

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,  
KUMASI, GHANA.**

**COLLEGE OF HEALTH SCIENCES,**

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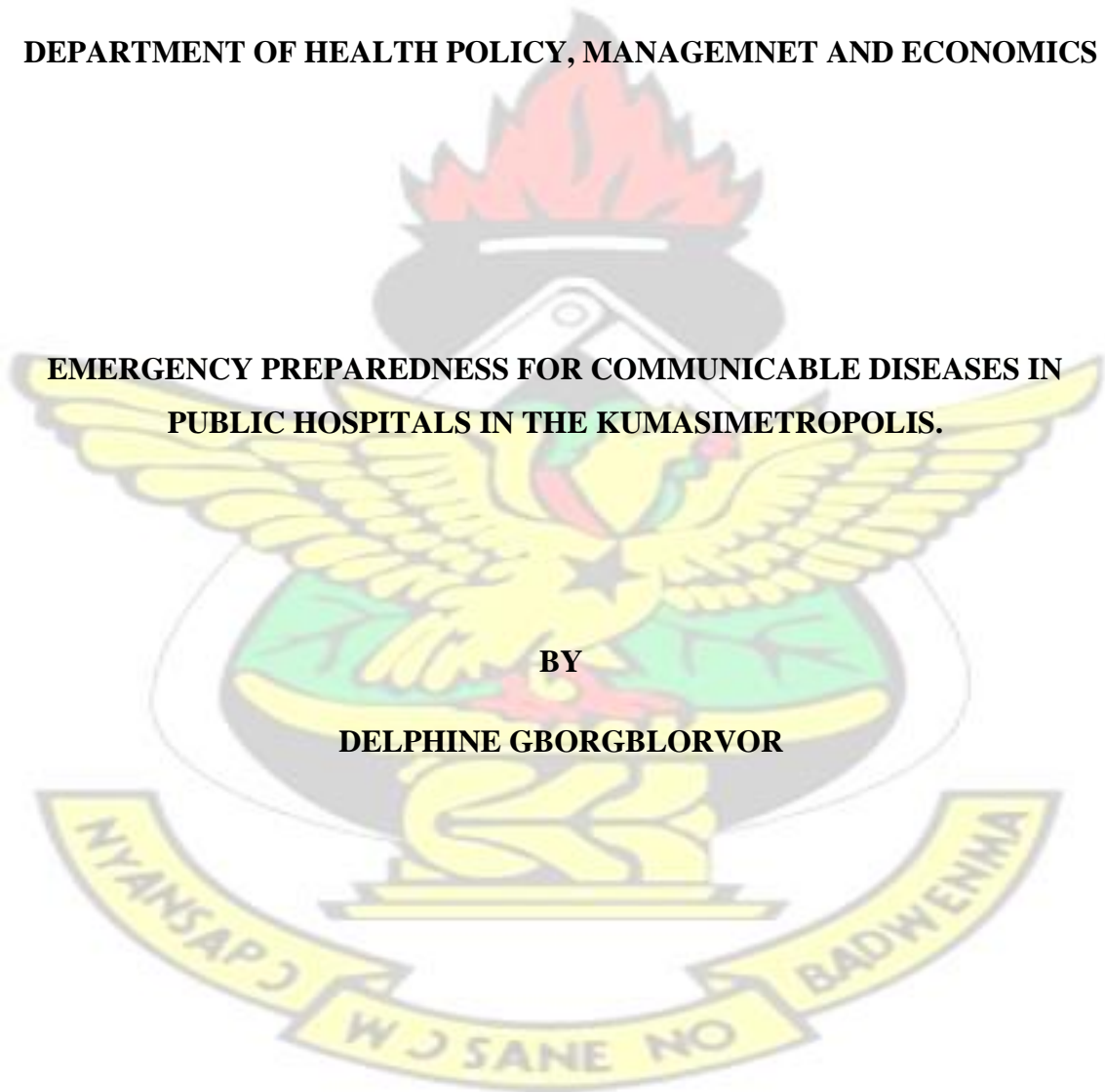
**SCHOOL OF PUBLIC HEALTH,**

**DEPARTMENT OF HEALTH POLICY, MANAGEMENT AND ECONOMICS**

**EMERGENCY PREPAREDNESS FOR COMMUNICABLE DISEASES IN  
PUBLIC HOSPITALS IN THE KUMASI METROPOLIS.**

**BY**

**DELPHINE GBORGBLORVOR**



**JUNE, 2016**

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**A THESIS SUBMITTED TO THE DEPARTMENT OF HEALTH POLICY,  
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REQUIREMENTS FOR THE AWARD OF MASTER OF PUBLIC HEALTH  
IN HEALTH SERVICE PLANNING AND MANAGEMENT**

**JUNE, 2016**

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## DECLARATION

I declare that except for references to other people's work which have been duly acknowledged, this piece of work is my own composition and neither in whole or in part has this work been presented for the award of a degree in this university or elsewhere.

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## DEDICATION

This work is dedicated to Eyram and Etornam

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This work could certainly not have become a reality without the support of many whose input and guidance have brought me this far. I acknowledge with gratitude the protection and guidance of the Almighty God that enabled me to undertake this study. I wish to express my sincere gratitude to the entire staff of KNUST school of Public Health who contributed immensely to the achievement of this work.

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## DEFINITION OF TERMS

A disaster is defined as: —a serious disruption of the functioning of the society, causing wide spread human, material, or environmental losses which exceed the ability of the affected society to cope using its own resources.!

Preparedness encompasses all those measures taken before a disaster event which are aimed at minimizing loss of life, disruption of critical services and damage when the disaster occurs.

A disease outbreak happens when a disease occurs in greater numbers than expected in a community or region or during a season.

Isolation: the complete separation from others of a person suffering from contagious or infectious disease; quarantine.

Contact tracing: is the identification and diagnosis of persons who may have come into contact with an infected person.



## **ABBREVIATION/ACROYS**

CDC: Centre for Disease Control and Prevention

GHS: Ghana Health Service

GPs: General Practitioners

IDSR: Integrated Disease Surveillance and Response

KNUST: Kwame Nkrumah University of Science and Technology

MET: Medical Emergency Team

MERS: Middle East Respiratory Syndrome

MPH: Master of Public Health

NEHRP: National Earthquake Hazards Reduction Program

OPD: Outpatient department

SARS: Severe Acute Respiratory Syndrome

TBAs: Traditional Birth Attendants

RRT: Rapid Response Team



## ABSTRACT

The global threat of communicable diseases and its world implications cannot be over emphasized. Its effects on lives of citizens exacerbate social and political instability in affected counties and regions. Infectious diseases are the leading cause of death and account for a quarter of the estimated 54 million deaths worldwide in 2012. The potential for disasters to occur exists in all communities. In the light of aforementioned the health sector should always anticipate disaster and disease outbreaks and put in prevention and preparatory measures in place so as to reduce the impact of such occurrences. This study was conducted to describe the emergency preparedness of public hospitals in the Kumasi Metropolis for Communicable diseases. A cross-sectional descriptive study was conducted using stratified random sampling methods. Five hundred (500) participants were enrolled in the study, from the five public hospitals in the Kumasi Metropolis. These facilities were Tafo Government Hospital (TGH), Manhyia Government Hospital (MGH), Kumasi South Hospital (KSH), Suntreso Government Hospital (SGH) and Maternal and Child Health Hospital (MCHH). A total of four hundred and eight (408) clinical care health workers and management team members responded. Self-administered structured questionnaire which reflected the objectives of the study were administered. Results of the study reveals that the knowledge of health workers on communicable disease was very good (96.11%), the practice of management of communicable disease was also good (85%) however the knowledge on emergency preparedness for communicable diseases was low as only (27.1%) of the respondents were aware of it and there were no emergency preparedness plan in the facilities. There were no emergency preparedness teams for communicable diseases and no structures in place for managing such cases. Management of the Kumasi Metropolitan Health Directorate should organize top up training on management of communicable diseases was recommended to enhance the knowledge and skills of health workers to management such cases, structures should be put in place in addressing communicable disease issues, and emergency preparedness plans should be drawn with involvement from all stakeholders to ensure its utilizations. In conclusion the emergency preparedness of public health facilities in the Kumasi Metropolis for communicable diseases was not adequate.

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

Health as defined by the World Health Organization (WHO) is a state of complete physical, mental, and social wellbeing and not the absence of infirmity or disease. A lot of factors come into play to determine the health status of an individual in a country. One of such factors is the healthcare facilities within a country. The economic growth and political stability are dependent on the health status of the citizens of any country. Healthcare facilities exist to deal with morbidities and also to provide health education/promotion for disease prevention to achieve the ultimate goal of Health; thus to improve Health/Health status of the citizens of a country.

A healthcare facility should be able to provide a large range of services to meet the needs of the people. Curative services, prevention, maternal and child health, emergency services among others.

Emergencies are unpredictable but when they occur they can lead to immediate demand on public health resources. The capability of affected institutions and countries to handle such situations can be compromised, exposing the deficiencies at the various levels of their emergency preparedness (Rivera-Gutiérrez, et al. 2013). The main goal of every health facility is to prevent or minimize the loss of lives during such occurrences (Connolly, et al. 2004). This can be done by health facilities formulating a comprehensive emergency plan in accordance with their manpower and infrastructural resources that will meet the demand of such occurrences.

Emergency management is the discipline of dealing with and avoiding both natural and man-made disasters (Malcolm E. Baird 2010). In addition to avoiding disasters,

emergency preparedness involves mitigation, preparedness, response and recovery in order to reduce the impact of the disaster.

Emergency preparedness is done at all levels and should not be done haphazardly. Successful preparedness requires detailed planning and collaboration among all stakeholders. The potential for disasters to occur exists in all communities. In the light of aforementioned the health sector should always anticipate disaster and disease outbreaks and put in prevention and preparatory measures in place so as to reduce the impact of such occurrences.

In 2004 Oreta et al wrote that almost on a daily basis, there are reports of disaster occurrences such as floods, drought, cyclones, earthquakes and infectious disease outbreak around the world, and that emergencies are totally unpreventable, but their impact can be minimized by effective planning.

Disease outbreaks can create a variety of hazards for health workers in the affected geographic area. Preparing before emergencies occurs plays an important role in ensuring that employers and workers have the necessary equipment, knowledge, and skills and attitude to protect themselves and others. It is therefore very important every health facility has an emergency preparedness plan ready at all times.

New and emerging communicable diseases with the potential to cause severe epidemics or pandemics are increasingly prevalent, and therefore what previously passed for acceptable planning and diseases events are now reevaluated (Carpenter and Wyman 2008). These diseases endanger the lives of citizens and exacerbate social and political instability in affected countries and regions. Communicable diseases constitute a major

public health problem all over the world, it has the potential to cause outbreaks and affect a large majority of the people (Noah and Fidas 2000, Fonkwo 2008).

The spread of communicable diseases happens through airborne viruses or bacteria, also through contact with blood or other bodily fluid. It is spread through direct contact or close proximity as the causative bacteria or viruses are mostly airborne. They can be expelled from the nose and mouth of the infected person and inhaled by anyone in the vicinity of such diseases. The increase in the spread of infectious disease results from changes in human behaviour including lifestyle and land use patterns (Kimball 2012). Globalization also increases the chances of an infectious disease in one country spreading rapidly to another country within a few days to weeks. This can be exemplified by Severe Acute Respiratory Syndrome (SARS) which within a matter of weeks spread in early 2003 from Guangdong province of China to rapidly infect individuals in some 37 countries around the world (Wang and Jolly 2004). Infectious disease poses a rising global health threat and will complicate global security over the next 20 years (Smith 2006).

Communicable diseases persist to be the major cause of illness and death worldwide but mortality and mobility rates for these diseases in developed countries decreased noticeably by end of the twentieth century. The decline in the industrialized countries can be associated to a lot of complex factors which include foreseeing and adequately preparing toward its occurrences, this includes better sanitation, availability of vaccines and antimicrobial drugs (López-Cuadrado, et al. 2014).

Richard Smith indicated that the development of an effective surveillance and response system probably is the most important way of reducing the impact of diseases outbreak (Smith 2006). Preparing before emergency occurs plays an important role in ensuring that

employers and workers have the necessary equipment, knowledge, and skills and attitude to protect themselves and others (Rivera-Gutiérrez, et al. 2013).

Kulldorff, Heffern et al stated that it is necessary and important to detect disease outbreaks early in order to minimize the morbidity and mortality that are associated with it, and this can be done by timely implementation of disease prevention and control measures. Nations, state, and local health departments are initiation disease surveillance systems with day by day analyses of hospital emergency department visits, ambulance dispatch callsetc (Kulldorff, et al. 2005).

## **1.2 Problem Statement**

Over the years the globe has had its fair share of various diseases outbreaks with high fatality rate in various countries in the world, most especially in developing countries. The developed countries in one way are believed to handle such outbreaks well by containing them but that was not the case seen in developing countries. In 2014, the West African Sub Region was hit with the Ebola epidemic which claimed the life of over 2,296 people with a total 4,507 cases that were diagnosed from Guinea, Liberia, Nigeria, Senegal and Sierra Leone by 14th September 2014 (Team 2014). There were some few cases in the developed countries; Spain 1, United Kingdom 1 and United States 4 cases with one dead. (Control and Prevention 2014), the developed countries managed and contained the disease so well. Their surveillance system and preparedness towards disease outbreak was up to date such that these identified cases were those that entered the country. There was no further spread of this deadly disease in their countries Following the Dec. 26 2004 earthquake in the Coast of Sumatra in the Indian Ocean which triggered a widespread tsunami resulted in massive casualties mostly as a result from drowning and debris. The



threats of communicable disease outbreak are high days and weeks after such a devastating disaster. The World Health Organization (WHO) Health Action in Crisis Network was activated immediately to support disease surveillance, advise on outbreak situations, support needs assessments and restoration of public health infrastructure and this reduced the incident of cases of communicable diseases (Waring and Brown 2005). There have been no confirmed cases of Ebola in Ghana yet, but we continue to struggle with Cholera, Meningitis, Yellow Fever and Influenza-like illness, according to the Weekly Epidemiological Bulletin of Ghana Health Service / Ministry of Health 14th week 2015 edition. In 2014 as at 24th August a total of 4,800 cases of cholera with 45 deaths had been reported from five regions in the country (Societies 2014). Anecdotal evidence has it that we have these alarming numbers of cases because our health facilities and their stakeholders are not adequately prepared to manage these outbreaks. The reason the researcher wants to assess the emergency preparedness for communicable diseases in the Kumasi Metropolis as there also remains very little research on the emergency preparedness for communicable diseases of health facilities in Ghana.

### **1.3 Rationale of Study**

Disasters disrupt hundreds of thousands of lives every year. Each disaster that occurs has lasting effects, both on people and property. Being prepared can reduce fear, anxiety, and losses that accompany such disasters and outbreaks.

In recent a study from the Institute of Medicine in America, it stated that effective public health preparedness to combating disaster requires a workforce with both knowledge and skills for full commitment in planning, response, and evaluation. Nonetheless, majority of

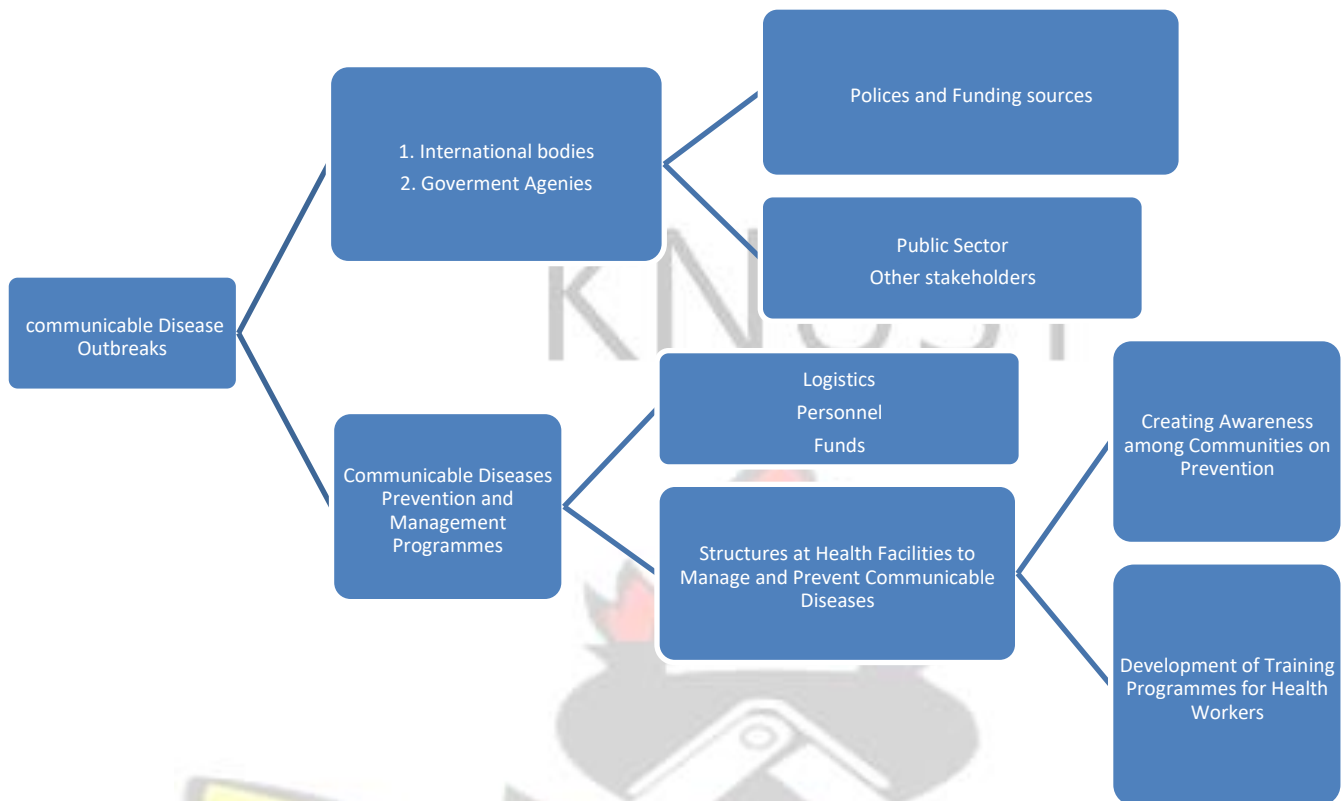
the public health leaders account that the public health workforce is not fully prepared in this regard (Hernandez, et al. 2003).

It has become extremely important for all to be ready to handle disease outbreaks as we are all under the pressure of emerging diseases that cause outbreaks and a lot of death. One of such disease that has caused panic and threatened the preparedness and response of the health sector in our continent especially the West Africa sub region is Ebola. The ability of a country to reduce the spread and death of such an outbreak depends on the preparedness and response of the country. The high case fatality of Ebola recorded in West Africa was probably indicative of our unpreparedness towards such emergencies/epidemics.

The study therefore seek to assess the preparedness of the Kumasi Health Directorate and their stakeholders to such disease outbreaks should they occur in Ghana with the focus on the public hospitals.

#### **1.4: Conceptual Framework**





Communicable diseases management and Prevention attracts International Agencies like WHO Health Organisation, and Centre for Disaster Management with the collaboration with Government Agencies formulate Policy and Funding for the Public sector, Ministry of Health and Ghana Health Service working with other NGO to help provide facilities, logistics, personnel, and expertise to enable them carry out effective Communicable Disease prevention and management programmes. The ultimate beneficiaries of these programmes are community members and the end result or goal is increased knowledge and access to facilities and services to reduce the negative impact of the disease on the people.

### 1.5 Research Questions

- How are communicable diseases managed in the various hospitals in Kumasi Metropolis?
- How prepared are hospitals to managed diseases outbreaks in the Kumasi Metropolis?
- What is the knowledge of health care workers on communicable diseases and emergency preparedness?

### **1.6 General Objectives**

To assess the emergency preparedness of public hospitals in the Kumasi Metropolis for communicable diseases.

### **1.7 Specific Objectives**

1. To assess how communicable diseases are managed in the public hospitals in Kumasi Metropolis.
2. To assess the knowledge of health workers on communicable diseases and emergency preparedness.
3. To determine the emergency preparedness of the hospitals for communicable diseases.

### **1.8. Profile of Study Area**

Kumasi is bounded by four districts which are all within the Ashanti Region; to the north by Asokore Mampong which was recently carved out of the Metropolis and Kwabre, on

the south by Bosomtwe-Atwima Kwanoma, on the east by Ejisu-Juaben and on the west by Atwima Nwabiagya.

It is divided into ten sub-metropolitans politically areas namely Manhyia, Tafo, Suame, Asokwa, Oforikom, Asawase, Bantama, Kwadaso, Nhyiaeso and Subin but five in respect to health as mentioned earlier.

### ***Health Profile of Kumasi Metropolis***

The Kumasi Metropolitan Health services are organized into five sub-metro health teams; namely Bantama, Asokwa, Manhyia North and South and Subin. The Metro Health Team is led by its Director of Health Services who has the overall responsibility for planning, monitoring and evaluating the performance of the health sector in the metropolis.

The city has a number of health facilities in both the public and private sector. Komfo Anokye Teaching Hospital (KATH) one of the teaching hospitals in the country can be found here and is the tertiary referral hospital for the northern part of the country.

The Metropolis has five public hospitals namely, Kumasi South Hospital which is the Regional hospital for the Ashanti Region, Manhyia Government Hospital, Tafo Government Hospital Suntreso Government Hospitals and Maternal and Child Health Hospital which are evenly distributed across the metropolis. These hospitals are the first point of care and the referral hospital for the health centres and clinics in the metropolis. The Metropolis, also has four quasi health institutions, five health care centres owned by the church of Christ and the Seventh - day Adventist church, one health centre and four clinics for the public.

In addition, there are over two hundred private health institutions and thirteen industrial clinics in the metropolis. There are fifty four traditional birth attendants (TBAs), nine maternal and Child Health points and 119 outreach sites. These facilities are evenly distributed in the spaces in the metropolis.

The Ghana Health Service (GHS) working with the private institutions provides clinical and public health services to the people in the metropolis. Some of the clinical services include out-patient-department (OPD) services, In-patient services, surgery, eye care, dental care, obstetrics and gynecology etc. The public health services include expanded programme on immunization, Reproductive and child health, disease control, nutrition, health information management, social mobilization for community support, collaboration with other sectors and the community and the environment health department.

### ***Population distribution***

In terms of population, it is the largest of the 27 districts in Ashanti Region; it has an estimated population of 2,204,395 with a growth rate of 2.7%(2010census). The population figure is however applicable during the night since the day time population is above. There are 213 communities in Kumasi and a cosmopolitan city with trading being the main occupation of the inhabitants

### ***Geography***

Kumasi, Ghana second largest city is about 300km from the national capital, Accra. It is about 150sq.km in size. The district raises northwards the Mampong scarp to about 350m



above sea level. The physical feature of Kumasi is of an original plateau, which as a result of erosion over the years has become a dissected upland. Two prominent sets of ridges of 75m and 310m respectively exist along the south western and Eastern boundaries. The Kumasi district is dissected by numerous streams draining into main drainage basins; Kwadaso, Subin, Aboabo and Susan/Weewee

The city's road network has largely been rehabilitated by the government; this has improved city transportation and access to outlying fringes of the city considerably. It enjoys good network of electricity and relatively good supply of potable water for domestic and industrial uses. It also houses the second largest airport in the country.

#### ***Vegetation/climate***

The climate is typically wet equatorial with the major rainy season running from late February to early July and the minor from mid-September to early November. The dry season is at its peak in the months of December and January to march. The vegetation can be described as mostly semi-deciduous forest with several valuable trees

#### ***Economic activity***

The main occupation of the citizens is trading. Commercial activity is centered on wholesaling and retailing. Trade/ Service/ Commerce constitute 71% of economic activities, industry 24% and Agriculture 5%

Kumasi has the single largest traditional market in West Africa called the Kumasi Central Market. It has over 10,000 stores and stalls. The city also has about twenty eight satellite

markets. The communities at the outskirts of the city do some farming

### ***Telecommunication***

The city has wider network coverage; it is linked to six mobile networks and a fixed line system, it has over twenty local FM Stations which serve as communication channels

### ***Culture/ Festivals***

Ashantis inclusive of Kumasi celebrate Akwasidae every six weeks and Awukudae is also observed on Wednesday, and its recurrence could be after 40 or 42 days.

### ***Religion***

The main religious groupings in the metropolis are the Christianity, Islamic religion, Traditional religion, Paganism.

### ***Education and educational Institutions***

There are two public Universities with three private Universities and one Polytechnic in the Metropolis, two Teacher Training Colleges and three Nursing Training Schools, 83 secondary schools and over 1018 basic schools most of which are privately owned.

### ***Tourism***

It is estimated that 50% of tourists who visit the country visit Kumasi. The city has an outstanding rich cultural heritage which is depicted in festivals like the Akwasidae, funerals

Source: Kumasi Metropolitan Health Directorates( 2015).

### **1.9 Scope of Study**

The study covered Kumasi South Hospital, Suntreso Government Hospital, Manhyia Polyclinic, Tafo Government Hospital and Maternal and Child Hospital all in the Kumasi Metropolis. The clinical care staff and their management team members formed the population from which the respondents were sampled. The respondents included Medical Officers, Pharmacists/ Dispensary Technicians, Physician Assistants, Biomedical Scientists/Laboratory Technologists, all categories of Nurses, Disease Control Officers, and Field Technicians emergency preparedness team members and management team members.

Private facilities and their staff were not included in the study.

### **1.10 Organization of Report**

This study is organized into six different chapters.

Chapter one gives the background of the study, the problem statement, rationale of the study, hypothesis, research questions, main objectives and specific objective of the study. It further gives a detail profile of the study area.

The chapter two is a detailed literature review of the study area and that have been put thematically under the specific objectives.

The chapter three describes how the study was carried out. A detailed account of the research methods and design used are narrated in this chapter, data collection techniques, the study population, study variables and sampling. Ethical consideration, limitation and assumption are all under chapter three.



The chapter four is the detail results of the study. These are presented in tables and figures which describes the objectives of the study.

Chapter five is the discussion the result comparing it to available literature.

Chapter six is the conclusion and recommendation of the study.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter reviewed available literature on emergency preparedness of health facilities for communicable diseases. The review is organized thematically under the following headings:

- Management of communicable diseases in hospitals.
- Knowledge of health workers on communicable diseases and emergency preparedness.
- Emergency preparedness of the hospitals for communicable diseases. Disasters and disease outbreaks occur every day somewhere in the world with huge impact on individuals, families and the entire community, the quality of life is threatened. World Disaster report 2007 reported 60% increase in disasters and communicable disease outbreak in the last decade. It is estimated that 600,000 to over 1.2 million people die with 270 million people affected, with a 17% increase in developing nations (Heymann 2007).

The developing countries are particularly vulnerable due to the lack of funding and disaster preparedness which increase the impact of the disaster on the health care, economic and social in the affected region and subsequently the country, wiping out years of development of a nation. The impact of disasters and disease outbreaks can be intelligently controlled through an effective planning and response.

There are various phases of emergency preparedness as used by policy makers, practitioners, trainers, educators, and researchers. This has been described by the United

States National Earthquake Hazards Reduction Program (NEHRP) as having four continuous phases as illustrated by figure below;



**Figure 2.1.Four Phases of Emergency Management (NEHRP 2009).**

**Mitigation:** It is the capability to limit death and economic reparation by reduction in the impact of disasters and outbreaks. This stage primarily focuses on preventing future emergencies or minimizing potential effects by reducing the probability of an emergency occurring or reducing the effects of inevitable disasters and outbreaks. This sometimes goes beyond the capacity of the health system but the involvement of all stakeholders such as Water Company making sure there is regular supply of safe water. The environment in which people live must be supervised properly to ensure sound sanitary practices to support healthy living. Health education and promotion, legislation and policies are some of the measures by which government can use to prevent or reduce the impact of disasters and diseases outbreaks.

**Preparedness:** It is the state of readiness for action should an outbreak occur. It is achieved and maintained through an active planning cycle, organising, training, equipping, evaluating and taking corrective actions. This phase involves regular meetings and training of health professionals on the management of diseases that causes outbreaks.

**Response:** This stage is concerned with measures put in place to prevent death and further damage that occurs during an emergency situation. This stage is implementing the preparedness stage. It must be done well-timed and precise confirming the presence or absence of pathogens by the use of diagnostic methods in the field and laboratories in the health care setting.

**Recovery:** It is the aptitude to return to normal state of function with less anguish and distraction of services provision after a disaster. It therefore entails an inclusive and speedy reaction to care for infected patients and decrease contact of the wider population to contaminated food, infectious humans and animals.

In 1965-1969 Dr. William H. Stewart, a pediatrician/epidemiologist, and a former U.S. Surgeon General is alleged to have stated that, it was time to —close the book on infectious diseases as major threats to public health and declare the war against pestilence over. Though this statement was disputed by Spellberg and Taylor-Blake 2013, at the time, this statement was made, it appeared the age of infectious diseases that had plagued humans for millennia was coming to an end as vaccines and antibiotics had substantially reduced the incidence and mortality of many diseases. The smallpox eradication campaign was scaled up and it was thought that eradication of other diseases such as tuberculosis and polio would not be too far behind. Improved food and water safety resulted in less exposure to pathogens, and the use of pesticides to control arthropod populations reduced vector-borne diseases. It seemed the battle with the microbial world had been won, and it was time to focus efforts and funding on the looming threat of chronic diseases (Koenig and Schultz 2014). This confidence, according to Gamage, et al. In 2010 however, largely ignored the burden of infectious diseases in the developing world. Five decades later,



although great progress has been made to put infectious diseases under control; microbial pathogens persist to be a major threat to public health all over the world. The preceding few decades has unveiled new challenges: —old pathogens once thought to be controlled by antibiotics have developed multidrug resistance, new pathogens have emerged, and traditional pathogens have appeared in new locations. Furthermore, factors such as increased global commerce and travel, and the threat of the intentional release of pathogens in bioterrorism have set the stage for infectious disease disasters with large numbers of casualties.

As humans cohabit with microbes, circumstances can tip the balance in favor of microbes with new or renewed pathogenic vigor. There will always be emerging pathogens, and consequently there is always the chance that a virulent microbe will cause extensive human disease and death (Gamage, et al. 2010). After the outbreaks of Ebola in West Africa in 2014 and the Middle East Respiratory Syndrome (MERS) in the Middle East, and some other parts of Asia in 2015, as to what the causative agent of the next big infectious disease disaster will be and when it will happen is unknown.

## **2.2 Management of Communicable Diseases in Hospitals**

A study on the knowledge of disease surveillance and notification by health care worker and the accessibility of facility records in Anambra state, Nigeria, revealed that, health workers had adequate knowledge ( 89.8%) of the disease surveillance and notification system, but a few of them ( 33.3%), knew the specific uses of the Integrated Disease Surveillance and Response (IDSR) forms. The forms for reporting weekly diseases of public health importance, the monthly report of diseases and conditions seen at the facility

and the form for reporting cases suspected. The knowledge of use of the forms at the hospital and local Government area levels were generally low, even though the observational checklist revealed that IDSR forms were predominantly found in primary health- care facilities (Nnebue, et al. 2012).

In similar study on the knowledge of disease notification among doctors in the government hospitals in Benin City Edo state, Nigeria also revealed that only 11.9% of doctor had good knowledge of disease notification, 23.1% knew where to obtain the forms and 23.9% knew how to complete these forms but rarely does (Ofili, et al. 2003).

The article Preventing Emerging Infectious Diseases: A Strategy for the 21st Century Overview of the Updated CDC plan stated that the objective of preventing infectious diseases include fortify infectious disease surveillance and response, humanizing methods for gathering and evaluating surveillance data, ensuring the use of surveillance data to develop public health practice and medical treatment and fortify global aptitude to monitor and respond to emerging infectious diseases (Binder, et al. 1998).

A study was conducted to reveal new knowledge about how General Practitioners (GPs) think in relation to the prescribing of antibiotics - knowledge that could be used in efforts toward rational treatment of infectious diseases in primary health care. The study looked at the variations in GPs' perceptions of infectious disease management, with special reference to antibiotic prescribing. It came to a conclusion that, restrictive antibiotic prescribing was considered important. Although the actual prescribing was greatly influenced by the interaction between patient and GP, to encourage restrictive antibiotic prescribing several aspects must be addressed and different GPs need various kinds of

support. Infectious disease management in primary care is complex and timeconsuming, and must be acknowledged in healthcare organization and planning (Björkman, et al. 2011).

## **2.3 Knowledge of health workers on communicable Diseases and Emergency Preparedness**

Teaching emergency preparedness to public health workers is important in ensuring the safety of all citizen of a country. This provides the knowledge for infectious disease prevention, and it is also an important component of response to diseases outbreaks and other emergencies. Effective public health preparedness requires workers with both knowledge and skills needed for full engagement in planning, response and evaluation activities for disaster; however most public health leaders report that the public health workforce is not fully prepared in this regard (Chandler, et al. 2008).

A cross sectional study conducted revealed that the knowledge, attitude and practice of reporting of notifiable diseases among health workers was found to be low, as only a few of the health workers (38.2%) were aware of national surveillance system, and 29.1% of the respondents have never reported any notifiable diseases (Bawa, et al. 2003).

Another study on the level of knowledge of healthcare workers towards preventive measures for communicable disease among pilgrims, and the difficulties faced by Healthcare workers in implementing preventive measures at the entry point concluded that healthcare workers have some difficulties in some preventive measures, especially among non-physicians, those with less years of experience and those who did not read the



written guidelines which highlighted the importance of training courses (Al-Ghamdi and Kabbash 2011).

Moabi, 2009 also researched on the knowledge, attitudes and practices of health care workers regarding disaster preparedness at Johannesburg hospital in Gauteng Province, South Africa revealed that the senior management of the hospital had reasonable knowledge on disaster management and had emergency preparedness plan but rather failed to regularly update the plan and the plan was not well communicated to the health care workers of the hospital in terms of training and provision of personal protective equipment (Moabi, 2009).

Another cross sectional study on knowledge, practices, attitudes and familiarity of nurses regarding emergency and disaster preparedness in Saudi –Arabia, students found out that the knowledge level regarding disaster preparedness among two third of the study sample was low, there was significant difference found for attitudes and practice regarding disaster preparedness as well as familiarity concerned emergency preparedness, based on the study lacking of knowledge and attitude and practices with acceptable level of attitude regarding disaster preparedness and neutral familiarity with emergency preparedness were concluded. (Fatma, et al. 2014).

Erin Smith also in a study titled the willingness of emergency healthcare workers to work during major emergency and disasters in Australia stated that emergency preparedness plans necessitate emergency health care workers to participate fully in responding to and managing major emergencies and disaster. It concluded that disaster health care services should not only depend on workers working at emergency centres as some healthcare

workers are not willing to work during such crises for the fear of the threat of the infection and illness (Smith 2007).

Ogedegbe, et al. 2012 also conducted another study on health care workers and disaster preparedness: barriers to and facilitators of willingness to respond to diseases outbreaks revealed that almost all the study participants understood their responsibilities and were willing to report to work in a disaster situation, the majority voiced significant barriers to such activities, they identified barriers to their willingness to work during a disaster.

Clinical and non-clinical staff differ in the types of barriers to willingness to report (WTR) endorsed, as well as their confidence in the hospital's ability to provide them with personal protective equipment (PPE) and guarantee their safety.(Ogedegbe, et al. 2012)

Another study on emergency preparedness competencies assessing nurses' educational needs indicated that despite the critical role nurses play in emergencies, there seemed to be no typical training in the undergraduate nursing education. The nurses' position on emergency preparedness and strategies within and across varied response team was low (Wisniewski, et al. 2004).

## **2.4 Emergency Preparedness of Health Facilities**

Hospital disaster management enables health facility to plan, prepare and provide a rational response to cases of disaster. During diseases outbreaks and disasters, there can be confusion and inefficiency in the hospitals; and can overwhelm the hospital resources, staffs space and supplies. When there is no plan to fall on during these times can lead to circumstances where there may be too numerous leaders and commands and no clear direction to solve the problem. It is therefore essential that all hospital have a hospital

emergency/Disaster plan which defines the command structure, clear cut job definitions once a disaster occurs (Connolly, et al. 2004).

To determine, therefore the emergency preparedness levels of health care facilities in disaster management, the following key areas should be looked at critically, chain of command during emergency, the hospital's general characteristics; emergency plans, equipment and infrastructure, personnel training, emergencies communications, laboratory facilities, treatment protocols, security and epidemiologic surveillance (Rivera-Gutiérrez, et al. 2013)

It is also important to note that infections prevention plans in health care facilities should contain the components of preparation, detection, response and evaluation to guide in preventing and controlling the spread of communicable diseases. Clinical staff should receive adequate education and training to detect infectious disease and related symptoms to begin appropriate isolation and initiate treatment in a timely manner (Blondel-Hill 1996).

In light of the above, assessment of Emergency Preparedness of health facilities should include, an annual assessment of the emergency plan which is required in order to ensure that the emergency preparedness is up to date. Hospital emergency preparedness assessments also should include: elements of disaster planning, emergency coordination, communication, training, expansion of hospital surge capacity, personnel, availability of equipment, stockpiles of medical supplies and (9) expansion of laboratory capacities..

Healthcare systems are required to prepare an effective response model to cope with disaster and disease outbreaks. Planning should be envisioned as a process rather than a

production of a tangible product. Assuring emergency preparedness requires a structured methodology that will enable an objective assessment of the level of readiness (Adini, et al. 2006).

Emergency preparedness for communicable disease should be targeted at strategies to rejuvenate the capability to protect the public from emerging infectious diseases by improving four major public health activities: surveillance and response, applied research, infrastructure and training, and prevention and control (Butler, et al. 1998).

Therefore the key for any successful mastering of a crisis is to be well prepared. All potential problems have to be carefully analyzed and respective precautions have to be taken. Major accidents and disasters can only be mastered and controlled by intelligent planning (Hersche 2003).

Studies have showed that many conditions outcome has a relationship between the dose of therapy given and the response of such therapy. Multiple studies around the world have demonstrated that patients admitted to hospitals suffer serious adverse event at a rate of between 2.9% and 17% of cases. Such events may not be directly related to the patient's original diagnosis or underlying medical condition. Of greater concern, these events may result in prolonged length of hospital stay, permanent disability, and even death in up to 10% of cases. Medical Emergency Team (MET) differs from other Rapid Response team in that the team leader is a physician, typically with intensive care expertise.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**



This chapter dwells on the methodology used for the study. It emphasizes the research design, the sampling techniques and sample size determination, the methods of data collection as well as ethical considerations for the study. The chapter also focuses on the main variables for the study.

### **3.2 Study Methods and Design**

A cross- sectional descriptive study design was used and a quantitative method was employed to show how the variables were related. The questions were both close ended and open ended. The study was divided into two parts; the first part looked at the health care workers of the various facilities and their understanding on emergency preparedness, disease outbreaks and communicable diseases. And the second part at the facilities preparedness in terms of infrastructure, policy, chain of command and structures put in place to handle emergency situations.

### **3.3 Data Collection Techniques and Tools**

A self-administered structured questionnaire was administered which reflected the objectives of the study. Participants were taken through the questionnaires and any unclear question was explained. They were allowed to ask questions bothering them which were addressed.

### **3.4 Study Population**

The population under study was the five public hospitals in Kumasi Metropolis: Tafo Government Hospital (TGH), Manhyia Government Hospital (MGH), Kumasi South Hospital (KSH), Suntreso Government Hospital (SGH) and Maternal and Child Health



Hospital (MCHH). The clinical health workers in the facilities were used for the study.

The total population of this category of health workers was 1139. Out of this number 193 were from MGH, KSH had 293 clinical health workers, SGH had 272 and MCHH and TGH had 160 and 221 respectively.

### **3.5 Eligibility Criteria**

Eligibility for the participation in the study is that they must be working in the five hospitals the study was conducted.

### **3.6 Inclusion Criteria**

The inclusion criteria for the study was all clinical care workers in the hospitals which included the Medical Officers, Physician Assistants, Pharmacists, Pharmacy Technicians, all categories of Nurses, Biomedical Scientists, Laboratory Technologists and Laboratory Assistants, Disease Control Officers, Field Technicians, members of the emergency preparedness team and management team members.

### **3.7 Exclusion Criteria**

The exclusion criteria included health workers and management team members who decline to be included in the study, Clinical care staff that had worked for less than six months during the time of data collection at the facility and non-clinical care workers.

Also staff that were on leave at the time of the study.

### **3.8 Study Variables**

Emergency structures and logistics of the health facilities

Practice of health workers on communicable diseases

Knowledge of health workers communicable diseases

Knowledge of health workers on disease outbreaks

Emergency preparedness of health facilities

Knowledge of health workers on emergency preparedness for communicable diseases

### **3.9 Sampling Techniques**

The study sample size was determined by using Epi Info version 6 statistical software. A total of 1139 clinical health workers were in the facilities the study was conducted with a 95% confidence interval the sample size was estimated to be four hundred and fifty (450). The total sample size for the study was five hundred (500) health workers from all five public hospitals in Kumasi Metropolis. Out of the five hundred (500), fifty (50) was for the questionnaires for the management and emergency team members of the facilities. Ten slots were allocated for each health facility that was used for the study. The rest of the four hundred and fifty (450) was used for the second part of the study; ninety (90) questions were allocated to each facility purposively.

The management team members of each facility and the emergency preparedness team members were purposively sampled.

The rest of the subjects for the study were selected using stratified random sampling to make up the sample size. The health workers were put into strata based on profession:

Medical Officers were in one stratum, all categories of Nurses in other stratum,

Physician Assistants/Medical Assistants in one stratum, Pharmacists and Pharmacy Technicians in one stratum, and Disease Control Officers and Field Technicians formed one stratum, Biomedical Scientists and Laboratory Technologists formed other stratum. Selection was done randomly in each stratum using simple random sampling method. Nurses dominated the other clinical care staff so were given 60%, Disease control Officers group 14%, Laboratory personnel groups were given 10%, Pharmacists and Pharmacy Technicians group 7% Physician Assistants/Medical Assistants groups were given 6% and the Medical Officers group 3%.

Names of staff members in each stratum were written on pieces of paper and folded. Folded names were put in a bowl and selection done randomly according to the percentage allocated to each stratum. Those chosen were enrolled into the study. When a name is chosen but staff decline or is on leave, other name is picked from the bowl to replace the early chosen name.

### **3.10 Pretesting.**

The questionnaires were pretested by administering it to colleagues health workers in the Master of Public Health (MPH) class of the Kwame Nkrumah University of Science and Technology (KNUST) as most are practicing health professionals as well as managers of health facilities across the country and with the mix of all the various health professionals. The questionnaire was modified to improve the meaning of some of the questions in the questionnaires.

### **3.11 Data Handling**

Data collected was checked for completeness and correctness, and double-entered into data sheets on a computer on a daily basis by two data clerks using Epi Info software programme. Data cleaning and verification was done on a regular basis and back-up copies kept by the Principal Investigator and a copy kept on an external hard disk drive and virtual drive dropbox and in my email draft folder.

### **3.12 Data Analysis**

The research process employed both quantitative and qualitative data. The analysis of the quantitative data was done in two ways; first, the data was rationalized into meaningful statistical data to ease the analysis. Inferences were drawn from the statistical data to compile the report. The qualitative data supplemented the quantitative data and helped present the situation more in a descriptive way

### **3.13 Ethical Consideration**

Ethical approval was obtained from the Committee on Human Research, Publication and Ethics (CHRPE) before the study was started. A written approval was obtained from the management of the five hospitals and from the Kumasi Metropolitan Health Directorates before undertaking the study.

Written informed consent for the study was obtained from respondents after the purpose of the study had been explained. Respondents were given at least 24hours to decide to participate or opt out at any point in the study.

Privacy, confidentiality and anonymity were identified as ethical issues of concern. The participants were assured that all information obtained would be used solely for the



purpose of the study. The questionnaires were self-administered, and to ensure privacy, no name or any identity was used to trace back the filled questionnaire to any participant. However, study numbers were given to each filled form for to prevent double entry of data.

Signed consent forms were kept separately from the study questionnaires.

### **3.14 Limitations of the Study**

The duration of the study was the major limitation of the study. Funding was also a limitation as the project was self-funded and could not use a large number of facilities and health workers for the study.

## **CHAPTER FOUR RESULTS**

### **4.1 Introduction**

This chapter outlines the results from the study. These include the demographic data, how communicable diseases are presently handled in the hospitals, the knowledge of health workers on communicable diseases and the facilities' preparedness for communicable disease emergencies.

### **4.2 Background Information**

The study had two set of questionnaires; one aspect looked at the health workers knowledge on communicable diseases and their current practices. The second looked at the management of the hospitals and what measures they have in place toward



communicable disease emergency preparedness. A total of five hundred (500) respondents were enrolled into the study. Four hundred and fifty (450) respondents were used for the first set of questions of the study and fifty (50) respondents for the second set. Out of the four hundred and fifty (450) participants, three hundred and sixty (360) responded. This gave a response rate of 80.0%. No reason was given for the 20% non-response rate.

**Table 4.1: Demographic characteristic of respondents**

<b>NUMBER(N=360)</b>	<b>PERCENTAGE(%)</b>	<b>FACILITY NAME</b>
Kumasi South Hospital (KSH).	72	20
Manhyia Gov't Hospital (MGH)	65	18.1
Maternal & Child Health Hospital (MCHH)	75	20.8
Suntreso Gov't Hospital (SGH)	73	20.3
Tafo Gov't Hospital (TGH)	75	20.8
<b>WORKING YEARS IN HEALTH SECTOR</b>		
Under 5 years	201	55.8
5-10 years	102	28.3
11-15 years	22	6.1
16-20 years	21	5.8
Above 20 years	14	3.9
<b>WORKING YEARS IN THE</b>		

## **FACILITY**

Under 5 years	273	76
5- 10 years	77	21.4
11-15 years	6	1.7
16-20 years	2	0.6
Above 20 years	2	0.3

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Source: Field Data, 2015.

### **4.2 Demographic data of respondents**

The five public hospitals that participated in the study and the proportion of respondents for each, out of the 360, are presented in the table 4. 1 above. The average representation of the facilities were 20%

More than half the respondents (55.8%) had worked in the health sector for less than 5 years and more than three fourth (76%) of the respondents had worked at their various facilities for less than 5 years. Close to a quarter (23.1%) had worked at their various facilities for between 5 and 15 years. Just about 1% had worked in the facilities for more than 15 years.

# KNUST

**Table 4 .2: Facility per professions of the respondents**

<b>1. Name of facility</b>	<b>Laboratory Personnel</b>	<b>Disease Control</b>	<b>Medical Doctor</b>	<b>Nurse</b>	<b>Pharmacy Staff</b>	<b>Physician Assistant</b>	<b>Total</b>
Kumasi South Hospital	6	5	2	51	5	3	72
Manhyia Gov't Hospital	6	6	2	40	5	6	65
Maternal & Child Health Hospital	5	8	3	51	5	6	75
Suntreso Gov't Hospital	5	5	2	51	5	3	73

Tafo Govt. Hospital	5	19	3	37	4	6	75
<b>TOTAL/ PERCENTAGE</b>	27 7.5%	43 19.4%	12 3.3%	230 63.9%	24 6.7%	24 6.7%	360 100%

The table 4. 2 above illustrates the facility and the professions respondents from each facility. From the above table, most of the respondents were Nurses (63.9%), and the least been Medical Officers (3.3%). Nurses form the dominant health workforce in all the surveyed institutions.

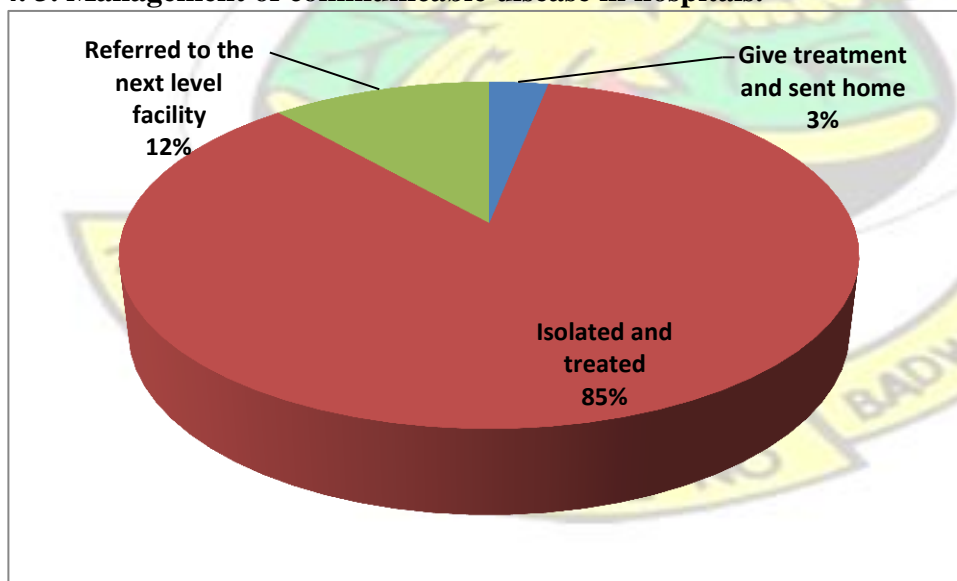
**Table 4. 3: Education per profession of the respondents**

<b>Educational level</b>	<b>Laboratory Personnel</b>	<b>Disease Control</b>	<b>Medical Doctor</b>	<b>Nurse</b>	<b>Pharmacy Staff</b>	<b>Physician Assistant</b>	<b>Total/Percentage</b>
Certificate	0	8	0	59	0	0	67 18.6%
Degree	10	6	12	35	6	8	77 21.4%
Diploma	17	29	0	136	18	16	216 60%
<b>TOTAL</b>	27	43	12	230	24	24	360

The above table 4. 3illustrates the educational qualifications of the various health professionals. The above table details the educational qualification of the respondents according to the above, more than half of the respondents (60.0%) had Diploma as their educational qualification. The Laboratory personnel, Medical officers, Physician Assistants and the Pharmacy staff none had certificate as their educational qualification and only the Medical Officers group had no diploma certificate among them.

Certificate, as used here, is ranked lower than Diploma, which in turn is ranked lower than a Degree (Degree>Diploma>Certificate).

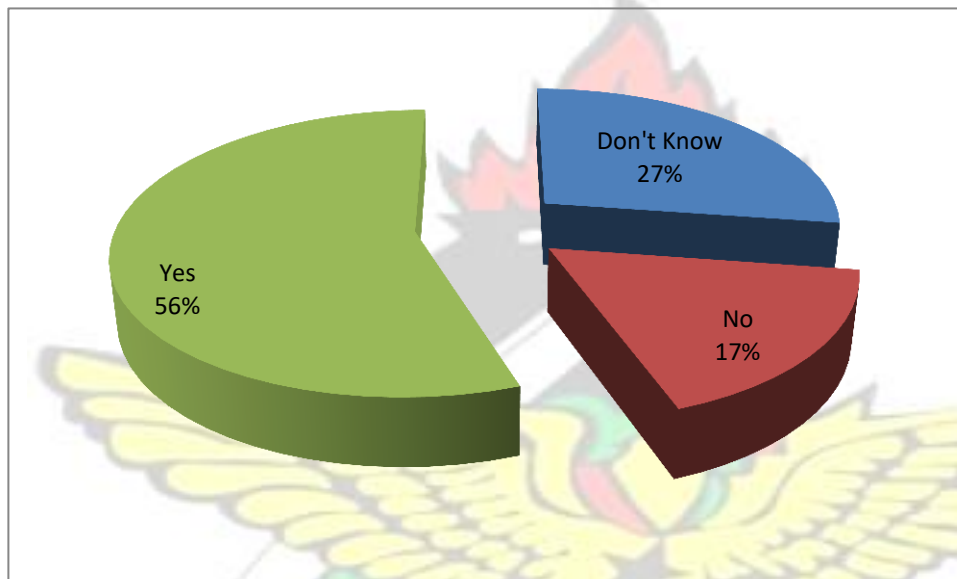
#### 4. 3. Management of communicable disease in hospitals.





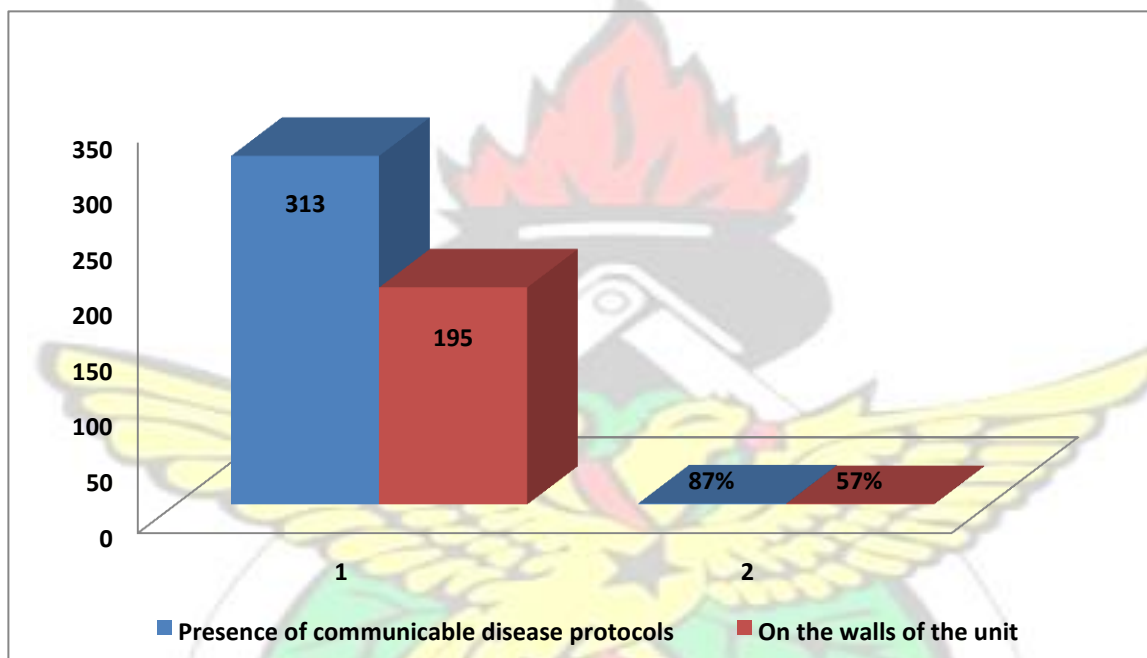
**Figure 4.1: Communicable diseases management by respondent.**

The results of the study showed that most cases (85%) of communicable diseases are isolated and treated at the facilities the study was conducted as shown by figure 4.1 above. Twelve percent of the cases are however referred to the next level of care, as these facilities are primary health care providers.



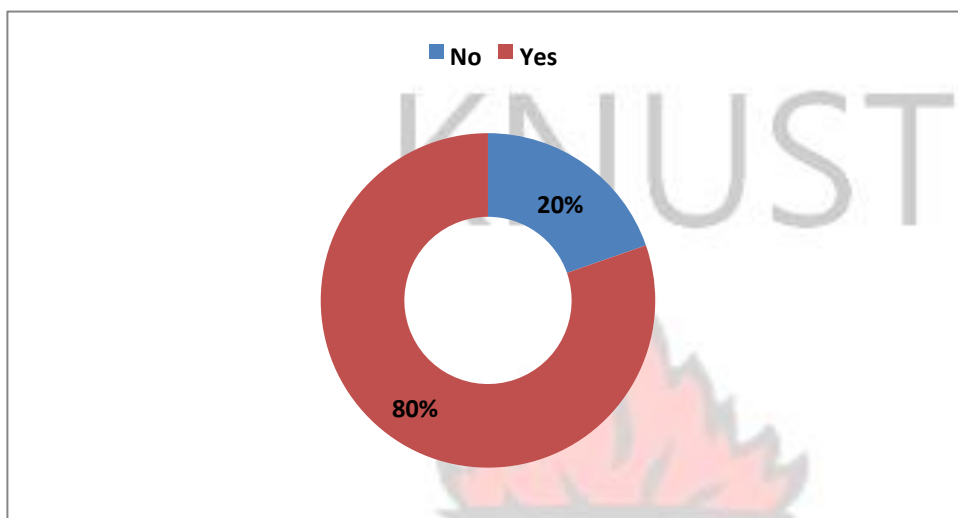
**Figure 4.2: Availability of an emergency preparedness plan for communicable diseases.**

From the above diagram (56%) of the respondents from the five facilities indicated that the facilities had emergency preparedness plan specific for communicable diseases, with 17% not sure of the presence of emergency preparedness plan specific for communicable diseases.



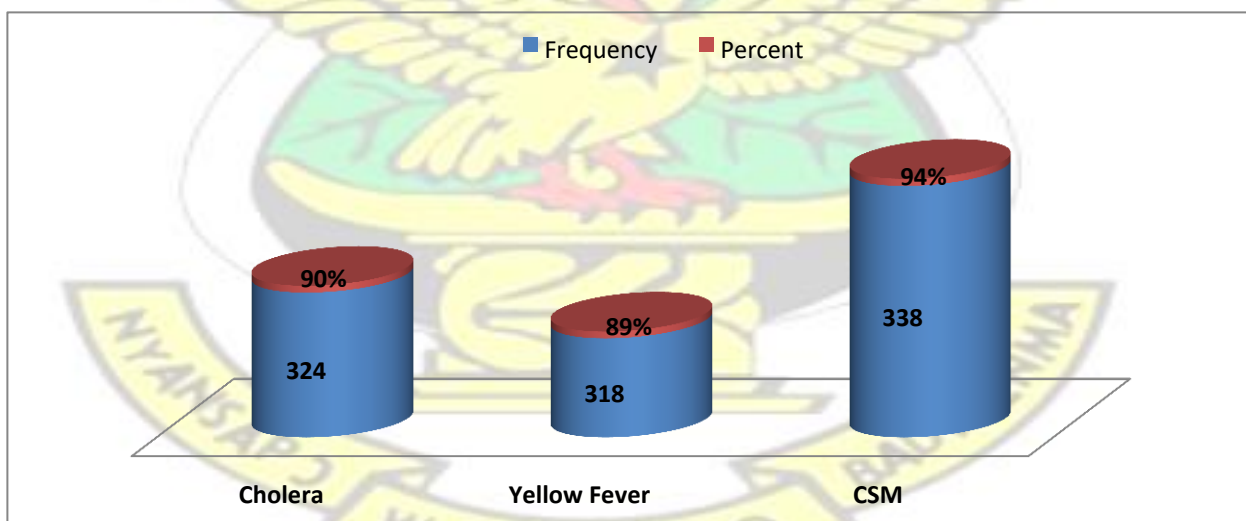
**Figure 4.3: Presence and placement of treatment protocols for communicable disease. (Source: Field Data, 2015)**

Treatment protocols for the management of communicable disease cases were also available in the facilities and can be found on the walls of the facilities as indicated by 87% and 57% of the respondents respectively. This is represented in the graph above.



**Figure 4.4: Respondents trained on the management of communicable diseases.**

Majority of the respondents (80%) affirmed that there were trained health workers for the management of communicable diseases in the hospital.



**Figure 4.5: Respondents knowledge on specimen for testing communicable disease**  
(Source: Field Data, 2015)

90% of respondents stated that stool specimen was required to diagnosed cholera, 89% of the respondents indicated that blood specimen was required for confirming a suspected Yellow Fever case and 94% of the respondents indicated cerebrospinal fluid was required for Meningitis's suspected cases. This is represented in the figure 4.5 above.

### 4.3. Knowledge of health workers on communicable diseases and emergency preparedness.

**Table 4.4: Respondents knowledge on definition of communicable disease.**

What is Communicable disease?	Frequency	Percentage %
Disease NOT transmitted through direct contact with an infected individual or indirectly through a vector	3	0.80%
Diseases transmitted by direct/indirect contact with an infected person or vector.	346	96.11%
Diseases transmitted from a healthy individual	10	2.80%
Diseases transmitted from parent to children through hereditary	1	0.30%
<b>Total</b>	<b>360</b>	<b>100.00%</b>

Majority of the respondents (96.11%) stated what a communicable disease definition is. Their definition was within diseases that are transmitted by direct / indirect contact with an infected individual or indirectly through a vector.

**Table 4. 5: Respondents knowledge on direct contact infection.**

<b>What is a direct contact infection?</b>	<b>Number</b>	<b>Percentage %</b>
Bitten by an infected vector	29	8.10%
Infected person's body fluid	296	82.20%
Infected person's items	30	8.30%
Playing with an uninfected animal	5	1.40%
<b>Total</b>	<b>360</b>	<b>100.00%</b>

82.2% of the respondents stated that to get infection by direct contact, a person might come into contact with an infected person's body fluid.

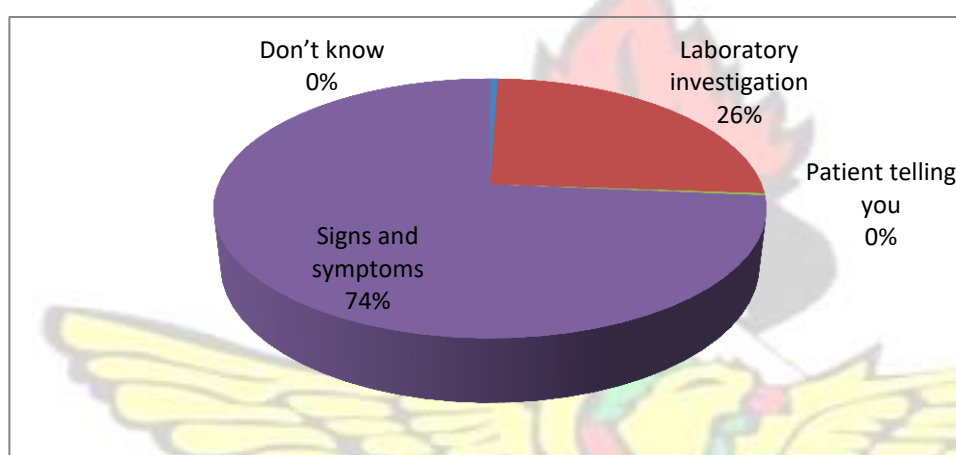
**Table 4. 6: Respondents knowledge on indirect contact infection.**

<b>What is an indirect contact infection?</b>	<b>Frequency</b>	<b>Percentage %</b>
Infection from a bit by an infective vector	51	14.16%
Coming into contact with infected person's body fluid	27	7.50%



Coming into contact with an infected person's items	282	78.30%
<b>Total</b>	<b>360</b>	<b>100.00%</b>

Majority of the respondents (92.46%) stated that to be infected indirectly a person may have to be bitten by an infective vector and come into contact with an infected person's items.



**Figure 4.6: Recognition of communicable disease by respondents.**

74% of the respondents indicated that communicable diseases can be recognized using signs and symptoms and not by laboratory investigation or client telling you.

**Table 4. 7: Respondents knowledge on disease outbreak.**

What is disease outbreak?	Frequency	Percentage %
Occurrences of cases of diseases in excess of what would normally be expected in a defined community, geographical area or season	336	93.30%

Occurrences of diseases cases normally expected in a defined community, geographical area or season	17	4.70%
Occurrences of diseases every day in the community	4	1.10%
Occurrences of every disease in the community	3	0.80%
<b>Total</b>	<b>360</b>	<b>100.00%</b>

On the knowledge of what a disease outbreak is 93.3% of the respondents indicated that is an occurrences of cases of diseases in excess of what would normally be expected in a defined community, geographical area or season.

**Table 4.8: Respondents knowledge on Contact tracing.**

<b>What is contact tracing?</b>	<b>Frequency</b>	<b>Percentage %</b>
Finding persons who may come into contact with infected persons	81	22.60%
Identifying and follow up of persons who may have come into contact with an infected person	188	52.22%
Identifying people showing signs and symptoms of an infected disease	90	25.10%
<b>Total</b>	<b>359</b>	<b>100.00%</b>

52.22% of the respondents understood what contact tracing was.

**Table 4.9: Respondents knowledge on time for contact tracing.**

When do we do contact tracing?	Frequency	Percentage %
During outbreak of diseases	100	27.90%
Once in a while	25	7.00%
When a patient is diagnosed with a communicable disease	226	63.00%
When we want to find case	8	2.20%
<b>Total</b>	<b>359</b>	<b>100.00%</b>

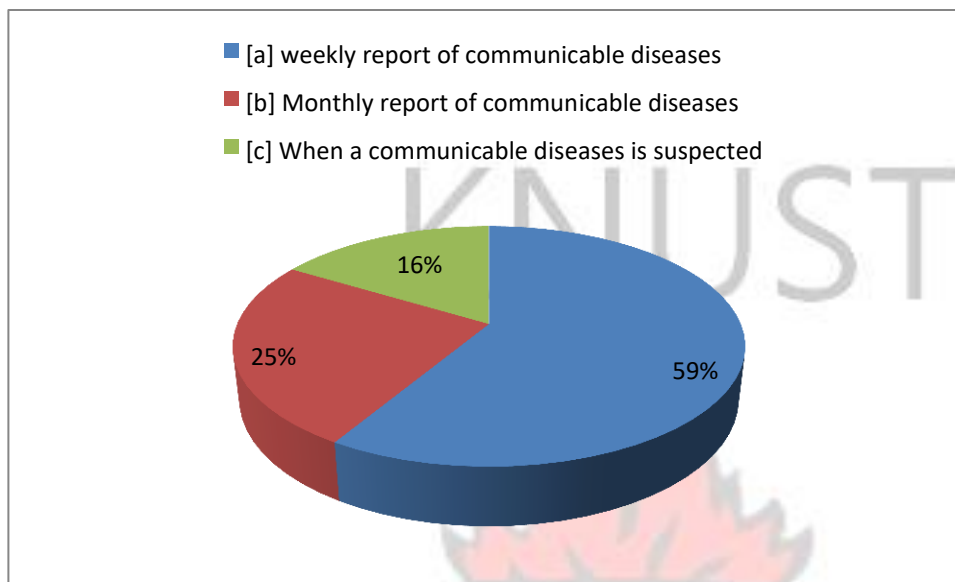
Contact tracing is done when a patient is diagnosed with a communicable disease and during disease outbreaks and 90.9% of the respondents knew that.

**Table 4.10: Respondents knowledge on IDSR.**

What do you understand by IDSR?	Frequency	Percentage %
Integrated Disease Surveillance and Response	313	86.90%
Integration Disease System and Reporting	25	6.90%
International Disease Surveillance and Response	11	3.10%
International Disease System and Reporting	11	3.10%
<b>Total</b>	<b>360</b>	<b>100.00%</b>

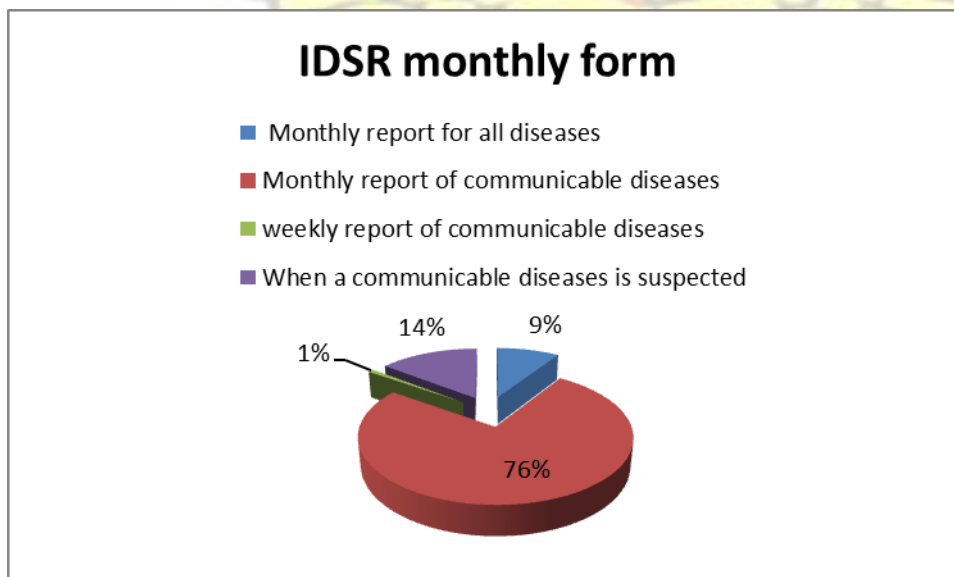
86.9% of respondents indicated IDSR to be integrated Disease Surveillance and

## Response



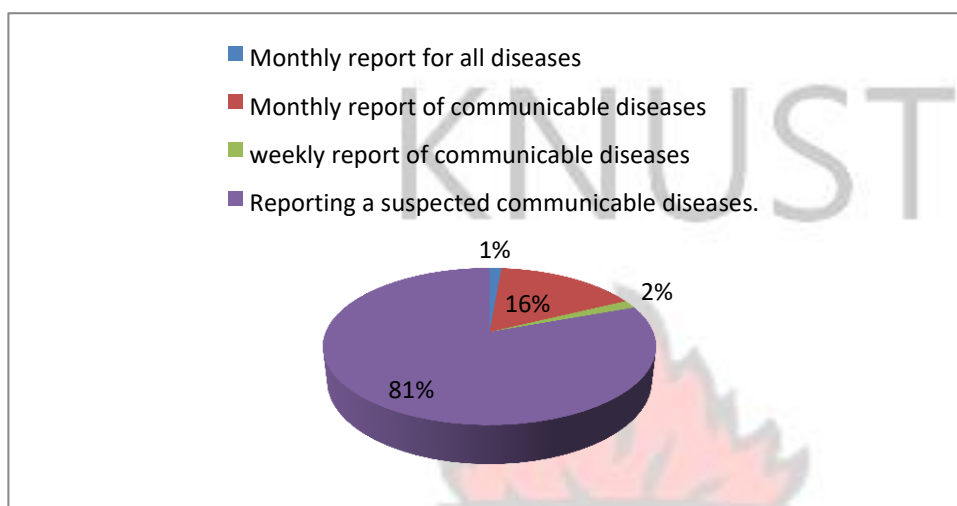
**Figure 4.7: Respondents knowledge on uses of IDSR weekly reporting form**

59% of the respondents indicated that IDSR weekly reporting form is used to weekly report of communicable diseases.



**Figure 4.8: Respondents knowledge on use of IDSR monthly reporting form.**

76% of the respondents indicated that IDSR monthly reporting form is for monthly report of communicable diseases.



**Figure 4.9: Respondents knowledge on Disease notification form.**

The above figure illustrates that 81% of the respondents indicated that disease notification form is used in reporting a suspected communicable disease, while 16% indicate monthly report of communicable diseases.

**Table 4.11: Availability of emergency preparedness Plan in facilities.**

What is emergency preparedness plan?	Frequency	Percentage %
A map up of how to deal with and avoid disaster	97	27.10%
How to prepare for a procedure	80	22.30%
Programs put in place to help address crises	118	33.00%
Ways to response to a situation	63	17.60%
<b>Total</b>	<b>358</b>	<b>100.00%</b>

An emergency preparedness plan is a map up of how to deal with and avoid disaster and



27.1% of the respondents indicated that.

**Table 4.12: Used of emergency preparedness plan in the facilities.**

<b>What is the emergency preparedness plan used for?</b>	<b>Frequency</b>	<b>Percentage %</b>
Don't know	32	8.90%
Management of emergency and avoiding them.	217	60.30%
When there is an outbreak	111	30.80%
<b>Total</b>	<b>360</b>	<b>100.00%</b>

60.3% of the respondents indicated that emergency preparedness plan is used to manage emergencies and avoid them.

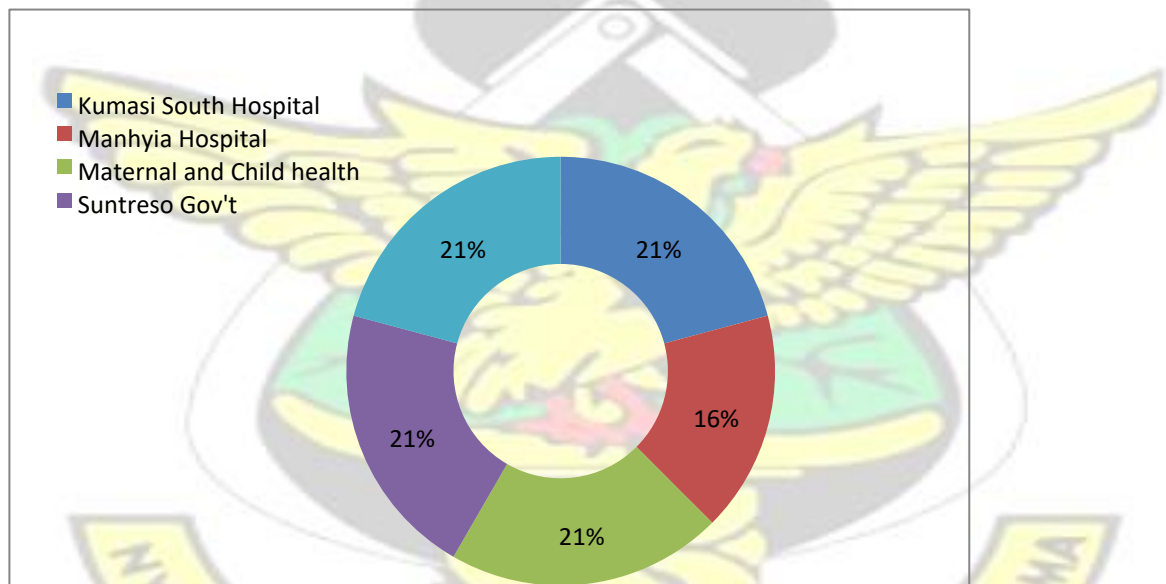
**Table 4.13: Respondents knowledge on reversed Cold chain.**

<b>What is reversed cold chain?</b>	<b>Frequency</b>	<b>Percentage %</b>
Storing & transporting ideas from a point at a recommended temperature to other	12	3.40%
Storing & transporting specimen at a recommended temperature from the point of collection to the laboratory	283	79.10%
Storing & transporting vaccines at the recommended temperature from manufacture to the point of use	60	16.50%
Transport of medical equipment to the recommended laboratory	3	0.80%
<b>Total</b>	<b>358</b>	<b>100.00%</b>

79.1% of the respondents indicated that reversed cold chain is storing and transporting specimen at a recommended temperature from the point of collection to the laboratory.

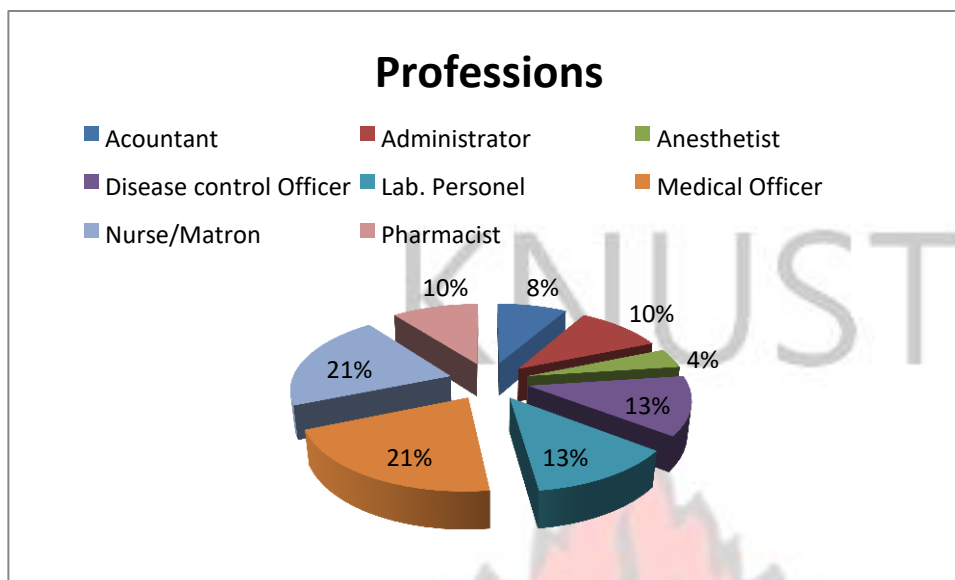
#### 4. 4. Emergency preparedness of the hospitals for communicable diseases.

Questionnaires administered in this section were to assess the facilities emergency preparedness as a whole. Fifty questionnaires were given out to management and emergency preparedness teams of the five hospitals used for this study. Out of the fifty, forty eight were returned completed. This gave a response rate of 96%; no reason was given for the 4% non-response rate.



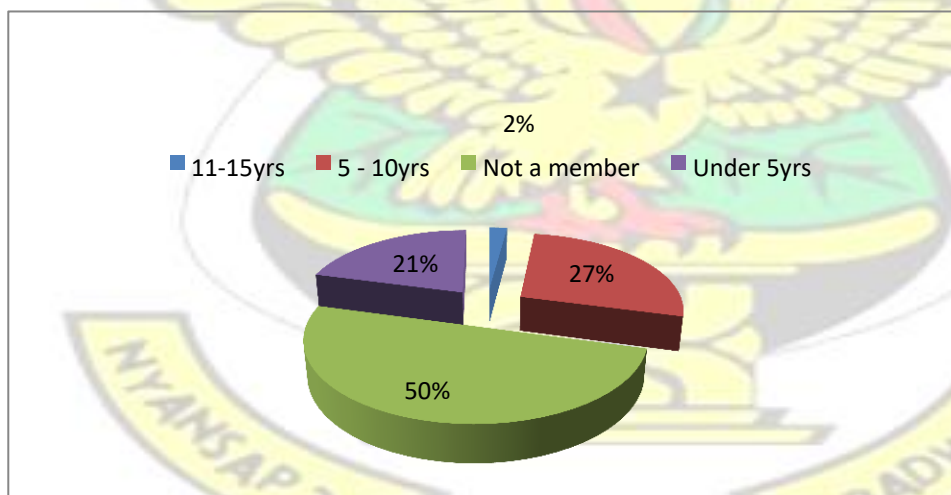
**Figure 4.10: Facilities representation of respondents**

Figure 4.4.1 gives the proportion of the hospitals' management and emergency preparedness teams response to the study conducted. There was an average response of 20%



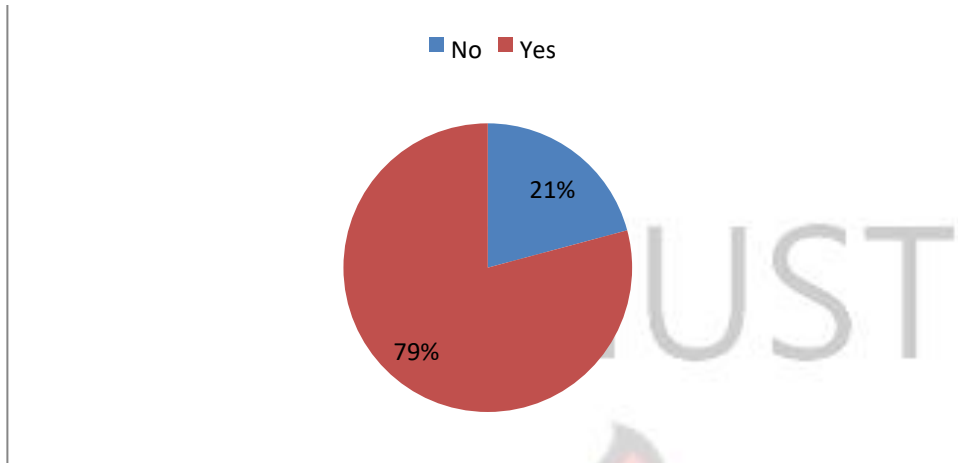
**Figure 4.11: The percentage of respondents in the category of professions.**

Medical Officers and Nurses (21%) were more on the emergency and management teams with the least been Anesthetists (4%)



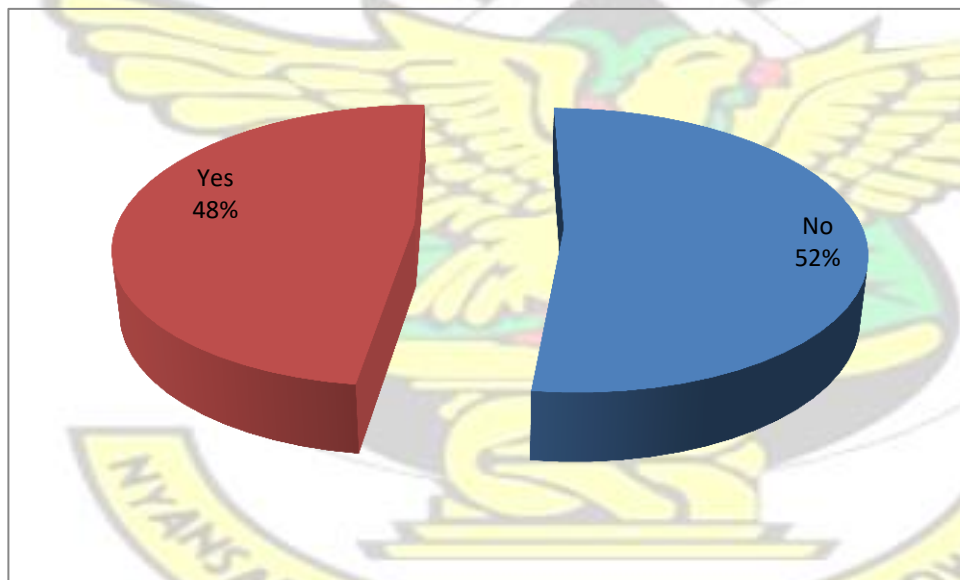
**Figure 4.12: Duration the respondents have served on the management team.**

50% of the respondents were management members of which more than half (29%) had been on the team for more than 5 years.



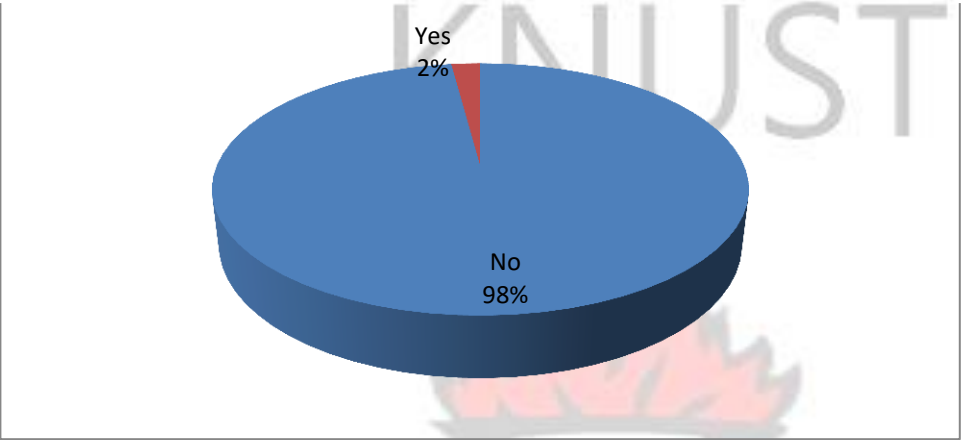
**Figure 4.13: Respondents who were members of the emergency preparedness team.**

79% of the respondents were members of the emergency preparedness team of the facilities. This indicated that some members of the management team were also members of the emergency preparedness team of the facilities.



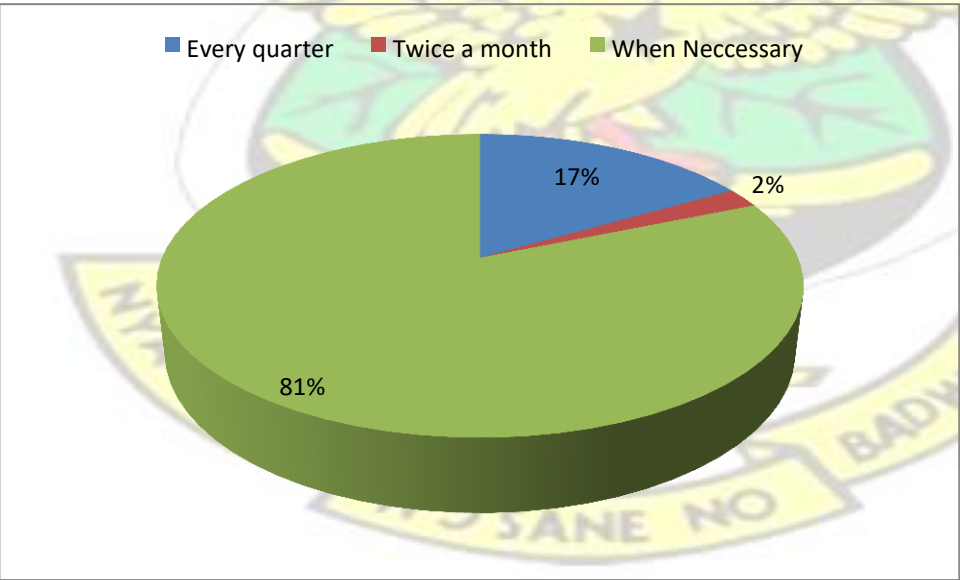
**Figure 4.14: Response to support given to the emergency preparedness team by management.**

The diagram above illustrates management support for the emergency preparedness teams of the facilities. 52% of the respondents indicated that management does not support the emergency preparedness team of the facilities.



**Figure 4.15: Availability of emergency preparedness team for communicable diseases**

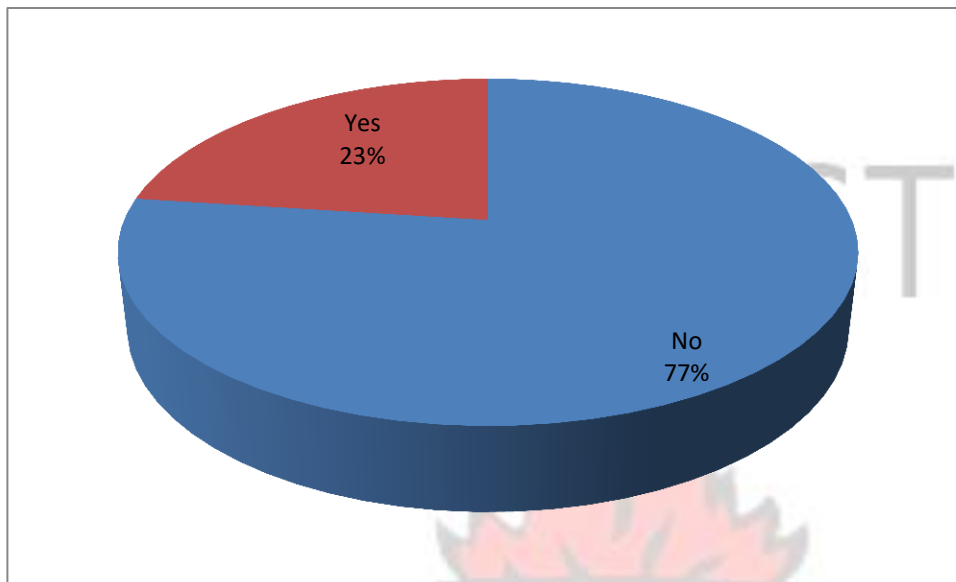
The above table illustrates that about 98% of the respondents indicated that there was no emergency preparedness team for communicable diseases in the facilities.



**Figure 4.4.7: Frequency of emergency team meetings at the facilities.**

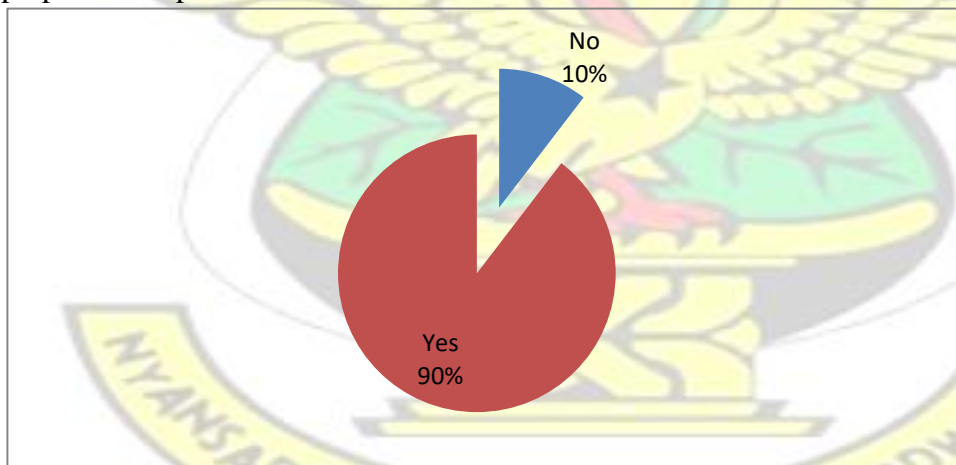


The emergency team of the various facilities met only when it was necessary (81%)



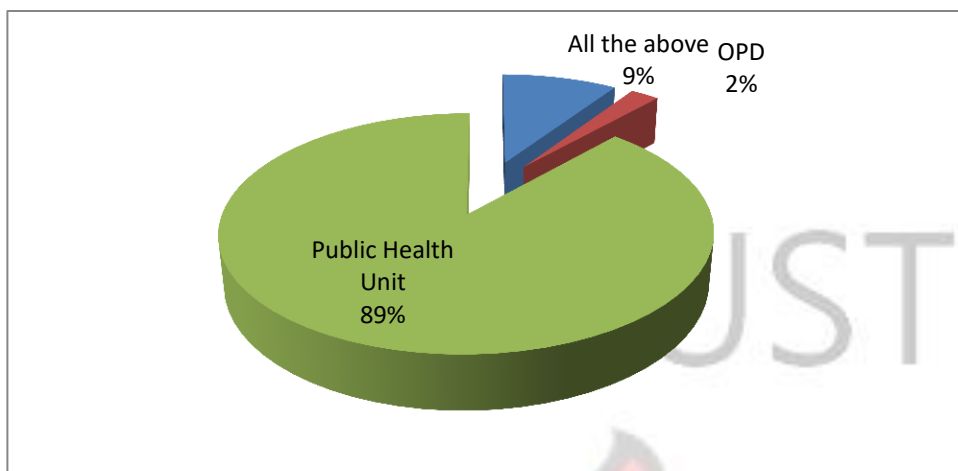
**Figure 4.17: Availability of Emergency Preparedness Plan in the facilities.**

More than half of the respondents (77%) indicated that there was no emergency preparedness plan in the facilities.



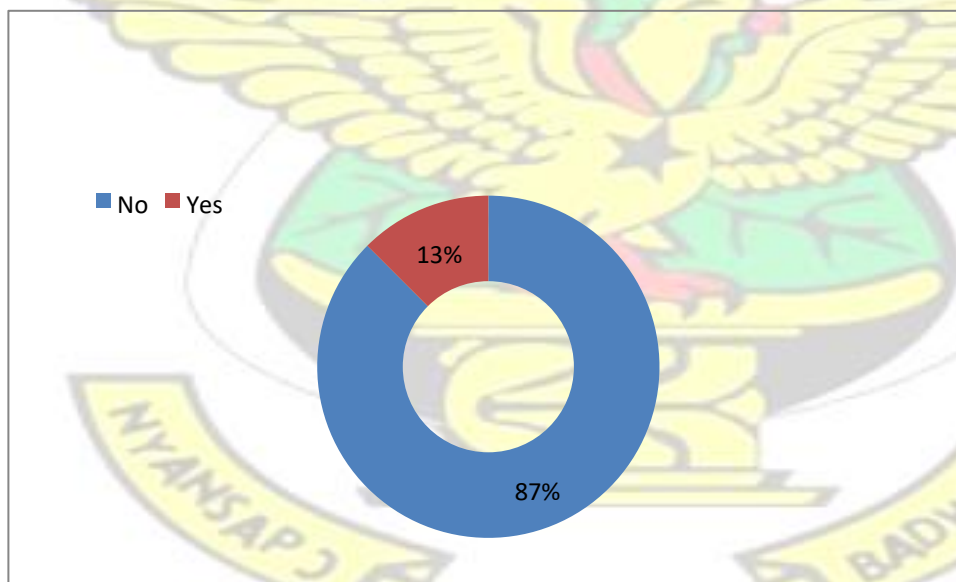
**Figure 4.18: Availability of trained staffs for management of communicable diseases in the facilities.**

The above diagram illustrates that 90% of the respondents indicated that some staff had received some training in the management of communicable diseases in the facilities.



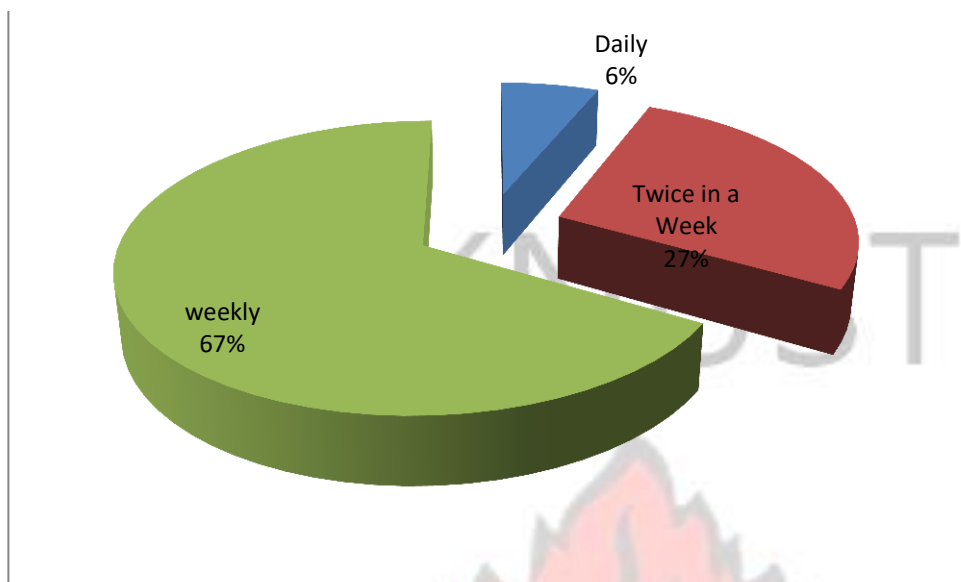
**Figure 4.19: Departments trained staff for communicable diseases are working.**

89% of the staffs trained in the management of communicable diseases worked at the public health unit, with 9% working at the other units combined apart from 2% who worked at the Out Patient Department (OPD).



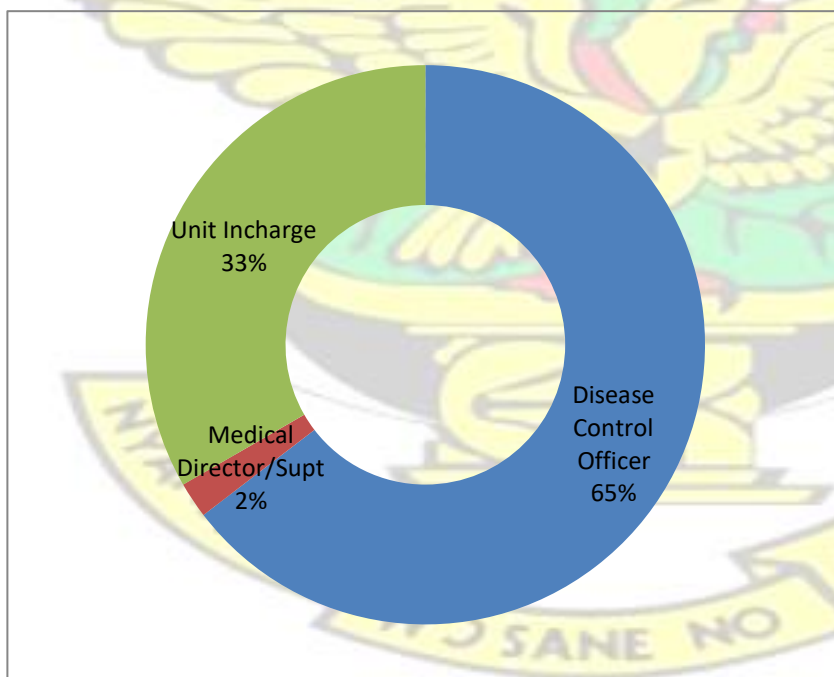
**Figure 4.20: Structures/room for admitting and treating communicable disease patient.**

Figure 4.20, illustrates that 87% of the respondents stated that there were no rooms or structure for admitting and treating of communicable diseases in the facilities.



**Figure 4.21: Frequency the consulting room registers are reviewed.**

The above diagram illustrates that 67% of the respondents indicated that the consulting room registers were reviewed weekly, 27% indicated twice in a week and 6% said daily.



**Figure 4.22: Who respondents contact in communicable diseases crises.**

From figure 4. 22, 65% of the respondents indicated that the staffs reported any communicable disease diagnosed in the facility to the Disease Control Officer, 25% said to the unit in-charge and 2% to the Medical Director of the facility.

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## **CHAPTER FIVE**

### **DISCUSSION**

#### **5.1. Introduction**

This chapter discusses the results of the study under the specific objectives relating it to available literature. The study was conducted to determine the emergency preparedness of the five public hospitals in the Kumasi Metropolis; Manhyia Government Hospital, Tafo Government Hospital, Suntreso Hospital, Kumasi South Hospital and Maternal and Child Health Hospital. The objectives of the study were to identify how communicable diseases are managed in the public hospitals in Kumasi Metropolis, also, to determine the knowledge of health workers on communicable diseases and emergency preparedness and to determine the emergency preparedness of the hospitals for communicable diseases.

#### **5. 2. Demographic data of respondents**

Clinicians were used for the study as they are mainly those who take responsibility during a communicable disease outbreak. Therefore, they need to know about communicable diseases and emergency preparedness for communicable disease.

The representation of the respondents from the five public hospitals in the Kumasi Metropolis used for the study averagely was 20%. There were more nurses representing a total of 63.9% of the whole respondents with the least representation been the Medical Officer which was 3.3%.

The educational background of the respondents was also taken into consideration, as it was considered to be a driving force in determining their knowledge and understanding of the subject matter.

The educational levels of the respondents had more Diploma certificate holders (60%) to the certificates and degree holders. Most were nurses who form the major health workforce, and this can be attributed to the fact that they have most of its training institutions to be diploma awarding.

The working experience of the respondents was also considered important in the subject matter as duration at the facility would help in a deeper understanding of the processes and structures in the facility. 55.8% of the respondent had worked less than five years in the health sector and 76% of the respondents had worked less than five years in the various hospitals at the time of the study.

### **5.3. Management of Communicable Diseases in hospitals.**

85% of the respondents indicated communicable diseases are isolated and treated; this is in accordance with the Ghana Health service treatment protocols to isolate and treat communicable disease at the diagnosed facility to prevent further spread of the disease.



Health workers in the facilities were trained on the management of communicable diseases (80%), and treatment protocols were also available in the facilities (87%), it is considered a good practice as Chandler, et al. 2008 emphasized the importance of public health workers been knowledgeable in infectious disease management.

More than half (56%) of the respondents from all five hospitals stated that emergency preparedness plan for communicable diseases could be found in the facilities and this is in agreement with what Smith (2007) implied when he indicated that emergency preparedness plan was very important and needed to confidently manage any emergency situation that may arise.

In the management of disease outbreaks and disasters, knowledge and skills plays an integral role in management and preparing for emergency situation as indicated by Wisniewski, et al. 2004 which was been practice in the facilities the study was conducted as 80% of the respondents affirmed to health receiving training on the management of communicable diseases.

#### **5.4. Knowledge of health workers on communicable diseases and emergency preparedness.**

The assessment of the clinical health workers knowledge on communicable diseases revealed that majority (96.11%) of the respondents was knowledgeable in communicable diseases and disease outbreaks. The respondents knew direct and indirect contact infections and their implications on the spread of infectious diseases (82.20%). About 74% of the respondents could recognize communicable diseases by signs and symptoms which are very importance in the management of communicable disease and this would

help in the early notification and surveillance response. Ofili, et al. (2003) on the other hand rather found a low disease notification among doctors in the government hospitals in Benin City Edo state.

The overall response on the knowledge on IDSR was good (86.9%), and about three quarters of the respondents (76%) knew the uses of the various forms, similarly Nnebue, et al. 2012 found 89.8% of health care workers to be aware and knowledgeable in disease surveillance and notification.

The knowledge on emergency preparedness was however low as most of the respondents did not really understand emergency preparedness and its importance to communicable diseases (27.1%), this could entirely false as Wisniewski, et al. 2004 study also found a low knowledge level of nurses on emergency preparedness which they attributed to typical training in the undergraduate nursing education.

#### **5. 5. Emergency Preparedness of Hospital on Communicable Diseases**

The third objective of the study seek to assessed the management and emergency preparedness team for communicable diseases preparedness, what structures and processes that had been put in place towards the facilities preparedness towards communicable diseases outbreak . The response rate for the second set of question was 96%, no reason was given for the 4% non-response. Various categories of health professionals were represented on both teams. Medical Officers and Nurses/Matron were the majority (21%), with the least been Anesthetists (4%). These comprised of the management team and emergency preparedness team members from the hospitals. 50% of the respondents were emergency team members and the other management members.

Of the 50% management members 29% had been on the management team for more than 5 years, it can be assumed that majority of the management members were experienced on how the hospital functioned and systems of operations.

From the study some members of the management were also members of the emergency team of the facilities, giving 79% of the respondents to be members of the emergency preparedness team. One would then expect maximum support of management to the work of the emergency preparedness teams but that does not seem to be the case as more than half of the respondents (52%) indicated that management does not support the activities of the emergency preparedness team of the facilities.

Even though there were emergency teams in each facility, almost all the respondents (98%) indicated that there was no emergency preparedness team specifically for communicable diseases in the facilities. Contrary to Jones et al 2009's article that expects separate teams for the different emergencies that could happen in our health care facilities as their management would require a certain expertise. An example would be that Emergency Medical Team (MET) would require the expertise of an Internal Medicine Physician and a Rapid Response Team (RRT) for communicable diseases be led by a Public Health Physician with expertise in communicable diseases.

To determine the emergency preparedness level of health facilities in disaster management certain key areas needs to be put into consideration such as treatment guidelines, trained personnel plans, equipment and epidemiologic surveillance (RiveraGutiérrez, et al. 2013) and these things seems to be in place in all the study facilities. Staff had received training in the management of communicable diseases (80%) treatment protocols (87%) could be found and assessable to all (57%).

The emergency preparedness teams met only when it seem necessary as stated by respondents (81%) and also non availability of an emergency preparedness plan for the management of communicable diseases (77%) in contrast to what Connolly et al. 2004 believe to be the ideal as in Disease outbreaks and mass casualties situation, there is confusion and chaos, therefore regular meetings and availability of plans to follow in such situations would have better outcomes. The irregular meetings could probably be attributed to the lack of support of the team from management. Blondel-Hill 1996 also believes that infectious disease prevention plan in health care is very important and should be available at all time to guide in preventing and controlling the spread of communicable diseases should they happen in any health care facility.





## CHAPTER SIX

### CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 Conclusions

The following conclusions were drawn based on the findings of the study conducted and in accordance to the objectives of the study.

##### ***Objective 1. Management of communicable diseases in hospitals***

The current practices of communicable disease management in the facilities were good as communicable disease cases were isolated and treated (85%).

There were treatment protocols for the management of communicable diseases (87%) that were readily available in all the facilities (57%).

The knowledge on which specimen were require for testing Cholera, Yellow Fever and Meningitis was very good.

The study also found out that there were no separate rooms for admitting and treating communicable diseases in the various facilities.

##### ***Objective 2. Knowledge of health workers on communicable diseases and emergency preparedness.***

The respondents were knowledgeable in communicable diseases definition (96.11%), contact tracing (82.2%) and its importance.

Knowledge on IDSR and the other reporting forms for diseases notification was also very good.

The knowledge on emergency preparedness and its implications for communicable diseases was quite low (27.1%).



***Objective 3. Emergency preparedness of hospitals for communicable diseases.***

There were emergency preparedness teams in all five hospitals, the study was conducted but none of the hospitals had an emergency preparedness team specifically for communicable diseases.

The emergency preparedness teams in the facilities are not proactive as they meet only when it was necessary and the support from management was not adequate, even though some members of the management team were also members of the emergency preparedness teams.

Emergency preparedness plans were not found in any of the facilities the study was conducted.

The consulting room register was reviewed weekly which should be done daily for early notification and response.

**6.2 Recommendations**

The following recommendations are made based on the findings of the study conducted. Knowledge withholding has its limits and practices are reliant on knowledge, therefore regular in- service training is important to proper management of communicable diseases. It helps health care workers with indispensable knowledge, skill and attitude for providing protection to themselves, patient and relatives and also reduce the impact of an outbreak should it occur.

Emergency preparedness team for communicable diseases should be formed in all health facilities across the Metropolis.

The teams should not just be form, but regular meetings to update themselves on the trending communicable diseases around us.

Emergency preparedness plans for communicable diseases should be drawn with input from all stakeholders so that the plan would be owned by all.

Temporary structures should be built immediately for admitting and treating communicable diseases in all the facilities and then permanent structures constructed over time.

The logo of KNUST (Kenya National University of Science and Technology) is centered in the background. It features a yellow eagle with its wings spread, perched on a shield. Above the eagle is a red flame or torch. The shield has a green base and a yellow top. The text 'KNUST' is written in large, grey, semi-transparent letters across the top of the logo.

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## **APPENDICES**

### **QUESTIONNAIRE Introduction**

Good morning/afternoon. I am a student at School of Public Health, KNUST. I will be administering questionnaire to health workers in the public hospital facilities in Kumasi Metropolis to find out your views and ideas about the emergency preparedness of health facilities on communicable diseases. This study is purely for academic purpose therefore whatever you say will be treated confidential, so feel at ease to express your candid opinion. Be assured that your responses will not in any way be linked to your identity.

### **THANK YOU!**

#### **Section A: Socio-demographics**

**For questions with options, please tick your BEST option/s as [ √ ].**

#### **SECTION A (Socio - Demographics)**

1. Name of hospital:
2. What is your profession?
3. Department you are currently working:

4. Educational level: [a] Degree [b] Diploma [c] Certificate  
[d] SSS/SHS level
5. How long (Years) have you been working in the health sector?  
[a] Under 5 [b] 5 – 10 [c] 11 - 15 [d] 16 – 20 [e] Above 20
6. How long (Years) have you been working in this facility? [a] Under 5  
[b] 5 – 10 [c] 11 - 15 [d] 16 – 20 [e] Above 20

**SECTION B (knowledge of health workers on communicable disease and emergency preparedness)**

1. What is a communicable disease?
- [a] A disease that is NOT transmitted through direct contact with an infected individual or indirectly through a vector
  - [b] A disease that is transmitted from parent to children through hereditary
  - [c] A disease that is transmitted by direct/indirect contact
  - [d] A disease that is transmitted from a healthy individual
  - [e] A diseases that is NOT transmitted from an infected animals
2. What is a direct contact?
- [a] Coming into contact with an infected person's items
  - [b] Coming into contact with an infected person's body fluid
  - [c] Coming into contact with an infected animal
  - [e] Coming into contact with an infected animal's fluid
  - [f] Being, as in the process of bitten by an infected vector
3. What is an indirect contact?
- [a] Coming into contact with an infected person's items
  - [b] Coming into contact with an infected person's body fluid

- [c] Coming into contact with an infected animals
  - [d] Coming into contact with an infected animal's fluid
  - [e] Been bitten by an infected vector
4. How can you recognize a communicable disease?
- [a] Signs and symptoms
  - [b] Patient telling you
  - [c] Laboratory investigation
  - [d] Don't know
5. What is a disease outbreak?
- [a] Occurrence of cases of disease in excess of what would normally be expected in a defined community, geographical area or season.
  - [b] Occurrence of disease cases normally expected in a defined community, geographical area or season
  - [c] Occurrence of disease everyday in the community
  - [e] Occurrence of every disease in the community
6. What is contact tracing?
- [a] Identification of people who are showing signs and symptoms of an infected disease
  - [b] Finding of persons who may come into contact with infected person
  - [c] Finding everyone who might have come into contact with an infected person
  - [d] Identification and follow up of persons who may have come into contact with an infected person
7. When do we do contact tracing?
- [a] When there is outbreak of disease
  - [b] When a patient is diagnosed with a communicable disease
  - [c] Once in a while

- [d] When we want to find case
8. What is the importance of contact tracing?
- [a] Identify source of infection
  - [b] Identify people who might have been infected
  - [c] Identify susceptible groups
  - [d] Find cases
9. What do you understand by IDSR?
- [a] Integrated Disease Surveillance and Response
  - [b] Integration Disease System and Report
  - [c] International Disease System and Reporting
  - [d] International Disease Surveillance and Response
10. What is the use of IDSR form 1?
- [a] weekly report of communicable diseases
  - [b] Monthly report of communicable diseases
  - [c] When a communicable diseases is suspected
  - [d] Monthly report for all diseases
11. What is the use of IDSR form 2?
- [a] weekly report of communicable diseases
  - [b] Monthly report of communicable diseases
  - [c] When a communicable diseases is suspected
  - [d] Monthly report for all diseases
12. What is disease notification form?
- [a] weekly report of communicable diseases
  - [b] Monthly report of communicable diseases
  - [c] When a communicable diseases is suspected



[d] Monthly report for all diseases

13. What is emergency preparedness plan?

- [a] A map up of how to deal with and avoid disaster
- [b] How to prepare for a procedure
- [c] Ways to response to a situation
- [d] Programs put in place to help address crises

14. What is the emergency preparedness plan used for?

- [a] Management of communicable diseases
- [b] When there is an outbreak
- [c] Don't know

15. Have you been trained in emergency preparedness? ☐ Yes ☐ No

16. What is reversed cold chain?

- [a] Transporting specimen to the recommended laboratory
- [b] Storing and transporting specimen at a recommended temperature from the point of collection to the laboratory
- [c] Storing and transporting vaccines at the recommended temperature from manufacturer to the point of use
- [d] Storing and transporting ideas from a point at a recommended temperature from one palace to other

17. What is Cold Chain?

- [a] Transporting specimen to the recommended laboratory
- [b] Storing and transporting specimen at a recommended temperature from the point of collection to the laboratory
- [c] Storing and transporting vaccines at the recommended temperature from manufacturer to the point of use



- [d] Storing and transporting ideas from a point at a recommended temperature from one place to other

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## Section C: (How communicable diseases are presently handled in the hospitals)

1. How are communicable disease managed in the facility?
  - [a] Isolated and treated
  - [b] Referred to a bigger facility
  - [c] Give treated and sent home
2. Is there a ward for admitting communicable diseases only?    ☐ Yes    ☐ No  
☐ Don't know
3. Does the facility have emergency preparedness plan?    ☐ Yes    ☐ No  
☐ Don't know
4. Where is it placed?    ☐ Placed in files    ☐ Placed in drawers  
☐ With the in-charge of unit    ☐ On the walls of the unit
5. Are there trained emergency health personal at the facility?    ☐ yes    ☐ No
6. Are there protocols for treatment of communicable disease?    ☐ yes    ☐ No If yes, how many?
7. Where are they placed?    ☐ Placed in files    ☐ Placed in drawers  
☐ With the in-charge of unit    ☐ On the walls of the unit

8. What specimen is taken for cholera case?

- [a] Blood
- [b] Urine
- [c] Stools
- [d] Vomitus
- [e] Cerebrospinal fluid

9. What specimen is taken for Yellow fever?

- [a] Blood
- [b] Urine
- [c] Stools
- [d] Vomitus
- [e] Cerebrospinal fluid

10. What specimen is taken for meningitis?

- [a] Blood
- [b] Urine
- [c] Stools
- [d] Vomitus
- [e] Cerebrospinal fluid



## Introduction

Good morning/afternoon. I am a student at School of Public Health, KNUST. I will be administering questionnaire to health workers in the public health hospital in Kumasi Metropolis to find out your views and ideas about the emergency preparedness of health facilities on communicable diseases. This study is purely for academic purpose therefore whatever you say will be treated confidential, so feel at ease to express your candid opinion. Be assured that your responses will not in any way be linked to your identity.

## THANK YOU!

### ASSESSMENT OF EMERGENCY PREPAREDNESS OF HOSPITALS IN THE KUMASI METROPOLIS-2015

Hospital Profession

7. How long have you been in the management member of the facility?  
[a] Under 5yrs    [b] 5 – 10yrs    [c] 6 - 15yrs    [d] 16 – 20yrs    [e] above 20yrs
8. Is there an emergency preparedness team for communicable diseases at the facility?  
[ ] Yes            [ ] No            [ ] Don't know
9. Are you a member of the emergency preparedness communicable diseases team?  
[ ] Yes            [ ] No
10. How often do they meet?    [ ] Once a week    [ ] Once a month    [ ] Twice a month  
[ ] Every quarter    [ ] When there is problem/When necessary
11. Does the management provide the necessary assistance for the emergency team to work effectively?    [ ] Yes            [ ] No
12. Is there an emergency preparedness plan for communicable diseases at the facility?  
[ ] Yes            [ ] No

5. (b). How current is it?
- [a] Was reviewed a month ago [b] Reviewed a year ago
- [c] Reviewed quarterly
- [d] Reviewed every two years
- [e] Reviewed five years ago
6. Are there trained staffs in management of communicable diseases?
- [ ] Yes [ ] No
7. Which department/s are they working?
- [a] OPD
- [b] Male medical ward
- [c] Female medical ward
- [d] Male surgical ward
- [e] Female surgical ward
- [f] Maternity
- [e] Children's ward
- [g] Others
8. How often is the consulting room registers reviewed?
- [a] Daily
- [b] Twice a week
- [c] Weekly
- [d] Monthly
- [e] Quarterly
- [f] Half yearly
- [g] Yearly
9. Hospital staff: Have staff received adequate training to face emergency situations?

☐ Yes   ☐ No

10. Does the hospital have basic backup equipment for managing communicable disease ☐ Yes   ☐ No

11. Who does the staff report to when a communicable disease is reported/ diagnosed?

- ☐ [a] Disease Control Officer
- ☐ [b] Medical Officer Incharge
- ☐ [c] District Director of Health Service
- ☐ [d] Report to no one

12. Are there protocols for treatment of communicable disease? ☐ yes   ☐ No

13. Is there a structure or a room for Admitting Communicable diseases? ☐ Yes   ☐ No

