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SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF HEALTH POLICY PLANNING AND MANAGEMENT

UNIVERSITY OF GHANA, LEGON

ASSESSMENT OF QUALITY OF CARE DELIVRED BY CLINICAL NURSES TO SUDDEN CARDIAC ARREST (SCA) PATIENTS IN THE EASTERN REGIONAL HOSPITAL, KOFORIDUA

BY

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THIS DISSERTATION IS SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE

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DECLARATION

I hereby declare that this submission is my own work towards the Masters of Public Health (MPH) and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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DEDICATION

This work is dedicated to the memory of my brother Mohammed who, even in his last minutes to death, still found energy to give me words of encouragement. It is also dedicated to MPH colleagues who have inspired, assisted and encouraged me when all hope was lost.

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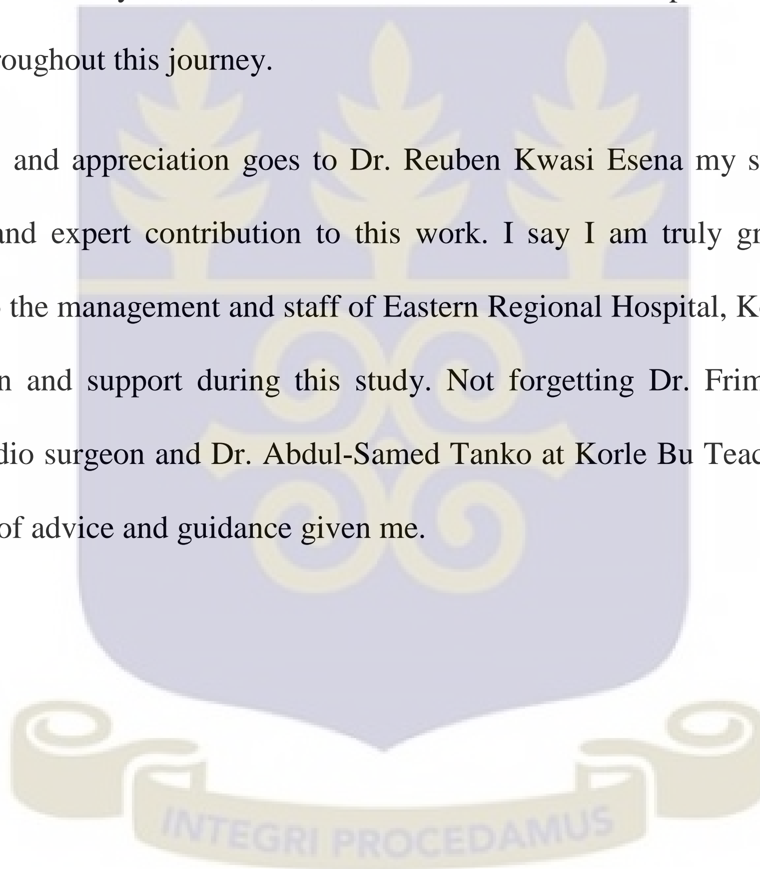

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LIST OF ABBREVIATIONS

ACLS	Advance Cardiac Life Support
AED	Automated external defibrillators
AHA	American Heart Association
ALS	Advance Life Support
ANC	Antenatal Clinic
BLS	Basic Life Support
CA	Cardiac Arrest
CPR	Cardiopulmonary Resuscitation
ECC	Emergency Cardiacvascular Care
ERC	European Resuscitation Council
ERH	Eastern Regional Hospital
GHS	Ghana Health Service
ICU	Intensive Care Unit
OPD	Outpatients Department
PALS	Paediatric Advance Life Support
ROSC	Return of spontaneous circulation
SCA	Sudden Cardiac Arrest
SCD	Sudden Cardiac Death
WHO	World Health Organisation

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LIST OF DEFINITIONS

Cardiac Arrest: A condition that occurs when the heart suddenly stops beating effectively and blood is not circulated by the heart.

Cardiopulmonary Resuscitation: An emergency procedure performed in an effort to manually preserve intact brain function.

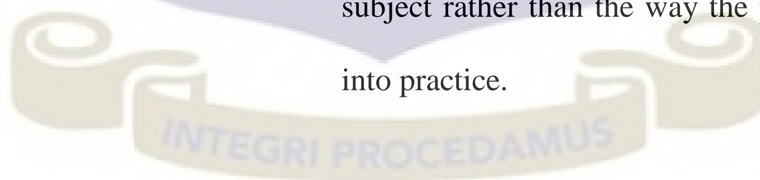
Clinical Nurse: An individual who holds a current license to practice within the scope of professional nursing in Ghana

Clinical Quality Measure: Tools that help measure and track the quality of healthcare service provided by eligible professionals and hospitals.

Process Measure: Healthcare-related activity performed for or on behalf of a patient.

Quality Care: Care that is in conformance to requirements.

Theoretical Knowledge: Knowledge of the principles and ideas of a subject rather than the way the principles are put into practice.



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ABSTRACT

Introduction: This research focused on quality of care delivered by clinical nurses to patients with sudden cardiac arrest in the Eastern Regional Hospital, Koforidua. Quality of care for patients with sudden cardiac arrest is highly associated with the provider's knowledge of cardiopulmonary resuscitation processes and quality measures available. However this area is mostly ignored, especially in Ghana.

Objective: To assess quality of care using cardiopulmonary resuscitation knowledge quality as a proxy.

Methods: A cross sectional descriptive survey method was adopted. The population for this research was made up of two hundred and fifty- nine (259) clinical nurses working in the Eastern Regional Hospital in various wards including theatre and casualty departments. A structured questionnaire was used to assess their knowledge of the cardiopulmonary resuscitation process and measures available to monitor quality of care.

Statistical analysis was carried out using STATA Version 13. To ensure easy and quick interpretation, the results were presented in frequencies, mean, proportions and percentages using Chi square and ANOVA.

Results: 160 nurses participated in the study. The average cardiopulmonary resuscitation knowledge level of the nursing professionals was 60% (95% CI: 58; 62). This average was consistent in important units such as Recovery, Surgical and Emergency wards.

Conclusion: The cardiopulmonary resuscitation knowledge quality did not meet the American Heart Association minimum standard (84%) suggesting lower odds of

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quality of care.

Recommendation: Stakeholders in health, need to take SCA as a serious public health problem and put measures such as short training programmes in place to ensure the survival of patients. Appropriate and requisite logistics should be provided to the hospitals since it was a major challenge.

Key Words: Cardiac Arrest, cardiopulmonary resuscitation, quality of care, theoretical knowledge, standard guidelines, Koforidua.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Sudden Cardiac Arrest (SCA) cases are known to be high (Chugh et al. 2008) and the quality of SCA patient management has received little attention in many hospitals worldwide. So there is the need to critically assess the processes of performing cardiopulmonary resuscitation (CPR) in the health facilities to identify issues that could improve the services.

Incidence of sudden cardiac death (SCD) varies geographically. This is due to prevalence of coronary heart disease (HD) in geographic regions and, to some extent, the availability of emergency treatment and presence or absence of CPR training and automated external defibrillators (AEDs), (Adams et al. 2011). There are recent reports of increased survival rates when a minimally interrupted cardiac resuscitation (MICR) protocol is used for out-of-hospital cardiac arrest (Adams et al. 2011). Globally there is the need for improved resuscitation care and a focus on patient outcomes. This is not just in terms of mortality, but more importantly, functional outcomes (Aufderheide et al., 2013). This requires critical commitment and prioritization of the resuscitation effort of the health workers.

All health care professionals are expected to have knowledge and be proficient in cardiopulmonary resuscitation (CPR) which is a core emergency skill in health (Hillary. 2012). In this context, nurses are the first line managers of emergencies. When emergency occurs and CPR is needed, nurses are first to initiate it. As the role of the nurse continues to expand, the boundaries between what is considered to be nursing interventions and what is considered to be medical interventions becomes more blurred (Terzi, 2008). This requires that nurses have high standards of

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knowledge and skills to deliver quality care, particularly in CPR process. Nurses have varying levels of competence in CPR and CPR skills deteriorate over time (Alspach, 2005; Josipovic, Webb & Mc Grath, 2009) and there is the need to assess the knowledge of nurses in the daily operations of CPR processes. Accurate knowledge of guidelines is associated with increase odds of correct performance of aspects of CPR (Botha et al. 2012).

The assessment of the quality of care for cardiac arrest patients is based on using the American Heart Association Guidelines 2010 (AHA, 2010). Their knowledge of CPR could identify the quality of CPR delivered that impacts positively or negatively on the quality of care received by patients. The nurses would describe Basic Life Support (BLS) algorithm (see Figures 2.1).

Basic life support (BLS) refers to basic non-invasive life-saving procedures, which involves maintaining the airway, breathing and circulation of a patient who has had a cardiac and or pulmonary arrest (AHA 2010). This procedure is used when an individual is unresponsive, not breathing or having gasp. The American Heart Association Guideline for resuscitation recommends that the sequence procedure for the first respondent acting alone be circulation, airway and breathing (C-A-B). This is a modification from the previously established procedure, which was airway, breathing and circulation (A-B-C) AHA 2010.

CPR quality variables include compression depth, compression with incomplete release, compression delivered per minute, and ventilation rate. When performing the CPR, proper hand placement is very important. This is placed at the lower one third of the sternum. The compression should be 4 to 5cm or 1/3 of the anterior posterior diameter of the chest. The compression should be fast with equal compression-

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decompression time of at least 100 per minute. For every 30 compressions the nurse gives 2 breaths (AHA 2010.

The purpose of this study is to assess the quality of care given by the clinical nurses using their knowledge quality on CPR as a proxy and to propose strategies for improving the CPR knowledge level quality which in turn improve quality of care for cardiac arrest patients.

1.2 Statement of the Problem

About 4 to 5 million Sudden Cardiac Deaths (SCD) occur annually worldwide (Chugh et al. 2008) and the incidence of SCA ranges from 20 to 140 per 100,000 people. The survival ranges from only 2% to 11% and its management requires critical attention in the quality of care to ensure that they are free from unnecessary and potential deaths. Among 140 cases admitted into various hospitals in the Eastern Region of Ghana with SCA in 2012, 34 died (24.3%) and out of 157 admitted in 2013, 31(19.7%) died (GHS, 2013). This indicates SCA as a dangerous public health problem in Ghana and yet its significance has been overlooked. This high number of deaths can be reduced by improving the quality of care for the SCA patients (Sotoodehnia et al. 2001). Quality of care during resuscitation of SCA patients is critical for their survival. Equally critical is the quality of CPR which is the lifesaving intervention and the cornerstone of the resuscitation from SCA (Meaney 2013).

Globally, there is a need for improved resuscitation care and focus on patient outcomes. This is not just in terms of mortality, but more importantly, functional outcomes (Aufderheide et al., 2013). This requires critical commitment and prioritization of the resuscitation effort of the health workers. Therefore, there is the need to assess the quality of care of SCA patients given by clinical nurses and identify

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the challenges associated with CPR performance by the clinical nurses in the safety culture of cardiac patients for policy decision.

1.3 Conceptual Framework

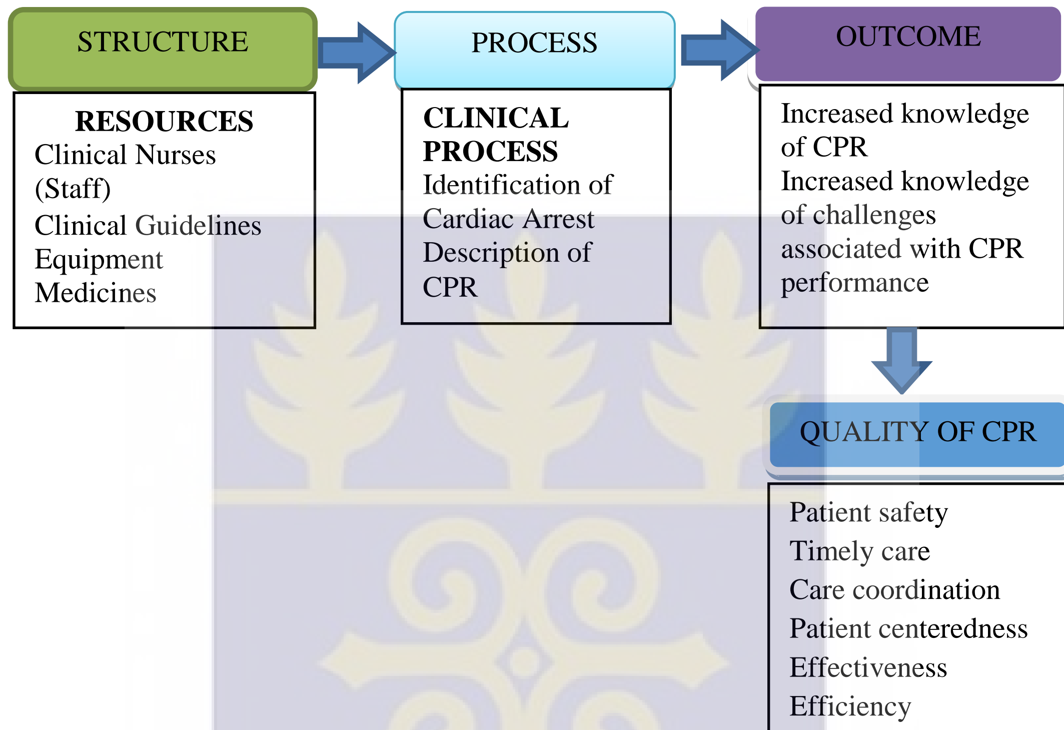

Figure 1. 1: Conceptual Framework of quality of care on Sudden Cardiac Arrest (Modified from Donabedian, 1990).

The study is guided by the conceptual framework of Avedis Donabedian (1990) as shown in figure 1.1. The modified conceptual framework shows the factors that were assessed to determine the quality of CPR. It explains how a quality of care to Sudden Cardiac Arrest (SCA) patients could be predicted based on information from determinants such as resources available, clinical processes and quality of CPR services. These resources include: Clinical Nurses (Staff), Clinical Guidelines, Equipment and Medicines. The process in managing patients with cardiac arrest consists of identification of cardiac arrest (CA) and description of cardiopulmonary

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resuscitation (CPR).tell the level of knowledge of CPR usage and the challenges associated with CPR. The outcomes are as follow: Increased knowledge of CPR and Increased knowledge of challenges associated with CPR performance. The expected quality services are patient safety, timely care, care coordination, patient centeredness, effectiveness and efficiency.

1.4 General Objective

The general objective of this study was to assess the quality of care for sudden cardiac arrest (SCA) patients delivered by clinical nurses in the Eastern Regional Hospital, Koforidua., Ghana.

1.5 Specific Objectives

The specific objectives are to:

1. assess the theoretical knowledge of nurses on CPR in line with American Heart Association Guideline 2010.
2. assess quality measures put in place for the management of sudden cardiac arrest (SCA) patients by nurses in line with American Heart Association Guideline 2010
3. analyse the process measures adopted by clinical nurses in managing of patients with sudden cardiac arrest (SCA)
4. identify the challenges associated with CPR performance by the clinical nurses

1.6 Research Questions

The research questions are:

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1. What is the theoretical knowledge of nurses of CPR in line with American Heart Association Guideline 2010?

2. What quality measures are put in place for the management of sudden cardiac arrest (SCA) patients?

3. What process measures are put in place for the management of sudden cardiac arrest (SCA) patients?

4. What are the challenges associated with the process of CPR?

1.7 Significance of the Study

Quality of care for SCA patients and specifically, quality of CPR will impact positively on the outcome of the patient‘s condition. It is expected that the outcome of this study will establish the quality of care the clinical nursing staff offer to SCA patients at the Eastern Regional Hospital as per the clinical guideline. The results of this study will aid the nurse managers and the management of the Eastern Regional Hospital know which areas of processes of resuscitation they will have to work on. Also no such study has been conducted in the Ghanaian teaching hospitals. ERH trains nurses and junior doctors. They may be posted after training to the district hospitals without adequate CPR knowledge. A proof of poor CPR knowledge may inform policy change for CPR training.

It is hoped that the lessons learnt will be extended to other hospitals and health care facilities in the bid to improve quality of care for SCA patients nation-wide by improving the CPR knowledge. Improving care requires assessment of knowledge. It

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is only when this knowledge is measured that stakeholders can be certain that effective and quality care can be provided.

The study would contribute to existing literature on quality of care in terms of assessing the quality of CPR. There is research gap in the context and in order to fill the gap, it will try to measure the staff knowledge of parameters of resuscitation, the steps or processes of CPR quality and the presence of equipment and supplies needed for resuscitation in order to understand the quality of service provided to SCA by the clinical nurses in the hospital.

1.8 Limitations of the Study

- The researcher did not find relevant literature on participants with similar characteristics done in Ghana. However this study would contribute to literature in respect. This study did not include doctors due to time limitation. Time is a limiting factor as it restricted the sample size and the depth to which this research would have been carried out. Notwithstanding this limitation, the requisite information for this work was sought for within the given time frame and a meaningful work done. Knowledge gained from this study cannot be generalized for all other hospitals nation-wide in Ghana. This is because the circumstances in the other health facilities may be different from that prevailing at the Eastern Regional Hospital, Koforidua.

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CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this chapter, relevant literature is reviewed to aid deeper understanding and also reflect what other authors had done in related fields. In particular, what quality care is, significance of CPR quality, the determinants of CPR quality and the importance of Knowledge of CPR and their effect on the provision of quality health care will be discussed.

2.1 Quality of care

Quality of care means health services provided by every health worker benefit patients without causing harm (Adindu, 2010). Quality of care demands attention to the needs of patients and clients, using tested methods that are safe, affordable and reduce deaths, illness, and disability (Offei, Bannerman, & Kyeremeh, 2004). It is also defined as the degree to which health service for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (Lohr, 1990). To measure the quality of care of a health system, certain measurable benchmarks are deployed to determine progress of a particular system or process within the health system to compare with the other systems or processes using protocols and guidelines. In doing so, three types of indicators are used. The structural indicator is an attribute of the human and material resources of the health system, the process indicator is what is done in giving or receiving care and the outcome indicator measures the effect of care on the health status of a patient or population (Mainz, 2003).

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2.2 Essence of Quality of health care

The World Health Organisation considers quality improvement a permanent obligation and priority for health service development (WHO, 2003). In fact in the early 1980s, WHO inspired member states to establish systematic quality measures that address effectiveness, safety, security and impact of services, patient acceptability, cost and benefit of services (Adindu, 2010).

Many countries responded to this call by developing policies while others progressed towards national quality programme implementation. Luckily, Ghana has gone beyond policy to implementation of national health quality programme because improving the quality of health care was key objective of the Ministry of Health. Offei, Bannerman, and Kyeremeh (2004) assert that the main strategy for achieving quality of care was through implementation of quality assurance programmes, which is now part of routine health service delivery in Ghana.

It can reasonably be argued that the quality of health care impacts upon utilization of health facility and enhanced improvements in quality lead to increased efficiency. Improvement in quality is, a natural phase of the process of development of health systems (Amanoo, Lartson & Ebraham, 1984). According to some researchers, as consumers become more quality conscious, service firms not only need to satisfy their expectations, but to exceed them (Moore et al., 1994) and (Berry et al., 1988).

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2.3 Service Quality and the Public Sector

High service quality is imperative and important for competitiveness of service industry. Providing excellent service quality and high customer satisfaction is the important issue and challenge facing the contemporary service industry (Hung et al., 2003). Service quality is an important subject in both public and private sectors, in business and service industries (Zahari et al., 2008). Public sector organisations have come under increasing pressure to deliver quality services (Randall & Senior, 1994) and improve efficiencies (Robinson, 2003). However, service quality practices in public sector organisations is low and is further exacerbated by difficulties in measuring outcomes, greater scrutiny from the public and press, a lack of freedom to act in an arbitrary fashion and a requirement for decisions to be based in law (Teicher *et al.*, 2002).

Gowan *et al.* (2001) state that service provision is more complex in the public sector because it is not simply a matter of meeting expressed needs, but of finding out unexpressed needs, setting priorities, allocating resources and publicly justifying and accounting for what has been done. In addition, Caron and Giauque (2006) pointed out that public sector employees are currently confronted with new professional challenges arising from the introduction of new principles and tools inspired by the shift to new public management. The rapid development and competition of service quality, in both developed and developing countries has made it important for companies to measure and evaluate the quality of service encounters (Brown & Bitner, 2007). Just as Bonow et al. (2008) said, quality metrics, including performance measures, often focus on processes of care for which recommendations in practice guidelines are of adequate strength that the failure to follow the recommendations is likely to result in suboptimal patient outcomes (eg, performing

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CPR for patients with SCA). Compliance with guidelines for cardiopulmonary resuscitation (CPR) for performance measures and metrics encourages the provision of the strongest evidence-based quality of care, including recovery from SCA (Meaney et al., 2013). However, quality metrics may also extend beyond processes of care, reflecting structures of care (eg, procedural volume or staffing ratios), efficiency in care delivery (eg, chest compression rate, compression depth, hand off time and artificial respiration), or patient outcomes (Bonow et al. 2008).

There are many definitions of quality of care in health care as mentioned above (the American Medical Institute definition of quality and Institute of Medicine (IOM) but the most applicable to CPR is the Donabedian defined quality of care (El Sayed, 2012). Avedis Donabedian define quality care through a model that provides a framework for examining health services and evaluating quality of health care. According to the model, information about quality of care can be drawn from three categories: “structure,” “process,” and “outcomes." Structure describes the context in which care is delivered, including hospital buildings, staff, financing, and equipment. Process denotes the transactions between patients and providers throughout the delivery of healthcare. Finally, outcomes refers to the effects of healthcare on the health status of patients and populations.

INTEGRI PROCEDAMUS

2.4 Quality Assessment

Quality assessment in health care compares performance with expectation, standard, goals and identifies opportunities for improvement, does not impose solutions, does not require any declared intention or ability to take corrective action and relies upon available measures (WHO, 2003). Assessment uses accurate evidence to measure the level of quality and satisfaction of patient’s needs based on agreed standards. When

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the quality of particular health intervention is assessed with reliable information it is easy to accurately show areas of short comings and for that matter improvement (Adindu 2010).

2.5 Significance of CPR quality

There is no specific definition for CPR quality in literature. Basically, good CPR quality means that chest compressions are performed in a way that produces as good perfusion as possible in a CA circumstances (Davok, 2007). This requires that chest compressions are deep enough, performed with right rate and complete release between compressions and minimal pauses are held in compressions during resuscitation attempt.

Despite interventions to improve quality of care in 1998, by instituting numerous trainings to improve the professional competence of health workers, these are not routinely practised and compliance with guidelines on basic patient care, workplace safety and staff working environment is poor (GHS, 2011). Issue of CPR quality in Ghana is been ignored probably because of poor standard managerial practices, shortage of equipment and consumables and poor supervision and lack of adherence to standard procedures or, may be, lack of knowledge among the health staff.

INTEGRI PROCEDAMUS

2.6 Determinants of CPR quality

Determinants of quality CPR were defined in an international collaborative meeting of CPR quality researchers, and a uniform reporting system of measured quality of CPR was published in 2007 (Kramer- Johansen et al. 2007b). Specific CPR quality variables are time without chest compressions (no-flow time), compression depth, compression rate, compression duty-cycle, compression with incomplete release, compression delivered per minute, and ventilation rate.

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2. 6.1 Pauses in chest compression

Single pauses in chest compressions during resuscitation attempts occur for multiple reasons, including rhythm analysis and defibrillation, airway manoeuvres, rescuer change, and chest compression/ventilation ratio. To assess CPR pauses, we need to know when a resuscitation episode begins and ends. The start of a resuscitation attempt is typically recorded when the defibrillator is turned on, and the end of the resuscitation attempt is marked by a return of spontaneous circulation or death, operationally defined as the last chest compression (Kramer- Johansen et al. 2007b).

When all single pauses are added up during a resuscitation attempt, time without compressions is called no flow time. Outside that period rescuers are using chest compression in an attempt to achieve blood flow during CA. So during the pause time blood does not flow (no flow time). This total no-flow time can be described as the cumulative time without chest compressions in the absence of pulse from the first therapeutic effort to the end of the resuscitation attempt (Kramer-Johansen et al. 2007a). The no flow ratio is the fraction of the total no flow time relative to the total time of the resuscitation attempt. The minimal single pause duration which is regarded as no-flow time has been defined as 1.5 seconds (Kramer-Johansen et al. 2007).

INTEGRI PROCEDAMUS

2. 6.2 Optimal chest compression depth

Compression depth is defined as the maximum posterior deflection of the sternum prior to chest recoil (Davok, 2007). In the resuscitation guidelines, target compression depth is 4–5 cm (AHA 2005, Handley et al. 2005); this is changed to at least 5cm. Compressions create blood flow primarily by increasing intrathoracic pressure and directly compressing the heart (Davok, 2007).

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For this reason, the 2010 AHA Guidelines (AHA, 2010) for CPR and ECC recommend a single minimum depth for compression of the adult chest, and that compression depth is deeper than in the old recommendation.

Compressions generate critical blood flow and oxygen and energy delivery to the heart and brain. Deeper chest compressions have been shown to correlate with increased cardiac output in animal models of CA (Babbs et al. 1983, Bellamy et al 1984, Ristagno et al. 2007). Also, in humans, increasing compression depth has been associated with increased defibrillation success and survival to hospital admission (Edelson et al. 2006a, Kramer-Johansen et al. 2006).

Some factors can affect chest compression depth, including the surface underneath the patient, rescuer fatigue during a long CPR episode, rescuer's weight or height and stiffness of the patient thorax (Davok, 2007). In the clinical setting, resuscitation is generally performed on the floor in an out of-hospital setting and in the bed with various mattresses in the in-hospital setting. Therefore, the surface underneath the patient is worthy of focus. In manikin studies, chest compression depth has been documented to be deeper on the floor (Tweed et al, 2001, Perkins et al. 2003) but participants in these studies were few and the populations heterogeneous. Resuscitation guidelines recommend using a backboard, but clinically they are not routinely used, at least, in Finnish hospitals. In addition, data concerning the efficacy of backboard use in terms of the quality of CPR in the bed is conflicting (Perkins et al, 2006, Andersen et al., 2007). Results about rescuer's weight or height correlation on chest compression depth are also conflicting (Perkins et al, 2004, Jones et al, 2008).

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2. 6.3 Optimal chest compression rate

Compression rate, defined as the frequency of chest compressions during a compression series, is easy to measure and modify (Davok, 2007). In resuscitation guidelines prior to 1986, the recommended chest compression rate was 60/minute. This recommendation later changed to about 100/minute (AHA, 2005), and currently, the recommended rate is atleast 100/minute (AHA, 2010).

The number of chest compressions delivered per minute during CPR is an important determinant of return of spontaneous circulation (ROSC) and survival with good neurologic function. The actual number of chest compressions delivered per minute is determined by the rate of chest compressions and the number and duration of interruptions in compressions (eg, to open the airway, deliver rescue breaths, or allow AED analysis). Provision of adequate chest compressions requires an emphasis not only on an adequate compression rate but also on minimizing interruptions to this critical component of CPR (Berg, 2010). An inadequate compression rate or frequent interruptions (or both) will reduce the total number of compressions delivered per minute (AHA, 2010).

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2. 6.4 Optimal Ventilation rate

The compression-to-ventilation ratio is 3:1(AHA, 2010). There should be a 3:1 ratio of compressions to ventilations, with 90 compressions and 30 breaths to achieve approximately 120 events per minute. The recommended compression-to-ventilation ratio remains 3:1 in the 2010 guideline. If the arrest is known to be of cardiac etiology, a higher ratio (15:2) should be considered.

2.7 Monitoring CPR quality

Clinical monitoring of CPR quality has enabled identification of what defines poor quality during resuscitation (Wik et al., 2005, Abella et al., 2005). These observations

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have led to changes in the guidelines and a wider knowledge of and interest in quality during CPR. Basically, monitoring of CPR quality can be divided into two main areas: simply monitoring what to do clinically or in training sessions, or monitoring to provide immediate feedback for improving the quality of CPR clinically or in training sessions (Davok, 2007).

In clinical resuscitation, there are many ways to monitor CPR quality. Probably the oldest is the palpable pulse, which was used as an indicator of good CPR quality in the 1990s (Wik et al 1994, Gallagher et al 1995, Van Hoeyweghen et al. 1993). There are some limitations with this method because it is difficult and time consuming to check a pulse even with a pumping heart (Eberle et al. 1996, Ochoa et al. 1998a).

The rediscovery of the issue of CPR quality emerged with developments in the use of defibrillator technology in late 1990s to make possible easy measurement of CPR quality in the clinical setting (Sunde et al. 1999). In clinical situations, chest compression depth can be directly measured using an accelerometer (Aase et al. 2002) or a linear potentiometer mounted on the patient's chest (Gruben et al. 1990). Indirectly it can be estimated with a force detector on the patient's chest (Perkins et al. 2005). The most important studies addressing CPR quality are done with an accelerometer technique (Wik et al. 2005, Abella et al. 2005). The defibrillators record chest compressions via a sternal pad fitted with an accelerometer and capture ventilations based on changes in thoracic impedance between the defibrillator pads.

2.8 Current status of CPR quality in clinical situations

The quality of CPR in clinical studies is poor (Elazazay, et al. 2012). With an in-hospital setting, there is a slow compression rate (<80/min) in 37%, too shallow chest compressions in 37%, and 24% of time with no compressions at all during in-hospital

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CPR (Abella et al. 2005). In an out-of-hospital setting, it is known that chest compressions were not given 48% of the time without spontaneous circulation; an average 28% of the chest compressions had the recommended depth of 38–51 mm; and the mean compression rate was 121/minute (Wik et al. 2005). Others have also documented similar findings (Losert et al. 2006, Valenzuela et al. 2005, Ko et al. 2005). With highly trained professionals in an emergency department, CPR quality is better. In a study, the mean rate was 114/minute, depth was too shallow in only 7%, and the no-flow ratio was 12.7% (Losert et al. 2006).

2.9 Current status of CPR knowledge among healthcare providers

Cardiopulmonary resuscitation knowledge is weak and poor among nurses. They lack basic knowledge of CPR. The pass rate of knowledge of CPR in nurses is 23.18 % (Xiu-zhen, Rui-lian, Yan-mei, & Tao, 2008). Brown et al (2006) demonstrated that accurate knowledge of guidelines was associated with increased odds of correct performance of some aspects of CPR. In a study, 35.1% pass rate was recorded among clinicians which is far below the expected 84% based on AHA BLS course. This raises considerable concern about the effectiveness of CPR that is performed by these health care providers (Botha, 2012).

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Seventy (70%) percent of the health professionals considered that their knowledge about resuscitation inadequate in a study in Kenya (Murila, et al., 2012). The mean knowledge score of nurses was 43.9% in two studies conducted in Ghana and Ethiopia (Gebreegziabher et al. 2014). The low level of performance could be due to limited exposure to real cardiopulmonary resuscitation cases during the undergraduate course, lack of certification processes before leaving the university and updating training (Gebreegziabher et al. 2014).

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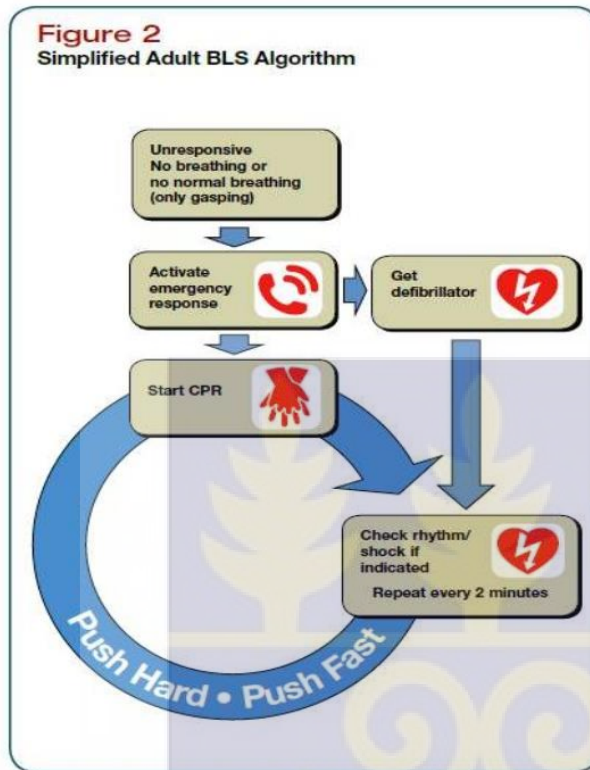
AMERICAN HEART ASSOCIATION:2010 GUIDELINES



Simplified Universal BLS algorithm

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Figure 2.1: Adult health care provider BLS algorithm.

CPR Algorism (taken from American Heart Association guideline for CPR and ECC 2010)

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CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the methodology used to carry out the study. It discusses the research design, study area, population, sample size, sample and sampling technique, Data collection techniques methods / methods and tools, and data analysis have been discussed.

3.1 Research Design

The study adopted the cross-sectional descriptive survey using a mixed method. As noted by Yin (1994) survey is a systematic method for gathering information from a sample of individuals for the purpose of describing the attributes of the larger population of which the individuals are members. This cross-sectional descriptive survey used different groups of people who differ in the variable of interest, but share other characteristics such as socioeconomic status, educational background, and ethnicity. This method is considered useful because the problem of study could not be directly observed.

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3.2 Study Area

The study was conducted at the Eastern Regional Hospital, Koforidua (see figure 3.1). Koforidua is one of the four sub municipals located in the New Juaben district of the Eastern Region. Koforidua lies between latitude $6^0$06N and $0^0$16W (Asenso-Mensah, Awoyemi, & Browne, 2009). Eastern Region shares boundaries with Central, Greater Accra, Brong Ahafo, Ashanti and Volta regions. It is a densely populated (GSS 2005) and mostly urbanized region (Attua & Fisher, 2011).

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The Koforidua General Hospital is the regional hospital in Koforidua, the capital of the eastern region of Ghana. It is a 400 bed tertiary teaching hospital. It provides a range of services to the local (and extended rural) population. These include provision of specialist care in visceral surgery, paediatric surgery, obstetrics and gynaecology, neonatology and paediatrics, dermatology, venerology and HIV medicine and laboratory medicine. The hospital is also an academic centre for training interns and residents as well as allied health students. Eastern Regional Hospital is the only public Hospital in the New Juabeng municipality. It is a main referral facility where many patients with severe or life threatening conditions are referred to.

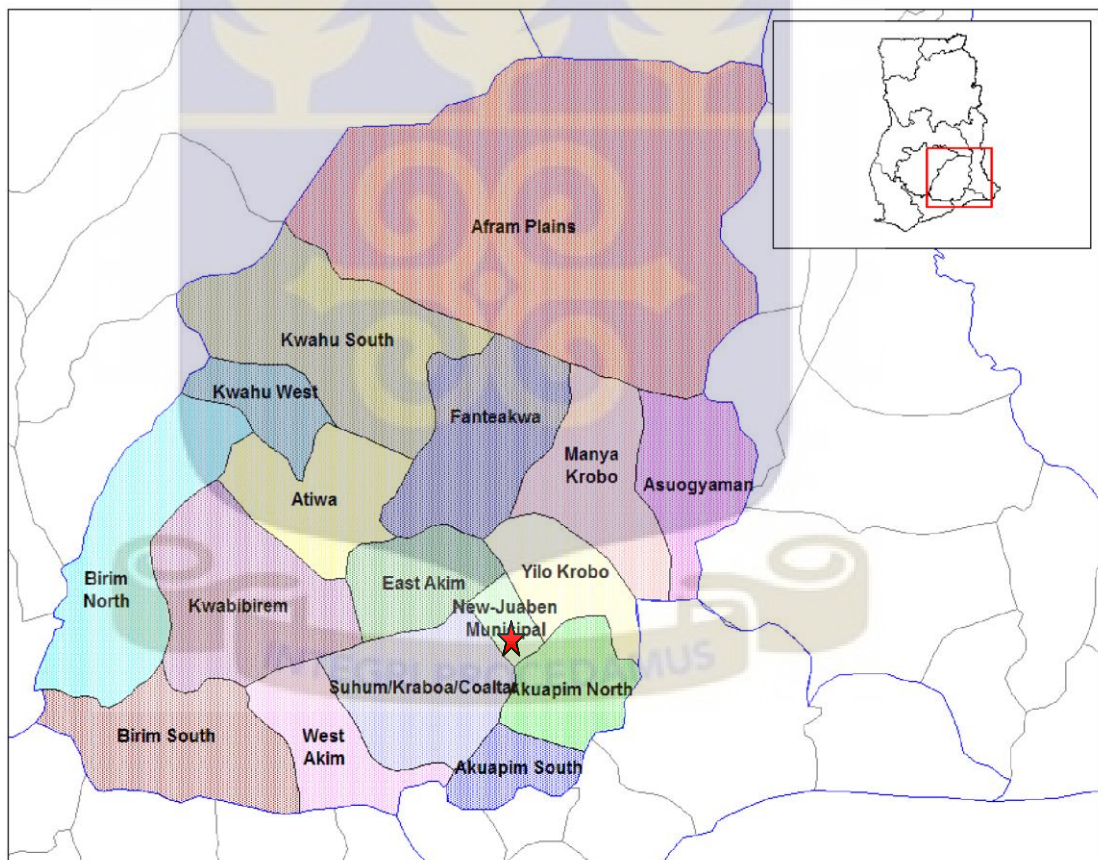

Figure 3.1: Map of Eastern Region

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3.3 Study Population

The study population included all 259 clinical nurses working in various departments at the Eastern Regional Hospital, Koforidua, Ghana. They either have a Diploma or Bachelor's degree in Nursing.

3.4 Sample Size

The minimum sample size as indicated by Cochran for cross-sectional study is:

$n = ((Z\alpha/2)^2 \, p\,(1-p))/d^2$ ……………………………(1)

Where:

n: sample size

p: the proportion of nurses who have knowledge of CPR procedure, p=40%

d is the margin of error =8%

$Z\alpha/2 = 1.96$ since $\alpha = 5\%$ at 95% Confidence Level

Therefore, by substituting the above in the equation (1), the minimum sample size required for this study was given by $n = (1.96)^2 * 0.4(1-0.4) / (0.08)^2 = 144.06$

Accounting for the effect of non-response rate of 10%, the final sample size n_o $= 144.06/0.9 = 160.066$ ie 160

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3.5 Variables

There were dependent and independent variables as indicated below:

3.5.1 Dependent Variables

The dependent variable is quality of care

3.5.2 Independent Variables

The independent variables are:

- Socio-Demographic factors (Age, Gender marital status. Qualification and department of work)
- Quality measures (Timely care, Care coordination, Clinical guideline, Staff knowledge and Patient safety)
- Process measures (Identification of cardiac arrest, Description of steps in CPR (procedure)
- Challenges (Academic improvement, Staffing, Technology, Relationship with other staff)
- Equipment and supplies (Not available/ inadequate, Available, Defective)

3.6 Sample and Sampling Techniques

A stratified sampling method was used to select the participants for this study. Various departments served as stratum and the nurses in each of the departments, served as sampling units. Proportion of nurses to participate in the study was calculated. To allocate sample size, simple random sampling was then used. Their names were numbered and the numbers wrapped in a paper and picked randomly.

The allocation of sample size for each department is shown in table 3.2 below:

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Table 3.1: Allocation of Sample Size by Department

	Department	No of Nurses	Percentage (%)	Sample Size
1	Casualty/emergency unit	13	5.01	8
2	OPD	24	9.27	15
3	Children's ward	14	5.41	8
4	Medical ward	24	9.27	15
5	Surgical	17	6.56	11
6	Theatre/Anaesthesiology	17	6.56	15
7	Neonatal /Intensive care unit	12	4.63	8
8	Recovery/ ICU	18	6.95	10
9	Obstetrics/ Gynaecology	49	18.92	31
10	Mental Health Unit	15	5.79	9
11	Public Health Unit	9	3.48	6
12	All other Units	47	18.15	24
	TOTAL	259	100	160

The simple random sampling method was then used for the stratum where sampling units were chosen randomly for the research.

3.7 Data Collection Techniques

The questionnaire (Appendix B) was designed with close-ended questions. It consisted of four sections. The section one covered demographic characteristics of the respondents. The section two covered quality measures which had domains such as timely care, care coordination, adherence to clinical guidelines, knowledge and client

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safety. While the section three covered process measures which included identification of CA and adult and paediatric CPR decisions and actions, section four captured challenges.

The questions were derived from the American Heart Association) (AHA) guideline of 2010 for CPR and Emergency Cardiac Care (ECC). Questions were based on the course content of AHA BLS. A minimum score of 84% defined adequate knowledge (outlined by AHA BLS Course).

3.8 Data analysis

The STATA Version 13 was used to analyse the data collected and presented in tables. To investigate which variables were associated with the knowledge and quality of care, the following statistical test of significance were used:

- Chi square test to compare proportion of domains who usually come into contact with CA patients and CPR training status.
- Mean comparison tests (t and F tests) were used for the demographic characteristics and working background.
- Correlation analysis to find the extent of relationship between knowledge and quality of care.

3.9 Ethical Considerations

Ethical clearance was obtained from the Ghana Health Service Ethical Committee through the School of Public Health (see appendix E). Written approval was sought from the Director of the Eastern Regional Hospital to use the facility. Prior to commencing data collection, the medical director sent a memo to all the departments informing them of the use the hospital for the study. Appointment was made with the

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unit managers. Duty rosters were obtained from each ward. The respondents were assured of their anonymity and the purpose of the study was clearly explained to all the participants. Informed consent form (see appendix A) was given to respondents, which they read and signed before they embarked on answering the questionnaires. Those who sought further explanation had the questionnaires explained to them by the research assistants after which their consent forms were signed.

Potential Risks/Benefits: The study did not pose any harm to the participants but rather, the outcome of the study helped to inform policy on quality of care, which will lead to the improvement of services provided to patients with sudden cardiac arrest.

Privacy/Confidentiality: Data collection was done in an enclosed neutral place where there were no disturbances, and privacy was ensured. The information given was treated confidentially and used for the purpose of the study.

Compensation: There were no financial benefits nor any other benefits, except refreshment was given to participants after the administration of the questionnaires.

Data Storage: The data gathered will not be shared with any individual. The information given would be treated as confidential and only be used for the purpose of the study.

Voluntary Concern: Participation in this study was solely voluntary and they could choose not to answer any individual question or all the questions. They were given the option to withdraw from the study at any time.

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Conflict of Interest: The researcher had no conflict of interest, but rather did this study only for academic purpose.

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CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the analysis and the discussion of the results obtained from the study. The chapter is further organized into four sub sections excluding the introductory section. A description of the data with respect to demographic background of respondents is done under section 4.1. The working background of respondents is taken care of in section 4.2. Section 4.3 considers respondents' background in CPR, measuring the knowledge level as well as the quality of care for patients with CA whereas relationship between socio-demographic, working, knowledge of respondents and quality of care are thoroughly considered in section 4.4. For statistical tests of significance, 5% level of significance was used in the study. The analysis was carried out using Stata SE 13 statistical software and Microsoft Excel for the table work.

4.1 Demographic Characteristics of Nurses

Table 4.1 illustrates gender, age groups and marital status of respondents who were interviewed; it was revealed that female respondents accounted for 70% whereas respondents who were males represented 30%. It can be observed that female respondents who participated in the survey outweighed male respondents.

The table revealed that 40.6% of the respondents are within the 18-29 years group, 32.5% in the 30-39 years group while 20.0% represent the 40-49 years group. The rest of the 6.9% of the respondents were 60 and above years.

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On the marital status of respondents table 4.1 showed that 35.6% of respondents where single whereas respondents who were married accounted for 60.0%. The rest of rest (6.3%) of respondents said they were divorced.

Table 4.1: Demographic Characteristics of Nurses

Demographic Characteristics	*Frequency*	*Percent*
Gender		
Male	48	30.0%
Female	112	70.0%
Age		
18 – 29	65	40.6%
30 – 39	52	32.5%
40 – 49	32	20.0%
50 and above	11	6.9%
Marital Status		
Married	97	60.6%
Not Married	57	35.6%
Divorced	6	6.3%

4.2 Proportion of Clinical Nurses Based on Rank, Duration of Service and Working Hours

Table 4.2 illustrates category of nurses, duration of service and weekly working hours of the respondents who were interviewed. It was revealed that staff nurses accounted for the highest participants (33.8%) whereas senior nursing officers were lowest (8%).

The table also revealed that 41. 5% of the respondents served between 1-4 years, 21.9% in the 5-9 years while 19.4% served between 10-19 years. The least interviewed were 30 and above years group (1.3%).

The table further revealed that 92.5% of respondents worked between 20 to 40 hours in a week, 4.4% work more than 40 hours while 3.1% work less than 20 hours.

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Table 4.2: Proportion of Clinical Nurses Based on Rank, Duration of Service and Working Hours

Working Background of Clinical Nurses	*Frequency*	*Percent*
Nursing Rank		
Registered nurse	12	7.5%
Staff nurse	54	33.8%
Senior staff nurse	28	17.5%
Nursing Officer	14	8.8%
Senior Nursing Officer	8	5.0%
Principal	12	8.1%
Midwife	32	20.0%
Service Duration		
Less than 1 year	10	6.3%
1 - 4 years	66	41.3%
5 - 9 years	35	21.9%
10 - 19 years	31	19.4%
20 - 29 years	16	10.0%
30 years or above	2	1.3%
Weekly Working Hours		
Less than 20	5	3.1%
20 to 40	148	92.5%
More than 40	7	4.4%

4.3 CA Background, Knowledge Level and Quality of Care

In this section, the background of respondents on CA and CPR, their knowledge levels on CPR and their assessment of quality of care of patients with CA are presented.

4.3.1 Contact with CA patients and CPR training

The study assessed the extent of respondents' contact with patients who had CA and whether training on CPR had been received. The results are shown in table 4.3.

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Table 4.3: Proportion of Nurses who got in Contact with CA patients and had CPR training

CA Patients Contact and Training	*Frequency*	*Percent*
In contact with CA patient?		
Contact	117	73.1%
No Contact	43	26.9%
CPR training		
Training	88	55.0%
No Training	45	28.1%
Do not recall	27	16.9%
Last CPR training		
Less than one year	11	12.5%
Between 1 and 2 years	22	25.0%
2 to 3 years	13	14.8%
More than 3 years	42	47.7%

From Table 4.3, it is noted that majority of the respondents (73%) were typically in direct or indirect contact with patients with CA. Also, majority of the respondents (55%) admitted to have ever received training on CPR and of this, 48% attested to receiving this training in more than three years. Only 12.5% received the training in less than a year ago.

The proportion of respondents in contact with CA patients and trained in CPR are further compared across gender, department and ranking of respondents. The results are shown in tables 4.3, 4.4 and 4.5.

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Table 4.4: Comparing Proportion of nurses who come in Contact with CA patients and those who Received CPR training across gender

CA Patients Contact and	Male		Female			
Training	***Frequency***	***Percent***	***Frequency***	***Percent***	Chi-square	***P-value***
In contact with CA patient?						
Contact	31	65%	86	77%	2.55	0.111
No Contact	17	35%	26	23%		
CPR training						
Training	27	56%	61	54%		
No Training	12	25%	33	29%	0.4	0.819
I don't remember	9	19%	18	16%		

From Table 4.4, 65% and 75% of male and female respondents respectively are typically in contact with patients with CA implying more females are in contact with CA patients. A Chi-square test to compare these proportions showed no significant difference (p-value =0.111). Moreover, in the case of CPR training, 56% and 54% of male and female respondents attested to remember receiving training. Likewise a chi-square test revealed there was no significant difference in the proportions though males were slightly higher.

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Table 4.5: Compering Proportion of Nurses Who Come in Contact with CA Patients and those Who Receive CPR training across Work Ranks

		In contact with CA patient?		**CPR training**		
Work Rank		Yes	No	Yes	No	I don't remember
Registered nurse	***Frequency***	8	4	9	3	0
	Percent	67%	33%	75%	25%	0%
Staff nurse	***Frequency***	38	16	27	24	3
	Percent	70%	30%	50%	44%	6%
Senior staff nurse	***Frequency***	22	6	15	6	7
	Percent	79%	21%	54%	21%	25%
Nursing Officer	***Frequency***	11	3	9	0	5
	Percent	79%	21%	64%	0%	36%
Senior Nursing Officer	***Frequency***	5	3	4	1	3
	Percent	63%	38%	50%	13%	38%
Principal	***Frequency***	9	3	5	2	5
	Percent	75%	25%	42%	17%	42%
Midwife	***Frequency***	24	8	19	9	4
	Percent	75%	25%	59%	28%	13%
Chi-square		1.635		28.978		
P-value		0.95		0.002		

From Table 4.5, Senior staff nurse and Nursing officers come in contact CA with patients most (79%) and Senior Nursing Officers are the least to be in contact with CA patients (63%). A Chi-square test however, showed no significant differences in the proportions (p-value =0.95). In addition, Registered Nurses are the most who attested to receiving training on CPR (75%) with Principal Nurses being the least (42%). A chi-square test further revealed that the proportions are significantly different from each other (p-value = 0.002)

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Table 4.6: Comparing Proportion of Nurses Who Come in Contact with CA Patients and those who Receive CPR training across Departments

Departments		In contact with CA patient?		CPR training		
		Contact	No Contact	Trained	Not Trained	I don't remember
Theatre/Anaesthesia	***Frequency***	11	4	6	4	5
	Percent	73%	27%	40%	27%	33%
Recovery ward/ICU	***Frequency***	10	0	4	3	3
	Percent	100%	0%	40%	30%	30%
Neonatal/Intensive care unit	***Frequency***	4	4	3	5	0
	Percent	50%	50%	38%	63%	0%
Medical Ward	***Frequency***	12	4	9	3	4
	Percent	75%	25%	56%	19%	25%
Paediatric/children's ward	***Frequency***	8	0	4	3	1
	Percent	100%	0%	50%	38%	13%
Obstetrics/gynaecology	***Frequency***	23	8	18	9	4
	Percent	74%	26%	58%	29%	13%
Emergency/Casualty	***Frequency***	7	1	7	1	0
	Percent	88%	13%	88%	13%	0%
Psychiatric/Mental health	***Frequency***	1	9	5	4	1
	Percent	10%	90%	50%	40%	10%
Surgical	***Frequency***	8	1	3	5	1
	Percent	89%	11%	33%	56%	11%
OPD	***Frequency***	9	6	7	5	3
	Percent	60%	40%	47%	33%	20%
Public Health	***Frequency***	5	1	4	2	0
	Percent	83%	17%	67%	33%	0%
Others	***Frequency***	19	5	18	1	5
	Percent	79%	21%	75%	4%	21%
Chi-square		29.272		26.791		
P-value		0.001		0.155		

4.3.2 Knowledge Level, Quality Care and Challenges

To assess the knowledge level of respondents in managing CA patients, a total of fifteen (15) questions were passed out to meet this end. Clinical process also comprised of five (5) questions. The quality care had domains like; timely care, care coordination, adherence to clinical guidelines and patient safety. The average values are used for the analysis.

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The knowledge level and quality and challenge assessment of managing CA patients by respondents are shown in table 4.7.

Table 4.7: Knowledge Level, Quality Care and Challenges Assessment

Domains	Rating	95% CI	
CPR Knowledge	60%	58%	62%
Clinical Process	53%	49%	57%
Timely Care	61%	57%	65%
Care Coordination	75%	70%	79%
Clinical Guidelines	66%	63%	69%
Patient Safety	78%	76%	81%
Quality Care	72%	70%	73%
Challenges	55%	52%	58%

From Table 4.7, the average knowledge level of respondents of CA/CPR is estimated at 60% (9 out of 15), which is significantly above average as shown by the 95% confidence interval (58%, 62%).

With the quality of care domains, patient safety is rated the highest at 73% with timely care rated the lowest at 61. The overall quality care is rated at 72%. This implies that respondents rated patient safety as the most adhered to quality measure done when dealing with patients with a CA and least on timely care.

In the case of the challenges, respondents rated it as average (55%). This means the challenges they face are neither overwhelming nor non-existent on average. The study further analyzes individually the practices used to assess theoretical knowledge, quality measures, clinical process and challenges.

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4.3.3 Summary of Correct responses for Knowledge of Cardiac Arrest

Results for individual questions used to measure knowledge, Quality Measures, Clinical Process and Challenges are shown in Table 4.8.

From Table 4.8, it is noticed that respondents had poor knowledge of locating the compression site as only 34% (95% CI 27; 42) was able to correctly say where to locate it. Respondents also showed inadequate knowledge of locating the depth of chest compression as only 47% (95% CI: 39; 55) was able to locate this. Noteworthy is that almost all respondents (98%) affirmed they could detect a patient with cardiac arrest.

Table 4.8: Summary of Correct responses for Knowledge of Cardiac Arrest

Questions Answered Fairly Well	Proportion Correct	95% CI	
How do you know that a patient is having CA?	98.1%	95.9%	100.0%
How do you manage patient with cardiac arrest in your setting?	93.1%	89.2%	97.0%
In your setting what first aid equipment should you prioritize to perform CPR?	95.0%	91.6%	98.4%
While performing CPR your chest compressions should be:	49.4%	41.6%	57.1%
In connection with CPR, what should you do when you give breaths or ventilate?	61.9%	54.3%	69.4%
How do you know that the breaths or the ventilation are effective?	97.5%	95.1%	99.9%
Where is the site for compression?	34.2%	26.8%	41.5%
What is the compression-ventilation ratio?	50.3%	42.6%	58.1%
What is the correct rate of chest compression?	58.1%	50.4%	65.7%
How far down the anterior posterior diameter of the chest is the compression depth?	47.1%	39.4%	54.9%
Chest compression-decompression time must be?	92.9%	89.0%	96.9%
There must be complete relapses between compressions to fill the heart	94.3%	90.7%	97.9%

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4.3.4 Summary of Nurses Conformity to Quality Measures

From Table 4.9, it is noted that, for timely care quality measures, 44% (95% CI: 36, 51) of respondents was able to correctly tell the duration for performing CPR and bulk majority of the respondents (97%) could tell the first thing when there is a collapse of a patient. With clinical coordination, the lowest that respondents are being conformed to is good systems and procedures in place to prevent medical errors (63%, 95% CI: 55; 70) and the highest as set in the study was staff following procedures when transferring patients to different units (89%, 95% CI: 83; 93). In the case of care coordination, the lowest measure according to respondents was "good cooperation among the hospital units" (76% 95% CI: 70; 83), Finally, for patient safety, the quality measure rated as least being conformed to was "mechanism to monitor wrong medication being given to patients" (29%) and the most conformed to measure was "making patients a top priority in the hospital (98%). Overall, the lowest rated quality measure was putting the mechanism in place to check given wrong medications.

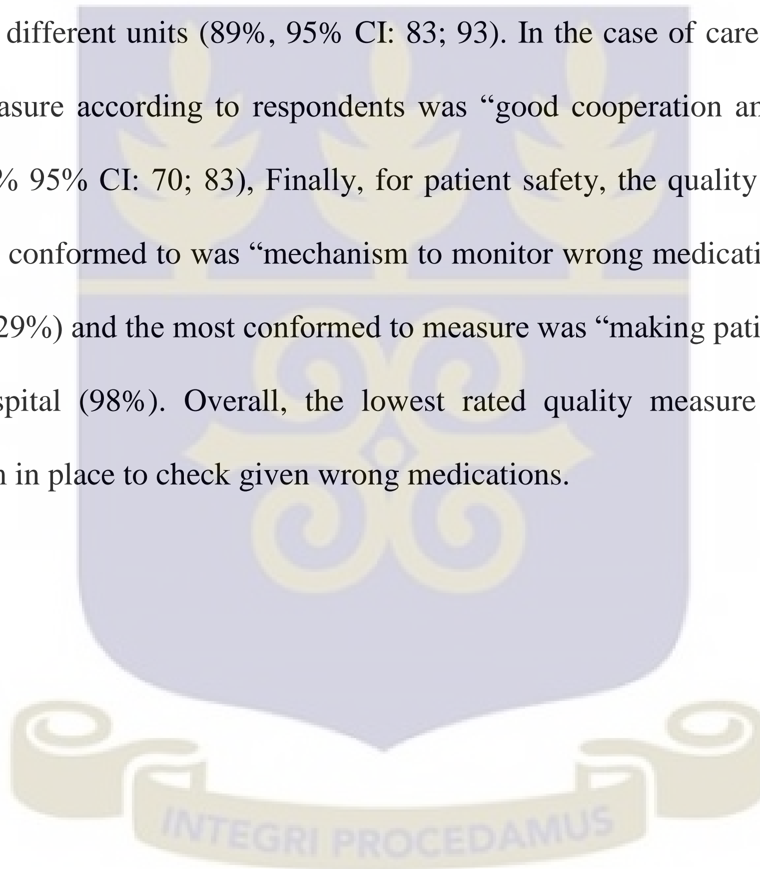

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Table 4.9: Summary of Nurses Conformity to Quality Measures

Quality Measures Questions	Proportion conforming	95% CI	
Timely Care			
Appropriate time for inspection of a patient with suspected CA	55.0%	47.3%	62.7%
First thing you do if you see a person collapse	96.9%	94.2%	99.6%
How long do you perform CPR for a patient?	43.8%	36.1%	51.4%
Care Coordination			
Important patient care information is not lost during shift changes (handing over).	95.6%	92.5%	98.8%
No problem in the exchange of information across department/unit	96.3%	93.3%	99.2%
Hospital shift changes) are not problematic	91.9%	87.6%	96.1%
There is good cooperation among hospital units that need to work together	76.3%	69.7%	82.8%
Doctors turn up when called to attend to CA patient	95.6%	92.5%	98.8%
Clinical Guidelines			
Staff follow standard procedure when transferring patients form one unit ot another.	88.1%	83.1%	93.1%
Procedures and systems are good at preventing medical errors from happening	62.5%	55.0%	70.0%
Conversant with CPR standard guide	77.5%	71.0%	84.0%
Have a copy of the guide in the department	82.5%	76.6%	88.4%
Patient Safety			
Patient safety is a top priority in this hospital	97.5%	95.1%	99.9%
Hospital management provides a work climate that promotes quality of care	90.0%	85.4%	94.6%
The actions of hospital management show that quality of care is a top priority	96.9%	94.2%	99.6%
Right medication given during CPR	83.1%	77.3%	88.9%
Is there a mechanism to monitor if patient is given a wrong medication?	28.8%	21.7%	35.8%
Standardization of health care devices are important for patient's safety	82.5%	76.6%	88.4%

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4.3.5 Summary of Questions to Assess Nurses Knowledge of Clinical Processes Answered Fairly Well

From Table 4.10. it is realized that the most adhered to clinical process is “time of writing report when conducting CPR” (94%) and the least is “how CPR team is assembled at the hospital” (19%).

Table 4.10: Summary of Questions to Assess Nurses Knowledge of Clinical Processes Answered Fairly Well

Questions Answered Fairly Well	Proportion Correct	95% CI	
How do you assemble the resuscitation team members when there is CA?	19.4%	13.3%	25.5%
Before the arrival of a Doctor of the resuscitation team what do you do?	78.1%	71.7%	84.5%
What are the steps in CPR?	68.1%	60.9%	75.3%
How will you describe the CPR process (Algorism)	66.9%	59.6%	74.2%
The doctor or the resuscitation team writes the report?	93.8%	90.0%	97.5%

4.3.6 Summary of Individual Challenges

Table 4.11 shows that the highest challenge faced by respondents in the study was “work overload and inadequate staff” (97%) and the least challenge was “using Ambu Bag” (5%).

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Table 4.21: Summary of Individual Challenges

Challenges	Proportion Challenged	95% CI	
Lack of advancement opportunities	76.9%	70.3%	83.4%
Work overload	96.9%	94.2%	99.6%
Too few Staff	96.9%	94.2%	99.6%
Poor organizational culture	84.4%	78.7%	90.0%
Lack of mentoring	65.0%	57.6%	72.4%
Poor personal fit with boss	63.8%	56.3%	71.2%
Limited or no enough access to technology	67.5%	60.2%	74.8%
Lack of training	71.3%	64.2%	78.3%
No enough time with patients	42.5%	34.8%	50.2%
Non-availability of trained personnel to provide effective cardio-pulmonary resuscitation (CPR)	96.3%	93.3%	99.2%
No CPR teams exits	92.5%	88.4%	96.6%
No CPR policies and guidelines exist	91.9%	87.6%	96.1%
Luck of fully equipped emergency trolleys and/or equipment	91.9%	87.6%	96.1%
I do not know how to do CPR	10.6%	5.9%	15.4%
I am not able to use Ambu bag	5.0%	1.6%	8.4%

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4.4 Assessment of Factors relating to Knowledge Level, Quality Care and Challenge of Nurses

The study further investigates which of the explanatory variables are significantly related to the knowledge level, quality care and the challenges level.

4.4.1 Relating Socio-demographic Factors to Quality Measures and Challenges

Table 4.32: Relating Socio-demographic Factors to Quality Measures and Challenges

	Gender			Age				
	Male (n=48)	Female (n=112)	**p-value**	18–29 (n=65)	30-39 (n=52)	40-49 (n=32)	50+ (n=11)	**p-value**
CPR Knowledge Level	62%	59%	0.277	59%	60%	62%	59%	0.537
Clinical Process Measure	58%	50%	**0.045**	53%	53%	53%	45%	0.824
Timely Care	56%	63%	0.890	49%	63%	76%	76%	**0.014**
Care Coordination	71%	76%	0.105	74%	70%	82%	82%	0.476
Clinical Guidelines	68%	65%	0.982	60%	65%	73%	77%	0.400
Patient Safety	78%	78%	0.599	79%	75%	81%	80%	**0.008**
Quality Care	70%	72%	0.239	68%	69%	79%	79%	0.146
Challenges	57%	55%	0.564	63%	56%	45%	39%	**0.000**

From Table 4.12, males recorded higher average knowledge level (62%) than females (59%) but the difference is not significant (p = 0.277), hence, gender does not influence the knowledge level. Also, the age group 40-49 years recorded the highest knowledge level (62%) with the group 18-29 the lowest (59%). The knowledge level generally, increased with age increase, but the differences were not significant (p = 0.537)

With quality of care, females (72%) rated it higher than males (70%) but the difference was not significant (p-value=0.239). There was no difference with quality care among the age groups as well. However, with the quality care sub-domains, only patient safety showed significant difference among the age groups with the group 50 years and above rating it the highest (79%), (p = 0.008).

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In addition, males recorded a significantly higher score in clinical process (58%) than females (50%), but there was no significant difference among the age groups for the clinical process scores, (p-value=0.824).

There was no significant difference between the challenges rating of males (57%) and females (55%) though the females rated their challenges a bit lower (p-value=0.564). However, there was significant difference in challenges rating among the age groups. The age group 18 – 29 yearshad the highest challenge rating at 63% and the challenge rating reduces as the age increases (p-value=0.000).

In conclusion, gender does not influence the knowledge level, the quality care and the challenge rating but only clinical process. Knowledge level increased with age but not significantly related, quality care rating is not influenced by age but challenge level reduces with age and challenge level is significantly influenced by age.

4.4.2 Relating Professional Ranking and Length of Service to Nurses CPR Knowledge, Clinical Processes, Domain of Quality Measures and Challenges

From Table 4.13, there is no significant difference in knowledge among the professional rankings though principals recorded the highest and registered nurse the lowest, (p-value=0.552). There is also no significant difference among in quality care among the professional rankings but the differences for challenges level were significant with midwives recording the highest and principals the lowest (p-value=0.000).

With length of service, there was no difference with knowledge levels and quality care measure but only with challenge level rating (p-value=0.000).

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Table 4.43: Relating Professional Ranking and Length of Service to Nurses CPR Knowledge, Clinical Processes, Domain of Quality Measures and Challenges

	N	Knowledge	Clinical Process	Timely Care	Care Coord.	Clinical Guide	Patient Safety	Quality Care	Challenges
Nursing Rank									
Registered nurse	12	57%	65%	50%	72%	58%	82%	69%	59%
Staff nurse	54	58%	52%	56%	72%	63%	78%	69%	60%
Senior staff nurse	28	63%	57%	67%	72%	68%	78%	72%	51%
Nursing Officer	14	59%	51%	83%	76%	75%	77%	77%	46%
Senior Nursing Officer	8	61%	35%	75%	73%	84%	83%	79%	47%
Principal	12	63%	48%	69%	85%	69%	85%	79%	39%
Midwife	32	61%	51%	52%	79%	63%	73%	69%	62%
p-value		0.552	0.258	**0.009**	0.344	0.307	0.343	0.490	**0.000**
Service Duration									
Less than 1 year	10	53%	64%	57%	60%	50%	78%	63%	58%
1 - 4 years	66	59%	52%	48%	76%	63%	80%	70%	63%
5 - 9 years	35	63%	55%	65%	69%	65%	74%	69%	56%
10 - 19 years	31	60%	52%	74%	78%	75%	80%	77%	44%
20 - 29 years	18	61%	44%	78%	83%	72%	78%	78%	44%
p-value		0.252	.514	**.033**	.488	.539	.174	.554	**.000**

4.4.3 Departmental Length of Service and Nurses CPR Knowledge, Clinical Processes, Domains of Quality Measures and Challenges

Table 4.14 shows that there was a significant difference in knowledge levels across the departments with OPD recording the highest and pediatrics the lowest (p-value=0.002). With quality care psychiatric recorded the highest and public health the lowest and the differences across departments were significant (p-value=0.035). The department with the highest challenge was NICU whilst Psychiatric had the lowest challenge level. Departmental classification again influences challenge levels as the difference was significant.

Length of service at department was only significantly related to challenge levels and it showed that people with higher length rated the challenges higher (p-value=0.041).

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Table 4.54: Relationship between Departmental Length of Service and Nurses CPR Knowledge, Clinical Processes, Domains of Quality Measures and Challenges

	N	Knowledge	Clinical Process	Timely Care	Care Coord.	Clinical Guide	Patient Safety	Quality Care	Challenges
Department									
Theatre/Anaesthesia	15	64%	51%	67%	67%	80%	77%	73%	53%
Recovery ward/ICU	10	59%	54%	47%	54%	58%	78%	62%	56%
Neonatal/Intensive care unit	8	49%	53%	46%	83%	53%	79%	69%	76%
Medical Ward	16	59%	44%	60%	75%	66%	77%	71%	50%
Paediatric/Children's ward	8	48%	73%	63%	45%	53%	79%	61%	66%
Obstetrics/Gynaecology	31	61%	53%	52%	81%	63%	75%	70%	64%
Emergency/Casualty	8	65%	68%	79%	93%	81%	85%	85%	48%
Psychiatric/Mental health	10	64%	56%	67%	70%	60%	87%	73%	41%
Surgical	9	61%	44%	37%	69%	53%	74%	62%	61%
OPD	15	66%	39%	73%	77%	80%	87%	80%	40%
Public Health	6	53%	40%	33%	77%	63%	69%	64%	71%
Others	24	59%	61%	79%	83%	67%	76%	76%	50%
p-value		**0.002**	0.062	**0.004**	0.094	**0.003**	**0.011**	**0.035**	**0.000**
Departmental Service Length									
Less than 1 year	32	62%	54%	67%	73%	68%	76%	72%	50%
1 - 4 years	111	59%	52%	57%	75%	66%	78%	71%	57%
5 - 9 years	12	62%	53%	67%	80%	63%	78%	73%	56%
<10years	5	57%	60%	87%	56%	65%	90%	74%	41%
p-value		0.650	0.907	0.051	0.794	0.272	0.316	0.237	**0.041**

4.4.4 Relationship between Nurses Contact with Cardiac Arrest Patients and Cardiopulmonary Resuscitation Training and Knowledge, Quality Measures and Training

The study revealed that there was a significant difference between knowledge levels of respondents who are in contact with CA patients (61%) and those who do not (58%), (p-value=0.031) and also between those who have received CPR training (63%) and those who have not (53%), (p-value=0.000). Only training status further had significant relationships with quality care measure ratings (p-value=0.014), its sub-domains timely care (p-value=0.000) and patient safety (p-value=0.000), clinical process(p-value=0.000) and challenges level (p-value=0.000).

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Table 4.65: Relationship between Nurses Contact with Cardiac Arrest Patients and Cardiopulmonary Resuscitation Training and Knowledge, Quality Measures and Training

	In contact with CA patient?			**CPR training**			
	Contact (n=117)	No Contact (n=43)	***p-value***	Trained (n=88)	Not trained (n=45)	Do not recall (n=27)	***p-value***
Knowledge Level	61%	58%	***.031***	63%	53%	62%	***.000***
Clinical Process Measure	54%	50%	*.509*	59%	48%	38%	***.000***
Timely Care	60%	63%	*.093*	65%	51%	63%	***.000***
Care Coordination	74%	75%	*.134*	79%	69%	70%	*.462*
Clinical Guidelines	66%	66%	*.789*	69%	60%	66%	*.194*
Patient Safety	78%	77%	*.559*	76%	77%	87%	***.005***
Quality Care	71%	72%	*.934*	73%	67%	73%	***.014***
Challenges	55%	56%	*.705*	53%	66%	47%	***.000***

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CHAPTER FIVE

DISCUSSION OF FINDINGS

5.0 Introduction

This chapter presents the discussion of the findings of the study. The chapter is organized into four sub sections excluding the introductory section. Theoretical Knowledge of Nursing Professionals is discussed under section 5.1. The quality measures is taken care of in section 5.2. Section 5.3 considers clinical process, whereas challenges is thoroughly considered in section 5.4.

5.1 Theoretical Knowledge of Nursing Professionals

The average knowledge level of the nursing professionals at the Koforidua Hospital was 60% (95% CI: 58; 62). Surprisingly, this is higher than knowledge level of doctors as reported by Botha et al. (2012) and community health nurses as reported by Chen et al. (2008). However, using the minimum average score of 84% criteria as stipulated in AHA BLS courses, the theoretical knowledge level is still low and as such needs to be improved. The results are similar to studies by Desalu et al. (2006) and Solagberu (2002). Moreover, 73% of the respondents admitted to having come into contact with CA patients and therefore, better results were much expected. This is in line with a study done in Tanzania where majority (86%) of nurses had a mean score of (33%).

Male nursing professionals had a higher total score (62%) than female professionals (59%). This suggests that perhaps, males did pay attention to more details as far as CPR was concerned than females. However, the difference was not statistically significant ($p>0.05$). It could also be that more males were CPR trained (56%) than females (54%). However, the knowledge difference was far-fetched because more females had CA care experience (77%) than males (65%), (p-value=0.111).

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Principal nurses had the highest average score (63%) and registered nurses had the lowest (57%) but the averages were not statistically significantly different from each other ($p>0.05$). This probably could be as a result of principal nurses being in charge of training and supervision of all kinds of nursing practices. However, the proportion of principal nurses (42%) who were CPR trained compared to the other rankings were the least. This raises an eyebrow, since they are supposed to be those in charge of training the other nursing officers and also makes principal nurses recording higher knowledge score far-fetched.

Nursing officers who have served for longer period of time "20 and above years "had the highest average knowledge score (63%) than officers who have served "Less than a year" (53%). In fact, this makes sense as officers with more years of service will obviously handle more CA cases and as such have used CPR methods more than rookie officers. However, statistical test of significance showed that the average knowledge level among the rankings of the nursing officers was not different from each other ($p>0.05$).

In the various departments, officers at the OPD had the highest average knowledge score of 66% and the lowest was officers from Paediatrics unit with a score of 48%. Departments whose officers are supposed to be highly knowledgeable of CPR such as Surgical (61%), Obstetrics/Gynaecology (61%), Recovery (59%) and Emergency unit (65%) all fell short of the 84% minimum criterion. Surprisingly, Psychiatric department had higher score (64%) than most of the departments required to be more knowledgeable of CPR. It is however, good that officers at the OPD are better in the CPR knowledge since most cases are first reported at that unit. Statistical test of significance further showed that the average knowledge scores differed across the departments ($p<0.05$), providing enough evidence to say that officers at different

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departments exhibit different CPR knowledge. The knowledge scores exhibited by the different departments, however, contradicted with proportion of officers who have CA case experience and CPR trained. All officers at Recovery Unit had CA experience and much better scores were expected of them and Emergency had the most officers who are CPR trained (88%) and therefore, their score was expected to be better. Scores from Emergency and Paediatrics Units were higher than findings in the study conducted by Botha et al. (2012).

Nursing officers who typically are in contact with CA cases recorded significantly higher score (61%) than those who do not (56%), ($p<0.05$). Same can be said of nurses who are CPR trained (63%) compared to those who had not (53%), ($p<0.05$). This is logical as nurses who are CPR trained are expected to be better knowledgeable than those who are not and so is nurses who are experienced with CA.

On individual CPR question basis, 98% of the officers could identify a patient with CA. Less than half of the officers (49%, 95% CI: 42; 57) was able to attest to the way of doing CPR chest compressions and only 34 %(95% CI: 27; 42) were able to show the correct site of compressions. Also, other practices in which not good number of the officers was able to correctly show adequate knowledge of them were: Compression-ventilation ratio (50%, 95% CI: 43; 58), Location of anterior-posterior diameter of chest (47% , 95% CI: 39; 54), Correct rate of Chest compression (58%, 95% CI: 50; 66) and Things to do when giving breaths and ventilation (62%, 95% CI: 54; 69). Analyzing individual questions, the results in this study were higher than those in the study by Botha et al. (2012). Officers performed poorly in these questions probably because these were more technical compared to the other questions and as such these questions can really be used to assess the knowledge level of the officers. The

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responses to these questions confirm what has already been said about the poor knowledge of officers in CPR.

Overall and across various categories of the nurses, the 84% minimum mark for adequate knowledge was not recorded and as such the knowledge of the nurses in CPR at Koforidua Hospital was poor. This confirmed the earlier findings by Hillary 2012 and Elazazay 2012.

5.2 Quality Measures

The domains used in this study for quality measures were: timely care, care coordination, clinical guidelines and patient safety. The overall quality care was rated on average at 53% (95% CI: 52; 54). Care coordination was the most conformed quality measure in the Koforidua Hospital (80%) and clinical guidelines was the least conformed measure (30%).

With timely care, less than half (44%, 95% CI: 36; 51), attested to the fact that they conform to the appropriate duration for performing CPR and 55% (95% CI: 47; 63), conformed to the appropriate time of inspecting patients suspected with CA. Almost all the officers (97%) did know what to do if a person collapses. With care coordination, almost all the respondents conform to the required practices, with the exception of co-operation among the hospital units where 76% of the respondents affirmed. With clinical guidelines, the least conformed to is “Procedures to check medical errors” (63%). Most of the patient safety measures were highly conformed to but “mechanism to monitor wrong medication” where only 28% affirmed is instituted in the hospital.

Quality measures were most conformed to at Psychiatric Unit (73%) than the rest of the departments but least conformed to in the Neonatal Intensive Care unit (64%).

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With the various domains, it is concluded that even though most of the nurses conform to timely care and care coordination, clinical guidelines and patient safety have some major concerns.

Researcher could not find a lot of literature of relevant studies to participants with similar characteristics. Much research is not done on this in Ghana.

5.3 Clinical Process

The Clinical Process was average at 53% showing an average process being followed in the hospital. The worst process being followed is how CPR team is being assembled which only 19% nurses attested to and the most conformed to process among the nurses is the time report is written when CPR is being done (93%).

Clinical process was more conformed to by male officers (58%) than female officers (50%). Registered nurses showed the highest level of conforming to clinical process (65%) than Senior Nursing officers (35%). This is probably because most of the senior officers do not directly partake in giving CPR to a patient.

Departmental wise, Paediatric Unit recorded the highest clinical process score with 73% whereas OPD recorded the least score with 40%. Incidentally, OPD recorded the highest knowledge score and the Paediatric recorded the lowest. It is therefore, far-fetched why the clinical process measure was however, negatively related in terms of department.

The clinical process measure is just average and very poor in the departments that are supposed to be really following such measures since they are likely to come into contact with CA patients.

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5.4 Challenges

The challenge level was rated at 50% showing average challenge facing officers who come into contact with CA patients. Unsurprisingly, work overload and inadequate staff were cited as the highest challenge facing the nursing officers at Koforidua Hospital (both 97%) with the use of Ambu bag being the least problem (5%). Relevant challenges that were severe and directly in relation to CPR quality were: lack of CPR training (71%, 95% CI: 64; 78), Non-availability of CPR experts (96%, 95% CI: 93; 99), Non-availability of CPR policies and guidelines (92%, 95% CI: 88; 96), lack of CPR equipment (92%, 95% CI: 88; 96) and non-existing CPR team (93%, 95% CI: 88; 97). This shows that there are really major concerns with the state and manner in which CA patients are treated at Koforidua Hospital. Shockingly, only 11% said they do have challenges performing CPR. This therefore, raises questions as to how the CPR knowledge quality is that low.

Males showed a higher level of challenge (57%) compared to female nurses (55%), however, the younger nurses, 18-29 years and 30-39 years groups showed that they face higher challenges (63% and 56%) respectively compared to the older officers 40-49 years and more than 50 years group with 45% and 39% respectively.

Midwives rated the highest challenge level with CPR (62%) and Principals showed the least (39%). Nursing officers with less than a year experience in the service showed less challenges compared to those who have served more than twenty years. In terms of the various departments, Psychiatry Unit recorded the least average challenge (41%) probably because they do not usually come into contact with CA patients.

Overall, there are much challenges that need to be addressed, especially in the departments that are likely to come into contact with patients with CA.

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CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This is the concluding chapter of the dissertation. It covers the summary of findings, conclusion and recommendations based on findings from the study. Limitations and future research are also discussed here.

6.1 Summary of study

The issue of quality of care delivered by health care providers has been of serious concern in Ghana. This has been blamed on either lack of knowledge, noncompliance to processes or lack of resources.

The research was carried out on clinical nurses in the Eastern Regional Hospital, Koforidua. The objective was to assess quality of care using their CPR knowledge as a proxy. Cross-sectional descriptive survey was conducted and results revealed that average CPR knowledge level was 60%.

6.2 Conclusions

The study concludes that:

- CPR knowledge quality which averaged 60% does not meet the 84% minimum level set by the AHA (2010) and as such can be viewed as low among nursing professionals at the Koforidua Hospital.
- CPR knowledge was more lacking in departments that are mostly in contact with CA patients such as Emergency, Recovery and Surgical Units.

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- Nursing officers with higher rankings and higher years of experience tend to have higher level of CPR knowledge. Also Nurses who are CPR trained had higher CPR knowledge than those who have not.
- The knowledge of the nurses was poorer on technical CPR practices like location of the compression site and anterior-posterior diameter, appropriate way of doing chest compressions.
- The most adhered to clinical process when taking care of CA patient at Koforidua Hospital is report writing and the least adhered to is how CPR team is assembled
- Timely care is the most valued quality measure that has been put in at Koforidua Hospital to take care of CA patients but clinical guidelines is the least valued.
- Challenges like lack of CPR training, lack of CPR team, non-availability of CPR experts, lack of equipment to perform CPR, inadequate staff and work overload are severe ones that are facing Koforidua Hospital.

6.3 Recommendations

The study therefore recommends that:

- WHO, the Government and all stakeholders in health, need to take SCA as a serious problem and put measures in place to ensure the survival of patients with such conditions. Specifically, CPR knowledge quality is poor and short training programmes for nurses over constant time interval is encouraged since CPR quality was better with nurses who are CPR trained.

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- CPR training should be targeted to department like OPD, Emergency, Recovery and Surgical as well as nurses in their early years of service and training should go into detail on how practically and technically CPR should be done.
- Stakeholders should also provide hospitals and hospital personnel with the appropriate and requisite logistics as these were the major challenges when dealing with CA patients.
- Hospitals must also put clinical process measures in place specifically and if possible try as much as to put CPR teams always on duty.
- Procedures and policies must be laid down to enhance better quality measures such as timely care, patient safety and most especially clinical guidelines. These policies must be geared toward making sure ample time and care are given to patients with CA.

6.4 Future Research

- Further studies should include other health professionals like doctors and scope of the study widened across Ghana to better measure the quality of CPR. Knowledge of CPR practices are suggested to be assessed both theoretically and practically in order to truly assess the quality of CPR in future research. Also a comparative study can be done to measure the quality of CPR between public and private hospitals.

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INTEGRI PROCEDAMUS

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APPENDICES

Appendix A: Informed Consent for Participants

Study Title: Assessment of Quality of Care of Sudden Cardiac Arrest (SCA) Patients in the Eastern Regional Hospital, Koforidua.

Principal Investigator: Ahmed Tijani Sulemana

Institutional affiliation: School of Public Health, College of Health Sciences, University of Ghana, Legon.

Background

Dear Participants, My name is Ahmed Tijani Sulemana, a student of the School of Public Health, University of Ghana, Legon. Of the approximately 15 000 deaths that occur in Ghana every year, about 25% will be from a cardiac cause, of which, some 12%–16% will occur suddenly in the hospital. The purpose of this survey is to find out your opinions regarding certain aspect of managing in-hospital cardiac arrest. We hope to partner with you to save more of these patients in the future.

Procedure

I will be asking you a few questions on your knowledge on process for resuscitation of sudden cardiac arrest patient. It will involve answering of the questions from this questionnaire.

Possible Risk and Discomfort

I do not foresee any risk or discomfort from your participation in this research. The study will not pose any harm to you but rather, the outcome of the study will help to inform policy on quality of care, which will lead to the improvement of services

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provided to patients with sudden cardiac arrest. The interview will take about 40-60minutes of your time. It include the nurses in this hospital.

Possible Benefits

The results of this study will be used to inform policy on quality of care, which will lead to the improvement of services provided to patients with sudden cardiac arrest.

Right to Refuse

Your participation in this study is solely voluntary and you can choose not to answer any individual question or all the questions. You are at liberty to withdraw from the study at any time. There would be no penalty in opting out in this study. However, I will encourage you to fully participate since your opinions are very important to us. Your opinions will enable us understand the gaps in resuscitation process and also aid in improving the quality of services you rendered to your patients with sudden cardiac arrest in your facility.

Anonymity and Confidentiality

I would like to assure you that whatever information you will provide will be handled with strict confidentiality and will be used purely for research purposes. Your responses will not be shared with anybody who is not part of the study team. Data analysis will be done at the aggregate level to ensure anonymity.

Dissemination of Results

The final report of this study will be disseminated to the Eastern Regional Hospital, the nursing department, clinical nurses and the research community involved in the study. The results will also be mailed to you, if you provide your address below.

……………………………………………………………………………………………

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Costs and/or Payments to Subject for Participation in Research

There will be no costs for participating in this research and there will be no payments awarded for participating staff in this research.

For further questions, concerning the research, you may contact Dr. Reuben Kwesi Esena (PhD) (+233 244 577 664), Ahmed Tijani Sulemana (+233 24 473 0829 or +233 50 133 0949), all of the Department of Health Policy Planning and Management (HPPM), School of Public Health, University of Ghana, Legon and GHS/ERC Administrator, Hannah Frimpong (0243 235 225 or 050 704 1223). Thank you.

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Voluntary agreement

I,…………………………………………………………………………………………

declare that the purpose, procedures as well as risks and benefits of the study have been thoroughly explained to me in English language and/or Twi and/or Ga /and/Ewe and I have understood.

I hereby agree to answer the questionnaire provided below

Signature/Thumbprint of participant………………………………… Date……. /…… /……..

Interviewer's statement:

I, the undersigned, have explained this consent form to the subject in the English language (Twi, Ewe or Ga language) that He/she understands the purpose of this study, procedures to be followed as well as the risks and benefits involved. The subject has freely agreed to participate in this study.

Signature of interviewer: ………………………………………..

Date: …………. / ………….. / …………….

Address ……………………………………………………………………….

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Appendix B: Questionnaire on Quality of Care for Sudden Cardiac Arrest Patients

This is a research carry out on **Quality of Care Delivered by Clinical Nurses to Sudden Cardiac Arrest Patients (SCA) in the Eastern Regional Hospital of Ghana**. I will therefore like to take a few minutes of your precious time to answer these questions as candidly as possible. You are assured that the answers you give will be strictly confidential and your name will not be mentioned in my research reports.

Most of the questions are followed by responses, ***write the number of your answer in box provided*** |____|

Qns No.	**Questions**	**Response**
	Respondent ID	|____|____|____|____|
Section one	**Demographic Information**	
1.	Sex 1. Male 2. Female	|____|
2.	Age in years (above 18 years) 1. 18 -29 2. 30 -39 3. 40 -49 4. 50 and above	/____/____/
3.	What is your grade in this hospital? Mark only one that best describes your rank? 1. Registered nurse 2. Staff nurse 3. Senior staff nurse	|____|

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	4. Nursing Officer 5. Senior Nursing Officer 6. Principal 7. Senior principal 8. Midwife	
4.	What is your marital status? 1. Married 2. Not married 3. Divorced 4. Widowed	|_____|
5.	What is your department? 1. Theatre / Anaesthesia 2. Intensive care/ recovery ward 3. Medical (non-surgical) 4. Paediatric/children's ward 5. Obstetrics/gynaecology 6. Emergency/casualty 7. Psychiatric/mental health 8. Antenatal/Postnatal 9. Surgical 10. OPD 11. Others(Specify please)........	|_____|
6.	What is your religion? 1. Christianity 2. Islam 3. Traditionalist 4. Others (Specify)……….	|_____|
7.	Which nursing school did you attend? 1. Korle Bu 2. Komfo Anokye 3. Tamale 4. Ho 5. Koforidua 6. Bolga 7. Cape Coast 8. Secondi-Takoradi 9. Wa 10. Others…………..	|_____|

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8.	How long have you been working as a nurse? 1. Below 1year 2. 1-4 years 3. 5-9 years 4. 10-19 years 5. 20-29 years 6. 30 years or above	/_____/
9.	How long have you worked in this Hospital? 1. Below 1year 2. 1-4 years 3. 5-9 years 4. 10-19 years 5. 20-29 years 6. 30 years or above	|_____|
10.	How long have you worked in this department? 1. Below 1year 2. 1-4 years 3. 5-9 years 4. 10-19 years 5. 20-29 years 6. 30 years or above	|_____|
11.	Typically, how many hours per week do you work in this hospital? 1. Less than 20 hours per week 2. 20 to 40 hours per week 3. More than 40 hours per week	|_____|
12.	In your staff position, do you typically have direct or indirect contact with patient with sudden cardiac arrest? 1. Yes, I typically have direct or indirect contact with patient with sudden cardiac arrest 2. No, I typically do NOT have direct or indirect contact with patient with sudden cardiac arrest	|_____|

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Section Two (Quality Measures)

13. Please indicate your agreement or disagreement with the following statements about clinical quality measures (CQM) put in place in your Hospital.

Timely care		
13a.	How long a time (in seconds) should your inspection of a patient with suspected cardiac arrest take? 1. 30 2. 60 3. I don't remember	|____|
13b.	How long a time (in seconds) should your inspection of a patient with suspected cardiac arrest take? 1. Less than 5minutes 2. 5-30minutes 3. I don't remember	|____|
13c.	What is the first thing you should do if you see a person collapse in the waiting room of the hospital where you work? 1. Call for help and check for response, breathing and pulse 2. Look for Doctor or the ward in-charge or senior colleague 3. Others………..	|____|
13d.	How long do you perform CPR for a patient? 1. Until patient recovers 2. Until am tired 3. When patient is confirmed clinically dead 4. Others………………	|____|
Care Coordination		
13e.	Important patient care information is often lost during shift changes (handing over). 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
13f.	Problems often occur in the exchange of information across department/unit 1. Strongly Agree 2. Agree	|____|

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	3. Neutral 4. Disagree 5. Strongly Disagree	
13g.	Hospital shift changes (handing over procedures) are problematic for patients in this hospital. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
13h.	There is good cooperation among hospital units that need to work together. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
13i.	Doctors do not turn up when called to attend to cardiac arrest patient 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
13j.	What are the steps in CPR? 1. Chest compression, Airway, and Breathing (C,A,B) 2. Airway, breathing and Chest compression (A, B, C) 3. Only chest compression or ventilation 4. Any other……………………	|____|
13k..	Please describe the CPR process (Algorism) 1. Check for response, call for help, Chest compression, Airway, and Breathing (C,A,B) 2. Airway, breathing and Chest compression (A, B, C) 3. Only chest compression or ventilation	|____|
Adherence to Clinical Guideline		
13l.	Staff do not follow standard procedure when transferring patients from one unit to another. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree	|____|

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	5. Strongly Disagree	
13m.	Our procedures and systems are good at preventing medical errors from happening 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
13n.	Which of the different CPR standard guide are you conversant with? 1. AHA Guideline for CPR and ECC 2. European CPR Council Guidelines 3. Australian CPR Council Guidelines 4. Guideline of Resuscitation Council of South Africa 5. Others Specify…………	|____|
13o.	Do you have a copy of the guide in this department? 1. Yes 2. No	|____|
Staff Knowledge		
13p.	Do you know what cardiac arrest (CA) is? 1. Yes 2. No	|____|
13q.	How do you know that a patient is having CA? 1. When patient is unresponsive, not breathing or having gasp 2. When patient complaints of chest pains 3. When there is cough and difficulty breathing	|____|
13r.	How do you manage patient with cardiac arrest? 1. By cardiopulmonary resuscitation (CPR) 2. By any other mean	|____|
13s.	Have you receive training on CPR? 1. Yes 2. No 3. I don't remember	|____|
13t.	In your setting what first aid equipment should you prioritise to perform CPR? 1. Ambu bag 2. Defibrillator	|____|

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	3. I don't know	
13u.	While performing CPR your chest compressions should be: 1. Hard and fast, with as few interruptions as possible 2. Gentle and slow 3. Hard but slow with frequent interruptions to check for a pulse 4. I don't know	|____|
13v.	In connection with CPR, what should you do when you give breaths or ventilate? 1. Breath/ventilate slowly 2. Breath/ventilate quickly 3. I don't know	|____|
13w.	How do you know that the breaths or the ventilation are effective? 1. You see the chest rising 2. You will hear the sound 3. I don't know	|____|
13x.	Where is the site of compression? 1. Middle ½ of the sternum 2. Apex 3. Upper ⅓ of the sternum 4. Lower ⅓ of the sternum	|____|
13y.	What is the compression-ventilation ratio? 1. 15:2 2. 30:2 3. 30:5 4. 60:5	|____|
13z.	What is the correct rate of chest compression? 1. At least 100 compressions per minute 2. 60 to <100 compressions per minute 3. <60 compressions per minute	|____|
13aa.	How far down the anterior posterior diameter of the chest is the compression depth? 1. 4 to 5 centimeters or 1/3 antero-posterior diameter of the chest 2. 3 to 4 centimeters or 1/2 antero-posterior diameter of the chest 3. Less than 3 centimeters or 1/4 antero-posterior diameter of the chest 4. Not sure	|____|
13ab.	Chest compression-decompression time must be?	|____|

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	1. Equal 2. Chest compression time more than decompression time or vice versa 3. Any how	
13ac.	There must be complete releases between compressions to fill the heart 1. Yes 2. No 3. I don't know	|____|
13ad.	Which medication do you give during CPR? 1. Epinephrine 2. Hydrocortisone 3. Atropine 4. Others…………………	|____|
13ae.	Have you ever heard of automated external defibrillator (AED)? 1. Yes 2. No	|____|
13af.	If yes, how did you hear about it? 1. Class room 2. TV 3. From friends 4. Others……………..	|____|
13ag.	Will you recommend AED for your hospital? 1. Yes 2. No	|____|
Patient Safety		
13ah.	Patient safety is a top priority in this hospital 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
13ai.	Hospital management provides a work climate that promotes quality of care 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
13aj.	The actions of hospital management show that quality of care is a top priority. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree	|____|

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	5. Strongly Disagree	

Section Three (Process Measures)

14. Please indicate your agreement or disagreement with the following statements about process in your Hospital.

Think about processes in your hospital...		
14a.	What are the steps in CPR? 1. Chest compression, Airway, and Breathing (C,A,B) 2. Airway, breathing and Chest compression (A, B, C) 3. Only chest compression or ventilation 4. Any other……………………	|____|
14b.	Please describe the CPR process (Algorism) 1. Check for response, call for help, Chest compression, Airway, and Breathing (C,A,B) 2. Airway, breathing and Chest compression (A, B, C) 3. Only chest compression or ventilation	|____|
14c.	Important patient care information is often lost during shift changes (handing over). 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
14d.	It is often unpleasant to work with staff from other department /unit 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
14e.	The actions of hospital management show that quality of care is a top priority. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
14f.	Hospital management seems interested in quality of care only after an adverse event	|____|

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	happens 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	
14g.	Important patient care information is often lost during shift changes (handing over). 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|_____|

Section Four (Challenges)

15. Please indicate your agreement or disagreement with the following statements about possible challenges in your Hospital.

Think about challenges you face in your current position		
15a	Lack of advancement opportunities 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|_____|
15b.	Work overload 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|_____|
15c.	Too few staff. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|_____|
15d.	Poor organizational culture 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|_____|

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15e.	Lack of mentoring. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
15f.	Poor personal fit with boss. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
15g.	Limited or no enough access to technology 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
15h.	Lack of training 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
15i.	No enough time with patients. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
15j.	Non-availability of trained personnel to provide effective cardio-pulmonary resuscitation (CPR). 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
15k.	No CPR teams exist. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|
15l.	No CPR policies and guidelines exist 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|____|

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15m.	Luck of fully equipped emergency trolleys and/or equipment. 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|_____|
15n.	I do not know how to do CPR 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|_____|
15o.	I am not able to use Ambu bag 1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree	|_____|

THANK YOU.

Section Five: Your Comments

Please feel free to write your comments about quality of care for sudden cardiac arrest in in this hospital?

……………………………………………………………………………………………

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THANK YOU FOR YOUR PATIENCE AND COOPERATION

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Appendix C: Inventory Checklist on Equipment

DATA COLLECTION INSTRUMENT

EASTERN REGIONAL HOSPITAL

CHECKLIST FOR INVENTORY ON EQUIPMENT (2015)

CODE NO: ………………… DATE: ……………… TO…………………………..

Functional Equipment	Ideal Number	Number Available	Percentage available
Ambu Bag			
Cardiac Monitor			
Naso Pharyngeal Tube			
Oropharyngeal Tube			
Oxygen			
Pulse Auximeter			
Sphygmomanometer			
Stethoscope			
Suction Machine			
Ventilator			

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Appendix D: Inventory Checklist on Medicines

DATA COLLECTION INSTRUMENT

Eastern Regional Hospital

Checklist for inventory on Medicines (2015)

CODE NO: ………………… DATE: …………… TO……………………..………..

Medicines	Ideal Number	Number Available	Percentage Available
Adrenaline			
Amiodarone Hydrodrochloride			
Atropine Sulphate			
Epinephrine			
Hydrocortizone			
Magnassium Sulphate			
Sodium Bicarbonate			
Vasopressin			