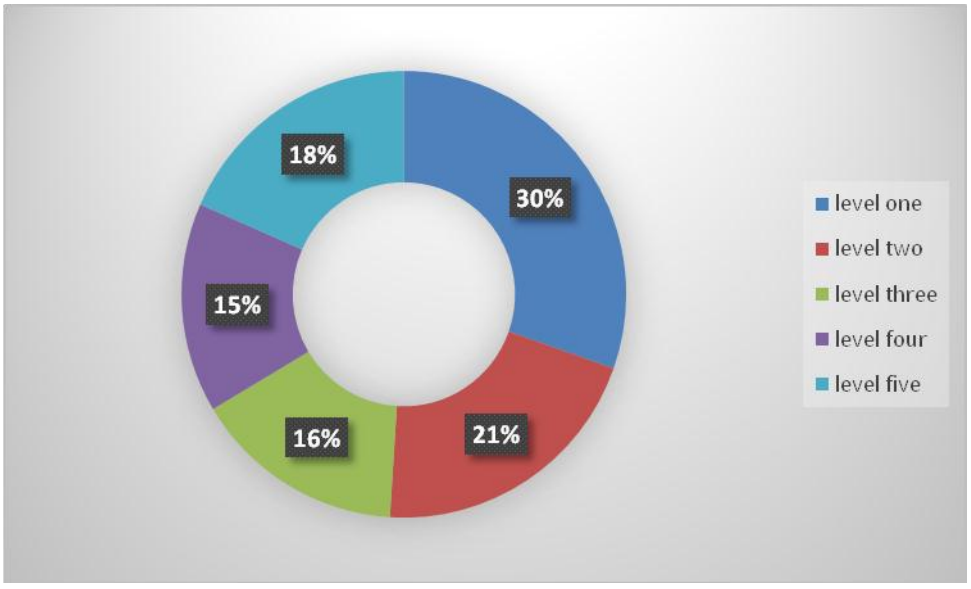

Figure 4:academic level

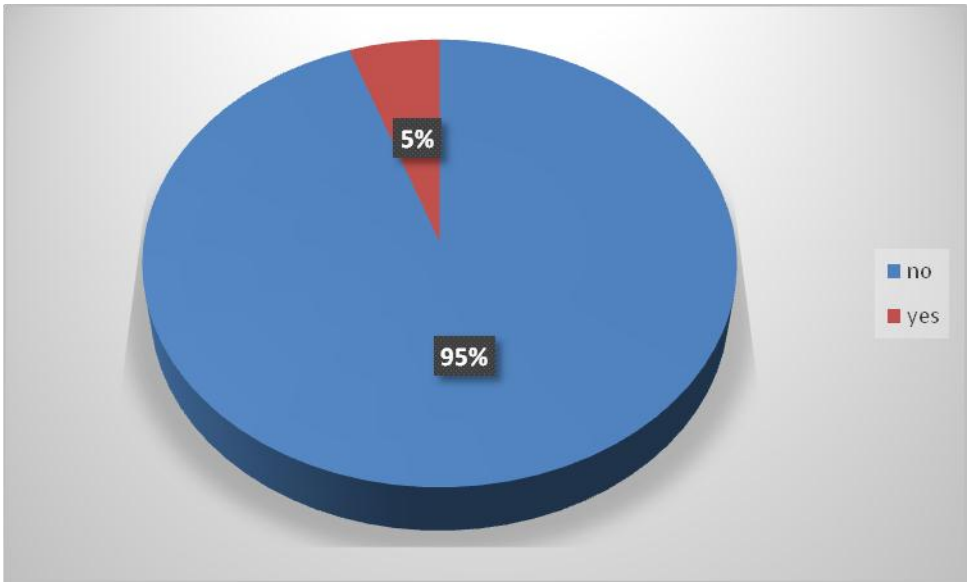

Figure 5: training course

Table 1: answers of student(n=500)

		Wrong answer	Correct answer
Level of knowledge about effective resuscitation	Chest Pressure rate per mint	403(80.6%)	97(19.4%)
	Correct place for pressure in adult	269(53.8%)	231(46.2%)
	Correct place for pressure in infant	429(85.8%)	71(14.2%)
	Depth of chest pressure in adult	403(80.6%)	97(17.1%)
	Depth of chest pressure in pediatric	448(89.6%)	52(10.4%)
Knowledge about AED	AED abbreviation	468(93.6%)	51(6.3%)
Knowledge about complication of CPR	BLS effects people lives if it is done incorrectly	52(10.4%)	448(89.6%)
	Do you have idea about complication BLS?	247(69.4%)	153(30.6%)
Knowledge about BLS in children and infant	Correct place for pressure in children	408(81.6%)	92(18.4%)
	Correct place for pressure in infant	429(85.8%)	71(14.2%)
	Depth of chest pressure in pediatric	448(89.6%)	52(10.4%)
	artificial respiration for	393(78.6%)	107(21.4%)

	children		
Knowledge about signs of shock	Signs of shock	235(47%)	265(53%)
Attitude about asphyxia	How to deal with child who choked while playing with toys	234(46.8%)	266(53.2%)
	First reaction when recurring a drowning adult	444(88.8%)	56(11.2%)

Table 2: knowledge of student about BLS(n=500)

	Frequency	Percent
poor knowledge	411	82.2
good knowledge	89	17.8
Total	500	100.0

Table 3: Knowledge of effective resuscitation (n=500)

	Frequency	Percent
Poor knowledge	459	91.8
Good knowledge	41	8.2
Total	500	100.0

Table 4: knowledge about complication of CPR(n=500)

	Frequency	Percent
poor knowledge	353	70.6
good knowledge	147	29.4
Total	500	100.0

Table 5: knowledge about BLS in children and infant (n=500)

	Frequency	Percent
poor knowledge	417	83.4
good knowledge	83	16.6
Total	500	100.0

Table 6: attitude toward asphyxia(n=500)

	Frequency	Percent
Negative attitude	370	74.0
Positive attitude	130	26.0
Total	500	100.0

Table 7: cross tabulation between knowledge and academic specialization (n=500)

P value (.000)		knowledge		
		poor knowledge	good knowledge	Total
Academic specialization	medicine	112(70.8%)	46 (29.1%)	158
	medical laboratories	111 (90.9%)	11(9%)	122
	Information technology	46(95.8%)	1(2%)	48
	dentists	62(83.7%)	12(16.2%)	74
	pharmacy	39(88.6%)	5(11.3%)	44
	nurse	33(70.2%)	14(29.7%)	47
	management	2(100%)	0(0%)	2
	computerscience	5(100%)	0(0%)	5
	Shopping	1(100%)	0(0%)	1
Total		411	89	500

Table 8 cross tabulation between knowledge and training course (n=500)

P value .000		knowledge		
		poor knowledge	good knowledge	Total
training course	no	400(84.5%)	73(14.7%)	473
	yes	11(40.7%)	16(59.2%)	27
Total		411	89	500

Table 9 cross tabulation between knowledge and academic(n=500)

p. value .000		knowledge		
		poor knowledge	good knowledge	Total
academic level	level one	146(96%)	6(4%)	152
	level two	88(85.4%)	15(14.5%)	103
	level three	67(87%)	10(13%)	77
	level four	57(75%)	19(25%)	76
	level five	53(57.6%0	39(42.3%)	92
Total		411	89	500

CHAPTER FIVE

Discussion:

All medical students should get familiar with BLS because they may encounter life-threatening situations on a regular basis. Regardless of study or specialty, the American Heart Association suggests that everyone receive BLS training. [19] The deficiencies in BLS knowledge among medical students have recently been brought to light in various papers [20]. [21]

This is study has included 500 students 158 were medicine students, 122 were medical laboratories students, 47 were information technology students, 74 were dentistry students, 44 were pharmacy students, 47 were nursing students, 2 were management students, 5 were computer science students and 1 was shopping student , 179 of them were less than 20 year old , 291 were between 20_29 year old , 23 were between 30_39 year old and 7 of them were between 40_50 , 59% of them were females and 41%were males , 30% were level one, 21% were level two, 16% were level three, 15% were level four and 18% were level five.

17.8% of the participated students had good knowledge about BLS while 82.2% of them had poor knowledge ،In contrast to a study done in Jordanian students 61% were having high level while 82.8% and 85.3% of Syrian and Iraqi students respectively have moderate level (n=1656) . This can be justified due to the lack of training system of BLS in medical schools of Sudan and not including it as a main part of practical curriculum.

Regarding BLS training, Only 5% of the participants have done a training course and 95% havent done a training course. Lower than the results of studies done in other countries like Oman (35.2%) , [21] Egypt (27%), [9] Saudi Arabia (22.5%) [10], India (18.9%) [22] and Pakistan (14.7%) [23].this is due to few training centers in Sudan and poor awareness about the importance of this

training in the years of university studying .Since 1966; it has been advised that all healthcare workers in the US take regular BLS training. [24] In comparison to other nations, our survey generally found a smaller percentage of trained medical students. In order to bring Sudan into compliance with international standards, it is necessary to train the medical students in BLS techniques.

About the knowledge of effective resuscitation 8.2% of the participants had good knowledge this far away from a study done in Saudi Arabia at King Saud University , which revealed very good knowledge of regarding the proper chest compression depth in CPR and the chest compression rate for adults and children 69% and 55%, respectively. Also another study done at AlQassim University in Saudi Arabia (40.8% and 24.2%, respectively) of students have insufficient

Knowledge regarding the proper chest compression depth in CPR and the chest compression rate for adults and children.

In this study on an institutional level the 17.2% proportion of students answering all MCQs correctly ranged from (n=500) which is comparable to 2% to 54% (n= 3.732) a study done in the United Kingdom, more than the study which done in Jordan Syria and Iraq where no one could answered all questions. 53% identify the signs of shock better comparable to 18% (n =823) in a study done in Egypt. This obviously indicates that good practicing sessions should be conducted to make the theoretical knowledge more strong. Our students need to practice what they have done.

At our study 26% of the students had positive attitude about asphyxia while 74% of them had negative attitude .

According to a study by Winchana et al., the understanding of BLS may decline in the six months following the training. As a result, students should continually examine the BLS principles and stay up-to-date with any new regulations. A study from Saudi Arabia revealed that television and movies are

the most popular sources of CPR performance, so we recommend you take advantage of different media (television, internet) to recognize, emphasize, and strengthen the value of BLS principles in your life. Additionally, media programs created by well-trained individuals will benefit society's public health. By giving medical students early instruction that also builds their confidence to handle a variety of emergency circumstances and act correctly, morbidity and mortality can be decreased. The American Heart Association (AHA) recommendations should be incorporated into the educational curriculum in order to attain this goal. To grasp the fundamentals of BLS, practical training on mannequins and courses are advised.

Limitations:

Unfortunately we wished to do it as practical assessment because it would be more representing and indicating the exact points of weakness, but due to limited time and fund we conducted it as a questions and answer questionnaire. We wish that another person could do it like that.

Conclusion:

The results indicate that medical students knowledge toward BLS is require more efforts. In addition ,this study showed that BLS training is not a common thing among students although it have positive impact on knowledge . So there is urgent need to include BLS courses in undergraduate curriculum particularly in preclinical stage. More efforts need to be done to prepare good doctors of the future.

Recommendations:

Incorporation of BLS into curriculum of preclinical classes (first and second classes) in the faculty would be great and then the fourth and fifth classes and more important to give practical training in manikins to make the knowledge strong.

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Appendix:

-Questionnaire:

استبيان عن دعم الحياة الأساسي Basic Life Support

***هل توافق على المشاركة في ملأ هذا الاستبيان**

نعم ( )

لا( )

1) العمر

.....

2) الجنس

ذكر ( )

أنثى ( )

3) المستوى الدراسي

المستوى الأول ( )

المستوى الثاني ( )

المستوى الثالث ( )

المستوى الرابع ( )

المستوى الخامس ( )

4) التخصص الدراسي

.....

5) هل سمعت عن دعم الحياة Basic Life Support

نعم ( )

لا ( )

6) هل سبق وتلقيت تدريبا فيما يختص بدعم الحياة الأساسي ؟

نعم ( )

لا ( )

7) إذا كانت إجابة السؤال السابق (نعم) اذكر نوع التدريب ومكانه

.....

8) إلى ماذا يرمز الإختصار AED؟

مزيلات الرجفان الخارجية الآلية ( )

مزيلات الرجفان الكهربائية الآلية ( )

أجهزة تنظيم ضربات القلب الكهربائية المتقدمة ( )

لا أعلم ( )

9) وجدت شخص ملقى على الطريق ولم تلحظ وجود نبض أو نفس ، ماهو أول رد فعل لك ؟

(ملاحظة : كنت وحدك)

تقوم بفتح مجرى التنفس ( )

تبدأ بالضغط على الصدر ( )

تحافظ على سلامته ( )

تقوم بإعطائه نفختين بهدف دفع الهواء إلى رئتيه ( )

لا أعلم ( )

10) كنت أنت وصديقك تتناولان الطعام ثم فجأة بدأت تظهر على صديقك أعراض إختناق ، ماهو رد فعلك الأول ؟

الضرب على الصدر ( )

الضرب على البطن ( )

تتحدث معه لتتأكد من أن الأعراض هي أعراض إختناق بالطعام ( )

لا أعلم ( )

11) تشاهد رضيعا يلعب بألعابه ثم يبدأ بالإختناق فجأة بعد التأكد أنه غير قادر على البكاء أو السعال ، ماهو رد فعلك الأول ؟

تبدأ الإنعاش القلبي الرئوي على الفور ( )

تقوم بإزالة الجسم المتسبب بالإختناق بواسطة أصابعك ( )

تقوم بالضرب على الظهر والضغط على الصدر خمس مرات * ثم تفتح الفم

وتزيل الجسم الغريب فقط عند رؤيته ( )

تقوم بإعطاء الرضيع الماء ( )

لا أعلم ( )

12) تشاهد غريقا بالغا تم إخراجه للتو من المياه مازال يتنفس لكنه لايستجيب ، ماهو رد فعلك الأول؟ *

تقوم بعمل الإنعاش القلبي الرئوي لمدة دقيقتين ثم تبلغ وحدة الطوارئ ( )

تقوم بعمل الإنعاش القلبي الرئوب لمدة دقيقة ثم تبلغ وحدة الطوارئ ( )

ضغط البطن لإخراج الماء ( )

المحافظة عليه في وضعية تساعد على الإستفاقة ( )

لا أعلم ( )

13) ماهو المعدل الصحيح لضغط الصدر الإسعافي لكل دقيقة ؟

100/ دقيقة ( )

120 / دقيقة ( )

80/ دقيقة ( )

70/ دقيقة ( )

14) ماهو المكان الصحيح لضغط الصدر الإسعافي عند الكبار ؟

شمال الصدر ( )

يمين الصدر ( )

وسط الصدر ( )

لاأعلم ( )

15) ماهو المكان الصحيح لضغط الصدر الإسعافي عند المواليد ؟

اصبع واحد تحت الخط الحلمي ( )

اصبع واحد فوق الخط الحلمي ( )

في الوسط ( )

لا أعلم ( )

16) كيف تقوم بعمل تنفس إصطناعي لطفل ؟

وضع الفم على فم وأنف الطفل معاً ( )

وضع الفم مع الفم مع قفل الأنف ( )

وضع الفم مع الفم بدون قفل الأنف ( )

لاأعلم ( )

17) ما هو العمق الصحيح لضغط الصدر للبالغين ؟

1 - 1.5 بوصة ( )

1.5 - 2 بوصة ( )

2 - 2.5 بوصة ( )

لا أعلم ( )

18) ماهو العمق الصحيح لضغط الصدر عند الأطفال ؟

2 - 1.5 بوصة ( )

1.5 - 1 بوصة ( )

من نصف إلى ثلث عمق الصدر ( )

لا أعلم ( )

19) ماهو العمق الصحيح لضغط الصدر عند حديثي الولادة ؟

1.5 - 2 بوصة ( )

2.5 - 3 بوصة ( )

من نصف إلى ثلث عمق الصدر ( )

لا أعلم ( )

20) دعم الحياة الأساسي قد يؤثر سلبا على حياة الإنسان إذا أجري بطريقة غير صحيحة

نعم ( )

لا ( )

21) هل لديك فكرة عن المضاعفات التي قد تحدث عند القيام بدعم الحياة الأساسي ؟

نعم ( )

لا ( )

22) هل لديك فكرة عن علامات الصدمة ؟

نعم ( )

لا ( )