



University Of Shendi

Faculty Of Graduate Studies & Scientific Research

Master Of Nursing Sciences



**Nurses knowledge Regarding Post Cardiac Arrest Care
In Intensive Care Unit Of Omdurman Military Hospital
On {March to September 2017}**

A thesis Submitted In Partial Fulfillment Of The Requirements For Master Degree In
Critical Care Nursing

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الإستهلال

قال الله تعالى :

(اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ ، خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ ،
اقْرَأْ وَرَبُّكَ الْأَكْرَمُ ، الَّذِي عَلَّمَ بِالْقَلَمِ ، عَلَّمَ الْإِنْسَانَ مَا لَمْ
يَعْلَمُ)

سورة العلق

Dedication

To my mother and father who gives me love

My brothers and sisters

My friends who give me support

To everybody who helped me to do the best

Acknowledgement

Firstly and lastly thank you my *god*.

I would like to express my thanks to my university and all members of nursing faculty.

Special thanks to my supervisor: Dr: Mariam Mohamed Elnageeb

Thank you for everybody who helped me.

Abstract

Post resuscitation care is an important phase to prevent recurrent arrest, preserve neurological and cognitive function and reduce mortality and morbidity rate.

This study is a descriptive cross sectional hospital based study was conducted in Omdurman military hospital aimed to assess ICU nurses knowledge regarding post cardiac arrest care .It involved total coverage to Elshellali ICU nurses during study period (n=60). Data were collected by questionnaire designed to study and analyzed by Statistical Packages for Social Sciences (SPSS).

The results showed that more than half (53.3%) of nurses had good knowledge about the definition of cardiac arrest ,and less than two third of nurses (43.3%) had good knowledge regarding causes of cardiac arrest. regarding the aim of administration of sedation and analgesia post resuscitation the study showed that less than two third (40%) of nurses had good knowledge about them. and more than half (55%) of participants had poor knowledge about airway management and ventilation ,also the study showed that the majority (70%) of study group had poor knowledge about the aim of post resuscitation care.

The study concluded that knowledge of intensive care unit nurses staff could be improved by teaching program and the study recommended Conduction of the protocol for the post resuscitation care, Refreshing courses should be recognizing and initiated on regular basic to increase the knowledge of nurses, Basic life support and advance life support certificated should be renewed.

المستخلص

الرعاية بعد الإنعاش هي مرحلة مهمة لمنع تكرار توقف القلب، للمحافظة على الوظائف العصبية والادراكية ولتقليل نسبة الوفيات والإصابه .

أجريت هذه الدراسة الوصفية في المستشفى العسكري في أم درمان حيث أنها تهدف إلى تقييم معرفة ممرضات العناية الحثيثة حول مايتعلق بالرعاية بعد الإنعاش. شملت تغطيه كامله لمرضي العناية الحثيثة بالشلالي خلال فتره الدراسة (حجم العينه =60) جمعت البيانات بالاستبيان المصمم للدراسة وتم تحليلها باستخدام الحزم الإحصائية للعلوم الاجتماعيه.

أوضحت النتائج أن أكثر من نصف الممرضين (53.3%) معرفتهم جيده بتعريف توقف القلب ' و اقل من ثلثي الممرضين (43.3%) معرفتهم جيده فيما يتعلق بأسباب توقف القلب ' فيما يتعلق بالهدف من إعطاء الادويه المهدئه والمخدرة بعد الإنعاش أوضحت الدراسة ان اقل من ثلثي الممرضين (40%) معرفتهم جيده بذلك ' وأكثر من نصف المشاركين (55%) لهم معرفه ضعيفه بمعالجه مجرى الهواء والتنفس .كذلك أوضحت الدراسة أن معظم مجتمع الدراسة (70%) معرفتهم ضعيفه عن الهدف من الرعاية بعد الإنعاش .

خلصت الدراسة إلى أنه يمكن تحسين المعرفة للممرضات في وحدة العناية الحثيثة بتوفير برامج تدريس .وأوصت الدراسة إلى عقد نظام للرعاية بعد الإنعاش وترتيب دورات تنشيطية تبدأ على أساس منتظم لزيادة معرفه الممرضين وتجديد شهادة الكورسات المنقده للحياة .

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Chapter One

1. Introduction

1.1. Background

Cardiac arrest (CA) is often the terminal event following progression and decomposition from a wide range of pathophysiological events (many cardiac arrests in adults happen due to heart attack). It is defined as a sudden stop in effective blood flow due to failure of the heart to contract effectively and stop breathing normally. The successful outcome after cardiac arrest can be conceptualized as a chain of survival; the chain is only as strong as its weakest link. The four links of the chain must be strong. They are: Early recognition and call for help, early cardiopulmonary resuscitation (chest compression and ventilation), early defibrillation, and post-resuscitation care, (1).

Cardiac arrest results in over 300,000 deaths per year in North America alone. However, advances in cardiopulmonary resuscitations and post-cardiac arrest care have improved outcomes in select cohorts of patients. Among these advances are the use of interventions to improve care of patients following cardiac arrest.

There is an increasing rate of return of spontaneous circulation (ROSC) following CA due to improvement of care delivery. Once resuscitated, the next challenges are to manage these patients appropriately so as to not only prevent mortality but preserve neurological and cognitive function. Proper post-resuscitation care (PRC) has been shown to reduce mortality and morbidity. To achieve this, a closely coordinated multidisciplinary team effort is required, (2).

The post-resuscitation phase starts at the location where Return of Spontaneous Circulation (ROSC) is achieved but once established, the patient is transferred to the most appropriate high care area (e.g. emergency room, cardiac catheterization laboratory or intensive care unit (ICU)) for continued diagnosis, monitoring, and treatment of those comatose patients admitted to ICUs after cardiac arrest, as many as (40-50%) survive to be discharged from hospital depending on the cause of arrest, system, and quality of care. The vast majority have a good neurological outcome although many have subtle cognitive impairment.

In 2015 Korean cardiopulmonary Resuscitation (CPR) guidelines, post cardiac arrest care was emphasized with effective advanced life support as one of the essential chain for survival. Based on an in- depth scientific evidence review using standardized methodological approach proposed by the GRADE (Grading of Recommendation Assessment , development and evaluation) working group , the guidelines either partially updated the recommendations or added new recommendations for each specific topic(3).

1.2 Justification

- Proper post cardiac arrest care requires systemic approach that leads to optimal outcome.
- Post cardiac arrest care decrease mortality rate.
- There are neglection to post resuscitation care so the study conducted to assess nurses knowledge regarding it.

1.3 Objectives

1.3.1 General objective:-

To assess nurse's knowledge regarding post cardiac arrest care.

1.3.2 Specific objectives:-

- 1-To determine the level of nurse's knowledge about cardiac arrest.
- 2- To identify nurses knowledge regarding post cardiac arrest care.
- 3- To assess correlation between variable of the study.

Chapter Two

2. Literature review

Cardiac arrest is the cessation of effective cardiac output as a result of either ventricular a systole, ventricular tachycardia, or ventricular fibrillation that lead to sudden cardiac death (SCD), Sudden cardiac death describes the unexpected natural death from cardiac cause within 1 hour of onset of symptoms in a person without any prior condition that appears fatal. The most common etiology for SCD is cardiovascular diseases account for 95% of SCDs the common etiology of SCD in Asian men less than 50 years of age is acute insults including hypoxia, ischemia, acidosis, electrolyte imbalances, and toxic effects of certain drugs may act on the structural substrate and produce arrhythmias leading to cardiac arrest. The presenting rhythm in cardiac arrest is variable, VT/VF, a systole and pulse less electrical activity.

The temporal sequence of cardiac arrest can be understood by a 3-phased time sensitive These phases include electrical (lasting 0 to 4 minutes from time of cardiac arrest), circulatory (lasting approximately 4 to 10 minutes from time of cardiac arrest), and metabolic (lasting > 10 minutes from time of cardiac arrest), and they require specific treatments. During the electrical phase, defibrillation is the most effective treatment for cardiac arrest. In the circulatory phase, good quality CPR gains increasing importance along with defibrillation. In the third and final metabolic phase, there is global ischemic injury, where therapeutic strategies that focus on metabolic derangements are critical. Therapeutic hypothermia for comatose survivors of SCD may assist in neurologic recovery at this stage, (4).

The management of cardiac arrest start by check the ABCs following basic cardiovascular life support (BLS) and advanced cardiovascular life support (ACLS) protocols. During the resuscitative effort and after the patient is stabilized, the underlying etiologies should be continuously explore Early initiation of CPR and defibrillation are the most effective measures with the highest impact on survival in patients suffering cardiac arrest. Increased public awareness is required, as witnessed arrests and bystander CPR are positive predictors of outcomes in out-of-hospital cardiac arrest. Cardiopulmonary resuscitation must be performed with a compression to ventilation ratio of 30:2, with minimal

interruptions, and delivery of rescue breaths taking no more than 1 second. Basic BLS interventions take precedence over ACLS, as the latter is of limited efficacy. CPR must be resumed immediately after each shock for 5 cycles. Amiodarone is the only anti arrhythmic with proven efficacy for the restoration of an organized rhythm in cardiac arrest. Benefit of lidocaine in restoring an organized rhythm is not yet established. Automated external defibrillators are simple, safe, and effective devices designed to be used by the general public, first responders, and hospital staff to convert VT/VF to perfusing rhythms in cardiac arrest patients. Educating cardiovascular patients and their families to recognize symptoms preceding SCD, in order to call for help when symptoms are present and to provide CPR when collapse occurs, are important steps to improve outcomes.

High quality post-resuscitative care is an important component of management of cardiac arrest with emphasis on treatment of reversible causes and metabolic conditions. Therapeutic hypothermia is effective in a select subset of cardiac arrest patients (5).

2.1 Post cardiac arrest care:-

Successful return of spontaneous circulation (ROSC) following cardiac arrest is the first stage in a journey towards making a complete recovery. The post-resuscitation phase starts at the location where ROSC is achieved and once established the patient is transferred to the most appropriate clinical area for ongoing management and monitoring.

There are complex pathophysiological processes that occur when circulation is restored after cardiac arrest, mainly resulting from the reperfusion of vital organs following a period of ischemia. This is termed the post cardiac arrest syndrome (PCAS).

The severity of PCAS is determined by the cause and duration of cardiac arrest. It has four key components:

- Post-cardiac arrest brain injury – manifesting as coma and seizures
- Post-cardiac-arrest myocardial dysfunction – this can be severe and recovery is usual after 48-72 hours
- Systemic ischemia/reperfusion response – tissue reperfusion can cause programmed cell death potentially affecting all organ systems
- Persisting causative pathology – coronary artery disease is the most common precipitating cause following out of hospital cardiac arrest

Consequently, a number of patients will require multi-organ support on an Intensive Care Unit and the quality of care they receive has a significant impact on their clinical and neurological outcome. In addition, the early correction/treatment of causative factors can reduce systemic and local organ ischemia, thus facilitating optimal chances of recovery.

Currently, there is considerable variation within the UK regarding treatment following cardiac arrest and subsequent prognostication. A recent survey suggests only 26% of centers with critical care have access to 24/7 interventional cardiology services and only 43.8% to neurophysiological investigations.

Cardiac arrest care bundles can facilitate access to appropriate care via predefined treatment routes and ensure evidence based treatment, optimizing the chances of a good outcome, (6).

The Scope of this guideline is to assist staff caring for comatose patients following ROSC after cardiac arrest. Evaluation and treatment of the patient's immediate clinical condition and prognosis occur in parallel and involves a multidisciplinary team (including emergency and critical care providers, neurologists, cardiologists, nurses, laboratory technicians and other specialists) that often provides simultaneous expertise and care ,(7).

2.2 Post cardiac arrest care bundle:-

- Control of the airway and appropriate ventilation strategies, including the avoidance of hyperoxia.
- Investigation for the likely pathological cause of arrest.
- Documented consideration of immediate angiography/primary percutaneous coronary intervention.
- Optimizations of hemodynamics'.
- Targeted temperature management.
- Appropriate use of sedative techniques.
- Monitoring of seizure activity and treatment when indicated.
- Control of blood glucose.

2.2.1 Airway and Ventilation:

Patients with reduced level of consciousness, agitation indicative of cerebral irritation or those with respiratory compromise should be sedated, their airway secured via tracheal intubation and lung protective ventilation commenced.

Ventilation should be tailored to the patient using tidal volumes of 6-8ml/kg ideal body weight. Pressure controlled modes of ventilation are preferable with the aim to achieve normocarbica as guided by end tidal carbon dioxide and/or arterial blood gas analysis. There is some evidence to suggest that ventilation to hypocapnia may be harmful. Patients should be ventilated with inspired oxygen concentrations required to achieve normoxaemia with target oxygen saturations of 94– 98% and a PaO₂ of between 8-12kPa. Evidence suggests that following an acute myocardial insult higher P_{O2} levels can be detrimental and are associated with a poorer outcome than normoxaemia or even hypoxemia. Insert a nasogastric tube to decompress the stomach which may have been distended during bag-mask ventilation.

A chest x-ray will be required to: check the lung fields for signs of aspiration or pulmonary edema, confirm the position of the endotracheal tube, nasogastric tube and any invasive lines that have been inserted and detect complications of CPR such as rib fractures or pneumothorax.

2.2.2 Investigation for the pathological cause of arrest:

After ROSC and during CPR, the resuscitation team should make efforts to evaluate the reversible causes of cardiac arrest (i.e., the five H's and five T's: hypovolemia, hypoxia, hydrogen ions [acidosis], hyper/hypokalemia, hypothermia, thromboembolism, thrombosis, tension pneumothorax, cardiac tamponade, and tablets) and then treat the patient. Followed by a set of mandatory investigations including the following:-

- Blood tests, to include full blood count, clotting profile, urea and serum electrolytes, bone profile, magnesium and troponin testing.
- 12 lead electrocardiogram
- Chest X ray
- Blood gas analysis

Additional investigations to be considered on a per-patient basis following the exclusion of ischemic heart disease should include:

- CT brain
- CT Pulmonary Angiography
- Focused echocardiography by an accredited operator,(6).

2.2.3 Cardiac Catheterization and Percutaneous Coronary Intervention (PCI):

PCI is a procedure in which a catheter is used to place a stent across a blocked artery to hold the artery open. It is most commonly used as a treatment for patients with myocardial ischemia. The goal of cardiac Catheterization and PCI is to relieve any potential coronary artery obstruction that contributed to the cardiac arrest, in order to improve immediate electrical and mechanical functions, and mitigate the risk of re-arrest. In several observational studies, PCI has emerged as potentially one of the most important hospital-based interventions associated with favorable neurologic outcome, (7).

2.2.4 Hemodynamic stabilization:

Post-cardiac arrest patients are often hemodynamically unstable due to the underlying etiology of arrest, myocardial dysfunction, and systemic ischemia/reperfusion response. Therefore, immediately after ROSC, an arterial catheter should be promptly inserted, and the arterial blood pressure should be monitored continuously. If an arterial catheter cannot be inserted, the blood pressure should be frequently measured noninvasively until the patient becomes hemodynamically stable. Dobutamine can be helpful for post-cardiac arrest myocardial dysfunction. In addition, vasodilatation occurs due to the systemic ischemia/reperfusion response; thus, dopamine or norepinephrine may be needed, and intravenous fluids can be an effective treatment depending on the situation. If hemodynamic instability persists even with the infusion of intravenous fluids or vasoactive drugs, a mechanical circulatory assistance device should be considered.

Although there are observational studies of patients with cardiac arrest that have investigated the relationship between blood pressure and

outcome, a controlled study has not been conducted on a target goal of blood pressure. An observational study examined whether treatment with a specific hemodynamic goal (e.g., a mean arterial pressure [MAP] >65 mmHg) would improve neurologic and functional outcome compared to treatment without a specific hemodynamic goal. The study reported that the mortality rate was higher and the functional recovery was lower in the patient group whose systolic blood pressure (SBP) was <90 mmHg after CPR compared to other patient groups whose SBP was \geq 90 mmHg. Two retrospective studies reported that the survival rate decreased in patients who maintained an SBP <90 mmHg and <100 mmHg. As several before-and-after studies have implemented a bundle of care, which included a blood pressure goal, the effect of blood pressure cannot be evaluated alone. Moreover, different studies have shown different results regarding a specific level of blood pressure, and the level of evidence from existing studies is insufficient to determine a target blood pressure goal.

Seven studies have investigated the effect of a bundle of care on neurologic outcome, and they reported different results. Some studies have found no association between a specific target blood pressure and neurologic outcome. In one of the studies, a MAP >80 mmHg was a goal, and in another study, an intervention was performed when a goal of MAP was below 75 mmHg, and both of which reported that using a bundle of care, including a hemodynamic goal, was not associated with the neurologic outcome. In contrast, other studies have found that a bundle of care that included a blood pressure goal improved the neurologic outcome. Two prospective observational studies have reported that maintaining a MAP >65 mmHg improved the neurologic outcome, and an additional study demonstrated that the neurologic outcome was better in the patient group who maintained a MAP >100 mmHg at 2 hours after ROSC, suggesting an association between MAP and the neurological outcome. another study reported that in patients with a good neurologic outcome, maintaining the time-weighted MAP over 70 mmHg was associated with the neurologic outcome. Two before-and-after observational studies have investigated the effect of using a bundle of care on the survival rate. Both of these studies used a bundle with a MAP >80 mmHg and >65 mmHg as a goal, but there was no significant difference in the survival rate. The evidence is insufficient to determine a

specific hemodynamic goal for post-cardiac arrest care. It is suggested that hypotension (SBP <90 mmHg or MAP <65 mmHg) should be immediately corrected, and a hemodynamic goal should be determined for individual patients, while maintaining an SBP >100 mmHg, (8).

2.2.5 Targeted Temperature Management (TTM):

TTM, also known as therapeutic hypothermia, is an early post-arrest intervention designed to reduce the body temperature in resuscitated, comatose cardiac arrest patients.

The rationale is to slow pathophysiological events and biochemical pathways that cause cellular death and complete systemic injury. The original goal was to reduce temperature to 33°C, but recent data suggests that 36°C is sufficient cooling, and that the benefit might relate more to prevention of fever than to hypothermia itself. Although TTM has been endorsed by AHA and ILCOR, the U.S. Food and Drug Administration concluded that existing data do not demonstrate unequivocal therapeutic benefit. The literature is inconclusive about optimal temperature (33°C to 36°C) and benefits for patients who present non-shakable initial rhythm. Further research into optimal target temperature and candidate selection is needed, (7).

2.2.5.1 Methods for cooling:

Several different methods can be used to achieve MTH. It is not the aim of this paper to present all the available different cooling methods, but rather to recommend the interested reader to a recent review by Holzer cooling methods, ranging from simple external methods to advanced invasive techniques. A combination of different methods may be necessary, at least during induction of MTH. No specific methods can be recommended, because there are only a few that have maintained the target temperature for studies comparing feasibility and efficacy, and no studies have evaluated implications on survival between cooling rate and stability have been described. A European hypothermia registry study reported that the majority of the patients were MTH treated for 24 h. However, 12-h protocols have also been used. Newborns with asphyxial cardiac arrest

have been successfully treated for 72 h, and it may be that even adults with a severe reperfusion injury due to hypoxic-induced cardiac arrest should be treated with MTH of a longer duration. Further studies are warranted to address this important question. The rate of rewarming is not known, but the traditional recommendation is 0.3–0.5C/hr. Rebound hyperthermia should be avoided.

2.2.6 Sedation:

In most post-cardiac arrest patients, mechanical ventilation should be maintained during post-cardiac arrest care, and sedatives or analgesics may have to be intermittently or continuously administered. If a patient is sedated while TTM is performed, the time required to reach to the target temperature can be reduced because shivering is prevented or reduced. Using a sedation protocol can be helpful in these cases.

Sedation after ROSC is a commonly used treatment method, but the level of evidence is not sufficient to make a recommendation about the duration to administer a sedative or neuromuscular blocker in post-cardiac arrest patients. A meta-analysis of 44 studies reported on sedative drugs that were used while TTM was performed among 68 intensive care units in various countries found that a large variety of drugs were being used.⁶⁹ From the analysis, it is impossible to know which drugs may be associated with outcome, but mainly the combination therapy of an opioid and sedative was used. It is recommended to maintain a sedative over a short duration of action as much as possible, but no study has analyzed the effect of using sedatives in patients after cardiac arrest or has suggested treatment strategies. One study has suggested that the continuous administration of neuromuscular blockers may be associated with a low mortality rate.⁷⁰ However, neuromuscular blockers interfere with clinical examinations, and they obscure the occurrence of seizure. Therefore, if a neuromuscular blocker is continuously administered, the EEG should be continuously monitored.

2.2.7 Control of Seizures:

In the context of targeted temperature management and the use of active cooling devices, diagnosing true seizure activity can be challenging. Seizures are common after cardiac arrest and can occur in approximately one third of patients who remain comatose after ROSC. Myoclonus is most common, occurring in up to 25% of patients. Patients may also display tonic-clonic seizure activity or a combination of various seizure types. Seizures can exacerbate brain injury as they increase cerebral metabolic rate; as such they should be treated aggressively. Sodium valproate, levetiracetam, phenytoin, benzodiazepines and barbiturates are all appropriate pharmacological agents that can be used to treat seizure activity.

We recommend that sodium valproate be the first line agent used to treat seizures. A loading dose of 800mg diluted in 50mls should be prescribed to run intravenously over 1 hour. Levetiracetam and benzodiazepines can be used as second line agents. Seizure activity can often be resistant to initial therapy; suspected ongoing seizure activity may warrant further investigation and should be discussed with the critical care consultant. True myoclonus can be difficult to treat and confers a poor prognosis if present. In addition to the anti-epileptics mentioned above, clonazepam can be used for myoclonic activity. Phenytoin is usually ineffective.

Electroencephalography (EEG) can be utilized for patients in whom the diagnosis of seizures is unclear or clinically challenging. Be mindful also that sedation can mask seizure activity; this can be elucidated using EEG monitoring in this high risk group. Continuous EEG should be considered for those patients receiving prolonged neuromuscular blockade. (6).

2.2.8 Blood Glucose control:

Hyperglycemia is associated with mortality and a poor neurologic outcome in patients who have been resuscitated from cardiac arrest, and it should be appropriately controlled. There is little evidence about a target blood glucose level to improve the outcome of patients with cardiac arrest. An RCT found no difference in the 30-day mortality rate

between the groups with a target controlling blood glucose level in critically ill patients. Although is still controversy on how to control the blood glucose level in critically ill patients, the strict control of blood glucose was associated with an increased occurrence of hypoglycemia. Therefore, the target range of 144 to 180 mmHg is suggested to prevent hypoglycemia, although evidence so far is insufficient. Hyperglycemia >180 mmHg should be treated with an insulin infusion per the hospital's protocol, and care should be taken to prevent hypoglycemia (<80 mg/dL). If hypoglycemia occurs, it should be immediately corrected by administering a glucose solution. The blood glucose level, especially, fluctuates during the induction or rewarming period; therefore, it is desirable to frequently test the patient's blood glucose level, (9).

2.3 Prognostication:-

Hypoxic-ischemic brain injury is common after resuscitation from cardiac arrest. Two thirds of those dying after admission to ICU following out of hospital cardiac arrest (OHCA) die from neurological injury. Most of these deaths are due to active withdrawal of life sustaining treatment (WLST) based on prognostication of a poor neurological outcome. For this reason, when dealing with patients who are comatose after resuscitation from cardiac arrest, minimizing the risk of a falsely pessimistic prediction is essential. Ideally, when predicting a poor outcome these tests should have 100% specificity or zero false positive rate (FPR), (i.e. no individuals should have a 'good' long-term outcome if predicted to have a poor outcome). However, most prognostication studies include so few patients that it is very difficult to be completely confident in the results. Moreover, many studies are confounded by self-fulfilling prophecy, which is a bias occurring when the treating physicians are not blinded to the results of the outcome predictor and use it to make a decision on WLST. Finally, both TTM itself and sedatives or neuromuscular blocking drugs used to maintain it may potentially interfere with prognostication tests, especially those based on clinical examination.

Prognostication of the comatose post-cardiac arrest patient should be multimodal, in other words involve multiple types of tests of brain injury, and should be delayed sufficiently to enable full clearance of sedatives

and any neurological recovery to occur – in most cases, prognostication is not reliable until after 72 h from cardiac arrest. The tests are categorized:

- Clinical examination – GCS score, pupillary response to light, corneal reflex, presence of seizures

- Neurophysiological studies – somatosensory evoked potentials (SSEPs) and electroencephalography (EEG)

- Biochemical markers – neuron-specific enolase (NSE) is the most commonly used.

- Imaging studies – brain CT and magnetic resonance imaging, (10)

Chapter Three

3. Methodology

3.1. Study design:

Descriptive cross sectional hospital based study design.

3.2. Study area:

The study was conducted in Omdurman military hospital, it located in Omdurman city, Omdurman military hospital contain many departments (ER, Obstetrics, Pediatric, Dental, psychiatric, orthopedic, Medicine, Surgical, ENT, Ophthalmic and Dermatological) departments. and (Dialysis, nursery, CCU, and ICU) Units. The study was conducted in Elshellali ICU, it's the largest ICU in Omdurman military hospital, it contain 15 beds (8 with mechanical ventilation, 6 HDU beds, and one isolation bed), the medical staff include 4 ICU consultants, 60 nurse, 15 ICU residents, one anesthetist, one Nutritionist.

Setting:

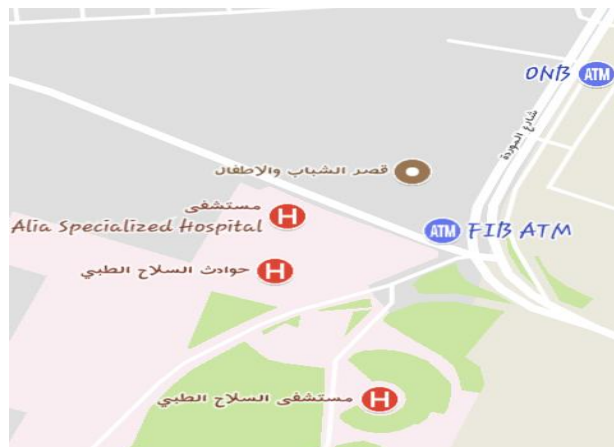
Elshelalli ICU

3.3. Study population:

All nurses who work at

Elshellali ICU in Omdurman

military hospital during the study period.



3.4. The sampling size:

Total coverage (n=60)

3.5. Variables of the study:

Demographic data (In dependent variables): Age- Gender.

Dependent variables: Nursing educational qualifications, Years of experience in ICU.

3.6. Data collection tools:

The data was collected by interview questionnaire containing two sections; sections one for demographic data and section two for knowledge assessment.

3.7. Scoring system:

The questionnaire composed of 4 choices, when the participant answered from (3-4) right answers their knowledge was Good, 2 right answers their knowledge was Fair and less than 2 their knowledge was Poor.

3.8. Data collection technique:

The data was collected from morning shift nurses staff and after noon nightshift nurses staff and the consumed time for questionnaire filling with each participant take about 10 minutes interviewing questionnaire, these after verbal agreement of participants.

3.9. Data analysis:

By Statistical package for social sciences (SPSS).

3.10. Ethical consideration:

The researcher took permission from the hospital of the study with an official letter from the Faculty of Nursing Sciences to the director of the hospital with the agreement of the target population, every individual observed once. Verbal consent from the interviewed persons was also taken after explaining the study and its objectives to them. Confidentiality was given consideration and the information is used for the research purpose only.

Chapter Four

4. Results

Table No(1)Distribution of study group according to their age

Phrase	Frequency	Percent
20- 25 years	37	61.7%
26-30 years	18	30.0%
30-35 years	3	5.0%
more than 35years	2	3.3%
Total	60	100.0%

Table No (1) showed that 61.7% of nurses age ranged between 20-25years, 30% their age between 26-30 years and 5%between30-35years old.

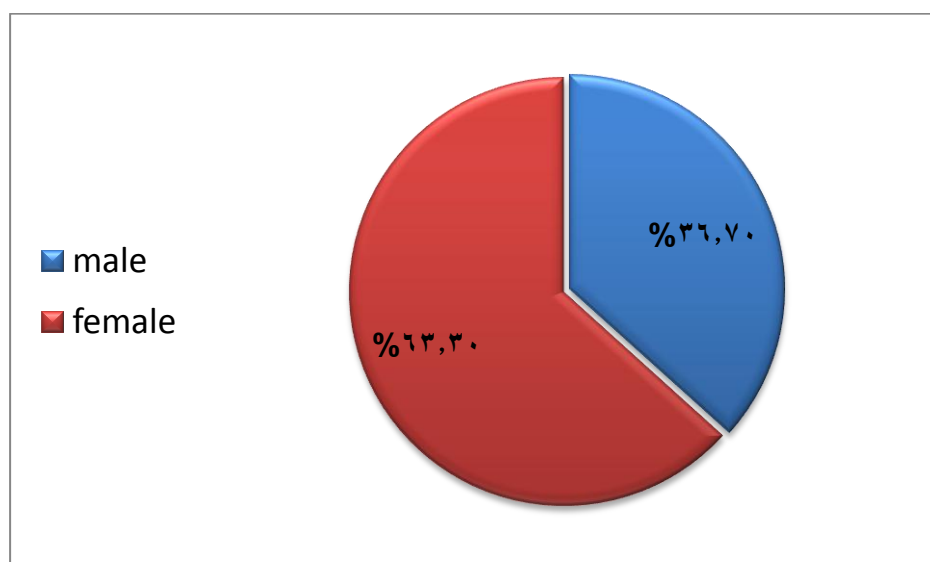


Figure No (1) Distribution of study group according to their gender (n=60)

Figure No (1) Showed that 63.3% of participant ware female, 36.7% of nurses were male

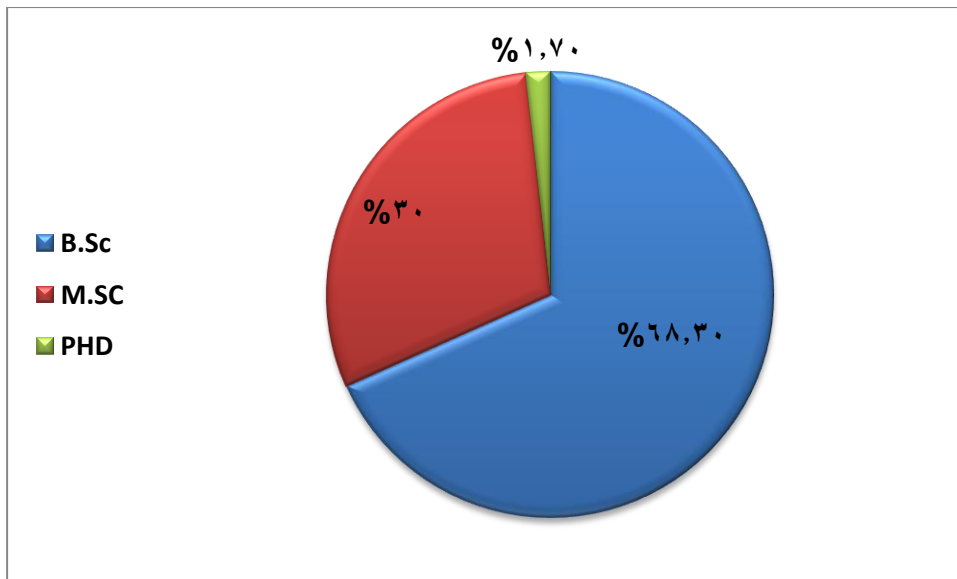


Figure No (2) Distribution of study group according to their level of education (n=60)

Figure No (2) showed that 68.3 of nurses BSc holder 30% of them MSc holder and 1.7% PHD holder.

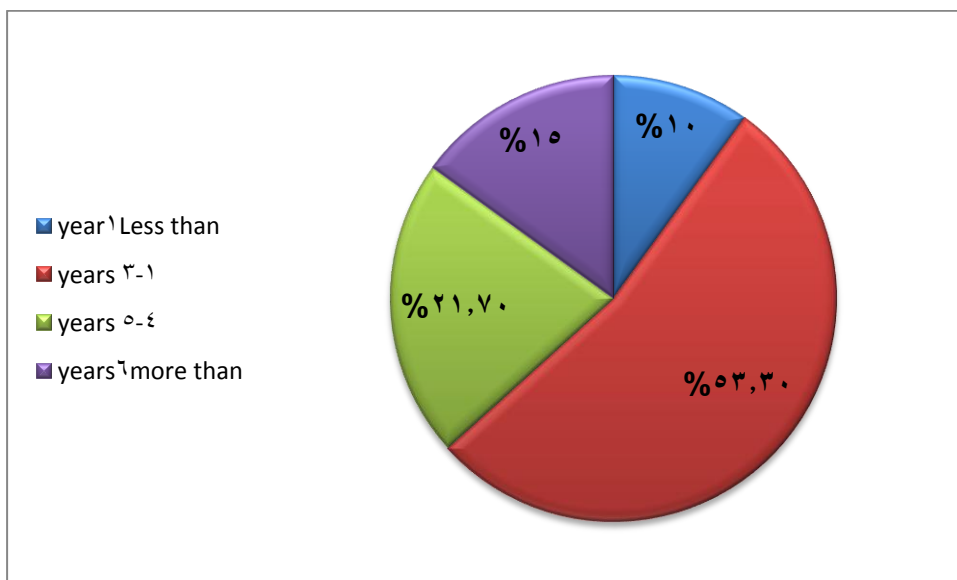


Figure No (3) Distribution of study group according to their experience (n=60)

Figure No (3) showed that 53.3% of nurses had experience between 1-3 years in ICU, 21.7% had 4-5years, 15% had more than 6 years and 10% had less than 1 year experience in ICU.

Table No(2) Distribution of study group according to their knowledge about definition of cardiac arrest

Phrase	Frequency	Percent
good	32	53.3%
fair	13	21.7%
poor	15	25.0%
Tota l	60	100.0

Table No (2) Showed that 53.3% of study group had good knowledge about definition of cardiac arrest,25%had poor knowledge and 21.7% had fair knowledge about the definition .

Table No(3) Distribution of study group according to their knowledge about causes of cardiac arrest

Phrase	Frequency	Percent
good	26	43.3%
fair	19	31.7%
poor	15	25.0%
Tota l	60	100.0%

Table No (3) Showed that 43.3% of participant had good knowledge about causes of cardiac arrest,31.7 of them had fair knowledge and 25%had poor knowledge about causes of cardiac arrest.

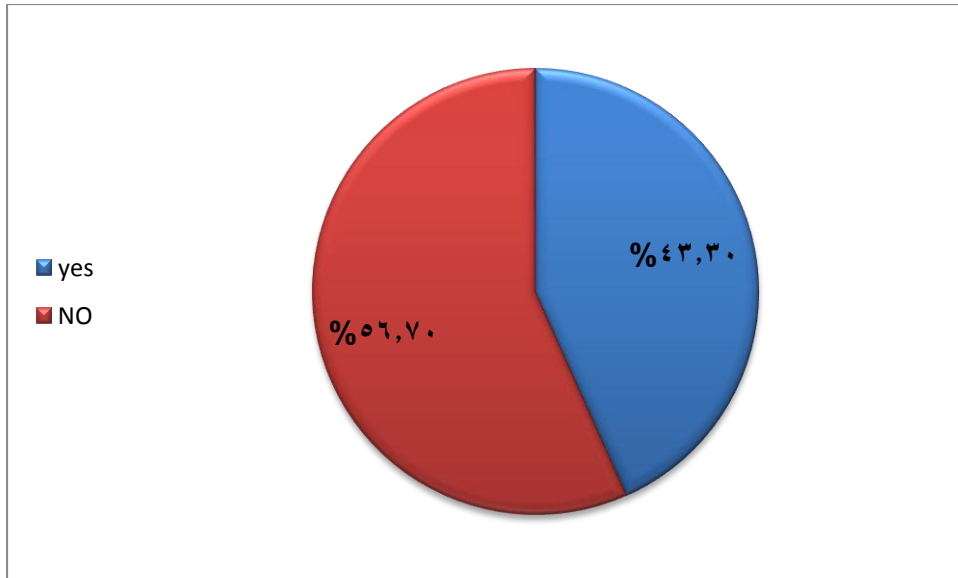


Figure No (4) Distribution of study group according to their knowledge about starting of post resuscitation phase age (n=60)

Table No (4) showed that 56.7% of nurses not aware about the time of starting post resuscitation phase and 43.3% aware about them.

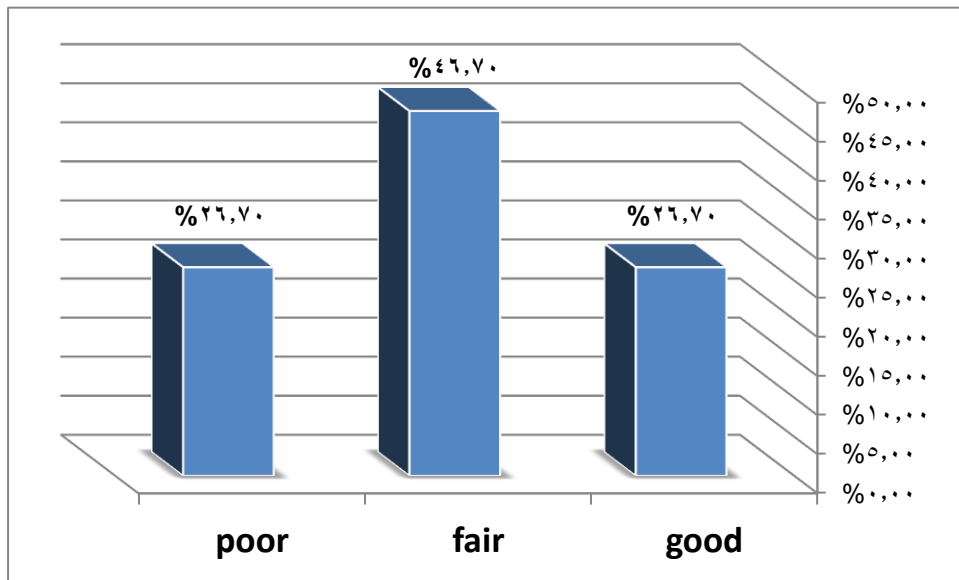


Figure No (5) Distribution of study group according to their knowledge about post cardiac arrest syndrome (n=60)

Figure No (5) Showed that (46.7%) of nurses had fair knowledge about post cardiac arrest syndrome, (26.7%) had good knowledge and (26.7%) had poor knowledge about them.

Table No(4) Distribution of study group according to their knowledge about component of care provided to the patients post resuscitation

Phrase	Frequency	Percent
Good	18	30.0%
Fair	23	38.3%
Poor	22	31.7%
Total	60	100.0%

Table No (4) Showed that (38.3%) of participant had fair knowledge about components of post resuscitation care, (30%) had good knowledge and (31%) had poor knowledge about the components.

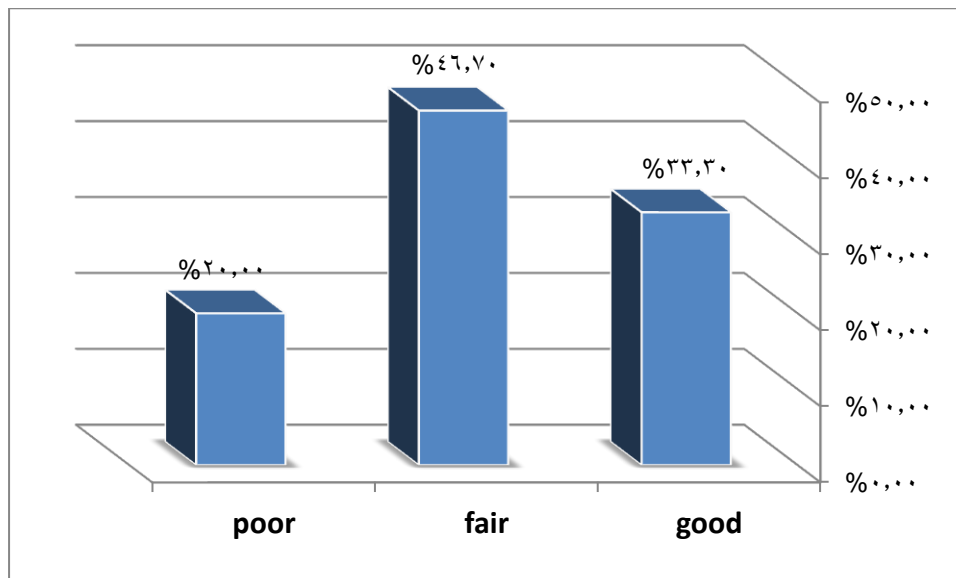


Figure No (6) Distribution of study group according to their knowledge about insurance of airway patency (n=60)

Figure No (6) Showed that (46.7%) of nurses had fair knowledge about insurance of airway patency (33.3%) had good knowledge about them and (20%) of nurses had poor knowledge.

Table No (5) Distribution of study group according to their knowledge about air way management and ventilation.

Phrase	Frequency	Percent
good	9	15.0%
fair	18	30.0%
poor	33	55.0%
Total	60	100.0%

Table No (5) Showed that 55% of nurses had poor knowledge about airway management and ventilation, 30% had fair knowledge and 15% had good knowledge about airway management and ventilation.

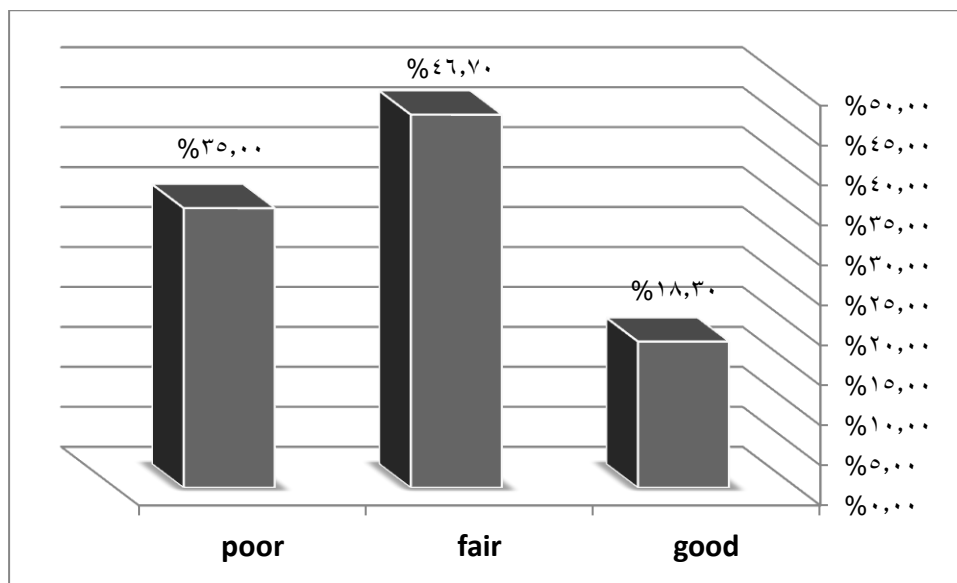


Figure No(7) Distribution of study group according to their knowledge about hemodynamic monitoring (n=60)

Figure No (7) Showed that 46.7% of nurses had fair knowledge, 35% had poor knowledge, and 18.3% had good knowledge about hemodynamic monitoring.

Table No (6) Distribution of study group according to their knowledge about hemodynamic stabilization.

Phrase	Frequency	Percent
good	23	38.3%
fair	20	33.3%
poor	17	28.3%
Tota l	60	100.0%

Table No (6) Showed that 38.3% of participant had good knowledge about hemodynamic monitoring, 33.3% had fair knowledge and 28.3% had poor knowledge about them.

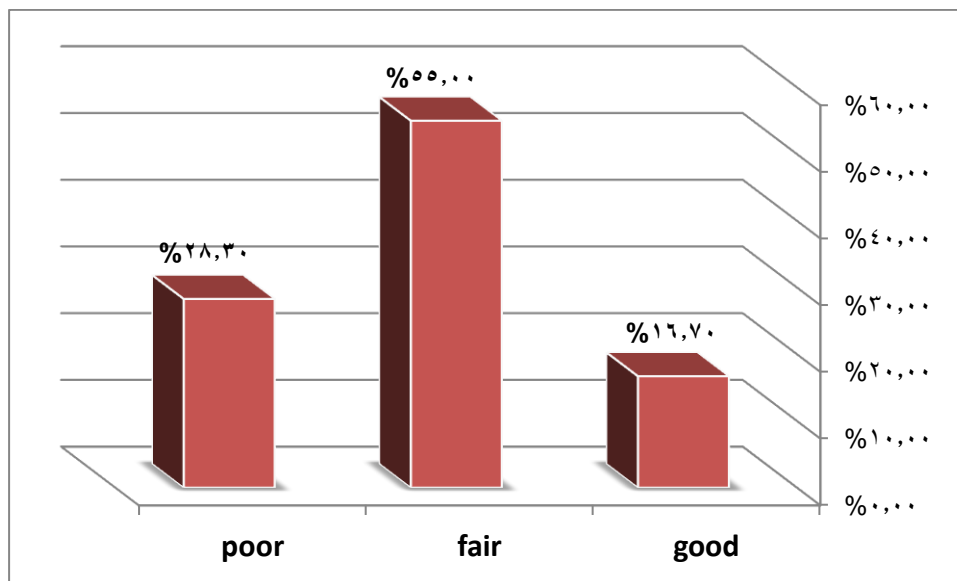


Figure No (8) Distribution of study group according to their knowledge about the goal of hemodynamic monitoring (n=60)

Figure No (8) Showed that 55% of nurses had fair knowledge about the goal of hemodynamic monitoring, 28.3% had poor knowledge and 16.7% of nurses had good knowledge about the goal of hemodynamic monitoring.

Table No (7) Distribution of study group according to their knowledge about cooling methods.

Phrase	Frequency	Percent
good	8	13.4%
fair	35	58.3%
poor	17	28.3%
Total	60	100.0

Table No (7) Showed that 58.3% of nurses had fair knowledge, 28.3% had poor knowledge and 13.4% of nurses had good knowledge about cooling methods.

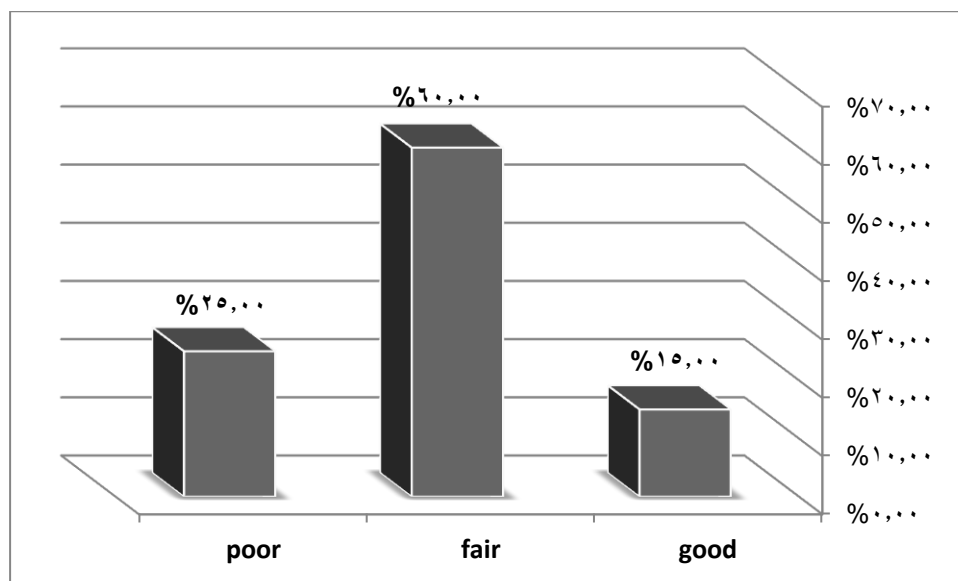


Figure No (9) Distribution of study group according to their knowledge about contraindications to therapeutics hypothermia (n=60).

Figure No (9) Showed that 60% of nurses had fair knowledge about contra indications to therapeutic hypothermia, 25% had poor knowledge and 15% had good knowledge about them

Table No(8) Distribution of study group according to their knowledge about the investigations required post cardiac arrest

Phrase	Frequency	Percent
good	17	28.3%
fair	25	41.7%
poor	18	30.0%
Total	60	100.0

Table No (8) Showed that 41.7% of study group had fair knowledge about the required investigation, 30% had poor knowledge and 17% had good knowledge.

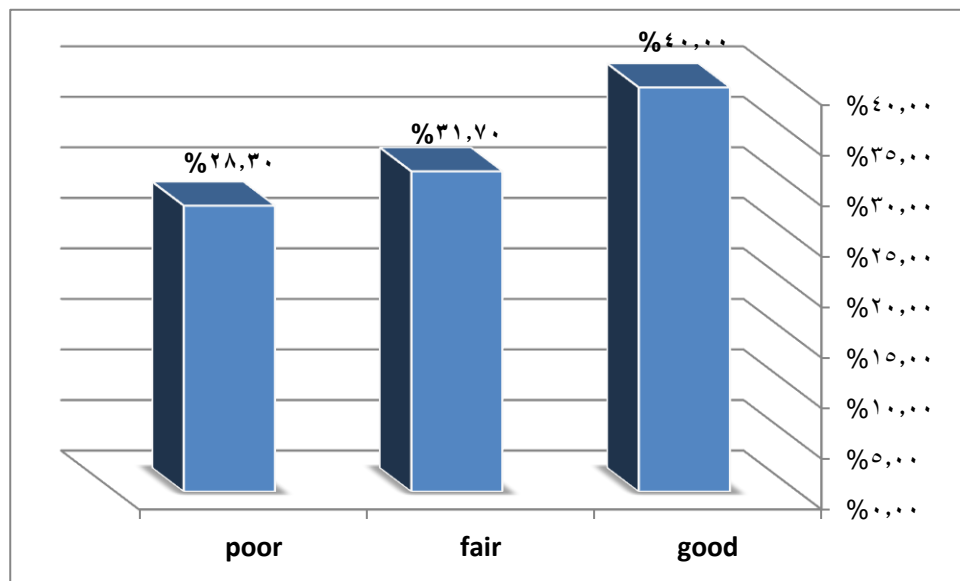


Figure No(10) Distribution of study group according to their knowledge about the aim of administration of sedation and analgesia in post arrest patient (n=60)

Figure No (10) Showed that 40% of nurses had good knowledge about the aim of sedation and analgesia administration ,31.7% had fair knowledge and 28.3% had poor knowledge about the aim .

Table No (9) Distribution of study group according to their knowledge about the aim of effective post resuscitation care.

Phrase	Frequency	Percent
good	11	18.3%
fair	7	11.7%
poor	42	70.0%
Tota l	60	100.0%

Table No (9) showed that 70% of study group had poor knowledge about the aim of post resuscitation care ,18.3% had good knowledge and 11.7% had fair knowledge about the aim of post resuscitation care.

Table No (10) Correlation between nurses knowledge regarding post cardiac arrest care and level of education

Knowledge	Level of education P value
Definition of Cardiac arrest	0.050
Causes of cardiac arrest	0.422
Time Of Starting post resuscitation phase.	0.482

Table No (10) showed that there is statistical significance with their level of education p value (0.050) this refer to nurses knowledge about definition of cardiac arrest and there is no statistical significance with their knowledge p value (0.422) this refer to nurses knowledge about causes of cardiac arrest also there is no statistical significance with their knowledge p value (0.482) this refer to nurses knowledge about Time Of Starting post resuscitation phase after return of spontaneous circulation.

CHAPTER FIVE

5.1 Discussion

Post resuscitation care is an important phase to prevent recurrent arrest, preserve neurological and cognitive function and reduce mortality and morbidity rate. This study is a descriptive cross sectional hospital based study was conducted to assess ICU nurses knowledge regarding post cardiac arrest care in Omdurman military hospital. The researcher went through the result and elected the following facts and information. This study showed that two third (61.7%) of studied group their age ranged between (20-35 years) and also two third of them (63.3%) were female, According to this study two third of nurses (68.3%) BSc holder and more than half (53.3%) of study population had experience in ICU between (1-3years). Regarding their knowledge about definition of cardiac arrest the study showed that more than half (53.3%) of participant had good knowledge, quarter of nurses (25%) had poor knowledge and less than quarter (21.7%) had fair knowledge about the definition. less than two third of nurses (43.3%) had good knowledge regarding causes of cardiac arrest, more than one third of them (31.7%) had fair knowledge and quarter of nurses (25%) had poor knowledge about causes of cardiac arrest. In assessment of nurses knowledge regarding time of starting post resuscitation care the study showed that more than half of study group (56.7%) not aware about time of starting post resuscitation phase and less than two third (43.3%) aware about them. Also the result showed that less than two third of participants (46.7%) of nurses had fair knowledge about post cardiac arrest syndrome, less than one third (26.7%) had good knowledge and less than one third (26.7%) had poor knowledge about them . About the components of post cardiac arrest care more than one third of nurses (38.3%) had fair knowledge, less than one third of nurses (30%) had good knowledge and more than one third (31%) of participants had poor knowledge about components of care, Regarding nurses knowledge about insurance of air way patency the study showed that less than two third of study group (46.7%) had fair knowledge, more than one third of them (33.3%) had good knowledge and less than quarter of study group (20%) had poor knowledge about them. This study showed that more than half (55%) of participants had poor knowledge about airway management and ventilation, less than one third (30%) had fair knowledge and less than quarter (15%) had good knowledge about airway management and ventilation.

Also more than one third (38.3%) of study group had good knowledge about hemodynamic stabilization, more than one third (33.3%) had fair knowledge and less than one third of nurses (28.3%) had poor knowledge about them. In assessment of nurses knowledge regarding cooling methods the result showed that more than half (58.3%) of nurses had fair knowledge, less than one third (28.3%) had poor knowledge and less than quarter (13.4%) of study group had good knowledge about them. This study showed that less than two third (41.7%) of study group had fair knowledge about the required investigation, less than one third (30%) had poor knowledge and also less than one third (28.3%) of participants had good knowledge about the investigations required for patient post cardiac arrest. Regarding the nurses knowledge about the aim of administration of sedation and analgesia in post cardiac arrest phase the study showed that less than two third (40%) of participants had good knowledge, more than one third (31.7%) had fair knowledge and less than one third (28.3%) had poor knowledge about the aim.

Also the study showed that the majority (70%) of study group had poor knowledge about the aim of post resuscitation care, less than quarter (18.3%) had good knowledge and also less than quarter (11.7%) of nurses had fair knowledge about the aim of post resuscitation care.

Finally the study showed that there is statistical significance with their level of education p value (0.050) this refer to nurses knowledge about definition of cardiac arrest and there is no statistical significance with their knowledge p value (0.422) this refer to nurses knowledge about causes of cardiac arrest also there is no statistical significance with their knowledge p value (0.482) this refer to nurses knowledge about time Of Starting post resuscitation phase.

5.2 Conclusion

This study concluded that more than half of nurses had good knowledge about the definition of cardiac arrest, and less than two third of nurses had good knowledge regarding causes of cardiac arrest, aim of administration of sedation and analgesia post resuscitation. And more than half of participants had poor knowledge about airway management and ventilation, also the study showed that the majority of study group had poor knowledge about the aim of post resuscitation care. So in this study I recommended to apply post resuscitation care protocol and Refreshing courses should be recognized and initiated on regular basic to increase the nurses knowledge.

5.3 Recommendation

This study carried out to assess nurses knowledge regarding post cardiac arrest care, most of nurses had BSC certificate although most of nurse had fair knowledge but some of them had poor knowledge so in this study I recommended the following to improve the nurses knowledge.

1. Applying post resuscitation care protocol.
2. Refreshing courses should be recognized and initiated on regular basic to increase the knowledge of nurses.
3. Basic life support and advance life support certificated should be renewed.
4. Continuous exchange training program outside the Sudan.
5. Encourage the nurses to conduct researches to be used as evidence based practice.

APPENDIX

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Faculty Of Graduate Studies &Scientific Research

Questionnaire Form:

Nurse's Knowledge Regarding Post cardiac arrest care In Omdurman
Military Hospital in ELshellali ICU.

Section 1: demographic data

1. Serial number:
2. Age: 20-25years 26-30 years 31-35years
More than 35years
3. Gender: Male Female
4. Educational status: Diploma B.Sc M.Sc
PHD
5. Work of experience in ICU: Less than 1year 1-3 years
4-6 years More than 6years

Section 2: knowledge assessment

6. Cardiac arrest is...
- a. Stops pumping of the heart ()
 - b. Stop breathing normally ()
 - c. May occur due to arrhythmias ()
7. Causes of the arrest are...
- a. Cardiovascular diseases ()
 - b. Electrolytes imbalance ()
 - c. Hypoxia ()
 - d. Toxins ()

8. Starting of post resuscitation phase after return of spontaneous circulation.
- a. Yes ()
 - b. No ()
9. Post cardiac arrest syndrome is...
- a. Post cardiac arrest brain injury ()
 - b. Post cardiac arrest MI ()
 - c. Systemic ischemia ()
 - d. Coronary artery disease ()
10. The component of care provided to the patients post resuscitation are...
- a. Assessment of airway, breathing, circulation, disabilities and exposure ()
 - b. Applying therapeutics hypothermia ()
 - c. Doing Investigation ()
 - d. Sedation administration ()
11. Ensure the airway patency by...
- a. Examine the patient's chest and look for symmetrical chest movement ()
 - b. Listen to ensure that the breath sounds are equal on both sides ()
 - c. Assess gases exchange (look for sign of hypoxia and cyanosis)()
12. Air way management and ventilation by...
- a. Intubation ()
 - . Ambubag ()
 - c. positioning ()
 - d. Insert airway device ()

13. Hemodynamic monitoring by...
- Arterial catheter insertion ()
 - Noninvasive blood pressure monitoring ()
 - Record pulse ()
 - Assess peripheral perfusion ()
14. Hemodynamic stabilization by....
- Fluid ()
 - Using vasoactive drugs ()
 - Inotropic support ()
 - Sedation and analgesia ()
15. The goal of hemodynamic monitoring in post cardiac arrest care is...
- Map.> 65mmhg ()
 - Saturation>94% ()
 - Pulse rate60-120 b/m ()
 - Temp 32-36°C ()
16. The cooling methods used to maintain target body temperature are...
- An infusion of 30 ml/kg of cold (4°C) 0.9% saline solution or Hartmann's solution ()
 - By using simple ice packs and/or wet towels ()
 - By using intravascular heat exchanger, placed usually in the femoral or subclavian veins ()
 - By using transnasal evaporative cooling ()
17. Contraindications to therapeutics hypothermia are ...
- Severe systemic infection ()
 - Established multiple organ failure ()
 - pre-existing medical coagulopathy ()

18. The investigations required are...

- a. X-ray ()
- b. PCI ()
- c. 12-lead ECG ()
- d. ABG and Biochemistry (renal function test, electrolyte and cardiac enzyme) ()

19. Administration of sedation and analgesia in post arrest patient aiming to...

- a. Reduced oxygen consumption ()
- b. Pain control ()
- c. Facilitate target temperature management ()
- d. Control shivering and agitation ()

20. The effective post resuscitation care aimed to ...

- a. Improve the likelihood of patient survival ()
- b. Prevention of recurrent arrest ()
- c. Decrease mortality rate ()