SCHOOL OF PUBLIC HEALTH

COLLEGE OF HEALTH SCIENCES

UNIVERSITY OF GHANA

KNOWLEDGE AND PRACTICE OF CARDIOPULMONARY RESUSCITATION (CPR) AMONG NURSES AT GREATER ACCRA REGIONAL HOSPITAL AND LEGON HOSPITAL

BY

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DECLARATION

I, Dora Ofori do hereby declare that this dissertation is a result of my independent work. References to other people's works have been duly acknowledged. I further declare that this dissertation has not been submitted for any degree program in this university or any other university elsewhere.

…….. ……

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(ACADEMIC SUPERVISOR)

DEDICATION

I dedicate this work to God Almighty, my mum Ms. Cecilia Boadu, my dad Mr. Stephen Ofori and my Siblings for their support and encouragement.

ACKNOWLEGDEMENT

I thank God Almighty for the Wisdom, Grace, and directions given to me to enable me to undertake this study successfully.

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LIST OF ABBREVIATIONS

AED	Automated External Defibrillator
AHS	American Heart Association
ALS	Advance Life Support
BLS	Basic Life Support
CA	Cardiopulmonary Arrest
CPR	Cardiopulmonary Resuscitation
ECC	Emergency Cardiovascular Care
MOH	Ministry of Health
NO	Nursing Officer.
NTC	Nursing Training College
PNO	Principal Nursing Officer.
RGN	Registered General Nurse.
SN	Staff Nurse
SSN	Senior Staff Nurse .
SNO	Senior Nursing Officer.
UMAIC	Universal Medical Assistance International Centre
WHO	World Health Organization

OPERATIONAL DEFINITION

Advanced life support: This is cardiopulmonary resuscitation technique which is performed after Basic Life Support (BLS) is done using electronic device and drugs.

Basic life support: This is maintaining air way, breathing and circulation for patients with cardiac arrest without drug administration.

Knowledge: This is theoretical and practical understanding of cpr acquired through experience, training and education. They are participants who answers >60% questions, have good knowledge, = 50% fair knowledge, and <40% has poor knowledge about CPR.

Practice: It refers to academic application of knowledge and skills on CPR.

Cardiopulmonary resuscitation is a lifesaving medical procedure which is performed in an effort to manually preserved intact brain function until further measures are taken to restore normal spontaneous blood circulation and breathing in a person in sudden cardiac arrest.

ABSTRACT

BACKGROUND: Cardiac arrest is a significant public health problem projected to account for 15–20% of all deaths. It is also recorded by WHO to be an important cause of cardiovascular morbidity and mortality in both developed and developing countries. Cardiac arrest if not treated immediately, can cause sudden cardiac death. With fast and appropriate medical care, survival is possible. Cardiopulmonary resuscitation is a lifesaving medical procedure for victims of sudden cardiac arrest. It is also done in an effort to manually preserve complete brain function until further actions are taken to restore normal unprompted blood circulation and breathing in cardiac arrest

OBJECTIVE: The objective of the study is to assess the knowledge and practice of cardiopulmonary resuscitation among nurses in the Greater Accra Regional Hospital and Legon hospital in line with the 2015 guidelines of the America Heart Association.

METHOD: A cross-sectional descriptive survey method was employed. A convenience sampling method was used to select the study areas as well as all the 248 nurses for the study, who work in the Greater Accra Regional Hospital and Legon hospital. A structured questionnaire was used to obtain data. Data obtained were summarized as frequencies and percentages. Associations were then tested using Pearson's chi-square test and multivariate logistic regression at 5% Significance.

RESULTS: 248 nurses participated in the study. The result of the study indicated that nurses in both hospitals had low knowledge (44.76%) and had fair practice on CPR (52.8%).

CONCLUSION: The study result shows that the nurses in these facilities need further training and periodic workshop on cardiopulmonary resuscitation to help them improve upon their quality of care they give to cardiac arrest patients.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Cardiac arrest is a significant public health problem projected to account for 15–20% of all deaths (Gajanan et al., 2017). Cardiac arrest is a major public health problem affecting thousands of individuals each year in both out-of-hospital and in-hospital settings (Sutton et al., 2012). It is also recorded by WHO (2017) to be an important cause of cardiovascular morbidity and mortality in both developed and developing countries. Cardiac arrest if not treated immediately, can cause sudden cardiac death. With fast and appropriate medical care, survival is possible. According to Sasson et al., (2010) more than 3 million sudden cardiac deaths occur worldwide every year and survival is lower than 8%. Cardiopulmonary resuscitation is a lifesaving medical procedure for victims of sudden cardiac arrest,(America Heart Association,2017). It is also done in an effort to manually preserve complete brain function until further actions are taken to restore normal unprompted blood circulation and breathing in cardiac arrest. According to Bakhsha (2010), it is a combination of rescue breathing and chest compression which is delivered to the victim who is thought to be in cardiac arrest. This, therefore, make it critical for all health care professionals especially nurses to have knowledge and competence in performing cardiopulmonary resuscitation (CPR) (Hillary, 2012). Cardiopulmonary resuscitation (CPR) knowledge in relation to standard care is fundamental in effective resuscitation performance.

CPR competency according to Broomfield (1996) is having the cognitive knowledge and psychomotor skills that are necessary for the effective performance of CPR in cardiac arrest situations. As nurses are the first line of emergency management, they are the first to be called upon to initiate CPR when needed in an emergency situation. As the nurse's role

continues to expand, the limitations between what is considered as nursing intervention become unclear with what is considered to be medical intervention (Terzi, 2008). In view of this, nurses are required to have adequate knowledge and skills to carry out excellent care mainly in the process of CPR and the need to evaluate the knowledge of these nurses in their daily processes of CPR.

Accurate knowledge of the guidelines is associated with increased likelihoods 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 2017 (AHA, 2017). Their knowledge of CPR could identify the quality of CPR delivered that impact positively or negatively on the quality of care received by patients. The need for health professionals to know how to perform basic life support cannot be overemphasized as they often encounter such a situation in their practice.

The purpose of this study is to assess the knowledge and practice of CPR among nurses which will help in understanding the deficit and to further formulate medical education training and capacity building among nurses.

1.2 Problem statement

Globally, Cardiovascular diseases have been known to be the number one cause of death with an estimated death rate of 17.7 million of which 80% was due to a heart attack in 2015 (WHO,2016). Out of the 56.9 million deaths worldwide in 2016, cardiovascular disease accounted for 15.2 million of the number of death (WHO, 2017). In the low and middle-income countries, it is still the leading causes of death. Cardiac arrest is an important cause of cardiovascular morbidity and mortality accounting for an estimated 15–20% of all deaths. Data from previous studies suggest that more than 3 million sudden cardiac deaths occur

worldwide every year and survival is lower than 8%. Cardiovascular diseases have remained the leading causes of death globally in the last 15 years (WHO,2018). In Ghana, it is estimated to be the fourth leading cause of death that is 6% of all death, (PRB,2014) and estimated to be the leading cause of death by 2020 due to an increased in its risk factors such as obesity, alcohol intake, and physical inactivity. A report by WHO (2017) states Cardiac arrest situation rests on the health care team. It is documented that a timely performed CPR can largely prevent sudden death. Cardiopulmonary resuscitation is a part of an important integral medical procedure in emergency medical care as the first-line response to cardiac arrest before advanced life support becomes obtainable. Whilst CPR has become well recognized in the healthcare systems in the developed world, it remains an evolving procedure in most African countries of which Ghana is of no exception. Quality of care during resuscitation for cardiac arrest patients is critical for their existence. Similarly, the foundation of the resuscitation for cardiac arrest patients results in the quality of CPR as the lifesaving intervention (Meaney, 2013).

There is, therefore, the need globally, for improved resuscitation care and focus on patient outcomes, 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. It is very important for every medical professional to know about CPR to save lives and improve the overall quality of community health.

Nurses being important members of the health care delivery team and is usually the first healthcare professional to identify cardiac arrest and to institute measures to provide Basic Life Support during emergency situations, are deemed necessary to have the basic skills and expertise which are needed to perform CPR. Hence, it is therefore prudent to access the knowledge and practice of cardiopulmonary resuscitation among nurses.

1.3 Conceptual framework

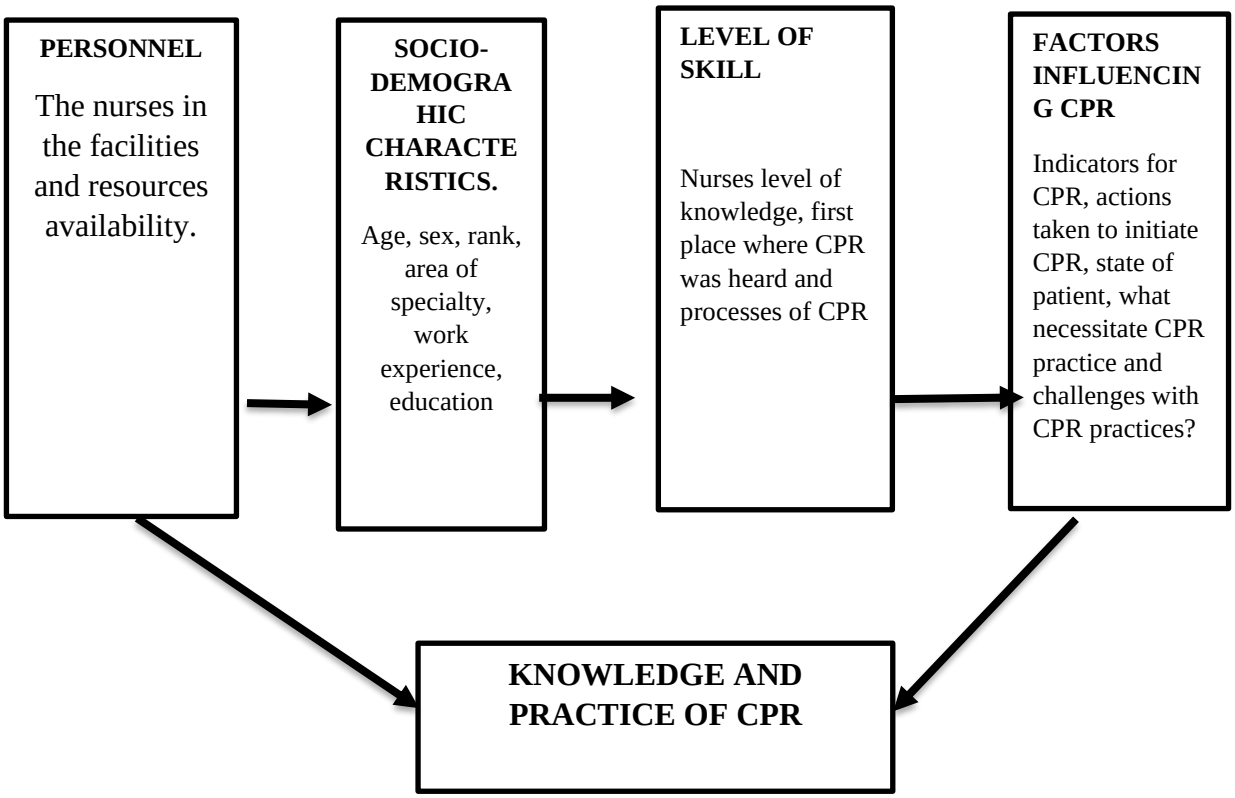

Figure 1: Conceptual Framework

1.4 Narrative of the conceptual framework

Figure 1.above depicts the conceptual framework of factors that were assessed to determine CPR practice. The framework explains how CPR practices can be determined by the following determinants: Personnel, socio-demographic characteristics, knowledge level and factors influencing CPR practice. The personnel involves nurses which include general nurses, emergency nurses , as well as critical care nurses and the availability of the resources also include the equipment and medicine. The Socio-demographic characteristics involves personnel characteristics that affect CPR such as age, sex, rank, area of specialty, work experience, and education.

The level of skills includes Nurses level of knowledge, the first place where CPR was heard and processes and sequence of CPR and how is being practiced. The factors influencing CPR include indictors for CPR, actions taken to initiate CPR, state of the patient, what necessitate CPR practice and challenges with CPR performance. The increased knowledge and frequent practice will improve CPR practice in order to reduce the mortality of cardiac arrest and improve the quality of lives of people.

1.5 Justification of the study

The study will be of immense benefit to nursing, other health care providers, individuals, government, scholars/ researchers, and to policymakers.

To the nurses, the study will create awareness on the details of cardiac arrest and providing skillful and timely intervention thereby reducing the rising rate of sudden deaths due to cardiac arrest. It would also allow for the need to go for further training to acquire the necessary skills in cardiopulmonary resuscitation.

In addition, this finding will help doctors and other health workers to appreciate the problems related to the non-practice of cardiopulmonary resuscitation to reduce sudden death in society.

The result will serve as a source of information to the public on the proper strategies towards the prevention, control, and management of heart diseases and cardiac arrest which result in sudden deaths.

The findings will help policymakers in the formulation of appropriate policies and laws on life-saving first aid measures.

Furthermore, it will help the government to come out with health measures aimed at providing the necessary facilities and materials for public health nurse practitioners to enable them to practice cardiopulmonary resuscitation.

1.6 Research Questions

1. What is the knowledge level of nurses on CPR?
2. To what extents do nurses practice cardiopulmonary resuscitation?
3. What are the factors that influence the practice of cardiopulmonary resuscitation among nurses?
4. What proportion of the nurses in both hospitals has a good CPR practice?

1.7 General objective

The main objective of the study is to assess the knowledge and practice of cardiopulmonary resuscitation among nurses in Greater Accra Regional hospital and Legon hospital.

1.7.1 Specific objectives

1. To assess the level of knowledge and practice of cardiopulmonary resuscitation among nurses.
2. To determine the extent at which nurses practices cardiopulmonary resuscitation.
3. To determine the factors that influences the practice of cardiopulmonary resuscitation among nurses.
4. To compare knowledge and practice of CPR in Greater Accra Regional Hospital and Legon hospital.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of CPR

Cardiopulmonary resuscitation according to the American Heart Association is a lifesaving technique for victims of sudden cardiac arrest and helps to sustain life in early critical minutes after cardiac and respiratory arrest. Rapid defibrillation, effective advanced life support and integrated post-cardiac arrest care (Kwangha, 2012) are reported by Homlberg and Herlitz (2011) as the series of cardiac action following cardiac arrest. According to Beauchamp et al., (2008), CPR can be provided by trained medical personnel, including paramedical staff, emergency medical technicians, and by laypersons who have undergone special training on cardiopulmonary resuscitation and have been fully certified. Cardiopulmonary resuscitation usually is used in the pre-hospital setting and can be provided without needing any medical equipment, (LeRoy, Kahn & Mastroianni, 2008). The goal of cardiopulmonary resuscitation is to provide oxygen quickly to the brain, heart, lungs, and other organs until normal heart and lung function is restored. Cardiopulmonary resuscitation can help brain damage and death in a person who experiences cardiopulmonary arrest. Currently, according to the AHA 2015 report, cardiopulmonary resuscitation is initiated upon recognition and activation of the emergency response system, immediate high-quality CPR, rapid defibrillation, basic and advanced emergency medical services, and advanced life support and post-arrest care. Hands-only CPR is recommended for untrained rescuers until trained personnel arrives. Osei-Ampofo *et al.* (2013) indicated that in Ghana, emergency care systems and timely access to emergencies are rudimentary

Successful resuscitation following cardiac arrest needs a combined set of corresponding actions represented by an association of a chain of survival. These associations include timely recognition of cardiac arrest and the beginning of the emergency response system, prompt cardiopulmonary resuscitation with an emphasis on chest compressions. The first CPR guidelines were developed by the American Heart Association in 1966 with its main aim to timely recognize sudden cardiac arrest and the activation of the emergency response system (National Research Council, 1966).

Professional bodies in many countries have formulated guidelines on how to provide cardiopulmonary resuscitation. The guideline outlines algorithms for the management of a number of conditions such as cardiac arrest, choking and drowning. Ghana does not have a guideline for cardiopulmonary resuscitation but practices that of the American Heart Association. CPR guidelines according to the AHA 2015 is as follows;

1. Check the scene for safety - make sure the environment is safe for rescuer and victim

2. Recognition of cardiac arrest -check for responsiveness, no breathing or only gasping in less than 10 seconds

3. Activation of the emergency response system and get AED

4. Begin CPR- 30 compressions and 2 ventilation and 15:2, if 2 rescuers at a rate of 100-120/min. Allow full recoil of the chest after each compression and minimise interruptions in chest compressions

5. Defibrillation as soon as AED is available.

2.2 The level of Knowledge of nurses on Cardiopulmonary resuscitation

Cardiopulmonary resuscitation (CPR) as the fundamental technique for the emergency treatment of cardiac arrest (CA), has been receiving great attention, especially by the World

Health Organization that has over the years emphasized on standardized training of health professionals to acquire knowledge and skills on cardiopulmonary resuscitation. In developed countries and regions like Britain and the United States of America for example, it is mandatory for health professionals to receive training on various cardiopulmonary resuscitation programmes of basic life support (BLS). On this note, in 2004, a training programme jointly organized by Universal Medical Assistance International Centre (UMAIC), Ministry of Health of P.R. China and American Heart Association (AHA) provided professional education and training to more than two million health professionals all over the world on how to practice cardiopulmonary resuscitation accurately and offer basic life support to patients who suffer cardiac arrest (Bellam,2012). With the established benefit of CPR, developed countries have already recommended BLS training even for high school students nearly a decade ago (Chamberlain et al., 2003). However, Ghana still does not have any such recommendations and guidelines even for medical and paramedical students. Many Ghanaian nursing students might not even learn the basics of BLS except a few students. Studies have shown that knowledge of healthcare professionals including nurses on cardiopulmonary resuscitation (CPR) in developing countries is low. In a study carried out by Allegro (2013) to determine the relative influence of level of knowledge of cardiopulmonary resuscitation and qualifications of nurses, the result showed that there is a significant difference between the level of knowledge and different levels of qualifications of nurses. The result implies that nurses with higher qualifications tend to be more knowledgeable in cardiopulmonary resuscitation than nurses with lower qualifications. Also, a cross-sectional survey carried out by Jallin and Gbangu (2012) to determine the perceived competence in cardiopulmonary resuscitation among qualified nurses in Kuwait, showed that nurses' knowledge of cardiopulmonary resuscitation was high and appreciative. Examining nurses' knowledge gain in a study conducted by Duncan, (2010), revealed that

many health professionals do not have a clear understanding of the meaning of cardiopulmonary resuscitation.

Offiong et al, (2016), also carried out a study in Nigeria to assess the knowledge and practice of CPR among public health nurses revealed that, 57% of the public health practitioners had never heard of CPR. The knowledge of cardiopulmonary resuscitation among Public Health Nurse Practitioners denotes that majority of the respondents had never heard about CPR (57%), Similarly, a study carried out by Solanke (2006), reported that 10% of health personnel in Ahmadu Bello University Teaching Hospital, Zaria do not have full information about cardiopulmonary resuscitation, hence do not know how to practice it. A study conducted in Kumasi, Ghana by Adebamowo and Ajayi (2005) showed that 25% of health personnel lack knowledge of cardiopulmonary resuscitation and do not practice it. But a study carried out in Ghana by Akumiah and Sarfo (2015) at Agogo to assess the knowledge of nurses on CPR practice indicated that 70% of the nurses had knowledge about CPR through training, out of this 70 %, 36% were able to accurately define the meaning of CPR whiles 48% were able to clearly state out properly the reasons for performing CPR.

2.3 Practices of cardiopulmonary resuscitation

Cardiopulmonary resuscitation is one of the most evolving areas of modern medicine which comprises of series of life-saving actions that improves the survival rates following cardiac arrest (Hakulinen, Hanshuwka, & Lopez, 2009). Although, the optimal approach to cardiopulmonary resuscitation may vary depending on the rescuer, the victim, and the resources available, the important challenge rest on how to achieve early and effective cardiopulmonary resuscitation. Given this challenge, prompt recognition of arrest and action by the rescuer continue to be priorities for the 2015 AHA (American Heart Association) Guidelines for cardiopulmonary resuscitation. Despite important advances in prevention,

cardiac arrest remains a substantial public health problem and a leading cause of death in many parts of the world. Cardiac arrest occurs both in and out of the hospital (Meena, Mohan, Suhas, Pavan & Siddharth, 2014). Lack of skills to perform basic life support and advanced life support by nurses and doctors has been identified as a backing factor to poor outcomes for cardiac arrest victims. The survival rate of patients after cardiac arrest is highly related to the time taken for resuscitation and defibrillation to commence. In the hospital setting, the nurse is the health care personnel who is most likely to observe a patient suffering a cardiac arrest, because it is the nurse that spends 24hours with patients (Mandong, Madaka, & Mannaseh, 2013). Similary Sanker et al, (2013), has identified the nurse as the nearest bystander who is likely to observe a cardiac arrest and whom society expects the best practice to be put into action to resuscitate the patient before definitive care. This has made it imperative that the nurse must be armed with the current evidence-based practice in basic life support to save a life. However, it is observed that CPR knowledge and practice are on the decline across nursing populations.

In a study by Mendhe, Burra, Singh, Narni,(2017) to assess the knowledge, attitude and practice of CPR among nursing and medical students interns in India, only 29% of the participants (30% MBBS interns and 28% nursing interns) had ever performed CPR which was less than what was expected. According to a study done by Suzuki et al.,(2015) to assess levels of knowledge and practice of CPR in Japanese medical students, less than 20% of the medical students could perform CPR. Again Tsegaye et al., (2015) also carried out a study in Ethiopia and confirmed that only 19.7 % of the respondents could perform standard CPR and of this 2.5 % were fifth-year students. The major findings in a study conducted in Nigeria by Adanu (2009) show that health worker's practice of cardiopulmonary resuscitation was high and there was a positive significant relationship between their

personal knowledge and practice of it. According to Chukwuali, Onuigbo and Mgbor (2009), the practice of cardiopulmonary resuscitation in the developing countries is too low since only about 5 percent of health personnel have training on it. Furthermore 12% and 7% of nurses had ever practiced CPR and practiced it regularly respectively in a study by Offiong et al, (2016) in Nigeria, therefore the study emphasizes that though the basic nursing programmes such as the Diploma and the Bachelors programmes lay adequate emphasis on the CPR technique but the retention of this knowledge among the nurses at the practicing stage can be doubtful.

Also the findings of Sarfo and Akumiah 2015 in Ghana revealed a greater number of the nurses did not know the fundamental approach in performing CPR while 30% knew the steps in carrying out CPR and had practiced it. Silande (2011) sees it as a paramount importance to establish a team of experts in CPR who will at all times organize and formalize the training of cardiopulmonary resuscitation to enable registered nurses to have updates in cardiopulmonary resuscitation knowledge for the benefits of clients in all working settings within the hospital.

2.4 Factors that influence the practice of CPR

The survival of cardiac arrest patients depends on several factors such as the integration of basic and advanced cardiac life support in addition to post-resuscitation care. The initial treatment to patients in cardiopulmonary arrest (CPA) should involve a systematic approach based on the five links of the chain of survival, early detection of an individual in Cardiopulmonary arrest (CPA), immediate request for expert help, the start of CPR through effective chest compressions, airway opening and oxygen delivery. Therefore nurses must have fast clinical reasoning, technical skills, and emotional control to act in the face of an

emergency since they are the first line of professionals to recognize such events in the patient as they spent 24 hours a day with them.

A report by America Heart Association (2012) and Gonzalez et al (2013) stated that Cardiopulmonary arrest(CPA) is the cessation of cardiac and respiratory functions, when the body cells and tissues stop receiving the oxygen and nutrients needed to sustain life if not reversed quickly, the cessation of these functions leads to irreversible cell and brain damage , causing death rapidly.

A study by Al-kandany, Al-Jeheidli, Ghayjath and Al-Haid (2007) on the decline of knowledge and practice of CPR among qualified nurses in Kuwait discovered that majority of the nurses (86.1%) had attended cardiopulmonary resuscitation session as part of the nursing curriculum and 65.5% of nurses had never participated in a cardiopulmonary resuscitation learning session other than in curriculum. It was further found that 26.7% of the nurses had never participated in a real resuscitation attempt. Overall, the median knowledge score of the registered nurses was 42.9% for cardiopulmonary resuscitation (CPR) and 52.0 % for emergency cardiovascular care (ECC). The study concluded that factors that affected nurses knowledge score were years of experience, participation in resuscitation session other than in curriculum, attempting real resuscitation and self-confidence of the nurses.

Majid et al., (2011), carried out a study to explore nurses' knowledge on their attitude towards cardiopulmonary resuscitation and factors expected to encourage or generate barriers to its practices, using 1486 nurses in two public hospitals in Singapore and indicated that 64% of nurses had a positive attitude towards cardiopulmonary resuscitation. Similarly, the nurses indicated that because of the heavy workload, they could not keep up to date with new trend of CPR. Concerning self-efficacy of cardiopulmonary resuscitation-related

capabilities, the nurses perceived themselves to have adequate levels of skills, and also felt that cardiopulmonary resuscitation training, time convenience, and mentoring by nurses with cardiopulmonary resuscitation experience would boost them to implement cardiopulmonary resuscitation. The top three barriers of implementing cardiopulmonary resuscitation according to them were lack of time, inability to understand statistical terms, and inadequate understanding of the jargon used in research articles. The study, therefore, recommended that hospital management in Southeast Asia, particularly in Singapore, develop a comprehensive strategy for building cardiopulmonary resuscitation competencies through proper training. Moreover, hospital libraries should also play an active role in developing adequate information literacy skills among nurses. Similarly, a study by Kozamani and Theodoros (2012), revealed that the main factor that affects the attitude of nurses in initiating cardiopulmonary resuscitation is their lack of systematic training. In contrast, the personal experience of nurses had a positive outcome since it reinforces their capabilities of initiating CPR

Govender et al.(2010) where 20 professional nurses had a decrease in their skills and their knowledge of CPR even though they had been trained in CPR 3 months prior to the study.

2.6 Summary and conclusion of the literature

This review reveals that cardiopulmonary resuscitation is very important in the lives of patients who have suffered sudden cardiac arrest. This is because the survival rate of these patients depends largely on the early recognition of cardiac arrest and the initiation of CPR. But the lives of these patients seem to be at stake since most of the reviewed literature revealed a low level of CPR knowledge and its practice among health workers, specifically nurses some of which were largely related to some factors such as the lack of systematic

training, moderate levels of skills possessed by the nurses and heavy workload on the side of nurses which does not keep up to date with new evidence.

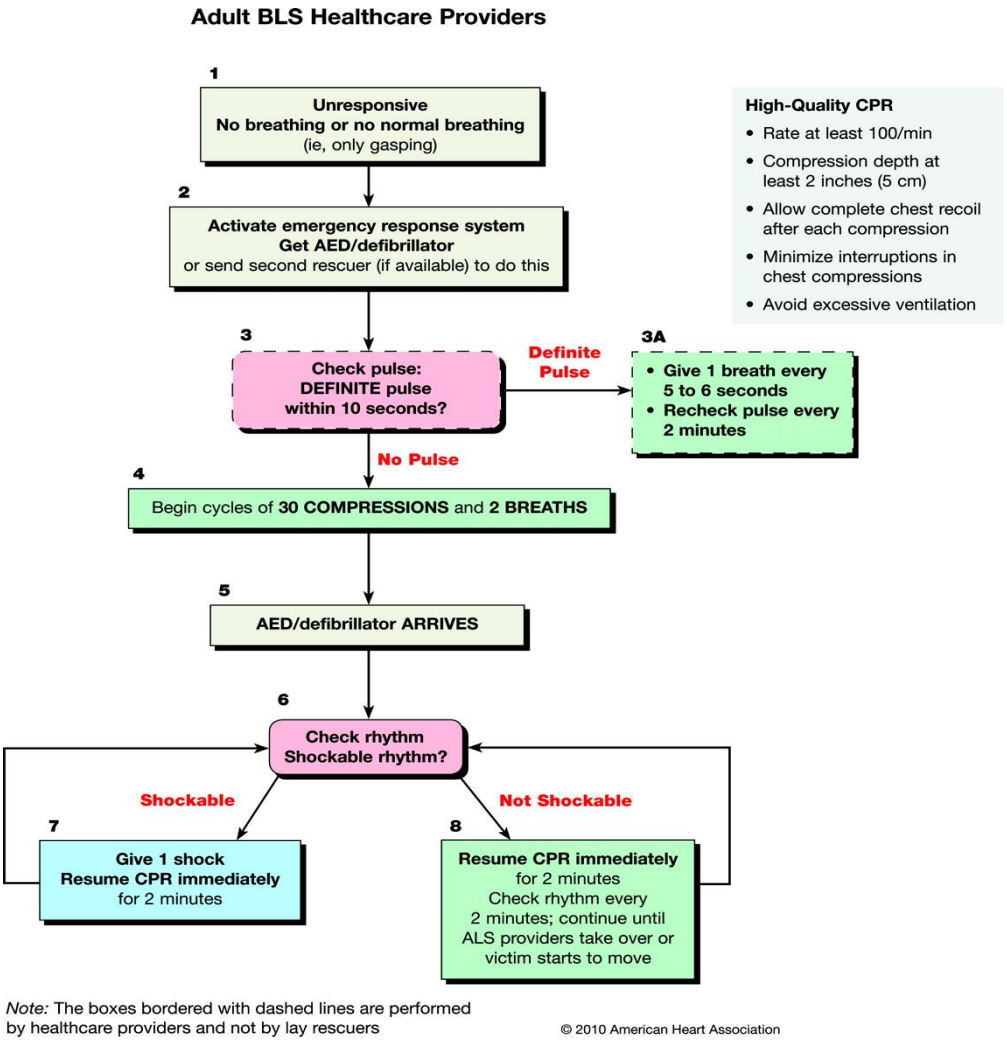

Figure 2: AHA 2015, BLS Healthcare Provider Algorithm
Source: American Heart Association

CHAPTER THREE

METHODS

3.1 Study Design

A quantitative cross-sectional descriptive survey design was used in this study. Nurses who worked at the Greater Accra Regional Hospital and the Legon hospital participated in this study. The study was conducted at the hospitals from 3rd June to 5th July 2019. The nurses were administered with a structured questionnaire to answer.

3.2 Study Area

The research was conducted at the Greater Accra Regional Hospital, Ridge as well as Legon Hospital, Accra. The study population comprised of nurses who work in these hospitals and have either a certificate, diploma, degree in nursing or with a specialty in any of the fields.

3.3 The Greater Accra Regional Hospital, Ridge.

The Greater Accra Regional hospital is located at the heart of the Accra metropolis and serves as the regional hospital for the Greater Accra region. It thus receives referrals from all over the region including healthcare facilities within the metropolis. It is a government hospital that provides a wide range of healthcare services.

It receives cases from all the districts in the Greater Accra Region. These districts include Accra Metropolis, Tema Metropolis, Adenta Municipal, Ga East Municipal, Ga West Municipal, Ga South Municipal, Ga Central Municipal, Ashiaman Municipal, Ledzokuku-Krowor Municipal, Dangme East, Dangme West, La Dade Kotopon Municipal, La-Nkwantanang Madina, Kpone Kalamanso, Ningo Prampram and Ada West districts. It is located on Castle Road, North Ridge in the Accra Metropolis of the Greater Accra Region, Ghana. It has seven (7) major departments namely Accident and Emergency Department.

Surgery Department, Medical Department, Paediatrics Department, Obstetrics and Gynaecology Department and Theater and Allied Health Department. Each department has units and subunits.

The clinical and diagnostic departments are; Allied Surgery, Medicine, Pediatrics, Obstetrics and Gynecology, Hematology, Pathology, Laboratories, Radiology, Anesthesia, Surgery, and Polyclinic. Others are Surgical and Medical Emergency, Accident Centre, Physiotherapy, Pharmacy, Central Sterilization, and Supply Department and Central Outpatient Department. The hospital does sophisticated procedures and specializations fields such as Dentistry, Orthopedics, Oncology, Neurosurgery, Urology and Eye, Ear, Nose, and Throat. The comparing facility is the Legon hospital. The University Hospital is located at the Ayawaso East Wugon sub-metro of Greater Accra Region of Ghana.

Legon Hospital

The study was also conducted in the University Hospital; Legon as comparing facility.The University Hospital is located at the Ayawaso East Wugon sub-metro of Greater Accra Region of Ghana. The hospital has a bed capacity of 130 and was primarily built to provide care for the university population but later extended to provide care to people from Madina, Adenta, Aburi, and Abokobi. The hospital offers the following services; medical and surgical, maternal and child health, reproductive health, dental, dietetics and physiotherapy, specialist eye care, orthopaedics, urology, and dermatology.The hospital also offers Out-patient department and emergencies services.

3.4 Inclusion Criteria

Nurses who have at least a certificate, diploma, specialty in critical care or emergency nursing.

3.5 Exclusion Criteria

Nurses who were on leave

3.6.1 Variables

Dependent Variables:

Knowledge and Practice of CPR among nurses

3.6.2 Independent Variables

Demographic Variables	**Knowledge and Practice of CPR**
Age of the nurses	Indications for CPR
Sex of nurses	Level of skill
Educational level of the nurses	First place when CPR was heard
Area of speciality of the nurses	Processes /actions involve in CPR
Rank of the nurses	What necessitate CPR practice.
The number of years of working as a nurse	Challenges with CPR practice and availability of personnel and resources.

3.7 Study Population

The study population included clinical nurses working in the Greater Accra Regional hospital and Legon hospital, Accra. They either have a Certificate, Diploma or Bachelor's degree in Nursing and or a Specialization.

3.8 Sample Size

The sample size for the study was calculated, using Yamane (1967) formula for sample size determination. According to Yamane (1967), the sample size can be calculated if the population size of the target group is known by using the formula below:

$$n = \frac{N}{1 + N(e)^2}$$

Where n= Required sample size

N= Total number of nurses in both health facilities.

e= Margin of error (5%=0.05)

Total of nurses in legon hospital =153

Total number of nurses in Greater Accra Hospital= 500

Total number of nurses in both facilities =653

$$n = \frac{653}{1 + 653(0.05)^2}$$

n= 248.05

n= 248

3.9 Sampling Method/ Procedure

A convenience sampling method was used to select the study areas for the study. The proportion of nurses to participate in the study was calculated based on the total number of nurses in hospitals. Allocation of sample size for each hospital was done by, calculating the total of nurses in each of the hospital divided by the total number in the two hospitals, multiply by the sample size gave the number of nurses to participate in the study from each of the hospitals. Convenience sampling was used to get all the 248 nurses for the study. Greater Accra Regional Hospital had 199 nurses and Legon hospital had 58 nurses who participated in the study. Questionnaires were administered to those on duty and most of them used 20 – 30 minutes to complete it. Some were administered with the questionnaire but decided that we should come for it the next day because of the workload at the time.

3.9 Data collection technique and instruments

Nurses who work at the various wards were assessed through a closed-ended questionnaire. In the selected areas of study, the convenience sampling method was used to select 248 respondents for the study. Consent was taken from respondents who were eligible for the study. Data were gathered through questionnaire. Questions were designed in the areas of biographical data of the respondents, the level of knowledge, factors that influence the practices of cardiopulmonary resuscitation, the practice of cardiopulmonary resuscitation using the 2015 AHA guidelines and the challenges associated with CPR.

3.10 Ethical consideration

In order to ensure that the research meets ethical standards, approval was sought from the Ethical Review Committee of the Ghana Health Service (GHS-ERC 078/04/19) Research and Development Division, Accra.

The researcher sought ethical approval from the hospitals by sending an official letter from the school of Public Health for permission to carry out the study in their facilities. Respondents of the study were assured that their information or responses to the various questions would be treated with the highest level of confidentiality and that such information would not be given to a third party without their consent. In addition, respondents were assured that the information given would be used purely for academic purposes. Informed consent form (see appendix A) were given to respondents, which they read and signed before answering the questionnaires. Participation in this study was solely voluntary and they had a right to choose not to answer any individual question or all the questions.

3.11 Training of Interviewers

Prior to the start of fieldwork, four research assistants with minimum qualification of a University Degree were trained to assist with the data collection.

3.12 Pre-Testing and Review of Instruments/Tools

A pre-test of the questionnaire was conducted using five nurses at the korle-bu Teaching Hospital with the design questionnaires. This was aimed at determining whether the instrument was clearly worded and would be able to solicit the type of information envisioned as well as identifying errors and ambiguous questions and correcting prior to the field data collection.

3.13 Quality Control

Four research assistants were recruited, trained and supervised to assist the principal investigator to administer the questionnaire and they were monitored closely throughout the data collection process. The questionnaires for the study were brief, elaborate and easy to understand. The data collected were checked and cleaned by the principal investigator for completeness and accuracy.

3.14 Data processes and analysis

The administered questionnaires were coded and entered into Microsoft Excel. The data was cleaned, validated and exported to STATA (statistical analysis software) Version 15.

Data analysis was done using STATA version 15 Summary statistics such as frequencies, means percentages and proportions were used to summarize the various variables. Tables were used to present some of the study where appropriate.

Bivariate analysis using chi-square test was used to test for association between socio-demographic characteristics and the knowledge of cardiopulmonary resuscitation, socio-demographic characteristics, and practice of cardiopulmonary resuscitation among nurses.

A multivariate analysis using logistic regression was used to test for the strength of association between the demographic characteristics and the knowledge of cardiopulmonary resuscitation and factors influencing CPR practice among nurses at P-Value of 0.05(5%) and 95% confidence interval.

CHAPTER FOUR

RESULTS

4.1 Demographic Characteristics

This section gives a description of the socio-demographic characteristics of the nurses in the study. A total number of 248 nurses were involved.

The table one below depicts that more of the respondents 167(67.3%) were within the age group of 20 to 30,majority of the nurses were females 172 (69.4%), 59.7% were diploma nurses, majority 76.6% were registered, general nurses, 48.8% were staff nurses and 68.1% had worked between 1-5years.

Table 1: Demographic Characteristics

Demographics	Frequency(n) N=248	Percentage (%)
Age		
20 – 30	167	67.3
31 – 40	60	24.2
Above 40	21	8.5
Sex		
Female	172	69.4
Male	76	30.6
Education		
Certificate	12	4.8
Diploma	148	59.7
Post basic	31	12.5
Tertiary	57	23
Specialty		
RGN	190	76.6
Critical care nursing	52	21
Emergency nursing	6	2.4
Rank		
SN	121	48.8
SSN	40	16.1
NO	43	17.3
SNO	33	13.3
PNO	11	4.4
Years of work		
1 - 5 years	169	68.1
6 - 10 years	51	20.6
11 - 15 years	20	8.1
16 - 22 years	8	3.2

4.2 Association of knowledge by Demographic characteristics

Table 2 below, illustrates the knowledge by socio-demographic variables which revealed that the majority of nurses had low knowledge 111(44.8%) and only 66(26.6%) had good knowledge about CPR. Those within the age group of 20-30 had good knowledge (48.8%)which was the highest among the age group, males had good knowledge (35.5%) as compared to females (22.7%) ,diploma's had low knowledge (41.2%), while specialty emergency nursing had good knowledge (50%,) 37.5% SSN (rank) had good knowledge

and those with 1-5 years work experience had good knowledge (29.6%) as compared with those with 16-22 years work experience.

Therefore the association between level of knowledge and socio-demographic variable revealed that age group, sex, education, specialty and years of work were statistically insignificant as their p-value was greater than 0.05(P > 0.05) except the rank of the respondents which was significant with a P-value of 0.014.

Table 2: Association of knowledge by Demographic characteristics

	Level of knowledge			**Chi-square(P-value)**
	LOW n=111(44.8)	AVERAGE n=71(28.6)	GOOD n=66(26.6)	
Age group				2.14(0.7)
20 – 30	72(43.1)	47(28.2)	48(28.7)	
31 – 40	28(46.7)	17(28.3)	15(25.0)	
Above 40	11(52.4)	7(33.3)	3(14.3)	
Sex				4.54(0.1)
Female	82(47.7)	51(29.7)	39(22.7)	
Male	29(38.2)	20(26.3)	27(35.5)	
Education				8.68(0.2)
Certificate	4(33.3)	7(58.3)	1(8.3)	
Diploma	61(41.2)	43(29.1)	44(29.7)	
Post basic	16(51.6)	8(25.8)	7(22.6)	
Degree	30(52.6)	13(22.8)	14(24.6)	
Specialty				5.25(0.3)
RGN	85(44.7)	51(26.8)	54(28.4)	
Critical care nursing	25(48.1)	18(34.6)	9(17.3)	
Emergency nursing	1(16.7)	2(33.3)	3(50.0)	
Rank				19.22(0.01)
SN	50(41)	41(33.9)	30(24.8)	
SSN	17(42.5)	8(20.0)	15(37.5)	
NO	25(58.1)	4(9.3)	14(32.6)	
SNO	12(36.4)	15(45.5)	6(18.2)	
PNO	7(63.6)	3(27.3)	1(9.1)	
Years of work				10.17(0.1)
1 - 5 years	79(46.7)	40(23.7)	50(29.6)	
6 - 10 years	17(33.3)	21(41.2)	13(25.5)	
11 - 15 year	11(55.0)	7(35.0)	2(10.0)	
16 - 22 years	4(50.0)	3(37.5)	1(12.5)	

Table 3 below: Depicts the place where CPR was first heard by the respondents. Out of the 248 respondents, 59.7% have heard about CPR in the nurses training colleges, 8.5% from the post-basic school, 19% at a workshop and 13% from an in-service training while none of the respondents heard from a friend.

In assessing their knowledge on the kind of patient to perform CPR on, majority 82.7 % indicated, patients in cardiac arrest, 9.7% said patients in shock while the minority, 7.7% indicated patients who are choking.

51.6% indicated that CPR should be performed to all persons regardless of the absence or presence of a pulse but 48.4% said no to it.

In assessing the knowledge of respondents on the location, the depth, the order, and the recommended compression to ventilation ratio in performing CPR; With regards to the location to perform CPR, 40.7% indicated the xiphisternum, 38.3% indicated the mid-chest,2% said right thoracic region, while 19% indicated the left chest. Again, the majority (50%) of the respondents stated that the depth of chest compression should be 5cm in adult, 23.8% stated 6cm, 16.5% said 4cm and 9.7% indicated 4.5 cm. In assessing the order of CPR intervention, 63.7% stated that the order was chest compression, airway, and breathing (CAB), 24.2% stated airway, breathing and chest compression (ABC), 2.4% stated breathing, chest compression and airway (BCA) and 9.7% stated airway, chest compression and breathing (ACB).

Furthermore, with the compression to ventilation ratio, 68.6% of the respondents stated Yes and 31.5% said No concerning 30:2 ratio for adult, children, and infants if only a single rescuer is present, 51.2% stated Yes and 48.8% stated No concerning 15:2 in children and infants if at least 2 rescuers are present and 56% stated Yes and 44% stated No concerning 3:1 in newborns unless a cardiac cause is known.

Table 3: Practice of Cpr among Nurses

VARIABLE	FREQUENCY	PERCENTAGE
FIRST PLACE WHERE CPR WAS HEARD		
NTC	148	59.7
POST BASIC SCHOOL	21	8.5
AT A WORKSHOP	47	18.9
IN-SERVICE TRAINING	32	12.9
THE KIND OF PATIENT IS CPR PERFORM ON		
Patient in Cardiac arrest	205	82.7
Patient in shock	24	9.7
Patient choking	19	7.7
SHOULD CPR BE PERFORMED TO ALL PERSONS REGARDLESS OF ABSENCE OR PRESENCE OF PULSE		
YES	128	51.6
NO	120	48.4
LOCATION FOR CPR		
Left thoracic region	47	18.9
Right thoracic region	5	2.0
Mid chest	95	38.3
Xisphisternum	101	40.7
DEPTH OF CHEST COMPRESSION		
5cm	124	50.0
6cm	59	23.8
4 cm	41	16.5
4.5cm	24	9.7
THE CURRENT ORDER OF CPR		
ABC	60	24.2
ACB	24	9.7
CAB	158	63.7
BCA	6	2.4
RECOMMENDED UNIVERSAL COMPRESSION TO VENTILATION RATIO ADULT, CHILDREN, INFANT(30:2)		
NO	78	31.5
YES	170	68.6
15:2 CHILDREN/INFANTS		
NO	121	48.8

YES	127	51.2
3:1 NEWBORN UNLESS A CARDIAC CAUSE IS KNOWN		
NO	109	43.9
YES	139	56.1

4.3 The level of practice among nurses regarding cardiopulmonary resuscitation

Table 4 below shows that, ages of nurses 36 (60%) that had good practice were within the 31-40 years age group. Males though few that had a good practice of CPR were 47 (61.8%) as compared to the females 84(48.8%). For education, those with diplomas had a poor practice of CPR 74(48.8%). In the area of specialty, emergency nurses had a good practice of CPR 66.7%, 53.7% of the staff nurse had a poor practice which was the highest and those with 6-10 years of working experience had a good practice of CPR (56.9%). Therefore, CPR practice did not differ by age, sex, rank, education, specialty and years of work experience.

Table 4: Association of CPR Practice by Demographic characteristic

	Level of Practice		Chi-Square(P-Value)
	Poor	**Good**	
	n=117(47.2)	n=131(52.8)	
Age			1.72(0.4)
20 – 30	82(49.1)	85(50.9)	
31 – 40	24(40.0)	36(60.0)	
Above 40	11(52.4)	10(47.6)	
Sex			3.58(0.1)
Female	88(51.2)	84(48.8)	
Male	29(38.2)	47(61.8)	
Education			3.82(0.3)
Certificate	3(25.0)	9(75.0)	
Diploma	74(50.0)	74(50.0)	
Post basic	12(38.7)	19(61.3)	
Tertiary	28(49.1)	29(50.9)	
Specialty			1.20(0.6)
RGN	93(48.9)	97(51.1)	
Critical care nursing	22(42.3)	30(57.7)	
Emergency nursing	2(33.3)	4(66.7)	
Rank			5.00(0.3)
SN	65(53.7)	56(46.3)	
SSN	14(35.0)	26(65.0)	
NO	18(41.9)	25(58.1)	
SNO	15(45.5)	18(54.5)	
PNO	5(45.5)	6(54.5)	
Years of Work			0.82(0.8)
1 - 5 years	82(48.5)	87(51.5)	
6 - 10 years	22(43.1)	29(56.9)	
11 - 15 year	10(50.0)	10(50.0)	
16 - 22 years	3(37.5)	5(62.5)	

Table 5 below represents the practice of CPR among the respondents. Majority (49.2%) of the respondent has ever practiced CPR, and 50.8% had never practiced CPR also 2.8% practiced it daily while 2.4% said they practice it always. The majority (80.2%) practiced CPR when the need arises and 14.5% occasionally. The majority (90.7%) said CPR should be continued until the person regains / returns Spontaneous circulation or is declared dead while 9.3% said No to it. Regarding what do you do if a patient is not breathing but has a

pulse, 52.4 % said start compression,23.8% stated give rescue breath, 19% said give oxygen and 4.8% said put patient in recovery.

For when a patient is unresponsive, no pulse and not breathing,2.8% of the respondents said Set up normal saline,71% stated start CPR, 5.7% said give oxygen and 20.6% said to call a doctor.

Table 5: Practice by nurses

VARIABLE	FREQUENCY	PERCENTAGE
THOSEN WHO HAVE EVER PERFORMED CPR		
NO	122	49.2
YES	126	50.8
HOW OFTEN DO YOU PRACTICE CPR		
DAILY	7	2.8
ALWAYS	6	2.4
WHEN THE NEED ARISES	199	80.2
OCCASIONALLY	36	14.5
CPR IS CONTINUED UNTIL THE PERSON REGAINS /RETURNS OF SPONTANEOUS CIRCULATION OR IS DECLARED DEAD		
NO	23	9.3
YES	225	90.7
WHAT DO YOU DO IF A PATIENT IS NOT BREATHING BUT HAS A PULSE		
Start compression	130	52.4
Give rescue breath |	59	23.8
Give oxygen	47	18.9
Put in recovery position |	12	4.8
WHAT DO YOU DO WHEN A PATIENT IS UNRESPONSIVE, NO PULSE AND NOT BREATHING		
Set up normal saline	7	2.8
Start CPR	176	70.9
Give oxygen	14	5.6
Call doctor	51	20.6

4.4 Factors that influence the practice of CPR

Table 6 below presents results for crude and adjusted odds ratio:

A simple logistic regression was run on stata and the unadjusted odds ratio showed that age group, education, specialty, rank, years at work, knowledge, and lack of experience significantly influenced the good practice of CPR among the nurses. The results show that nurses within the age group 31 to 40 years were about 4 times more likely to have good practice as compared to nurses aged 20 to 30 years which was statistically significant [3.8(0.0 -6.9)0.0]. Nurses with post-basic education are 6 times more likely to have good practice as compared to certificate nurses [6.1[(1.1-32.4)0.04]. Moreover, nurses with lack of experience have 53% reduce odds of practicing CPR as compared to those with experience which is statistically significant [0.47(0.27-0.82)0.008]

A multiple logistic regression test was run for the adjusted variables. Adjusted odds ratio, however, shows specialty, rank, knowledge, and lack of personal experience significantly influence the good practice of CPR. The results show that critical care nurses were 5 times more likely to have good practice as compared to RGN [5.38(1.7-17.4)0.005]. Nursing Officers (NO) were 5 times more likely to have good practice as compared to SSN [5.5(1.7-17.9)0.005]. Nurses with good knowledge on CPR surprisingly were identified to have 63% reduce odds of practicing CPR as compared to those with poor knowledge in CPR, which was statistically significant as [0.31(0.13-0.74)0.008]. Nurses with lack of experience have 65% reduce odds of practicing CPR as compared to those with experience, which is statistically significant as [0.35(0.18-0.69)0.002].

Table 6: Factors that Influence the Practice of CPR

Characteristics	Predictor	cOR[95% CI]p-value	aOR[95%CI]p-value
Practice	**Age**		
	20 - 30	Ref	Ref
	31 – 40	3.8[2.0-7.0]0.0	1.8[0.6-5.4]0.3
	Above 40	1.6[0.6-4.4]0.3	0.8[0.1-5.5]0.8
	Sex		
	Female	Ref	
	Male	0.8[0.4-1.4]0.4	
	Education		
	Certificate	Ref	Ref
	Diploma	1.6[0.3-7.4]0.6	3.5[0.6-21.7]0.2
	Post Basic	6.1[1.1-32.4]0.0	4.1[0.6-30.5]0.2
	Tertiary	3.6[0.7-18.1]0.1	4.0[0.6-26.3]0.2
	Specialty		
	RGN	Ref	Ref
	Critical care nursing	4.27[2.25-8.12]0.000	5.38[1.67-17.35]0.005
	Emergency Nursing	1.57[0.28-8.82]0.612	1.[0.12-8.96]0.9
	Rank		
	SSN	Ref	Ref
	SN	1.2[0.5-2.96]0.8	1.0[0.4-2.9]0.9
	NO	6.6[2.4-18.1]0.0	5.5[1.7-17.9]0.005
	SNO	4.[1.5-12.9]0.01	1.9[0.5-8.3]0.4
	PNO	5.7[1.5-12.9]0.02	6.2[0.8-46.5]0.1
	Years of Work		
	1 - 5years	Ref	Ref
	6 - 10years	2.1[1.09-4.01]0.03	0.8[0.27-2.45]0.7
	11 - 15years	2.3[0.88-5.80]0.09	0.3[0.05-1.77]0.2
	16 - 22years	0.9[0.18-4.72]0.92	0.1[0.01-1.85]0.1
	Knowledge		
	Poor	Ref	Ref
	Average	0.8[0.45-1.6]0.6	1.1[0.5-2.5]0.7
	Good	0.4[0.41-0.8]0.007	0.31[0.13-0.74]0.01
	Lack of Personal Experience		
	No	Ref	Ref
	Yes	0.5[0.3-0.8]0.008	0.4[0.2-0.7]0.0
	Lack of Training		
	No	Ref	
	Yes	0.99[0.5-1.9]0.99	
	Calm in Performing CPR		
	No	Ref	
	Yes	0.9[0.1-10.3]0.9	

4.5 Knowledge of nurses who practice CPR

Table 7 below shows that most of the respondents 52.25% had low knowledge in CPR and practiced it poorly. About 60.56% had an average level of knowledge in CPR and also

practiced it well and 53.03% of the respondents had a high knowledge in CPR and practiced it well.

Table 7: Knowledge of Nurses who practice CPR

Knowledge	Level of practice		Total
	Poor	**Good**	
Low	58(52.3)	53(47.8)	111
Average	28(39.4)	43(60.6)	71
High	31(46.97)	35(53.0)	66

4.6 Comparing The Proportion Of Nurses In The Various Hospitals Who Had Good Practice Of Cardiopulmonary Resuscitation.

Table **8** below reveals that, Nurses from Legon hospital had poor practice 48.3%[36.0-61.0] compared with Greater Accra Regional hospital nurses 53.2%[46.0-60.0].

Table 8: Proportion of Nurses who practice CPR

	Site of study	**Proportion[95%CI]**
Poor		
	Legon Hospital	48.3[36.0-61.0]
	Greater Accra Regional Hospital	46.8[40.0-54.0]
Good		
	Legon Hospital	51.7[39.0-64.0]
	Greater Accra Regional Hospital	53.2[46.0-60.0]

CHAPTER FIVE

DISCUSSION

5.1 The level of Knowledge of nurses on Cardiopulmonary resuscitation

This study revealed that nurses in the Greater Accra Regional and Legon hospitals had limited information on Cardiopulmonary resuscitation, 45% indicating a low level of knowledge in the area. There was no significant association between level of knowledge and age, sex, education, area of specialty and number of years of work experience. This study is not consistent with a study conducted in Kumasi, Ghana by Adebamowo and Ajayi (2005) which showed that 25% of health personnel lack knowledge of cardiopulmonary resuscitation whereas the majority of the nurses in this study have poor knowledge.

The study also revealed that most of the respondents (60%) first heard about CPR in the nurses training college. The basic knowledge of CPR is widespread among nurses mostly due to the fact that they are part of the curriculum used in the various nursing training colleges and universities in Ghana but their ability to retain the knowledge to practice is the challenge. This is consistent with a work done by Akumiah and Sarfo (2015) at Agogo to access the knowledge of nurses on CPR practice which indicated that 70% of the nurses had knowledge about CPR through training.

5.2 Level of the practice of CPR among nurses

The result of the study revealed that 53% practiced well CPR. The numbers who were good in practicing CPR were related to factors such as age, rank, area of specialty and number of years of work experience. Those in the age group 31-40 were 60% and this could be that majority in this age group were interviewed. Males had 62% since CPR involves a little energy they are likely to initiate and start CPR when the need arises before the female continuous, For area of specialty 4(67%) of emergency nurses were good in practicing CPR,

which was closely followed by critical care nurses 30 (58%) which were slightly higher in numbers. This is due to the fact that emergency nurses are the first line of contact at the emergency settings hence their ability to practice CPR and as studies have showed that Lack of skills to perform basic life support and advanced life support by nurses and doctors has been identified as a backing factor to poor outcomes for cardiac arrest victims and also consistent with a study conducted by Allegro (2013), which revealed that nurses with higher qualifications tend to be more knowledgeable in cardiopulmonary resuscitation than nurses with lower qualifications.

The nurses who have worked 15-20 years also constituted 63% suggesting that the long years of work may have exposed them to many years of CPR practice and this study is doesn't agree (Meena, Mohan, Suhas, Pavan & Siddharth, 2014),that only 29% of the participants had ever performed CPR which was less than what was expected. Again in Japan by Suzuki et al., among Japanese medical students, less than 20% of the medical students could perform CPR. Also, Tsegaye et al., (2015) also carried out a study in Ethiopia and confirmed that only 19.7 % of the respondents could perform standard CPR.

The increase in the well-performed CPR could be related to the fact that there is an increase in cardiac arrest cases which require that CPR should be done regularly.

Furthermore, the result for the practice of CPR among nurses revealed that the majority (51%) have ever performed CPR. About 80% performed it when the need arises while 2% performed CPR always as part of their professional responsibilities which means that the nurses where able to practice CPR fairly. This does not corroborate with the findings of the study by Chukwuali, Onuigbo and Mgbor (2009) which revealed a low level of the practice of cardiopulmonary resuscitation in the developing countries and attributed it to lack of training for the health worker after school.

5.3 Factors that influence the practice of CPR

The study sought to find out the factors that influences the practice of cardiopulmonary resuscitation among nurses. The adjusted odds ratio obtained for age, sex, education, years of work experience, lack of training and being calm and not frightened during CPR were not statistically significant. However, this agrees with a study by Kozamani and Theodoros (2012), which revealed that the main factor that affects the attitude of nurses in initiating cardiopulmonary resuscitation is their lack of systematic training. But adjusted odds ratio, however, shows specialty, rank, knowledge, and lack of personal experience significantly influence the practice of CPR. The odds of those with Critical care nursing were 5 times the odds of RGN, which is statistically significant and is consistent with a study conducted by Allegro (2013), which revealed that nurses with higher qualifications tend to be more knowledgeable in cardiopulmonary resuscitation than nurses with lower qualifications.

Nursing Officers (NO) were 5 times more likely to practice CPR as to compared to SSN Nurses with good knowledge on CPR surprisingly were identified to have 69% reduce odds of practicing CPR as compared to those with poor knowledge in CPR, the findings agrees with the study by .Govender et al.(2010) where 20 professional nurses had a decrease in their skills and their knowledge of CPR even though they had been trained in CPR 3 months prior to the study.

Nurses with lack of experience have 65% reduce odds of practicing CPR as compared to those with no lack of experience, which is in line with a study by Kozamani and Theodoros (2012) which affirms that personal experience of nurses had a positive outcome since it reinforces their capabilities of initiating CPR and also a major finding in a study conducted in Nigeria by Adanu (2009) shows that health worker's practice of cardiopulmonary

resuscitation was high and there was a positive significant relationship between their personal knowledge and practice of it, which agrees with the findings of the study.

5.4 Comparing The Proportion Of Nurses In The Various Hospitals Who Had Good Practice Of Cardiopulmonary Resuscitation.

In comparing the proportion of good practice among nurses in Greater Accra Regional hospital and Legon hospital. The nurses from Legon hospital had high prevalence of poor practice 48% and high prevalence of good practice were identified among Greater Accra Regional hospital nurses 53%.this could be due to the fact that it's a referral point so more patients with cardiac arrest are rushed there and the nurses get the opportunity to practice more and frequently. It could also be that they have periodic in-service training on it and watch more current videos on it. It is a fair assessment comparing the two hospitals at any point in time ; both nurses in those places have been trained and have knowledge about CPR but sometimes the nurses in a small facility may be reluctant to practice as they are fast to refer cases to a bigger facility and may also have fewer nurses on duty to commence the practice, thus losing their skills when the need arises.

In general, Nurses in Greater Accra Regional Hospital had a good practice of cardiopulmonary resuscitation than Legon Hospital.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The study revealed that the nurses had low knowledge on CPR but they were fairly able to practice it. There is a need for hospital management and nursing directorates to organized periodic workshop and in-service training to enhance the skills of their nurses.

Critical care and emergency nurses tend to have high knowledge and practice on CPR. Senior staff nurses and Nursing officers have a good practice of CPR. Nurses with higher rank practice CPR well.

However, lack of post-basic training in critical care and emergency nursing was a hindrance to the practice of CPR as the majority of the respondents were registered general nurses.

Years of work experience and lack of personal experience had a major effect on CPR practice. The more years of experience means the nurse had practice more CPR on cardiac arrest patients and would have gain more experience from the practice.

6.2 Recommendations

Based on the findings and conclusions from the study, the following recommendations were made.

- Though the basic nursing programmes such as the diploma and the Bachelor's programmes lay adequate emphasis on the CPR technique but the retention of this knowledge among the nurses at the practicing stage can be doubtful hence the need for nurses to abreast themselves with current AHA guidelines and practices. Nurses must attend training on CPR to enhance their practice, at least every two years as

indicated by AHA. Refresher courses, workshops, and in-service training must be organised for an update in the knowledge of CPR as well by their institutions.

- Hospitals are therefore encouraged to rotate general nurses through the various departments especially at the emergency department so that all nurses at a health facility would have experiences in CPR.
- The government and society must understand the seriousness of cardiac arrest and cost of losing our workforce through cardiac arrest, therefore regular training on current trends on CPR must be organized for nurses by the hospital management to help save many lives since nurses trained from the study perform CPR well.
- Further studies should be done to include doctors and the scope of the study widened across Ghana to better assess the knowledge and practices of CPR among healthcare professionals. Also, a comparative study can be done to assess the knowledge and practice of cardiopulmonary resuscitation among nurses in teaching and district hospitals.
- All those who participated in the study should indicate critical points at which CPR knowledge and skills deteriorate to help with impactful training.

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APPENDICES

Appendix A

University of Ghana

School of Public Health

Consent Form

PARTICIPANTS' INFORMATION SHEET

The Information Sheet provides information about the research for participants to make an informed decision of whether to participate in the study or not. It outlines the nature of the research, what the research involves, risks, benefits, compensation.

TITLE OF STUDY: KNOWLEDGE AND PRACTICE OF CARDIOPULMONARY RESUSCITATION AMONG NURSES AT GREATER ACCRA REGIONAL HOSPITAL AND LEGON HOSPITAL

Principal Investigator: This project is being carried out by Dora Ofori. I am a graduate student of the School of Public Health, University of Ghana, Legon. Information to be collected is mainly for research purposes.

You can contact me on the following address:

Address: School of Public Health

College of Health Science

University of Ghana,

P.O. Box LG 13, Legon

Introduction

I am Dora Ofori and pursuing masters in public health at the University of Ghana. I am conducting a research on the knowledge and practice of cardiopulmonary resuscitation among nurses at Greater Accra Regional hospital and Legon hospital. To the nurses, the study will create awareness on the details of, cardiac arrest and providing skillful and timely intervention thereby reducing the rising rate of sudden deaths due to cardiac arrest.

It would also allow for the need to go for further training to acquire the necessary skills in cardiopulmonary resuscitation.

Background and Purpose of Research

Cardiac arrest is a significant public health problem projected to account for 15–20% of all deaths. (Gajanan et al , 2017) It is also recorded by WHO (2017) to be an important cause of cardiovascular morbidity and mortality in both developed and developing countries. Cardiac arrest if not treated immediately, can cause sudden cardiac death. With fast and appropriate medical care, survival is possible. Cardiopulmonary resuscitation is a lifesaving medical procedure for victims of sudden cardiac arrest. (AHA 2017). It is also done in an effort to manually preserve complete brain function until further actions are taken to restore normal unprompted blood circulation and breathing in cardiac arrest

This study seeks to assess the level knowledge and practice of cardiopulmonary resuscitation among nurses, determine the factors that influences the practice of cardiopulmonary resuscitation and compare the practice of cardiopulmonary resuscitation among the nurses at Greater Accra Regional hospital and Legon hospital.

Nature of Research

A cross-sectional study will be carried out and simple randoming technique will be used to administer questionnaires. 258 Nurses will be involved in the study from the two hospitals. The answering of questionnaire will last for 20 to 40 minutes.

Participants involvement

Duration /what is involved

Study participants will be requested to answer a structured questionnaire which will take 20-40 minutes.

Risk/Benefits

There is no direct risk and psychological discomfort in participating in this study but some inconveniences with participant's time spent. The benefit is that you would have contributed to important research for the future by providing an in-depth understanding which would aid doctors and other health workers to appreciate the problems related to the non-practice of cardiopulmonary resuscitation to reduce sudden death in the society and also help with policy implementation.

Voluntary Participation/Withdrawal:
Participation is entirely voluntary and participants are at liberty to withdraw from the study at any time. Withdrawal will not cause participants to lose any privilege or service due them.

Costs: Participants will not incur any cost for participating in the study.
Compensation: No payment will be given to you for your time for participating in the study.
Outcome and Feedback: Data collected in this study will be used solely for academic purposes so there will be no feedback to individual participants.

Funding Information: The cost of this study will be borne fully by the principal investigator.
Confidentiality: This study is anonymous. No one will be able to know how you responded to the questions. The information will only have a study or ID number and not your name. We will not be collecting or retaining any information about your identity. The records of this study will be kept strictly confidential. We will not include any information in any report we may publish that would make it possible to identify you. Soft copies of the research would be password protected. All information will be kept safe and seen only by the researchers.

Provision of Information and Consent for Participants: A copy of the Information sheet and Consent form will be given to participants after it has been signed or thumb-printed for keeps.

Sharing of participants Information: The principal investigator will be custodian of all data generated and shared results with head of the various hospitals where the study was conducted.
Storage of Samples: Data generated will be purely used for academic work and questionnaire would be kept for a period of three years .provision will be made for participants to provide answers to questionnaire.

Ethical Approval :This study was sought reviewed and approved by the Ghana Health Service Ethics Review Committee (GH-ERC). This committee were there to ensure that

participants are protected from harm and that their rights are respected during participation in the research.

Contacts for Additional Information

You may also call or e-mail:

1 .Dora Ofori

(Principal investigator)

Mob:024891678

E-mail: wealthnanayaaluv@gmail.com

2. Dr. Samuel Sackey

(Academic supervisor)

Mob:0242216542

Email-Sackey492003@yahoo.co.uk

3.Hannah Frimpong, GHS-ERC Administrator.

GHS-Ethics Review Committee

Research and Development Division, Ghana Health Service

P. O. Box MB 190

Accra.

Office: +233 302 681109

Mobile: 233 (0) 243235225 or 0507041223.

Email: Hannah.Frimpong@ghsmail.org

CONSENT FORM FOR NURSES

TITLE OF STUDY: KNOWLEDGE AND PRACTICE OF CARDIOPULMONARY RESUSCITATION AMONG NURSES AT GREATER ACCRA REGIONAL HOSPITAL AND LEGON HOSPITAL

PARTICIPANTS' STATEMENT

I acknowledge that I have read the purpose and contents of the Participants' Information Sheet read and satisfactorily explained to me in a language I understand . I fully understand the contents and any potential implications as well as my right to change my mind (ie withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name or Initials of Participant…… ID Code ……..

Participants' Signature ..…… OR Mark (Please specify)…….

Date:…….

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Researcher's name…….

Signature …….

Date…….

APPENDIX B

QUESTIONNAIRE ON THE KNOWLEDGE AND PRACTICE OFCARDIOPULMONARY RESUSCITATION (CPR) AMONG NURSES AT GREATER ACCRA REGIONAL HOSPITAL AND LEGON HOSPITAL

Dear respondent,

I submit this questionnaire to solicit your kind assistance as a respondent in obtaining a data for an investigation into the knowledge and practice of CPR among nurses. This is in partial fulfillment of an award of a Master's Degree in Public Health. All information given will be treated with confidentiality and will be used for its intended purpose only. Thank you immensely for your participation.

SECTION A: DEMOGRAPHIC DATA OF RESPONDENTS

Please tick the suitable answer.

1. Age of respondents: Age at last birthday …….
2. Sex of respondents:
   a) Male [ ]
   b) Female [ ]
3. Educational level of respondents.
   a) Certificate [ ]
   b) Diploma [ ]
   c) Post basic [ ]
   d) Tertiary [ ]
4. Choose the area of specialty in nursing.
   a) RGN [ ]
   b) Critical care nurse [ ]
   c) Emergency nurse [ ]
   d) Others specify……..
5. Rank of respondents.
   a) SN [ ]
   b) SSN [ ]
   c) NO [ ]
   d) SNO [ ]
   e)PNO [ ]

6. Number of work Experience ……

SECTION B: LEVEL OF KNOWLEDGE OF NURSES ON CPR

7. Where is the first place you heard about cardiopulmonary resuscitation?
   a) NTC [ ]
   b) Post Basic School [ ]
   c) At a Workshop [ ]
   d) At an in-service training [ ]
   e) From a friend [ ]
8. What kind of patient is CPR performed on?
   a)Patient in Cardiac arrest [ ]
   b) Patient in Shock [ ]
   c) Patient Choking [ ]
   d) Patient with Angina pectoris [ ]
9. Should CPR be performed to all persons regardless of the absence or presence of a pulse?

a) Yes [ ]

b) No [ ]

10. Where is the best location for chest compression for CPR?
    a) Left thoracic region [ ]
    b) Right thoracic region [ ]
    c) Mid chest [ ]
    d. Xisphisternum [ ]
11. What is the depth of chest compression in adult?
    a) 5cm [ ]
    b) 6cm [ ]
    c) 4cm [ ]
    d) 4.5cm [ ]
12. The current order of updated CPR intervention for all age group except newborns is…
    a) Airway, Breathing, Chest compression (ABC) [ ]
    b) Airway, Chest compression, Breathing (ACB) [ ]
    c) Chest compression, Airway, Breathing (CAB) [ ]
    d) Breathing, Chest compression, Airway (BCA) [ ]

13. The recommended universal compression to ventilation ratio with a compression rate of at least 100 per minute ;

13a) Is 30:2 for adult, children and infant if only a single rescuer is present ?

a)Yes [ ]

b) No [ ]

13 b) 15:2 in children and infants if at least 2 rescuers are present ?

a)Yes [ ]

b) No [ ]

13 c) 3:1 in newborns unless a cardiac cause is known ?

a)Yes [ ]

b)No [ ]

SECTION C: PRACTICE OF CPR AMONG NURSES

14. Have you ever performed CPR ?

a)Yes [ ]

b) No [ ]

15. How often do you practice CPR?

a) Daily [ ]

b) Always [ ]

c) When the need arise [ ]

d) Occasionally [ ]

16. CPR is generally continued until the person regains return of spontaneous circulation or is declared dead.

a) Yes [ ]

b) No [ ]

17. What do you do if a patient is not breathing but has a pulse?

a) Start compression [ ]

b)Give rescue breath [ ]

c) Give oxygen [ ]

d) Put in recovery position [ ]

18. What do you do when a patient is unresponsive, no pulse and not breathing?

a) Set up normal saline [ ]

b) Start CPR [ ]

c) Give oxygen [ ]

d) Call doctor [ ]

19. In the event of sudden cardiac arrest, what immediate action is usually taken in your facility/ ward?

a)Call doctor [ ]

b) start CPR [ ]

c) Give oxygen [ ]

d) Give hydrocortisone [ ]

SECTION D: FACTORS THAT INFLUENCES THE INITIATION AND PRACTICE OF CPR.

Please tick yes or no to the statement that best applies to you.

20.When performing CPR , It is always better to be calm and contented ,rather than look frightened.?

a)Yes [ ]

b) No [ ]

21.Lack of continuous training and legal backing prevent you from performing CPR

a)Yes [ ]

b) No [ ]

22. Lack of personal experience on positive outcome to reinforce my capability to initiate CPR

a)Yes [ ]

b) No [ ]

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GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
GPS Address: GA-050-3303
Tel: +233-302-681109
Fax + 233-302-685424
Email: ghserc@gmail.com

MyRef. GHS/RDD/ERC/Admin/App 19/136
Your Ref. No.

13th May, 2019

Dora Ofori
University of Ghana
School of Public Health
Legon

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC 078/04/19**
Project Title	Knowledge and Practice of Cardiopulmonary Resuscitation (CPR) among Nurses at Greater Accra Regional Hospital and Legon Hospital
Approval Date	13th May, 2019
Expiry Date	12th May, 2020
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.
- Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....
DR. CYNTHIA BANNERMAN
(GHS-ERC CHAIRPERSON)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra