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ASSESSMENT OF THE QUALITY OF CARDIOPULMONARY RESUSCITATION AMONG HEALTH CARE PROVIDERS IN CRITICAL CARE UNITS AT GOVERNMENTAL HOSPITALS IN GAZA STRIP

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ABSTRACT
Qualities of Cardiopulmonary Resuscitation (CPR) performed by rescuers depend on learner's integrating, retaining, and applying for cognitive, behavioral, and psychomotor skills required to successfully perform resuscitation. There is a lack of studies that assess the Quality of CPR among nurses and doctors in critical care units in Gaza strip and their relation to patient outcomes. The aim of this study was to assess the quality of cardiopulmonary resuscitation among health care providers in critical care units at governmental hospitals in Gaza strip. Researcher used a descriptive cross-sectional design to assess the quality and knowledge concerning CPR among Health Care Providers in the critical care units (ICU, CCU, and ER) at Governmental Hospitals in the Gaza Strip. Results revealed that in most of the study the highest age groups of the participants were aged less than 30 years (61.6%) followed by 27.8% of them aged between 31-40 years and only 10.6% of them were aged more than 40 years. The study population according to academic qualification showed that the highest group of the study population finished the bachelor's degree (76.2%) while 13.3% of them finished the master's degree. The study population according to the knowledge indicated that only 11.3% of the participants have a high knowledge level while 41.7% of them have moderate levels of knowledge and 47.0% of them have a low level of knowledge. The average was 63.18. The quality score of CPR procedures showed that only 21.5 of the participants have a high-quality level and 15.8% of them have a low level of quality. The average was 70.24. The average of knowledge among males was higher statistically significant than females (65.88% vs. 57.90%, respectively, P = 0.001). The results also showed the average knowledge among physicians was higher statistically significant than nurses (66.72% vs. 60.85%, respectively, P = 0.009). Educators and, administrators, need to consider integrating basic and advanced life support courses into the curriculum. Continuing education committees in governmental hospitals adopt intensive plans to raise the knowledge and practice skills among nurses and doctors.

INTRODUCTION
1.1 Background
Succeed performance revival by secures is that the results of learners integration, retaining and applying the psychological feature, behavioral, and bodily process skills demand that improves Quality of process resuscitation supplement. Resuscitation may be a crucial medical technique for the emergency treatment of cardiopulmonary arrest (CA). Anyone withal formal medical work can learn resuscitation skills currently it's a mixture of rescue respiratory and chest compressions that are delivered to the victims who are thought to be in cardiopulmonary arrest (Tsima, 2019).

CPR is an essential life-saving skill when applied to people who are unresponsive and not breathing due to cardiac arrest. CPR involves a combination of chest compressions and rescue breathing (ventilation), in a 30:2 ratio, according to best practice guidelines. CPR aims to maintain a circulation sufficient to preserve brain function until specialized equipment, such as an Automated External Defibrillator (AED), becomes available. Early, high-quality CPR has been shown to save lives and improve patients' neurological outcomes (Brenton-Rule et al., 2021).

Previous research has investigated the attitude, knowledge, and practice of CPR amongst doctors, nurses, lifeguards, paramedics, dentists, radiographers, physiotherapists, and dental and medical students. Furthermore, international research into health professionals' attitudes, beliefs, and knowledge of CPR has led to changes in training and improvement in CPR skills and practice (Brenton-Rule et al., 2021).

Emergency Cardiovascular Care (ECC) 2020 impact goals focus on and set an ambitious target to double the cardiac arrest survival rates and out-of-hospital

community response. The community forms the first three links (recognition and activation of the emergency response system, immediate high-quality CPR, rapid defibrillation, basic and advanced EMS, advanced life support, and post arrest care) of the American Heart Association (AHA) to improve the survival rates of an adult chain of survival (Al Haliq et al., 2020).

The chain of survival will be improved by activating the community by increasing public awareness regarding the importance of early defibrillation. The AHA Highlights recommendations support the community's hands-only CPR training to be performed for adult victims (Al Haliq et al., 2020).

CPR alone is not enough, and the AEDs are important to restore the normal sinus rhythm and to bring the heart to function normally. Early CPR and AED utilization by the community may assist in life-saving, and it is associated with a two- to three-fold increase in survival when compared to victims who had no CPR and AED before the EMS arrival. In addition, for many victims, AED is not offered until the EMS crews reach the scene, and for every minute delay in defibrillation, the chances of survival decline by 10%, so familiarity with the public access defibrillation (PAD) may enable rapid defibrillation before EMS arrival (Al Haliq et al., 2020).

Despite the efforts to focus on the utilization of AED, there are still a lot of AED issues; research suggests that the community faces challenges regarding the utilization of AEDs. Moreover, the community is afraid of AEDs that might be dangerous, complicated technically, and difficult to use because of their limited knowledge and familiarity with them (Al Haliq et al., 2020).

In several huge investigations, the prompt delivery of resuscitation has served as a necessary predictor of survival. Resuscitation could nearly double the likelihood of survival. Whereas not treatment, the chance of survival from cardiac arrest falls by 10–15% per minute, and with well-performed resuscitation, in all probability shifts the curve towards the subsequent chance of survival (Sichman, 2020).

Survival is to boot negatively affected once the resuscitation quality is lack. Many practices have an impact on the quality of resuscitation furthermore as ordinarily pauses in chest compression and conjointly the time of chest compressions entirely 1/2 the time. Interruptions in chest compressions reduce the coronary introduction and build the result worse. Deep chest compressions have been discovered to correlate with higher introduction and to increase survival to hospital admission. Importance of resuscitation, survival rates keep low for the most part due to its ineffective administration. Good–quality is highlighted in resuscitation tips (Sichman, 2020).

International recommendations dictate that HCPs repeat a resurgence course for 2 years a minimum of whereas, in many developing countries, standard resuscitation training is not routine. It's usually simply assumed that everyone HCP can acknowledge and treat cardiopulmonary arrest. The skills of resurgence among HCPs are significantly influenced by work which they're a big determinant of the success of resurgence. To amass these skills, routine work on resuscitation needs to be stressed (Rajeswaran et al., 2014).

The survival profit for cardiac arrest victims receiving high-quality resuscitation has been documented. So, resuscitation work is obligatory for the HCPs and is extremely necessary as doctors and nurses usually discover the victims of hospital pathology. Studies have shown that HCPs to have lack skills despite attempting to undertake and do resuscitation. Since resuscitation can be a vital ability, HCPs, in spite of their work level or work setting, need to be competent in initiating and acting resuscitation and hospitals to supply work to their employees (Brenton-Rule et al., 2021).

In hospitals, any trained health care providers (doctors, nurses) are quickly allowed to initiate life-saving treatment. Inside the developed world, the incidence of in-hospital cardiopulmonary arrest ready by a revival team and receiving resuscitation is roughly trying of per one thousand admissions. In such settings, the reasons of improvement of outcomes in-hospital cardiopulmonary arrest are the work of employee's members and conjointly the introduction of revival teams and pre-employment wants of resuscitation certification. This improvement has resulted in the evolution of hospital follow within a relatively short quantity regarding 45 years. Resuscitation has been elevated from its original historical situation as a spanking new experimental technique to its up thus far case as a clinically universal procedure. As a result of this, all hospital-based health care professionals need to be versatile and qualified inside the performance of life-saving procedure resuscitation that's to boot named as basic life support (BLS) (Stiell et al., 2006).

In Gaza, the present quality of resuscitation and conjointly the flexibility to perform resuscitation between HCPs is unknown. The importance of resuscitation referred to as chest compression and ventilation for the survival of cardiac arrest patients has been incontestable and there are indications the quality of resuscitation performance impacts the impact. In 2020 American Heart Association (AHA) tips resuscitation, they have improved for revival providers and AHA instructors to focus on the revival science and tips recommendations that are the foremost very important or moot, or those that will result in a modification in revival work and follow, and to provide the argument for the recommendations(Eric et al., 2015).

This study aim is to work out the resuscitation skills, quality of work between HCPs, and understanding of this state of resuscitation skills between these providers facilitate guide future work and application of methods, which can profit health care providers to clients with cardiopulmonary arrest. Also, will service administration good–quality highlighted in resuscitation tips be up-to-date.

1.2 Problem statement

Cardiopulmonary resuscitation (CPR) coaching is required for health care and it is needed for health care typically discover the victims in hospital a systole. Many of different methods of improving this retention are devised and evaluated. However, the content and style of this training lack standardization and know to assess the standard of CPR among health care providers in critical care. CRP is becoming important an increasingly important topic of discussion for researchers worldwide. Specialize in assessment of the standard CPR among HCPs in important care unit's permits beneficiaries and their advocates to participate within the development of applicable monitoring and enforcement of quality standards and it is important to focus on the employment of this growing body of information by advocates to secure and expand services. It is important to achieve a high assessment Quality of CPR among HCPs in important care throughout supplying particularly in ICUs, ER, and CCU. Therefore, it's significant to the study the researcher used to conduct this study to assess the Quality of CPR among HCPs in important care units at Governmental hospitals in Gaza strip to advocate suggestions for stakeholders to improves the standard of HCPs (doctors and nurses) provided in units, Intensive Care Unit (ICU), Emergency Room (ER), and Cardiac Care Unit (CCU) in geographical area. Therefore, this study was designed to improve our understanding of the problem.

1.3 Significance of the problem

There is a lack of studies that assess the Quality of cardiopulmonary resuscitation highly specialized doctors and nurses in ICU unit, ER, and CCU, and their relation patient outcomes. Up to the researcher's data, there's no analysis studies are conducted in GS regarding the assessment of the Quality of resuscitation among HCPs in critical care units at governmental hospitals in Gaza strip. This study used baseline data to highlight to improvement of Quality. Also, assess the Quality of cardiopulmonary resuscitation among HCPs in critical care units at governmental hospitals within the GS and instructed recommendations to improve it and guidelines to apply them in all hospitals in GS.

1.4 General objective

To assess the quality of cardiopulmonary resuscitation among health care providers in critical care units at governmental hospitals in Gaza strip.

1.5 Specific objectives

1. To assess knowledge of Health care providers regarding cardiopulmonary resuscitation in critical care units at governmental hospitals in the Gaza strip according to "2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care".
2. To assess quality of performance of Health care providers regarding cardiopulmonary resuscitation in critical care units in governmental hospitals in the Gaza strip according to 2020 (AHA).
3. To examine the differences in the Quality of cardiopulmonary resuscitation among Health care providers in Intensive Care Units, Emergency Room, Cardiac Care Units concerning selected baseline characteristics.
4. To suggest recommendations to the stakeholders that could improve the Quality of cardiopulmonary resuscitation key persons about the Quality of cardiopulmonary resuscitation provided for critical care in Intensive Care Units, Emergency Room, and Cardiac Care Units at governmental hospitals in Gaza Strip.

1.6 Context of the study

1.6.1 Geographical and demographical context

The entire space of historical Palestine is regarding 27,000 Km2, with Palestine stretching from ras Al-Nakoura within the north to rafah within the south. Palestine is sea girt by Lebanon within the north, the Gulf of metropolis within the south Asian country and Jordan within the east and by Egypt and therefore the sea within the west, there area unit 5 governorates of the geographical area, Gaza Strip governorate, north governorates, khan Yunis governorate, and central governorate (PCBS, 2017). There area unit regarding 13.5 million Palestinians within the world, about 5.1 million area unit within the State of Palestine; 2.59 million males and a couple of.51 million females. The population of the West Bank was 3.05 million people; of that 1.55 million males and 1.50 million females. Whereas the population of GS was 2.05 million people of that 1.04 million males and 1.01 thousand females (PCBS, 2020).

Gaza strip maybe a land with a complete space of regarding 365 km2, the little independent Palestinian territory is sea girt by Egypt (Rafah border crossing) and by Israel. In geographical area, there area unit 5 main governorates: North Gaza Strip, Gaza, Middle space, KhanYunes, and Rafah. Gaza Strip town is that the largest town, and therefore the office of the Gaza Strip Governorate among different cities. Several languages area unit Spoken: Arabic (the mother tongue), Hebrew (spoken by several Palestinians), West Germanic (widely understood). Main faith is Islam, 98.0 - 99.0%. (Predominantly Sunni) besides different religions (PCBS, 2020).

1.6.2 Health Sector in the GS

The Ministry of Health (MOH) is that the main health provider in Gaza strip beside other health providers, United Nations Relief and Works Agency (UNRWA), Military of Medical Services (MMS), Non-Governmental Organizations (NGOs), and personal health sector, MOH is to blame for the supervising, regulation, licensure, and management for the entire health services (Alabbasi, 2018). The total number of hospitals in the Gaza Strip is 34, 13 for MOH, 17 for NGOs, 2 for MMS, and two private hospitals. These hospitals have 3049 beds in total. 105 beds are for ICUs, 98 in MOH hospitals, and 7 in private hospitals. Also, The Gaza strip has many primary health care centers. 52 of these centers are owned and supervised by MoH and 22 centers are owned by UNRWA and supervised by MOH. There are five major MOH hospitals in GS including ICUs with a total capacity number of 98 beds: Al Shifa Medical Complex (SMC), Nasser Medical Complex (NMC), European Gaza Hospital (EGH), Al Aqsa Hospital (AH), and the Indonesian Hospital (IH) (MOH, 2019).

There are five main ICUs, CCU, and ER in GS: at SMC with total capacity number 12 beds, at NMC with total capacity number 12 beds, at EGH with total capacity number of 12 beds, AH with total capacity number 12 beds, and at IH with total capacity number 9 beds. The health sector is considered one of the most important social sectors in the Palestinian Territory (MOH, 2021).

Conceptual framework and literature review

2.1 Conceptual framework

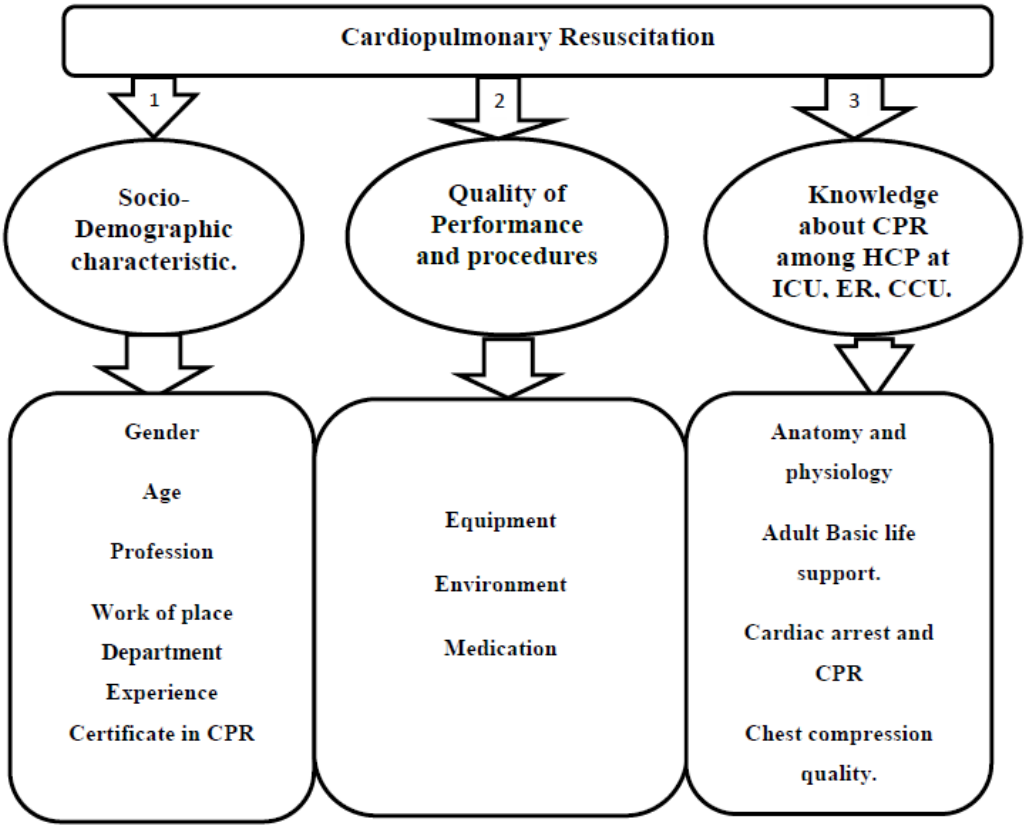

Figure 2.1: Diagram of the conceptual framework.

The figure below (2.1) shows the theoretical framework, the self-structured diagram given the most domains beneath the study. The researcher used to assess the standard of cardiac resuscitation, chest compression quality. Conceptual framework outlines the assessment of the standard of cardiac resuscitation among HCPs in important Care Units. The framework displays dimensions of socio-demographic characteristics of HCPs, the current study could be a cross-sectional study that enclosed 151 subjects, the socio-demographic characteristics that were studied enclosed Age (years), sex, profession, work of place, department, experience, education level, have a certificate in cardiac resuscitation, and to grasp the distinction of data concerning cardiac resuscitation among health care suppliers in CCU, associated with the place, department, age, education levels, certificate, experience. Quality of Performance and procedures, equipment, Environment, Medication, and Data score domains of cardiac resuscitation among HCPs in CCU at governmental hospitals in a geographic area, data concerning cardiac resuscitation among HCPs at intensive care unit, ER, CCU, anatomy, and physiology, Adult Basic life support. Cardiopulmonary arrest and cardiac resuscitation Chest

compression quality, Airway, Bag-mask-ventilation, internal organ observance, medical care, Advanced airway, cardiac resuscitation sequence. Distinction of the standard score domains of cardiac resuscitation among health care providers in CCU.

2.2 Theoretical definitions

CPR is an emergency lifesaving procedure performed when the heart stops beating. 2020 AHA are Guidelines of CPR consisting of external cardiac massage and artificial respiration; the first treatment for a person who has collapsed and has no pulse and has stopped breathing attempts to restore circulation of the blood and prevent death or brain damage due to lack of oxygen. The AHA continues to make a strong recommendation for chest compressions Quality of at least two inches but not more than 2.4 inches in the adult patient, based on moderate-quality evidence. In contrast, there is a moderate strength for compression rates of 100-120 compressions per minute, based on moderate-quality evidence (AHA, 2020).

The AHA Guidelines recommended a rate of between 100-120 compressions per minute for manual CPR on adult patient's compression that is too slow doesn't create enough perfusion pressure too fast, and the heart doesn't have time to refill with blood (AHA, 2020).

During cardiac arrest, the most appropriate initial compression since blood hasn't been pumping, it's crucial to get the blood flowing to vital organs. AHA Guidelines suggested ratio to the current is that compression and ventilation be provided continuous chest compression with a ventilation every 6 seconds advanced airway placement for asynchronous ventilation during continuous chest compression, but you want to make sure you don't get caught up in the moment and hyperventilate. Pulse checks should be performed during Resuscitation when physical signs of life are noted. Stop with the random pulse checks, already random or prolonged pulse to the brain and other vital organs (AHA, 2020). The AHA Guidelines recommended striving for a compression depth of between (2-2.4) inches. High-Quality CPR relies on more than just compression rate, adequate compression rate depth and fraction are all critically important. After the return of spontaneous circulation, Assessments would be most appropriate to performed as soon as possible 12 lead ECG. Don't forget about your possible causes of cardiac arrests, like a coronary thrombus, check 12 lead and alert the receiving hospital of any ECG abnormalities like ST elevation. Performing chest compression should switch roles at least every 2 minutes. Leaning on the chest during CPR impacts full chest wall recoil. During CPR, getting full chest wall recoil is as important as giving great compression. During recoil, the heart refills so more blood can be pushed out of the heart on the next compression. Leaning on the chest limits the heart's ability to refill, making your subsequent compression less effective. The average survival rate for adult patients with out-of-hospital cardiac arrest is 7% approximately (AHA, 2020).

2.3 Quality of care

Doing the right things to the right persons, at the right time, doing things right the first time. Quality of care is the level attainment of health systems the intrinsic purpose for health improvement and responsiveness to legitimate expectations of the people (WHO, 2021).

The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge and is critical for achieving universal health coverage (WHO, 2021).

Quality of care has been defined by the federal Agency for Healthcare Research and Quality doing the right thing at the right time for the right person and having the best possible result (WHO, 2021).

Assessing the quality of care may have different significance, The significance of quality performance measures is to promote accountability and to improve the performance of the health care system and can be applied to different levels of the healthcare system and high-quality health care should be: efficient, timely, safe, effective, patient-centered, and equitable (WHO, 2021).

2.3.1 Efficacy

The ability of the science and technology of health care to bring about improvements in health when used under the most favorable circumstances (WHO, 2021).

2.3.2 Effectiveness

The degree to which attainable improvements in health are in fact attained (WHO, 2021).

2.3.3 Efficiency

The ability to lower the cost of care without diminishing attainable improvements in health (WHO, 2021).

2.3.4 Optimality

The balancing of improvements in health against the costs of such improvements (WHO, 2021).

2.3.5 Acceptability

Conformity to the wishes, desires, and expectations of patients and their families (WHO, 2021).

2.3.6 Legitimacy

Conformity to social preferences is expressed in ethical principles, values, norms, mores, laws, and regulations (WHO, 2021).

2.3.7 Equity

Conformity to a principle that determines what is just and fair in the distribution of health care and its benefits among members of the population (WHO, 2021).

To assess the quality of CPR, High-quality CPR performance, Compression rate of 100-120/min, Chest compression fraction >80%, Compression depth of at least 2 inches in adults, and at least 1/3 the AP dimension of the chest in infants and children, No excessive ventilation (AHA, 2020).

The components of high-quality CPR, Five main components of high-performance CPR have been chest compression fraction, chest compression rate, chest compression depth, chest recoil, and ventilation. Components were identified because of their contribution to blood flow and outcome (AHA, 2020).

2.4 The other seven steps of CPR

1. Position your hand and make sure the patient is lying on his back on a firm surface, kneel beside him and place the heel of your hand on the center of the chest (CPRHQ, 2018).
2. Interlock fingers and keeping your arms straight, cover the first hand with the heel of your other hand and interlock the fingers of both hands together and keep your fingers raised they do not touch the patient's chest or rib cage (CPRHQ, 2018).
3. Give chest compressions and lean forward so that your shoulders are directly over the patient's chest and press down on the chest about two inches. Release the pressure, but not your hands, and let the chest come back up and Repeat to give 30 compressions at a rate of 100 compressions per minute (CPRHQ, 2018).
4. Open the airway and move it to the patient's head and tilt his head and lift his chin to open the airway again and let his mouth fall open slightly (CPRHQ, 2018).
5. Give rescue breaths and pinch the nostrils closed with the hand that was on the forehead and support the patient's chin with your other hand and take a normal breath, put your mouth over the patient's, and blow until you can see his chest rise (CPRHQ, 2018).
6. Watch chest fall and remove your mouth from the patient's and look along the chest, watching the chest fall and repeat steps five and six once (CPRHQ, 2018).
7. Repeat chest compressions and rescue breaths and place your hands on the chest again and repeat the cycle of 30 chest compressions, followed by two rescue breaths. Continue the cycle (CPRHQ, 2018).

CPR stands for cardiopulmonary resuscitation, it is an emergency life-saving procedure that is done when someone's breathing or heartbeat has stopped. This may happen after an electric shock, heart attack, or drowning, who needs CPR quality, High-quality CPR is provided to people who have suffered cardiac arrest.

2.5 The different types of CPR

1. Basic Life Support CPR.
2. Advanced Cardiac Life Support.
3. Pediatric Advanced Life Support.
4. Heart saver First Aid & CPR, High-quality CPR.

2.5.1 Compression rate

The compression rate is the measurement of how fast CPR is being performed a rate of 100-120 compressions per minute is ideal. If compressions are too slow, blood is not being circulated effectively around the body. If compressions are too fast, the heart does not have enough time to adequately fill so cardiac output drops off (EMS1, 2017).

2.5.2 Compression depth

Compression depth is the measurement of how deep the sternum is pushed down during CPR. The preferred compression depth is 2 inches for most adults. It is equally to allow the chest to fully recoil following each compression. By allowing full recoil, rescuers allow the heart to fill with blood completely which improves cardiac output. Caregivers should never rest their weight on the patient's chest during CPR (EMS1, 2017).

2.5.3 Compression fraction

Compression fraction is the percent of the time during the cardiac arrest that CPR is being performed. Each time CPR is stopped the output of the heart falls off dramatically. After CPR is restarted, it takes time to build up cardiac output again. Minimizing interruptions during CPR is one of the most important ways to ensure high-quality resuscitation. Continue compressions as another rescuer places an AED or obtains IV or IO access (EMS1, 2017).

2.5.4 Ventilation rate

Ventilation rate is the rate at which rescuers are delivering ventilations often via a bag-valve-mask. While patients need ventilation, over-ventilating or hyperventilating the patient can be detrimental to their outcome; too much ventilation can increase pressure in the chest cavity and may reduce the output of the heart (EMS1, 2017).

2.5.5 Defibrillators

Defibrillators as Automated External Defibrillator (AED), Implantable Cardioverter Defibrillator (ICD), (NIH, 2020). Defibrillators are devices that restore a normal heartbeat by sending an electric pulse or shock to the heart. They are used to prevent or correct an arrhythmia, a heartbeat that is uneven or that is too slow or too fast. Defibrillators can also restore the heart's beating if the heart suddenly stops (NIH, 2020).

Different types of defibrillators work in different ways. Automated external defibrillators (AEDs), which are in many public spaces, were developed to save the lives of people experiencing sudden cardiac arrest. Even untrained bystanders can use these devices in an emergency (NIH, 2020).

Other defibrillators can prevent sudden death among people who have a high risk of life-threatening arrhythmia. They include implantable cardioverter defibrillators (ICDs), which are surgically placed inside your body, and wearable cardioverter defibrillators (WCDs), which rest on the body. It can take time and effort to get used to living with a defibrillator (NIH, 2020).

2.6 The approach the all deteriorating or critically ill patients

1. Used the Airway, Breathing, Circulation, Disability, and Exposure (ABCDE) to assess and treat the patient.
2. Complete initial assessment and re-assess regularly.
3. Treat life-threatening problems before moving to the next part of the assessment.
4. Assess the effects of treatment.
5. Recognize when you will need extra help. Call for appropriate help early.
6. Use all members of the team. This enables interventions (e.g. assessment, attaching monitors, intravenous access) to be undertaken simultaneously.
7. Communicate effectively - use the Situation, Background, Assessment, Recommendation or Reason, Story, Vital signs, Plan approach.
8. The significance of the initial treatment is to keep the patient alive and achieve some clinical improvement. This will buy time for further treatment and making a diagnosis.
9. Can take a few minutes for treatments to work, so wait a short while before reassessing the patient after an intervention (NIH, 2020).

2.6.1 First steps

1. Ensure personal safety and wear gloves apron as appropriate.
2. First look at the patient, in general, to see if the patient appears unwell.
3. If the patient is awake, ask "How are you?" If the patient appears unconscious or has collapsed, shake him and ask "Are you alright?" If he responds normally, he has a patent airway, is breathing, and has brain perfusion. If he speaks only in short sentences, he may have breathing problems, and the failure of the patient to respond is a clear marker of critical illness.
4. This first rapid Look, Listen and Feel of the patient should take about 30 s and will often indicate a patient is critically ill and there is a need for urgent help. Ask a colleague to ensure appropriate help is coming.
5. If the patient is unconscious, unresponsive, and is not breathing normally (occasional gasps are not normal) start CPR according to the resuscitation guidelines. If you are confident and trained to do so, feel for a pulse to determine if the patient has a respiratory arrest. If there are any doubts about the presence of a pulse start CPR.
6. Monitor the vital signs early and attach a pulse oximeter, ECG monitor, and a non-invasive blood pressure monitor to all critically ill patients, as soon as possible.
7. Insert an intravenous cannula and take blood for investigation when inserting the intravenous cannula (NIH, 2020).

2.7 The A-E Assessment

Early identification of the deteriorating patient and prevention of cardiorespiratory arrest is the first link in the chain of survival. Once cardiac arrest occurs, fewer than 20% of in-hospital cardiac arrests will survive to go home. In approximately 80% of cases, clinical signs deteriorate over the few hours before the arrest. These patients often have slow, progressive physiological deterioration; often hypoxia and hypotension are either not noticed or are treated poorly. In general, the clinical signs of critical illness are similar whatever the underlying process because they reflect failing respiratory, cardiovascular, and neurological systems. We use the A to E assessment as it is a systematic way to ensure we don't miss anything and eliminate anything life-threatening before moving on to the next most important section. The priorities' from A to E treating as we go – for example, if someone has an obstructed airway and cannot breathe, we must treat this immediately – we would not move on to assessing their circulation (ILS, 2019).

2.7.1 Airway (A)

Airway obstruction is an emergency. Untreated, airway obstruction can cause hypoxia and risks damage to the brain, kidneys, and heart, cardiac arrest, and death (RCUK, 2021).

2.7.2 Breathing (B)

During the immediate assessment of breathing, it is vital to diagnose and treat immediately life-threatening conditions (RCUK, 2021).

1. Look, listen, and feel for the general signs of respiratory distress: central cyanosis, sweating, use of the accessory muscles of respiration, and abdominal breathing.
2. Count the respiratory rate. The rate is 12–20 breaths min-1 normal. A high (> 25 min-1) or increasing respiratory rate is a marker of illness and a warning that the patient may deteriorate suddenly.
3. Assess the depth of each breath, the pattern (rhythm) of respiration, and whether chest expansion is equal on both sides.
4. Note the presence and patency of any chest drain abdominal distension may limit diaphragmatic movement, thereby worsening respiratory distress. Note any chest deformity may increase the risk of deterioration in the ability to breathe normally, look for a raised jugular venous pulse in severe asthma or tension pneumothorax.
5. Record the inspired oxygen concentration and the SpO2 reading of the pulse oximeter. The pulse

oximeter does not detect hypercapnia. If the patient is receiving supplemental oxygen, the SpO2 may be normal in the presence of a very high PaCO2.

6. Listen to the patient's breath sounds a short distance from his face rattling airway noises indicate the presence of airway secretions, usually caused by the inability of the patient to cough sufficiently or to take a deep breath. Stridor or wheeze suggests partial, but significant, airway obstruction.
7. Percuss the chest hyper-resonance may suggest a pneumothorax; dullness usually indicates consolidation or pleural fluid.
8. Auscultate the chest bronchial breathing indicates lung consolidation with patent airways; absent or reduced sounds suggest a pneumothorax or pleural fluid or lung consolidation caused by complete obstruction.
9. Check the position of the trachea in the suprasternal notch deviation to one side indicates mediastinal shift.
10. Feel the chest wall to detect surgical emphysema or crepitus.
11. The specific treatment of respiratory disorders depends upon the cause. Nevertheless, all critically ill patients should be given oxygen. In a subgroup of patients with COPD, high concentrations of oxygen may depress breathing they are at risk of hypercapnic respiratory failure - often referred to as type 2 respiratory failures. Nevertheless, these patients will also sustain end-organ damage or cardiac arrest if their blood oxygen tensions are allowed to decrease. A lower than normal PaO2 and oxygen saturation. Give oxygen via a Venturi 28% mask (4 L min-1) or a 24% Venturi mask (4 L min-1) initially and reassess. Aim for target SpO2 range of 88–92% in most COPD patients, but evaluate the target for each patient based on the patient's arterial blood gas measurements during previous exacerbations. Some patients with chronic lung disease carry an oxygen alert card that documents their target saturation and their own appropriate venturi mask.
12. If the patient's depth or rate of breathing is judged to be inadequate, or absent, use bag-mask or pocket mask ventilation to improve oxygenation and ventilation, whilst calling immediately for expert help. In cooperative patients who do not have airway obstruction consider the use of non-invasive ventilation (NIV). In patients with an acute exacerbation of COPD, the use of NIV is often helpful and prevents the need for tracheal intubation and invasive ventilation (RCUK, 2021).

2.7.3 Circulation (C)

In almost all emergencies, consider hypovolaemia to be the primary cause of shock until proven otherwise. Unless there are obvious signs of a cardiac cause, give intravenous fluid to any patient with cool peripheries and a fast heart rate. In surgical patients, rapidly exclude hemorrhage (overt or hidden). Remember that breathing problems, such as a tension pneumothorax, can also compromise a patient's circulatory state. This should have been treated earlier on in the assessment.

1. Look at the color of the hands and digits are they blue, pink, pale, or mottled?
2. Assess the limb temperature by feeling the patient's hands are they cool or warm?
3. Measure the capillary refill time (CRT). Apply cutaneous pressure for 5 s on a fingertip held at heart level (or just above) with enough pressure to cause blanching. Time is how long it takes for the skin to return to the color of the surrounding skin after releasing the pressure. The normal value for CRT is usually < 2 s. A prolonged CRT suggests poor peripheral perfusion.
4. Assess the state of the veins: they may be under filled or collapsed when hypovolaemia is present.
5. Count the patient's pulse rate.
6. Palpate peripheral and central pulses, assessing for presence, rate, quality, regularity, and equality. Barely palpable central pulses suggest a poor cardiac output, whilst a bounding pulse may indicate sepsis.
7. Measured the blood pressure. Even in shock, the blood pressure may be normal, because compensatory mechanisms increase peripheral resistance in response to reduced cardiac output. A low diastolic blood pressure suggests arterial vasodilation (as in anaphylaxis or sepsis). A narrowed pulse pressure (difference between systolic and diastolic pressures; normally 35–45 mmHg) suggests arterial vasoconstriction (cardiogenic shock or hypovolaemia) and may occur with rapid tachyarrhythmia.
8. Auscultate the heart. Is there a murmur or pericardial rub? Are the heart sounds difficult to hear? Does the audible heart rate correspond to the pulse rate?
9. Look for other signs of poor cardiac output, such as reduced conscious level and, if the patient has a urinary catheter, oliguria (urine volume < 0.5 mL kg-1 h-1).
10. Look thoroughly for external hemorrhage from wounds or drains or evidence of concealed hemorrhage.
11. The specific treatment of cardiovascular collapse depends on the cause but should be directed at fluid replacement, hemorrhage control, and restoration of tissue perfusion. Seek the signs of conditions that are immediately life-threatening (e.g. cardiac tamponade, massive or continuing hemorrhage, septicaemic shock), and treat them urgently.
12. Insert one or more large intravenous cannula. Use short, wide-bore cannula, because they enable the highest flow.
13. Take blood from the cannula for routine hematological, biochemical, coagulation, and microbiological investigations, and cross-matching, before infusing intravenous fluid.
14. Give a bolus of 500 mL of warmed crystalloid solution (e.g. Hartmann's solution or 0.9% sodium

chloride) over less than 15 min if the patient is hypotensive. Use smaller volumes (e.g. 250 mL) for patients with known cardiac failure or trauma and use closer monitoring (listen to the chest for crackles after each bolus).

15. Reassess the heart rate and BP regularly (every 5 min), aiming for the patient's normal BP or, if this is unknown, a target > 100 mmHg systolic.
16. If the patient does not improve, repeat the fluid challenge. Seek expert help if there is a lack of response to repeated fluid boluses.
17. If symptoms and signs of cardiac failure (dyspnea, increased heart rate, raised JVP, a third heart sound, and pulmonary crackles on auscultation) occur, decrease the fluid infusion rate or stop the fluids altogether. Seek alternative means of improving tissue perfusion (e.g. inotropes or vasopressors).
18. If the patient has primary chest pain and a suspected ACS, record a 12-lead ECG early.
19. Immediate general treatment for ACS includes:

1. Aspirin 300 mg, orally, crushed, or chewed, as soon as possible.
2. Nitroglycerine, as sublingual.
3. Give oxygen only if the patient's SpO2 is less than 94% breathing air alone.
4. Morphine is titrated intravenously to avoid sedation and respiratory depression (RCUK, 2021).

2.7.4 Disability (D)

Causes of unconsciousness include profound cerebral hypoperfusion, hypoxia, hypercapnia, or the recent administration of analgesic or sedatives drugs.

1. Treat the ABCs: exclude or treat hypotension and hypoxia.
2. Check the drug chart for reversible drug-induced causes of depressed consciousness. Give an antagonist where appropriate.
3. Examine the pupils (size, equality, and reaction to light).
4. Rapid initial assessment of the patient's conscious level using the AVPU method: Alert, responds to Vocal stimuli, responds to Painful stimuli or Unresponsive to all stimuli. Alternatively, use the Glasgow Coma Scale score. A painful stimulus can be given by applying supra-orbital pressure (at the supraorbital notch).
5. Measure the blood glucose to exclude hypoglycemia using a rapid finger-prick bedside testing method. In a peri-arrest patient use, a venous or arterial blood sample for glucose measurement as finger prick sample glucose measurements can be unreliable in sick patients.
6. Nurse unconscious patients in the lateral position if their airway is not protected (RCUK, 2021).

2.7.5 Exposure (E)

To examine the patient properly full exposure of the body may be necessary. Respect the patient's dignity and minimize heat loss (RCUK, 2021).

2.8 Basic Life Support, Action and Technical Description

2.8.1 Safety

Make sure that you, the victim, and anyone are safe (ERC, 2021).

2.8.2 Response

Check for a response. Shake the victim gently by the shoulders and ask loudly: "Are you all right?"

2.8.3 Airway

Open the airway, if there is no response, position the victim on their back, with your hand on the forehead and your fingertips under the point of the chin, and gently tilt the victim's head backward, lifting the chin to open the airway.

2.8.4 Breathing

Look, listen and feel for breathing, Look, listen and feel for breathing for no more than 10 seconds. A victim who is barely breathing, or taking infrequent, slow, and noisy gasps, is not breathing normally, Absent or Abnormal Breathing

Alert emergency services, if breathing is absent or abnormal, ask a helper to call the emergency services or call them yourself, Stay with the victim if possible, Activate the speaker function or hands-free option on the telephone so that you can start CPR whilst talking to the dispatcher, Send for AED:

Send someone to get an AED, Send someone to find and bring back an AED if available, if you are on your own, do not leave the victim, but start CPR.

2.8.5 Circulation

Start chest compressions, Kneel by the side of the victim, Place the heel of one hand in the center of the victim's chest this is the lower half of the victim's sternum, place the heel of your other hand on top of the first hand and interlock your fingers, Keep your arms straight, Position yourself vertically above the victim's chest and press down on the sternum at least 5 cm, After each compression, release all the pressure on the chest without losing contact between your hands and the sternum, Repeat at a rate of 100-120 min-1 (EMS1, 2017).

2.9 Combine Rescue Breathing

2.9.1 Chest Compressions

If you are trained to do so, after 30 chest compressions, Open the airway again, using head tilt and chin lift, Pinch the soft part of the nose closed, using the index finger and thumb of your hand on the forehead, Allow the victim's mouth to open, but maintain chin lift, Take a normal breath and place your lips around the victim's mouth, making sure that you have an airtight seal, Blow steadily into the mouth whilst watching for the chest to rise, taking about 1 second as in normal breathing. This is an effective rescue breath, Maintaining head tilt and chin lift, take your mouth away from the victim and

watch for the chest to fall as air comes out, Take another normal breath and blow into the victim's mouth once more to achieve a total of two rescue breaths, Do not interrupt compressions by more than 10 seconds to deliver the two breaths even if one or both are not effective, Then return your hands without delay to the correct position on the sternum and give a further 30 chest compressions, Continue with chest compressions and rescue breaths in a ratio of 30:2 (EMS1, 2017).

2.9.2 Compression-Only CPR

If you are untrained, or unable to give rescue breathes, give chest-compression-only CPR (continuous compressions at a rate of 100-120 min-1). As soon as the AED arrives switch it on and attach the electrode pads to the victim's bare chest. If more than one rescuer is present, CPR should be continued whilst the electrode pads are being attached to the chest (EMS1, 2017).

2.9.3 Follow The Spoken/Visual Directions

1. Follow the spoken and visual directions given by the AED.
2. If a shock is advised, ensure that neither you nor anyone else is touching the victim.
3. Push the shock button as directed.
4. Then immediately resume CPR and continue as directed by the AED.

If No Shock Is Advised**:** Continue CPR If no shock is advised, immediately resume CPR and continue as directed by the AED. If no AED is available, or whilst waiting for one to arrive, continue CPR. Do not interrupt resuscitation until:

a) A health professional tells you to stop, or the victim is definitely waking up, moving, opening eyes, and breathing normally, or you become exhausted. It is rare for CPR alone to restart the heart. Unless you are certain that the victim has recovered continue CPR, Signs that the victim has recovered

a) Waking-up.
b) Moving.
c) Opening eyes.
d) Breathing normally.

If Unresponsive but breathe, normally place in the recovery position,. If you are certain that the victim is breathing normally but still unresponsive, place them in the recovery position. Be prepared to restart CPR immediately if the victim becomes unresponsive, with absent or abnormal breathing (EMS1, 2017).

2.10 Operational definition

The researcher used to CPR allow for meaningful comparisons of assessment of Quality CPR between in ER, CCU, ICU, in hospitals as well as a common system for the quality of CPR improvement and documentation of this improvement. Chest compression Quality provides by giving 30 compressions, followed by two breaths. High-quality CPR, as well as early defibrillation, is vital in achieving good outcomes for patients, Start compressions within 10 seconds, Push hard, push fast, Allow complete chest recoil, Minimize interruptions in compressions. Chest compression fraction >80%, the compression rate of 100-120/min, Compression depth of at least 50 mm (2 inches) in adults, Give effective breaths, Avoid excessive ventilation.

2.10.1 Quality of CPR

It's applied of High-quality CPR performance, Compression rate of 100-120/min, Chest compression fraction >80%, Compression depth of at least 2 inches in adults, Doing the right things to the right persons, at the right time, doing things right the first time. Quality of care is the level attainment of health systems the intrinsic purpose for health improvement and responsiveness to legitimate expectations of the people.

2.10.2 CCU

It's a specialized department that administers continuous close monitoring for patients who need special care through the well-trained team, this is areas of the hospital where seriously ill patients receive specialized care such as intensive monitoring and advanced life support this department (ER, ICU, CCU).

2.10.3 HCPs

All doctors and nurses who work in Critical care unite (ICU, CCU, ER) are authorized to practice by the State and performing within the scope of their practice under the Ministry of health.

2.10.4 Governmental hospitals

a Hospital operated by a government or any of its subdivisions or agencies, It means a departmental dispensary whether full-time or Part- time established and run by a department of the government for medical attendance and treatment of a class or classes of government servants and members of their families, a hospital maintained by a local authority and any other hospital with which arrangements have been made by the government for the treatment of government servants. There are five major MOH hospitals in GS Al Shifa Medical Complex (SMC), Nasser Medical Complex (NMC), European Gaza Hospital (EGH), Al Aqsa Hospital (AH), and the Indonesian Hospital (IH).

2.3 Literature review

2.3 Introduction

A literature review is the key step in the research process, which helps to lay a foundation for the study. The literature review provides a background for understanding current knowledge on a topic and illuminates the significance of the study. A literature review is a body of text that aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to Assessment of the Quality of Cardiopulmonary Resuscitation among Health Care Providers in Critical Care Units at Governmental Hospitals. The study revealed the importance of

knowledge and practice of Quality performance of CPR. Furthermore, various international organizations on resuscitation have emphasized the importance of education in providing high-quality CPR and thus improving survival from cardiac arrest. CPR performed by rescuers depends on learners integrating, retaining, and applying the cognitive, behavioral, and psychomotor skills required to successfully perform resuscitation. CPR is an important medical procedure that is needed for individuals who face sudden cardiac arrest. It is a combination of rescue breathing and chest compressions that are delivered to the victims who are thought to be in cardiac arrest (Tsima, 2019). The development of knowledge and skills is an essential component of professional development in nurse education programs. There is universal evidence to suggest that CPR knowledge is lacking recalled by nurses (Baskett et al., 2005). Lack of knowledge and skill retention following cardiopulmonary resuscitation training for nursing and medical staff ha00s been documented over the past 20 years (Misko et., al, 2003).

2.3.1 To assess knowledge of Health care providers regarding cardiopulmonary resuscitation in critical care units

Conducted a study to acknowledge the extent and skills regarding cardiac resuscitation and additionally the factors that impact the extent of cardiac resuscitation data and skills between necessary care nurses in Kuwait. The investigator used the look of the study, a descriptive, cross-sectional, and correlation style was used. The conclusions of the study showed that the investigator complete that frequent education and training in cardiac resuscitation among the hospital and having cardiac resuscitation certification from AHA required for necessary care nurses to increase their ability lots of the period of critically measure at peril for a systole (Alnutaifi, 2021).

Performed a study to determine the impacts of the Resuscitation Quality Improvement program on cardiac resuscitation knowledge skills in UK hospitals that this is a way of Basic Life Support work and guarantee if this program lands up in inflated compliance in cardiac resuscitation work. Investigator used the look of the study a multi-institutional cohort study. The conclusions showed that a study, this data show up degree raised adherence with pointers for high-quality cardiac resuscitation post-training with the Resuscitation Quality Improvement cart, for all adult and most child measures, but not child cardiac resuscitation. However, the association among a formalized quarterly Resuscitation Quality Improvement course of study and enhancements in revivification skills is not clear. It's in addition obscure if the Resuscitation Quality Improvement approach is superior to the current classroom-based Basic Life Support work for cardiac resuscitation ability conquest among UK, Also, analysis is required to substantiate some way to optimally implement the Resuscitation Quality Improvement system among the UK, also and how to optimally o enhance hospital-wide compliance with cardiac resuscitation work to spice up the outcomes of in-hospital organ arrests (Kuyt et al., 2021).

The investigator talks regarding the study, procedure program that would be a retrospective descriptive. Victimization terminal, compact cardiac resuscitation work at a skills station, hospital basic life support suppliers who failed to meet cardiac resuscitation performance measures throughout the first quarter quickly accrued on the skills necessary to meet cardiac resuscitation measures. Those meeting cardiac resuscitation measures throughout the first quarter preserve that performance over time. Workers nurse educators got to ponder incorporating innovative cardiac resuscitation education strategies that center on spaced learning with define feedback (Klacman et al., 2021).

Conducted a study to witness cardiac resuscitation rates have firmly inflated inland between 2014 and 2018. The investigator used the look of the study, retrospective empiric study descriptively analyses. The study showed that data infer the possibility of a non-significant association between accrued non- emergency medical services witness cardiac resuscitation rates and restart a heart work and community first responder theme activity. They advocate organized mass work, significantly for kids in regions where cardiac resuscitation is not a needed a section of the school course of study (Lockey et al., 2021).

Conducted a review study to assess the impacts of dispatcher-assisted CPR on neurologically right permanence in clients with out of hospital cardiac arrest, additionally as permanence to discharge, one-month permanence or longer, and additionally the comeback of spontaneous circulation. The conclusions of the study showed that dispatcher-assisted CPR demonstrates inferior outcomes compared with bystander-initiated cardiac resuscitation, though' every dispatcher-assisted CPR, and witness-started cardiac resuscitation increase neurologically intact permanence compared with no witness cardiac resuscitation. Variability in out of hospital cardiac arrest outcomes across studies and multiple contradictory factors were familiar. Early cardiac resuscitation is crucial, so in cases where bystanders haven't started cardiac resuscitation, dispatcher-assisted CPR supply an opportunity to spice up neurologically intact permanence following Out of hospital cardiac arrest (Eberhard et al., 2021).

Conducted a study from the review to allow a comprehensive investigate the varied prospects for observation and enhancing the standard of cardiac resuscitation in terms of physiology and operation, and these 2 approaches might overlap. There's a transparent and fast development of technology to boost quality of cardiac resuscitation. The investigator worked to clarify the role of wearable devices and devices step by step as specially designed cardiac resuscitation capabilities for

the patient supported physiological parameters. Steps are taken, however a lot of square measure certain. It absolutely was additionally created clear that the boundaries of what was potential with human services activities would become clearer. To perform and improve high-quality cardiac resuscitation, one spoke that one should improve Rate, depth, and pause amount confirming by method monitors. Second, giving advanced technological development opportunities to live physiological parameters in time period which is able to create technique for a client-specific cardiac resuscitation (Genbrugge et al., 2020).

Conducted a study to acknowledge participants, course characteristics, and center factors related to participant satisfaction and ALS outcomes. It's expounded that each course outcomes and participant expertise square measure identical across an oversized variety after all centers. Analysis of feedback scores and consequences qualifies continuous analysis and targeted improvement of the revitalization Council UK ALS course. Recognition the demographic traits of participants might conflict with ALS, might change suggested support from associate degree earlier stage (Thorne et al., 2020).

Conducted a study to complete a scientific review and meta-analysis of superordinate studies heading if dispatcher-assisted CPR, distinction with freelance witness emergency procedure Bystander Cardiopulmonary Resuscitation, inflated the rates of Bystander Cardiopulmonary Resuscitation, and if they altered permanency scores compared with no Bystander Cardiopulmonary Resuscitation in Out-of-hospital cardiopulmonary arrest. The study found that dispatcher-assisted CPR resulted in necessary higher rates of Bystander Cardiopulmonary Resuscitation as distinction with freelance Bystander Cardiopulmonary Resuscitation in out of hospital cardiac arrest. Additionally dispatcher-assisted CPR resulted in an exceedingly major permanency rate compared with no Bystander Cardiopulmonary Resuscitation; therefore dispatcher-assisted CPR ought to be a customary protocol for emergency medical services systems worldwide (Wang et al., 2020).

A descriptive cross-sectional study to assess the nurses' data concerning cardiac resuscitation and to search out the connection among data of the nurses and they are demographic erratic. The results showed that the study sight that the plurality of nurses had to lack data concerning cardiac resuscitation. There was no vital association among the nurse's data and their gender, age group, Years of labor expertise, and formal coaching, whereas necessary relationship among nurses' data and educational qualification. investigator complete that the bulk of the study samples square measure feminine, most of the study samples have to be compelled to lack data concerning cardiac resuscitation (Saud et al., 2020).

A cross-sectional study performed to assess the practical standing of supply in resuscitation trolleys at four district hospitals in African nation. The strategy employed in the study was study. Failure to boost the prevailing state of affairs might negatively influence the result of cardiac resuscitation (Billy et al., 2019).

A prospective study conducted to outline the impacts of the appliance of the phone emergency procedure Telecommunicate CPR program on the outcomes of out-of-hospital cardiopulmonary arrest. The study complete that T-CPR programs be developed and dispatchers square measure trained within the space of this analysis. The results can be thought of as proof to EMS managers, health care employees, and also the stone for more studies on this subject (Seyedbagheri et al., 2019).

A study was conducted within the UK to outline the proportion of the population that had witnessed associate degree out of hospital cardiac arrest, had trained in cardiac resuscitation and public access electronic device use, Related to being trained and willing to act within the event of witnessing a cardiopulmonary arrest. Cardiac resuscitation and public access electronic device use will save the lives of individuals United Nations agency expertise out-of-hospital cardiopulmonary arrest. The study showed that coaching makes a variance in people's temperament to act within the event of a cardiopulmonary arrest. But there's a big probability to excess the proportion of the overall population trained in cardiac resuscitation, Observance ought to be additionally given to support coaching in public access electronic device use and targeting coaching for those that square measure older or from lower social grades (Hawkes et al., 2019).

Retrospective studies were conducted to see the association between emergency medical services physician-led cardiac resuscitation versus paramedic-led cardiac resuscitation and neurologically intact permanency once out-of-hospital cardiac arrest. The study complete that emergency medical services physician-led cardiac resuscitation for out-of-hospital cardiac arrest was related to improved 1-month neurologically intact permanency distinction with paramedic-led cardiac resuscitation. Although, neurologically intact permanency was identical for patients aged <18 years and receiving bystander defibrillation (Goto et al., 2019).

A quasi-experimental study was performed to assess the impact of debriefing-based coaching regarding CPR on nurses' information. Applied mathematics analysis shows that when the intervention, the mean a lot of information and performance of the participants were considerably on top of before the intervention. The results of this study showed that information of nurses in CPR enlarged with debriefing-based coaching (Mohsenabadi, 2018).

A review conducted to provide associate degree update on mechanical devices used for each out-of-hospital a systole out-of-hospital cardiac arrest and in-hospital a systole, a summary on device use in special circumstances, and steerage on readying within the clinical setting. In a systole, high-quality emergency procedure (CPR) may be a key determinant of client's permanency. The employment of mechanical devices above all circumstances wherever high-quality chest pressures can't be safely delivered is also an affordable strategy. Additionally mechanical CPR devices give an automatic thanks to deliver high-quality CPR. Mechanical chest compression devices systematically deliver high-quality chest pressures, however this doesn't translate into increased clients outcomes once devices square measure habitually utilized in out-of-hospital cardiac arrest. The complete that the mechanical CPR devices may provide a helpful adjunct to straightforward treatment above all things, however current guide doesn't support their routine use (Poole et al., 2018).

The target of the study that conducted to review impacts on outcomes when a systole or the standard CPR. The man of science can represent the premise of a systole revivification care. Fast transmission of high-quality CPR will dramatically retrieve in permanency scores; though, the definitions of optimum kiss of life have developed over many decades. Investigations victimization CPR recording devices have allowed the assessment of specific CPR performance parameters and their relative importance concerning the comeback of spontaneous circulation and permanency to hospital discharge. The results showed that the introduction of latest technologies to quantify metrics of CPR delivery has introduced necessary insights into CPR quality. Further work has advised new probabilities to live physiological markers throughout kiss of life and doubtless tailor CPR delivery to shopper demand. Exciting probabilities currently exist to check quantitative metrics of doubtless guide resuscitation care in a very purposeful fashion (Abella, 2016).

A Prospective study was conducted to assess the impact of formal certified CPR observe programs on the knowing and ability of CPR among nurses, to spot self-reported outcomes of tried CPR and observe necessity for nurses. They found that the mean information scores were equivalent among the CPR certified and noncertified nurses, but the certified nurses scored a better mean score. Although, vital semi-permanent effects couldn't be found, there's demand for normal and periodic recertification (Saramma et al., 2016).

A study was conducted to analyze if time period objective feedback on manikins helps to boost CPR accomplishment and if contest among separate European Emergency Medical Services and between participants at every Emergency Medical Services helps motivation to coach. The results recommend that the employment of time period objective feedback will considerably facilitate enhance CPR performance. Contest, partly among participants, perceived to promote workers to coaching and this study suggests that contest might need a helpful role to assist inspire workers to perform CPR coaching (Smart et al., 2015).

A descriptive cross-sectional study was conducted to assess the nurses' information regarding emergency procedure and to search out the connection among the information a lot of the nurses and their demographic ever-changing. The conclusions showed a big study that the bulk of the nurses had lack information regarding a systole and emergency procedure. However there was a non-significant relationship among the nurses' information toward emergency procedure and their gender, age group. The study results indicate that there was importance association among the nurses' information of CPR and their educational qualification and their Years of labor expertise (Al-Janabi et al., 2014).

Conducted a descriptive, quantitative study to assess the retention of basic info and skills among attention provider attended a Basic Life Support course. The man of science has taken the sample consecutive from half the annual intake of a BLS course 3 months when completion of the course. The results showed of the study indicate that skills retention was sensible and, though there was some fall-off in ability and information. The study has showed that the new methodology of video-based coaching is effective in teaching BLS skills which basic BLS information and skills square measure maintained by attention 3 months post-course completion. Additionally highlighted the necessary skills base among nursing workers has the BLS qualification and therefore the skills to initiate CPR (Govender et al., 2014).

Methodology

Methodology research is a systemic way to resolve research problems. This chapter provides a summarized depiction of the way adopted by the investigator to conduct this study. Also, includes research approach, setting of the study and sampling technique, description of the tool and development, pilot study, research design, data collection, study instrument, procedure and plan of analysis, Validity of Questionnaire, Statistical analysis.

3.1 Study design

Accomplish objectives of present study. Researcher used a descriptive cross-sectional design to assess the quality and knowledge concerning CPR among HCPs within the important critical care units (ICU, CCU, and ER) at Governmental Hospitals in Gaza Strip, which include (Al-Shifa, Nasser medical complex, European Gaza, Aqsa martyrs, Indonesian) hospitals. Researcher utilized this design to perform the objectives of study; data were collected from nurses and doctors through questionnaires. It was distributed to the HCPs and Checklists.

3.2 Study population

Study of population consist of 350 includes doctors and nurses, worked at five majors governmental hospitals in the GS, making a total 151 of HCP in (ICU, CCU, ER) who asked and participated in this study. The hospitals provide (ICU, CCU, and ER) with equipment viability and trained health care providers, and the total number of beds in the hospitals (105).

The study of the population consist that included 265 subjects groups (patients), to the assessment of the quality of cardiopulmonary resuscitation (CPR) among health care providers in critical care units. The researcher used a descriptive cross-sectional design to assess the quality and knowledge concerning CPR among HCPs within the important critical care units that included 265 subjects groups. The study population according to hospitals of participants work in Al-Shifa Medical Complex 43.4%, of participants work in Nasser Medical Complex 20.8%, of participants, work in European Gaza Hospital 15.1%, of them, work in Indonesian Hospital 11.3% and in Al Aqsa Hospital 9.4%. The study population works in the ICU department 35.1% while 18.9% of them have worked in the CCU department and 46.0% of the ER department.

Tables 3.1: Distribution of study population according to their department (A), hospitals (B).

Departments	Number of HCPs	Percentage
ER	***122***	***40.0%***
ICU	***93***	**35.1%**
CCU	***50***	**18.9%**

A) Department

Governmental Hospitals	Number of HCPs	Percentage
SMC	***115***	***43.4%***
NMC	***55***	***20.8%***
EGH	***40***	***15.1%***
IH	***30***	***11.3%***
AH	***25***	***%9.4***

B) Hospitals

3.3 Sample and sampling

A non-probability sampling of Health care Providers in Critical Care Units, A total sample (151). The researcher used the sample which selects nursing staff and doctors working in the critical care units. A purposive sampling technique utilizes to collect the sample from (ICU, CCU, and ER) in government hospitals of Ministry of Health (MOH) in Gaza Strip. The duration of the study is from 01.05-2021 to 10.07-2021.

3.3.1 Inclusion Criteria

- All doctors and nurses employed in critical care units (ER, ICU, CCU) in government hospitals of Ministry of Health (MOH) in Gaza Strip.

3.3.2 Exclusion Criteria

- All doctors and nurses who are trainees or volunteers.
- All employees who have been appointed for less than a year.

3.4 Study setting

Study has conducted in these hospitals, European Gaza Hospital (EGH), Nasser Medical Complex (NMC), Indonesian Hospital (IH), Al Shifa Medical Complex (SMC)**,** and Al Aqsa Hospital (AH)**.**

3.5 Data collection and study instrument

The researcher acquired approval from the university so as to start the study, wherever data assortment tools were designed, then the research worker took the approval of the final board of Human Resources Development of the Ministry of Health to begin the distribution of the Questionnaires next research worker collected the information and at last analyzed the information and wrote the results.

The researcher was collected data to complete the aims of the study. information was collected by used a form sheet to assess the standard of chest compression through cardiopulmonary resuscitation that has done by HCPs, associated an empirical listing to assess the health care provider's performance. Data was collect through the accustomed develop questionnaires and by suggests that of structured self-report techniques with the topics. The knowledge assortment method has been completed from (01.05-2021) till (10.07-2021). Every participant spends more or less (20) minutes finishing the report.

3.5.1 The Study Instrument

There was no problem faced during the pilot study, constant of information collection that was utilized to achieve this study. Information was collected in 2 stages, in the first stage the questionnaire was dispensed for participants and each of them is allowed sufficient time to fill it, all participants give back the Questionnaire. In the second stage regrind checklist of performance cardiopulmonary resuscitation the researcher observe the participants during practice cardiopulmonary resuscitation on the muckiness and evaluated him, also using a stopwatch to assess the rate of chest compression and time need to assess the patient. Questionnaires were designed and constructed to measure the quality of chest compression of the health care providers about CPR. To compose the Questionnaires, employ an exploratory study was close-end question was (32) questions health care providers who select according to study original criteria. A questionnaire was prepared on the "knowledge and practice assessment of the Quality of CPR among HCPs in Critical Care Units. A Likert scale of 2-points was used to prepare structured questionnaires according to the AHA and the researcher's experience in the hospital's field. The questionnaires were constructed and composed:

3.5.2 Part 1: demographic
Composed of items (7), which include sex, age, academic qualification, working experience, area of assignment, formal train in CPR and the recurrence of resuscitation will be performing on client.

3.5.3 Part 2: Knowledge
Health care provider knowledge about cardiopulmonary resuscitation and Quality of chest compression. Start compressions within 10 seconds Push hard at least 2inches (5mm), push fast (100-120/min) and permit to complete chest recoil, decrease interruptions in pressures, Give effective breaths, avert excessive ventilation change pressure every 20 minutes or sooner if exhausted, If there's no advanced airway 30:2 pressure ventilation ratio.

3.5.4 Cardiac arrest and CPR: depending on
ABLS: 2020 American heart association guidelines for CPR and emergency cardiovascular care and associated with study construct the questions regarded with the second parts of HCPs knowledge This half contains thirty two queries regarding the causes of pathology, however will someone acknowledge a cardiac arrest and practical steps of cardiac resuscitation.

3.5.5 Checklists
Include an observational checklist to assess health care provider's performance regarding cardiopulmonary resuscitation in CCUs in governmental hospitals in Gaza strip. It was developed that based on a checklist from BLS providers. The course of the AHA and rated by done /not done list. The checklist contains (steps number, Critical performance criteria, done, not done the observation was done by using me, can the participants in front me do the steps and I check done in the list if the steps are done correctly or not, if not done in the proper way the checklist contains: assessment of collapse victims: this contains 6 steps: (safety approach, check up a response, check up a pulse, check for breathing, time used to assess victim, call for the emergency team). Give high-quality chest compressions in 5 steps (hand placement, rate of compression 30 push/ 18 seconds, chest recoil, depth of compression 2 inches, Interruptions reduce give 2 breaths with the pocket in less than 10seconds.

3.6 Study period
Study was conducted in time from 01.05-2021 to 30.08-2021.

3.7 Validity of Questionnaire
Copied of the questionnaire were given to (10 experts) at the Islamic University of Gaza (IUG) and MOH have excellent records in health care research, that evaluated the instrument and content validity. Research experts review the instrument and determine whether the items in the questionnaire are relevant and suitable to study purposes, the questionnaire was modified according to experts' suggestions, the provided comments and suggestions all were considered and included the questions.

3.8 Reliability
Cronbach's Alpha test Statistical Package for Social Sciences program (SPSS) was utilized to define the accuracy of a questionnaire. Researchers utilize pilot study test-retest reliability. The study was distributed questioners to a small group of people and after two weeks, the same test was distributed to the same group of people.

3.8.1 Cronbach's Alpha
The researcher assured the accuracy of study questionnaire during Coefficient of Alpha.

Table 3.1 shows values of Coefficient of Alpha to each questionnaire domain of participants also table illustrated the reliability of domains; values of Cronbach's Alpha were in range from 0.837 and 0.853, which shows a good reliability of the entire questionnaire.

Table 3.2: Reliability of the research for each domain of the questionnaire.

No.	*Domains*	*No. of item*	*Cronbach's Alpha*
1.	*Knowledge*	***32***	*0.837*
2.	*Quality*	*31*	*0.853*

3.8.2 Split Half
Researcher calculated the correlation among overall immeasurable odd parameters and therefore the total immeasurable even parameters, correlation price was (R=0.7), then the scientist used the Guttman split-half constant equation.

3.9.3 Pilot study
A pilot study was carried out on 20% (20) of the subject. It was done to the test to emphasize the clearness and practicality of the tools. Results of the information were obtained from the pilot study which helps in the modification of tools; items were corrected or add as needed. A modification was done and the eventual form was developed. The sample and results from the pilot study doesn't include the main statistical sample.

3.10 Ethical and administrative considerations
To complete analysis, the scientist committed to all or any moral issues. An agreement was obtained from the college of the IUG, and official approval was obtained from general directorates of human resources development of MOH in GS so as that permits the distribution of questionnaires to nurses and doctors (see Annex 7). Collected information from, (ER, CCU, ICU) department, the consent was connected to the 151 questionnaires; respondents were assured that the information solely be used for research purposes, and confidentiality was maintained. Moreover, participants can have right to reject or withdraw from the study participation at any time.

3.11 Statistical analysis

The researcher was used (SPSS) to analyze data. The questionnaire was unloaded and analyzed through the SPSS version 23; the following statistical tools were utilized:

1. Mean and SD.
2. Cronbach's Alpha test.
3. Pearson coefficient of correlation
4. Independent T-test.
5. ANOVA.
6. Post Hoc Test.

3.12 Limitations of the study

Researcher was faced with a lot of limitations during this study period with include difficulty on fined to make the observational checklist, some include criteria participants refused to include in the research, the researcher also doesn‘t receive any financial support from anywhere, Lack of resources in standards of quality of care, Transportation obstacles during the distribution of questionnaires to the hospital due to covid19 situation in GS, and Electricity interruptions.

3.13 Time table of the study

Study was conducted from May to August 2021, was started by ready a groundwork proposal, then get the agreement from university to begin study, agreement from MOH and Helsinki Committee to started information collection in May, designing the information collection tools, conducted the study, information collected, then data analyzed and writing.

4. RESULTS AND DISCUSSION

4.1 Sample distribution according to socio-demographic

Current study is a cross-sectional study that included 151 subjects. The socio-demographic characteristics that were studied included age (years), sex, profession, place of work, department, experience, education level, have certificate about CPR, have special course CPR, last course (BLS, ILS, ALS).

4.1.1 Distribution of the study population according to their gender

Figure 4.1 pointed out the about two-thirds of the study population in the study population were males (66.2%) while 33.8% were females.

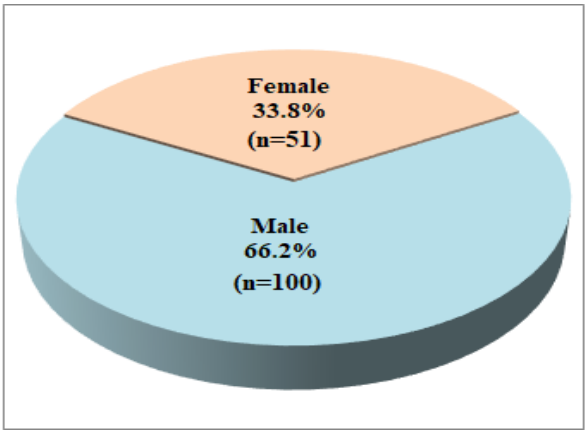

Figure (4.1): Distribution of study population according to their gender.

4.1.2 Distribution of the study population according to their age

Figure4.2 illustrated that the highest age groups of the participants were aged less than 30 years (61.6%) followed by 27.8% of them aged between 31-40 years and only 10.6% of them were aged more than 40 years.

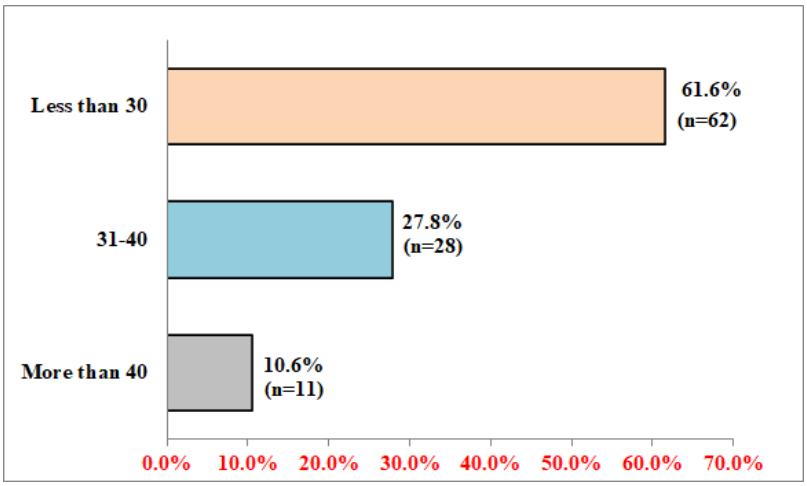

Figure 4.2: Distribution of the study population according to their age.

These result findings were similar to a study, Al-Ftlawi (2011), Hamza, (2012) which the results socio-demographic characteristics.

Also, these results differed from the study, Ayala et al (2013) that show that the results showed they the study population consistent with their gender was principally feminine (94.6%), had a mean age variance of 42.7 (7.9) years, were principally married (60.2%), and had kids (69.9%). associated with work, principally were nurses

(58.1%), were irremovable (92.5%), and had worked over five years in their current department (65.6%) (Ayala et al., 2013). With reference to the main of study, the peoples were nurses (60.3%) whereas 39.7% of them were physicians.

4.1.3 Distribution of the study population according to academic qualification

The distributions of the study population according to academic qualification showed that the highest group of the study population was finished the bachelor's degree (76.2%) while 13.3% of them have finished the master's degree and 7.6 % of them have finished the diploma nursing program. The results illustrated that only 2.6 of them have finished the board of PhD (Figure 4.3).

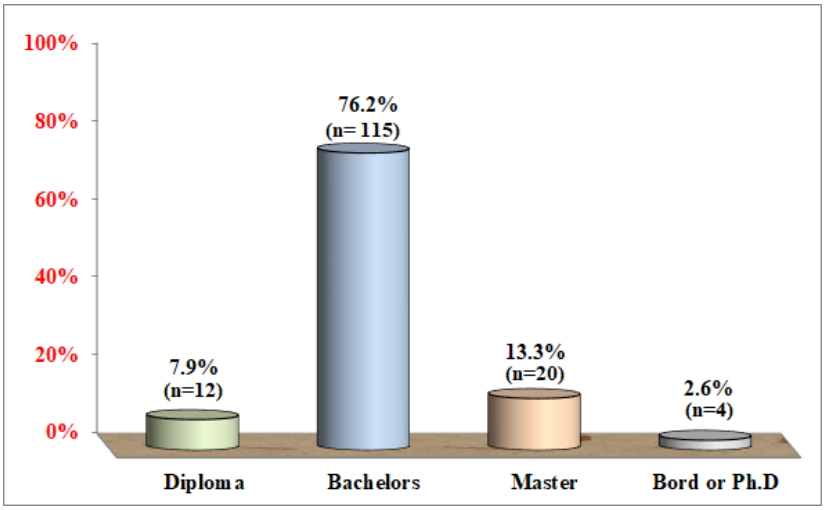

Figure (4.3): Distribution of study population according to education levels.

4.1.4 Distribution of the study population according to their socio-demographic information

Table 4.1 illustrated that the majority of study population were nurses (60.3%) while 39.7% of them were physicians. The distributions of the study population according to hospitals showed that 25.8% of participants work in Al-Shifa Medical Complex, 23.1% of participants work in Nasser Medical Complex, 19.9% of participants work in European Gaza Hospital, 16.6% of their work in Al Aqsa Hospital and the lowest group was worked in Indonesian Hospital (14.6%). The results show that 41.1% of the study population works in ICU department while 24.5% of them have worked in the CCU department and 34.4% of the ER department. The results showed that most of the study populations have experience 5 years or less (68.2%) while 19.2% of them have experience from 6 to 9 years and 12.6% of they have experience 10 years or more. Regarding certificates about CPR, the results showed that the majority of them taken CRP certificates (85.4%) and 76.7% of them have CRP special courses. Additionally, the results showed that the highest groups of the participants have been last course (BLS, ILS, ALS) within less than 1 year (48.3%) followed by 31.2% of the participants have been last course (BLS, ILS, ALS) within 1 to 2 years and 20.5% have been last course (BLS, ILS, ALS) more than 2 years.

Table 4.1: Distribution of the study population according to their socio-demographic information.

Variables		Frequency (n)	Percentage (%)
Sex	Male	100	66.2
	Female	51	38.8
Age (years)	Less than 30	93	61.6
	31-40	42	27.8
	More than 40	16	10.6
Education	Diploma	12	7.9
	Bachelors	115	76.2
	Master	20	13.2
	PhD.	4	2.6
3. Profession	Physician	60	39.7%
	Nurse	91	60.3%
4.Work of place	Al Shifa Medical complex	39	25.8%

	Nasser Medical Complex	35	23.1%
	European Gaza hospital	30	19.9%
	Al-Aqsa hospital	25	16.6%
	Indonesian hospital	22	14.6%
5. Department	ICU	62	41.1%
	CCU	37	24.5%
	ER	52	34.4%
6. Experience	5 years or less	103	68.2%
	6-9 years	29	19.2%
	10 years or more	19	12.6%
8. Do you have a certificate in CPR?	Yes	129	85.4%
	No	22	14.6%
9. If yes, do you have special course? n=129	Yes	99	76.7%
	No	30	23.3%
10. Last course (BLS, ILS, ALS) within?	Less than 1 years	73	48.3%
	1- 2 years	47	31.2%
	More than 2 years	31	20.5%
Total		**151**	**100%**

n: number of subjects; **ICU**: intensive care unit; **CCU**: Cardiac Care Unit & **ER**: emergency room.

4.2 Scores of items measuring knowledge

The distribution of the participants according to their knowledge scale is ranked and pointed out in Table 4.2. According to results, the highest question is the correct answer about knowledge was the number (27) "In the absence of equipment of ventilation what shall you do?" with a percentage of 94.7%, followed by the question number (17) "During the automated external defibrillation analyses rhythm?" with percentage 92.7%. While the lowest question was the number (6) "After the airway is opened, which of the following correctly states the proper technique for delivering mouth-to-mouth ventilation?" with a percentage of 7.9% followed by the question number (32) "Stop chest compression for?" with percentage 4.0%.

Table (4.2): Scores of question s measuring knowledge.

Items	Correct		Incorrect		Rank
	N	%	n	%	
A. Chest compression					
1. Where should the hands be placed to perform chest compressions on an adult?	80	53.0	71	47.0	22
2. The depth of compressions for an adult victim should be at least?	126	83.4	25	16.6	12
3. Why is it important to compress to the appropriate depth during CPR?	97	64.2	54	35.8	17
4. The recommended rate for performing chest compressions for victims of all ages is?	102	67.5	49	32.5	15
5. Stop chest compression for?	6	4.0	146	96	32
B. Airway					
6. After the airway is opened, which of the following correctly states the proper technique for delivering mouth-to-mouth ventilation?	12	7.9	139	92.1	31
7. If a victim of foreign body airway obstruction becomes unresponsive, the rescuer should send someone to activate the emergency response system and immediately?	33	21.9	118	78.1	30
8. What is the best technique of open client's airway if the case non – traumatic?	83	55.0	68	45.0	21
C. Bag-mask Ventilation					
9. Which of the following ventilation devices/techniques is not recommended for a single rescuer to provide breaths during CPR?	67	44.4	84	55.6	26
10. Which of the following options lists the correct compression and ventilation rates for 2-rescuer CPR in the presence of an advanced airway?	71	47.0	80	53.0	25
11. Inspiratory time during valve mask ventilation?	87	57.6	64	42.4	19
D. Cardiac monitoring					
12. Have you ever deal with a patient suffering from cardiac arrhythmia?	140	92.7	11	7.3	2

13. Would you like to know about untraditional methods to treat a conscious patient with symptomatic cardiac arrhythmia?	130	86.1	21	13.9	10
E. Defibrillation					
14. As soon as an AED becomes available, which of the following is the first step the rescuer should perform to operate the AED?	51	33.8	100	66.2	27
15. After the AED delivers a shock, the rescuer should?	76	50.3	75	49.7	23
16. When applying adhesive pads of defibrillation on the victim's chest what shall you do with it?	87	57.6	64	42.4	19
17. During the automated external defibrillation analyses rhythm?	140	92.7	11	7.3	2
18. Do you know the type of rhythms that needed to D/S shock when the cardiac arrest happened?	138	91.4	13	8.6	5
19. If yes mention one of them.	131	86.8	20	13.2	9
F. Knowledge about CPR among HCP at ICU, ER, CCU.					
20. The first action to do on a collapsed victim?	129	85.4	22	14.6	11
21. Which of the following victims need CPR?	132	87.4	19	12.6	8
22. After you identify an unresponsive victim with no breathing (or no normal breathing) and no pulse, chest compressions should be initiated within?	92	60.9	59	39.1	18
23. Assessment of a collapsed victim must be done within five to ten seconds?	139	92.1	12	7.9	4
24. What shall you do if the victim did not respond at the first action?	75	49.7	76	50.3	24
25. What is the first action to be done when cardiac arrest occurs in critical care unites the first steps?	34	22.5	117	77.5	29
26. What are the complications of CPR performance?	133	88.1	18	11.9	7
27. In the absence of equipment of ventilation what shall you do?	143	94.7	8	5.3	1
28. Are you willing to increase the knowledge of health care providers about the right to deliver cough CPR?	137	90.7	14	9.3	6
G. Advanced airway					
29. When should the rescuer initially ensure that the scene is safe?	100	66.2	51	33.8	16
30. What to do to check the response on a collapsed victim?	50	33.1	101	66.9	28
31. In 2-rescuer CPR, while the first rescuer begins chest compressions, the second rescuer should?	107	70.9	44	29.1	14
H. CPR sequence					
32. The AHA Guidelines for CPR and ECC recommend that to identify cardiac arrest in an unresponsive victim with no breathing (or no normal breathing), a healthcare provider should check a pulse for no more than?	125	82.8	26	17.2	13

4.3 Scores of the knowledge score domains of CPR among health care providers in CCU

The distribution of scores of the knowledge score domains of CPR among health care providers in CCU is ranked and illustrated in Table 4.3. According to results, the highest domain was number (D) " Cardiac monitoring " with a percentage of 89.50%, followed by the domain number (H) "CPR sequence " with a percentage of 83.0%, While the lowest domain was a number (B) "Airway" with a percentage of 28.33% followed by the domain the number (C) "Bag-mask Ventilation" with a percentage of 49.67%.

Table (4.3): Scores of the knowledge score domains of CPR among health care providers in CCU at governmental hospitals in Gaza Strip.

Domains	Max Score	Mean	SD	%	Rank
A. Chest compression	5	2.72	1.08	54.40	6
B. Airway	3	0.85	0.75	28.33	8
C. Bag-mask Ventilation	3	1.49	0.98	49.67	7
D. Cardiac monitoring	2	1.79	0.44	89.50	1
E. Defibrillation	6	4.13	1.26	68.83	4
F. Knowledge about CPR	9	6.72	1.44	74.67	3
G. Advanced airway	3	1.70	0.86	56.67	5
H. CPR sequence	1	0.83	0.38	83.00	2
Total	**32**	**20.22**	**4.35**	**63.19**	

n: number of the subjects & **Max:** maximum

4.4 Distribution of the study population according to their responses about knowledge

Table 4.4 illustrated the distribution of the study population according to knowledge. This table showed that only 11.3% of the participants have a high knowledge level while 41.7% of them have moderate levels of knowledge and 47.0% of them have a low level of knowledge. Finally, the average (SD) of knowledge levels was 63.18 (13.59). This indicated the total knowledge level is lower borderline moderate levels.

Table (4.4): Distribution of the study population according to their level of knowledge.

Variable and level	n (%)	Mean[£] (SD)	Min	Max
Knowledge levels		63.18 (13.59)	28.13	90.63
High	17 (11.3)			
Moderate	63 (41.7)			
Low	71 (47.0)			

n: number of subjects; **SD**: standard deviation; **Min**: minimum; **Max**: maximum; [£]Maximum score of mean = **100 %**; **High**= equal 80% or more; Moderate = 60-79.9%; **Low** = less than 60%.

These results differed from the study, Lakshmi et al (2018) which ends up showed CPR skills of the nurses were lack through pre-test and nobody may pass the necessary skills, checking the scene safety, checking the heartbeat, activating the emergency response system, giving high-quality CPR, making certain adequate pressure rate, in operation the AED, used bag valve mask and administering D/S to the a systole patients (Lakshmi et al., 2018).

This consequence of the present study was kind of like some studies, Saud, et.al (2020). The results showed that the study reveals that the bulk of nurses had lack of information regarding emergency procedure. A significant association among nurse's academic certification and knowledge at p-value 0.05, also no significant association among nurse's knowledge and gender, age group, work experience, and formal training. The researcher concluded that the majority of the study samples are female, Most of the study samples have to lack knowledge about CPR at the total mean (0.44) (Saud et al., 2020). The average (SD) of knowledge levels was 63.18 (13.59). This indicated the total knowledge level is lower borderline moderate levels. It's important to increase knowledge and training to all health care providers about CPR to determine the performance of quality for CPR training health care providers (HCP), CPR and improve the knowledge to persons about the Quality of CPR provided for critical care in ICUs, ER, and CCU. High-Quality CPR relies on more than just compression rate, adequate compression rate depth and fraction are all critically important for secures observation of emergency procedure quality through resuscitation efforts quality of CPR is a high priority for resuscitation research going forward, as good outcomes in cardiac arrest. To improve the quality of work and saving patients and focusing on weaknesses and improving them to increase the efficiency and skills of the individual from a knowledge and practical point of view (HCPs).

4.5 Mean difference of knowledge about CPR among health care providers in CCU related to the gender

Table (4.5) showed the mean difference in knowledge about CPR among health care providers in CCU related to gender. The results showed the average knowledge among males was higher statistically significant than females (65.88% vs. 57.90%, respectively, P = 0.001).

Table (4.5): mean difference in CPR among health care providers in CCU related to the gender.

Domains	Gender	N	% Mean	SD	T	P-value
Knowledge levels (%)	Male	100	65.88	12.96	3.538	0.001*
	Female	51	57.90	13.35		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **SD:** standard deviation & **t:** independent t-test.

4.6 Mean difference of knowledge about CPR among health care providers in CCU related to the profession

Mean difference of knowledge about CPR among health care providers in CCU related to profession illustrated in Table (4.6). The results showed the average knowledge among physicians was higher statistically significant than nurses (66.72% vs. 60.85%, respectively, P = 0.009).

Table (4.6): mean difference of knowledge about CPR among health care providers in CCU related to the profession.

Domains	Profession	N	% Mean	SD	t	P-value
Knowledge levels	Physician	60	66.72	13.48	2.648	0.009*
	Nurse	91	60.85	13.22		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **SD:** standard deviation & **t:** independent t-test.

These consequences of the existing study were similar to the study; Al-Janabi et al (2014) results showed of the study exposes that the major of nurses had a lack knowledge related to CA and CPR. There was a non-significant association between the nurses' data toward CPR procedure, their gender and age bracket. Results of study indicate that there was a big association between their educational qualification and therefore the overall nurses' data of CPR. Additionally to, there's no relationship among nurses' data of CPR procedure and dealing expertise, space of Assignment, Formal coaching, and CPR Performance on a client, Important of study that the main of nurses had lack data regarding CA and CPR (Al-Janabi et al., 2014).

4.7 Mean difference of knowledge about CPR among health care providers in CCU related to their age groups

The mean difference of knowledge about CPR among health care providers in CCU related to age groups is pointed out in table 4.7. The one-way ANOVA test showed there is a statistically significant variation among means of knowledge about CPR among the age groups of health care providers in CCU (P = 0.002).

Table (4.7): Mean difference of knowledge about CPR among health care providers in CCU related to their age groups.

Domains	Age (years)	N	Mean	SD	F	P-value
Knowledge levels	Less than 30	93	65.29	13.33	6.716	0.002
	30-40	42	62.65	12.78		
	More than 40	16	52.34	12.47		
	Total	151	63.18	13.59		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **SD:** standard deviation & **F**: one-way ANOVA.

Table (4.8): Post Hoc test of mean difference of practices domains related to their age groups.

Dependent Variable		Mean Difference (I-J)	Std. Error	P-value	95% Confidence Interval	
					Lower Bound	Upper Bound
Less than 30	31-40	2.64	2.43	0.280	-2.17	7.45
	More than 40	12.95	3.54	0.000*	5.94	19.95
30-40	Less than 30	-2.64	2.43	0.280	-7.45	2.17
	More than 40	10.31	3.85	0.008*	2.70	17.91
More than 40	Less than 30	-12.95	3.54	0.000*	-19.95	-5.94
	30-40	-10.31	3.85	0.008*	-17.91	-2.70
*. The mean difference is significant at the 0.05 level.						

Table 4.8 showed that Post Hoc between age groups, the test showed that the average of knowledge among age groups less than 30 years is higher statistically significant than more than 40 years group (65.29 vs. 52.34%; P < 0.05%) while no statistically significant 30-40 years group (65.29 vs. 62.65%; P > 0.05%). By same away, the group of 31-40 years is higher statistically significant than more than 40 years group (62.65 vs. 52.34%; P < 0.05%) while no statistical significant compared to age group less than 30 years (65.29 vs. 62.65%; P > 0.05%). The Post Hoc test showed it is statistically significantly different in the average of knowledge of age group more than 40 years is lower statistically significant compared to less than 30 years (52.43 vs. 65.29%; P < 0.05%).and 31-40 years (52.43 vs. 62.65%; P < 0.05%).

These findings were similar to a study, Saramma et al (2016) Showed of study results, the bulk of 206 nurses ninety-three cardiopulmonary resuscitation certified and 113 noncertified were females. The study shows that there was a big significant statistical rising in mean data level and overall performance before and when the formal certified cardiopulmonary resuscitation educational program (P = 0.000). They found that the mean data scores were equivalent among the cardiopulmonary resuscitation certified and noncertified nurses, the certified nurses scored the next mean score (P = 0.140). The researcher's Formal certified cardiopulmonary resuscitation educational program raises cardiopulmonary resuscitation knowledge and talent. While vital semi-permanent impact couldn't be found. There's a requirement for normal perennial recertification's (Saramma et al., 2016).

4.8 Mean difference of knowledge about CPR among health care providers in CCU related to their department

Table 4.9 illustrated the mean difference in knowledge about CPR among health care providers in CCU related to the department. The one-way ANOVA test showed there is no statistically significant difference between means of knowledge about CPR among ICU, CCU, and ER department of health care providers in CCU (P > 0.05).

Table (4.9): Mean difference of knowledge about CPR among health care providers in CCU related to their department.

Domains	Department	N	% Mean	SD	F	P-value
Knowledge levels	ICU	62	62.45	12.60	2.706	0.070
	CCU	37	59.88	12.18		
	ER	52	66.41	15.14		
	Total	151	63.18	13.59		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **ICU**: intensive care unit; **CCU**: Cardiac Care Unit & **ER**: emergency room**; SD:** standard deviation & **F**: one-way ANOVA.

4.9 Mean difference of knowledge about CPR among health care providers in CCU related to their experience

Table 4.10 detected the mean difference of knowledge about CPR among health care providers in CCU related to experience. The one-way ANOVA test showed there is no statistically significant difference between means of knowledge about CPR among experience groups of health care providers in CCU (P > 0.05).

Table (4.10): Mean difference of knowledge about CPR among health care providers in CCU related to their experience.

Domains	Experience	N	% Mean	SD	F	P-value
Knowledge levels	1-5 years	103	63.29	13.73	0.114	0.892
	6-9 years	29	63.69	15.00		
	More than10 years	19	61.84	10.85		
	Total	151	63.18	13.59		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **SD:** standard deviation & **F**: one-way ANOVA.

4.10 The mean difference of knowledge about CPR among health care providers in CCU related to their education levels

Table 4.11 detected the mean difference of knowledge about CPR among health care providers in CCU related to education levels. The one-way ANOVA test showed there is no statistically significant difference between means of knowledge about CPR among education levels of health care providers in CCU (P > 0.05).

Table (4.11): Mean difference of knowledge about CPR among health care providers in CCU related to their education levels.

Domains	Education levels	N	% Mean	SD	F	P-value
Knowledge levels	Diploma	12	62.50	9.14	0.765	0.515
	Bachelors	115	63.89	13.19		
	Master	20	59.06	15.67		
	PhD	4	65.63	24.87		
	Total	151	63.18	13.59		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **SD:** standard deviation & **F**: one-way ANOVA.

4.11 The mean difference of knowledge about CPR among health care providers in CCU related to their work of place

The mean difference of knowledge about CPR among health care providers in CCU related to work of place is summarized in Table 4.12. The one-way ANOVA test showed there is no statistically significant difference between means of knowledge about CPR among place work of health care providers in CCU (P > 0.05).

Table (4.12): Mean difference of knowledge about CPR among health care providers in CCU related to their work of place.

Domains	Work of place	N	Mean	SD	F	P-value
Knowledge levels	Al Shifa Medical complex	39	63.94	14.28	2.147	0.078
	Nasser Medical Complex	35	60	15.58		
	European Gaza hospital	30	59.9	14.22		
	Al-Aqsa hospital	25	65.38	9.11		
	Indonesian hospital	22	68.89	10.45		
	Total	151	63.18	13.59		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **SD:** standard deviation & **F**: one-way ANOVA.

4.12 Mean difference of knowledge about CPR among health care providers in CCU related to have certificate about CPR

Mean difference of knowledge about CPR among health care providers in CCU related to have certificate about CPR illustrated in Table (4.13). The independent t-test showed that there is no statistically significant among who have certificate about CPR and who haven't (P > 0.05).

Table (4.13): Mean difference of knowledge about CPR among health care providers in CCU related to have certificate about CPR.

Domains	Have Certificate about CPR	N	% Mean	SD	t	P-value
Knowledge levels	Yes	129	63.66	13.62	1.051	0.295
	No	22	60.37	13.38		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **SD:** standard deviation & **t:** independent t-test.

4.13 Mean difference of knowledge of about CPR among health care providers in CCU related to having a special course about CPR

The Mean difference of knowledge about CPR among health care providers in CCU related to having a special course about CPR is pointed out in Table (4.14). The independent t-test showed the average of knowledge among those who have a special course about CPR was higher statistically significant than those who haven't (66.32% vs. 54.90 %, respectively, P < 0.001).

Table (4.14): Mean difference of knowledge about CPR among health care providers in CCU related to having a certificate about CPR.

Domains	Have special course about CPR	N	% Mean	SD	t	P-value
Knowledge levels	Yes	99	66.32	13.43	4.291	< 0.001*
	No	30	54.90	10.27		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **SD:** standard deviation & **t:** independent t-test.

4.14 The mean difference of knowledge about CPR among health care providers in CCU related to the duration of last course (BLS, ILS, ALS)

Table 4.15 detected the mean difference of knowledge about CPR among health care providers in CCU related to the duration of the last course (BLS, ILS, ALS). The one-way ANOVA test showed there is no statistically significant variation between means of knowledge about CPR related to duration of last course (BLS, ILS, ALS) groups among health care providers in CCU (P > 0.05).

Table (4.15): Mean difference of knowledge about CPR among health care providers in CCU related to their duration last course (BLS, ILS, ALS).

Domains	Last course (BLS, ILS, ALS) within	N	Mean	SD	F	P-value
Knowledge levels	Less than 1 years	73	63.10	14.94	1.001	0.370
	1- 2 years	47	65.03	11.67		
	More than 2 years	31	60.58	12.90		
	Total	151	63.18	13.59		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **SD:** standard deviation & **F**: one-way ANOVA.

4.15 Assessment of the quality of cardiopulmonary resuscitation (CPR) among health care providers in critical care units

The present study is a cross-sectional study that included 265 subjects groups, the socio-demographic characteristics that were studied included work of place & department. The distributions of the study population according to hospitals showed that 43.4% of participants work in Al-Shifa Medical Complex, 20.8% of participants work in Nasser Medical Complex, 15.1% of participants work in European Gaza Hospital, 11.3%of them work in Indonesian Hospital and the lowest group was worked in Al Aqsa Hospital (9.4%). The results showed that 35.1% of the study population works in the ICU department while 18.9% of them have worked in the CCU department and 46.0% of ER department (Figure 4.4).

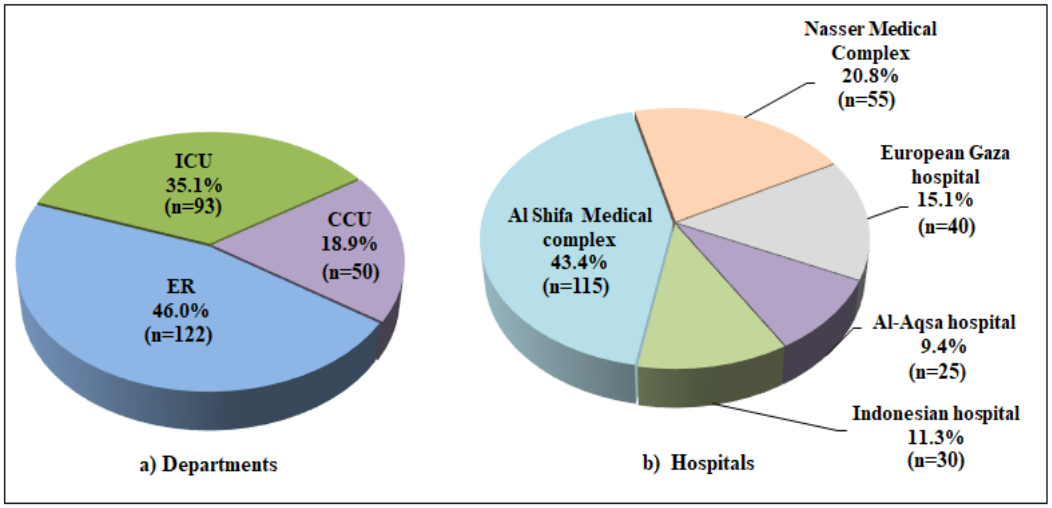

Figure (4.4): Distribution of study population according to their department and hospital.

4.16 The quality score of CPR among health care providers in CCU

The distribution of the quality score of CPR among health care providers in CCU is ranked and pointed out in Table 4.16. The results, the highest paragraph was the number (F2) " Provide IV access (peripheral, central, intra-osseous, and cut down)" with a percentage of 91.7%, followed by the paragraph number (D1) " Initiate cardiac monitoring immediately " with percentage 90.9%. While the lowest paragraph was the number (I1) " Stick to the proper sequence of the AHA 2020 Algorithms " with a percentage of 0.4% followed by the paragraph number (A3 & A5) " Allow complete chest recoil after each compression & Change compressor after 2 minutes with minimum delay, respectively" with percentage 42.3%.

Table (4.16): The quality score of CPR among health care providers in CCU

	Done		Not done		Rank
	N	%	n	%	
A. Chest compression:					
A1. Put hands on the lower third of the sternum in the midline.	188	70.9	77	29.1	18
A2. Compression depth at least 2 inches for adults.	179	67.5	86	32.5	21
A3. Allow complete chest recoil after each compression.	112	42.3	153	57.7	29
A4. Compression rate 100-120/minute.	140	52.8	125	47.2	27
A5. Change compressor after 2 minutes with minimum delay.	112	42.3	153	57.7	29
B. Airway					
B1. Open airway properly	201	75.8	64	24.2	16
C. Bag-mask Ventilation					
C1. Proper mask seal	168	63.4	97	36.6	22
C2. Proper mask holding by the rescuer	161	60.8	104	39.2	23
C3. Keep compression-ventilation ratio at 30:2	202	76.2	63	23.8	15
C4. Insert oral airway	145	54.7	120	45.3	26
C5. Deliver each breath in one second	194	73.2	71	26.8	17
D. Cardiac monitoring					
D1. Initiate cardiac monitoring immediately	241	90.9	24	9.1	2
D2. Proper diagnosis of cardiac rhythm.	232	87.5	33	12.5	5
D3. Proper pulse check in 10 seconds	204	77.0	61	23.0	14
E. Defibrillation					
E1. Set shock energy properly.	214	80.8	51	19.2	12
E2. Put paddles in a proper position.	216	81.5	49	18.5	11
E3. Insert sufficient pressure on paddles.	181	68.3	84	31.7	20
E4. Warn the CPR team to be clear of the patient before shock delivery.	224	84.5	41	15.5	9
E5. Continue the massage immediately after shock delivery.	213	80.4	52	19.6	13
F. IV drug delivery					
F1. Deliver drugs at a proper time based on the cardiac rhythm.	234	88.3	31	11.7	4
F2. Provide IV access (peripheral, central, intra-osseous, and cut	243	91.7	22	8.3	1

	Done		Not done		Rank
	N	%	n	%	
down)					
G. Medications					
G1. Choose drugs based on correct indications.	224	84.5	41	15.5	9
G2. Proper drug dosage.	153	57.7	112	42.3	25
H. Advanced airway					
H1. Provide advanced airway.	226	85.3%	39	14.7%	7
H2. Minimum delay in cardiac massage when inserting the airway.	186	70.2%	79	29.8%	19
H3. Correctly confirm the location of the airway.	227	85.7%	38	14.3%	6
H4. Proper ventilation rate and volume.	226	85.3%	39	14.7%	7
H5. Use 100% oxygen.	236	89.1%	29	10.9%	3
I. CPR sequence					
I1. Stick to the proper sequence of the AHA 2020 Algorithms.	1	0.4%	264	99.6%	31
K. Reversible Causes					
K1. Consider reversible causes.	156	58.9%	109	41.1%	24
K2. Use proper interventions to resolve reversible causes.	133	50.2%	132	49.8%	28

n: number of the subjects

4.17 Scores of the quality score domains of CPR among health care providers in CCU

The distribution of scores of the quality score domains of CPR among health care providers in CCU is ranked and illustrated in Table 4.17. According to the results, the highest domain was number (F) "IV drug delivery" with a percentage of 90.0%, followed by the domain number (D) "Cardiac monitoring" with a percentage of 85.0%. While the lowest domain was number (I) "CPR sequence" with a percentage of 1.0% followed by the domain a number (K) "Reversible causes" with a percentage of 54.5%.

Table (4.17): Scores of the quality score domains of CPR among health care providers in CCU.

Domains	Max Score	Mean	SD	%	Rank
A. Chest compression	5	2.76	1.41	55.2	8
B. Airway	1	0.76	0.43	76.0	5
C. Bag-mask Ventilation	5	3.28	1.33	65.6	7
D. Cardiac monitoring	3	2.55	0.68	85.0	2
E. Defibrillation	5	3.95	1.38	79.0	4
F. IV drug delivery	2	1.80	0.49	90.0	1
G. Medications	2	1.42	0.69	71.0	6
H. Advanced airway	5	4.15	1.13	83.0	3
I. CPR sequence	1	0.1	0.06	10.0	10
K. Reversible Causes	2	1.09	0.93	54.5	9
Total	31	21.78	3.95	70.3	

n: number of the subjects & **Max:** maximum

4.18 Distribution of the study population according to scores of the quality score domains of CPR among health care providers in CCU

Table 4.18 illustrated the distribution of the study population according to Scores of the quality score domains of CPR among health care providers in CCU. This table shows that only 21.5% of the participants have a high-quality level while 62.6% of them have moderate levels of quality and 15.8% of them have a low level of quality. Finally, the average (SD) of quality levels was 70.24 (12.74).

Table (4.18): Distribution of the study population according to their level of quality.

Variable and level	n (%)	Mean[£] (SD)	Min	Max
Quality ness levels		70.24 (12.74)	0.00	93.55
High	57 (21.5)			
Moderate	166 (62.6)			
Low	42 (15.8)			

n: number of subjects; **SD**: standard deviation; **Min**: minimum; **Max**: maximum; [£]Maximum score of mean = **100%** ; **High**= equal 80% or more; Moderate = 60-79.9%; **Low** = less than 60%.

4.19 The mean difference of quality level about CPR among health care providers in CCU related to their work of place

The mean difference of quality levels about CPR among health care providers in CCU related to work of place is summarized in Table 4.19. The one-way ANOVA test showed there is no statistically significant difference between means of quality level about CPR among place work of health care providers in CCU (P > 0.05).

Table (4.19): Mean difference of quality level about CPR among health care providers in CCU related to their work of place.

Domains	Work of place	N	Mean	SD	F	P-value
Quality levels	Al Shifa Medical complex	115	69.73	12.71	1.520	0.197
	Nasser Medical Complex	55	69.97	14.40		
	European Gaza hospital	40	70.97	13.63		
	Al-Aqsa hospital	25	66.84	8.41		
	Indonesian hospital	30	74.84	10.66		
	Total	265	70.27	12.74		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **SD:** standard deviation & **F**: one-way ANOVA.

4.20 Mean difference of quality level about CPR among health care providers in CCU related to their department

Table 4.20 illustrated the mean difference of quality level about CPR among health care providers in CCU related to the department. The one-way ANOVA test shows there is no statistically significant difference among means of quality level about CPR between ICU, CCU, and ER department of health care providers in CCU (P > 0.05).

Table (4.20): Mean difference of quality level about CPR among health care providers in CCU related to their department.

Domains	Department	N	% Mean	SD	F	P-value
Quality levels	ICU	93	71.25	13.67	0.849	0.429
	CCU	50	71.16	11.24		
	ER	122	69.17	12.59		
	Total	265	70.27	12.74		

*P≤0.05: Significant, P>0.05: Not significant; **n**: number of the subjects; **ICU**: intensive care unit; **CCU**: Cardiac Care Unit & **ER**: emergency room**; SD:** standard deviation & **F**: one-way ANOVA.

According to the European resuscitation council guideline (AHA, 2020) high-quality CPR performance, Rates of compression 100-120/min, chest compression fraction >80%, compression depth of a minimum of two inches in adults, and a minimum of 1/3 the AP dimension of the chest in infants and youngsters, No excessive ventilation (AHA, 2020). (AHA, 2020) The elements of high-quality CPR, 5 main elements of superior emergency procedure are chest compression fraction, rate of chest compression, chest compression depth, chest recoil, and ventilation.

Components were specified because of their attributable to blood flow and outcome (AHA, 2020) per minute, based on moderate-quality evidence (AHA, 2020). The AHA Guidelines recommended rate of compression between 100-120 compressions /min for manual CPR adult clients' compression that is too slow doesn't create enough perfusion pressure too fast, and the heart doesn't have time to refill with blood (AHA, 2020). During cardiac arrest, the most appropriate initial compression since blood hasn't been pumping, it's crucial to get the blood flowing to vital organs. AHA Guidelines suggested Ratio to the current that compression and ventilation be provided continuous chest compression with a ventilation every 6 seconds advanced airway placement for asynchronous ventilation during continuous chest compression, but you want to make sure you don't get caught up in the moment and hyperventilate. Pulse checks should be performed during Resuscitation when physical signs of life are noted. Stop with the random pulse checks, already random or prolonged pulse to brain and other vital organs.

AHA Guidelines recommended striving for a compression depth between (2-2.4) inches. High-Quality CPR relies on more than just compression rate, adequate compression rate depth and fraction are all critically important. After the return of spontaneous circulation, Assessments would be most appropriate to performed as soon as possible 12 lead ECG. Don't forget about your possible causes of cardiac arrests, like a coronary thrombus, check 12 lead and alert the receiving hospital of any ECG abnormalities like ST elevation. Performing chest compression should switch roles at least every 2 minutes. Tendency on the chest during CPR impacts full chest position recoil. Through CPR, getting full chest wall recoil is as important as giving great compression. During recoil, the heart refills so more blood can be pushed out of the heart on the next compression. Leaning on the chest limits the heart's ability to refill, making your subsequent compression less effective. The average

survival rates for adult client out-of-hospital cardiac arrest is 7% approximately (AHA, 2020). The mean difference of quality level about CPR among health care providers in CCU related to the department. The one-way ANOVA test shows there is no significant statistical difference through means quality level about CPR between ICU, CCU, and ER department of health care providers in CCU ($P > 0.05$).

These results differed from the study, Govender et al (2014) which ends up in shows of the study indicate that skills detention was excellent and, although there was some fall-off in data and data talent, there's no significant variation among the scores at the top of the course and retest scores. A sample of fifty of the study was representative of those who show the study has incontestable that the new technique of video-based coaching is economical in teaching BLS skills which core BLS data and skills area unit preserved by HCPs 3 months post-course completion. The study has additionally highlighted necessary skills base between nursing employees that have the BLS qualification and skills to initiate emergency procedure, nursing skills should be recognized and used the most effective (Govender et al., 2014).

Abella et al (2006) showed that the primary five minutes of every revivification by 30-second segments unconcealed that rates of chest compression were but 90/min in twenty eight.1% of the phase. Compression depth was too shallow for thirty seven.4% of pressures. Ventilation rates were rising, with 60.9% of the phase incorporates a rate of over 20/min. The mean no-flow fraction was zero.24 (0.18). A 10-second pause every minute of arrest would yield a no-flow fraction of zero.17. The study additionally shows that total of twenty seven purchasers (40.3%) achieved a comeback of spontaneous circulation and seven (10.4%) were discharged from the hospital. This shows the study, in-hospital pathology, the standard of multiple parameters of emergency procedure was discordant and infrequently didn't meet revealed guideline recommendations, performed by well-trained hospital employees. Significance of high- suggests the required for secures observation of emergency procedure quality through resuscitation efforts, (Abella et al., 2006).

The results in Trzeciak, (2006) were founded similar with significant “no flow” periods and rates of chest compression that were very slow and shallow. The study also showed that these studies established the fact that ineffective CPR is commonly delivered. The quality of CPR is an issue of high priority for resuscitation research going forward, as good outcomes in cardiac arrest depend upon it, (Trzeciak, 2006).

5.1 CONCLUSION

The explanation for work is that it deals with necessary topics, wherever the study unconcealed the importance of data and observes of Quality performance of cardiac resuscitation. This chapter will summarize per study together with the conclusion that of findings and credible application of the results. Recommendation over analysis to recommend up this studying that conferred. Study recommends hospitals ought to develop a procedure of handbooks that provide elaborate knowledge concerning all the foremost recent advances, reveal, and observe cardiac resuscitation. The procedure of reference book ought to be submitting annual auditing, and active steps ought to be beginning reform such deficiencies. The interesting findings of this study are that the study showed that only 21.5% of the participants have a high-quality level while 62.6% of them have moderate levels of quality and 15.8% of them have a low level of quality. The average (SD) of quality levels was 70.24 (12.74). This indicated the total quality moderate levels, the study showed that the study population according to knowledge. Regarding showed that only 11.3% of the participants have a high knowledge level while 41.7% of them have moderate levels of knowledge and 47.0% of them have a low level of knowledge, the average (SD) of knowledge levels was 63.18 (13.59), this indicated the total knowledge level is lower borderline moderate levels, the study presented that there is about two-thirds of the study population in study population were males (66.2%) while 33.8% were females, a study population according to academic qualification that showed the highest group of the study population that finished the bachelor's degree (76.2%) the education level most of the bachelor degree, Regarding certificates about CPR, the majority of them have taken CRP certificates (85.4%) and 76.7% of them have CRP special courses. the showed that the highest groups of the participants have been last course (BLS, ILS, ALS) within less than 1 year, the average of knowledge among males was higher statistically significant than females (65.88% vs. 57.90%, respectively, $P = 0.001$), the average of knowledge among physicians was higher statistically significant than nurses (66.72% vs. 60.85%, respectively, $P = 0.009$), the showed it is not statistically significantly variation in the average of knowledge of age group(30-40) years, (age group more than 40 years). ($P > 0.05$), That shows there is no significant statistical variation between means of knowledge about CPR between ICU, CCU, and ER of departments of health care providers in CCU ($P > 0.05$)., shows there is no significant statistical variation between means of knowledge about CPR among experience groups of health care providers in CCU ($P > 0.05$). Also, there is no significant statistical difference between means of knowledge about CPR among education levels of health care providers in CCU ($P > 0.05$). In addition to, there is no significant statistical variation between means of knowledge about CPR among place of work of health care providers in CCU ($P > 0.05$). That showed the average of knowledge among those who have a special course in CPR was higher statistically significant than those who haven’t (66.32% vs. 54.90 %, respectively, $P < 0.001$).

5.2 Recommendation

CRP is a more and more important topic of argumentation for researchers worldwide to recommend suggestions for stakeholders to get better the quality of HCPs (Doctors and Nurses), to provide in (ICU, ER, CCU) in Gaza Strip.

1. The educators, administrators, needed to consider integrating ALS and basic into the curriculum that is necessary to protect the life of clients.
2. Programs training of study CPR in a large sample size to determine performance of quality for CPR training health care providers (HCP), CPR and improve the knowledge.
3. Training study about CPR with a large sample size to determine the critical care unit must be put compulsory important refresh course in CPR of the department (ER, ICU, and CCU). The practice of proper rate and depth and recoil chest can lead to high-quality chest compression because that ensuring on the training course the HCPs reaches the rate and depth.
4. Regard applied CPR guidelines update by hospitals to modify HCPs knowledge about cardiopulmonary resuscitation every year. Regard to activation of teaching students CPR procedures.
5. Administrators at governmental hospitals need to provide further training CPR in critical care based on the recently published guidance.
6. In relevancy CPR follow ought to be performed one year a minimum of, considering that CPR data and skills best than people who were certified in CPR for two years.
7. In relevancy CPR follow ought to be required for all HCPs worked in CCU units.
8. Encouraging the HCP to work and increase scientific research related to improve the quality of work and saving patients and focusing on weaknesses and improving them to increase the efficiency and skills of the individual from a scientific and practical point of view (HCPs).
9. CRP is an essential topic of discussion for researchers worldwide to recommend suggestions for stakeholders to enhance the quality of HCPs (Doctors and Nurses) provided in (ICU, ER, CCU) in Gaza Strip.
10. Suggested recommendations and Guidelines to the stakeholders that could improve Quality of CPR key persons about Quality of CPR provided for critical care in ICUs, ER, and CCU.

List of abbreviations

ACLS	***Advance Cardiac Life Support***
ACS	***Acute Coronary Syndrome***
A&E	***Accidental and Emergency***
ALS	***Advanced Life Support***
AHA	***American Heart Association***
AH	***Al-Aqsa Hospital***
BCLS	***Basic Cardiac Life Support***
BLS	***Basic Life Support***
CA	***Cardiac Arrest***
CCU	***Critical Care Unit***
CPR	***Cardio Pulmonary Resuscitation***
EGH	***European Gaza Hospital***
EH	***El- Emaraty Hospital***
EMS	***Emergency Medical Services***
ER	***Emergency Room***
ERC	***European Resuscitation Council***
GHIGS	***Governmental Hospital In Gaza Strip***
GS	***Gaza Strip***
HCPS	***Health Care Providers***
HNGOs	***Health Non-Governmental Organizations***
ICU	***Intensive Care Unit***
IH	***Indonesian Hospital***
MOH	***Ministry of Health***
NGO	***Non-Governmental Organization***
NPSA	***National Patient Safety Agency***
PCBS	***Palestinian Central Bureau of Statistics***
PHIS	***Palestinian Health Information System***
ROSC	***Return of Spontaneous Circulation***
SCA	***Sudden Cardiac Arrest***
SMC	***Shifa Medical Complex***
SPSS	***Statistical Package of Social Science***
WHO	***World Health Organization***

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