PERCEPTION OF DISEASE OUTBREAK BY HEALTH WORKERS AND LEVEL OF EPIDEMIC PREPAREDNESS OF PUBLIC HEALTH FACILITIES IN ALIMOSHO LOCAL GOVERNMENT AREA, LAGOS

BY

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ABSTRACT

Epidemic preparedness has been influenced by top-down approaches that emphasize the need for commitment and expertise in addressing severe situations. Studies have shown that responses to managing disease outbreak have been reactive rather than pro-active, with limited understanding of key action steps to be taken during the outbreak. There is little documentation on the level of epidemic preparedness of public health facilities in Nigeria. This study was carried out to assess the perception of disease outbreak by health workers and level of epidemic preparedness of public health facilities in Alimosho Local Government Area, Lagos State.

This study adopted a cross-sectional survey design. A total sampling technique was used to recruit all 290 health workers in the public health facilities in Alimosho LGA. A semi-structured, interviewer-administered questionnaire was used for data collection. The instrument included information on socio-demographic characteristics, knowledge of health workers and perception towards epidemic preparedness. A workplace checklist was used to assess the adequacy of epidemic preparedness in Alimosho LGA. From a total obtainable knowledge score of 27, a knowledge score of ≥ 12 was classified as good and from a total obtainable perception score of 55, a perception score of ≥ 30 was classified as good. Data were analysed using descriptive statistics and logistic regression at $p < 0.05$.

Age of the health care workers was 35.9±8.4 years, 87.6% were Yoruba and 81.4% were married. Nine percent had post-graduate degrees, 79.2% were graduates while 12.1% were non-graduates. About 79.0% of the workers had permanent employment. Clinical staff and support staff were 79.0% and 12.8%, respectively. Only 12.1% of the respondents had received training on epidemic preparedness in the past 12 months; 68.6% of those trained and 57.3% of those not trained had significant understanding of baseline response to disease outbreak. Of the clinical staff, 61.6% also had an understanding of baseline response to disease outbreak. Only 11.3% of the respondents were

knowledgeable about epidemic preparedness. The high occurring epidemic prone diseases were measles (33.0%) and cholera (26.7%). Of those who were not knowledgeable about epidemic preparedness, 94.8% lack understanding of disease outbreak. Across the healthcare facilities visited, infrastructures for disease containment was not available. Health workers ≤ 35 years of age were about 3 times less likely to be knowledgeable about epidemic preparedness (OR = 0.33, CI = 0.132 – 0.825) compared with those >35 years of age. Workers with no understanding of disease outbreak were also twice less likely to be knowledgeable about epidemic preparedness compared to those who had an understanding of disease outbreak (OR = 0.34, CI = 0.131 – 0.894).

The understanding of disease outbreak by health workers was inadequate; also, the level of preparedness for epidemic outbreak in Alimosho local government was not satisfactory. The provision of infrastructure and training of health workers should be encouraged in Alimosho Local Government Area in order to avert and control disease outbreaks.

Keywords: Health workers, Epidemic preparedness, disease outbreak
Word count: 475

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CERTIFICATION

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DEDICATION

This work is dedicated to God Almighty, in whose mercy and grace I found favour and help to carry out this research work from start to finish; and for the gift of life.

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ACRONYMS

CDC	Centres for Disease Control and Prevention
CFR	Case Fatality Rate
DSNO	Disease Surveillance and Notification Officer
DSRC	Disease Surveillance and Response Committee
EPR	Epidemic Preparedness and Response
FMOH	Federal Ministry of Health
HF	Health facility
IDSR	Integrated Disease Surveillance and Response
LGA	Local Government Area
NGOs	Non-Governmental Organizations
PHC	Primary Health Care
RRT	Rapid Response Team
SMOH	State Ministry of Health
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1   Background of the Study

The threat of outbreak of diseases to a country's healthcare system has always been present.

For many healthcare systems and emergency departments, these threats have become part of

everyday operations. Outbreaks range from natural to man-made, and this affects

communities and health care systems in various ways. In 2005, an estimated 162 million

people worldwide were affected with disasters such as natural disasters, epidemics and

industrial accidents (Ursano et el, 2007). Communities are sometimes left to suffer the

consequences of the outbreak with some people unable to cope or even recover from it,

especially the underprivileged (Ursano et al, 2007). The process of preparing the healthcare

system to prevent, respond to, and effectively recover from these threats can be described as

emergency preparedness. It is the ability to prepare for, respond to, and effectively manage an

outbreak (Ronan & Johnson, 2005).

Emergency preparedness requires attention not just to specific types of threats but to various

steps that increase preparedness for any type of threat and epidemic. The perception of

members of a community on improving their sanitary conditions could prevent the outbreak

of disease. People who do not see the need to improve their sanitary conditions to enhance

good health are at risk of being exposed to communicable diseases. In local communities,

there is a possibility for an outbreak of communicable diseases such as cholera, dysentery,

yellow fever to occur; with the potential of affecting a large number of people. These

outbreaks can have widespread effects on daily and personal activities. The emergence and

re-emergence of such epidemic prone infectious diseases calls for improved preparedness,

strong coordination and rapid response (EPR guidelines, 2006). An efficient surveillance

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system together with a multidisciplinary approach that is based on prevention, preparedness, and response is very important in reducing outbreaks and deaths at large (WHO, 2011).

Communicable disease outbreaks have become imminent because of the poor surveillance systems in Nigeria and this has led to the adoption of Integrated Disease Surveillance and Response (IDSR) strategy which is aimed at strengthening the surveillance systems to get effective response to containing communicable diseases (Abubakar et al, 2010). The IDSR strategy calls for a coordinated approach to data collection, analysis, interpretation, use and dissemination of surveillance information designed for decision making and public health action. The World Health Organization (WHO) promotes a two-pronged strategy which involves epidemic preparedness and epidemic response. This is encapsulated in the IDSR strategy which states clear essential tasks and activities required for strengthening or expanding the existing surveillance systems (National Guidelines, 2012).

The preparation and response to disease outbreak is an important part of primary health care delivery services at the Local Government level. This means that it is imperative for the Local Government to be ready for outbreaks and have the capacity to identify outbreaks for timely action in order to reduce morbidity and mortality in the event of an outbreak (FMOH, 2009).

In Nigeria, existing prevention and control strategies are multi-sectoral. Epidemic Preparedness and Response (EPR) approaches include registration of cases, case management and public health measures. These action steps, targeted at improving personal hygiene and water treatment as well as emergency responses from both governmental and non-governmental agencies have contributed to the reduction in case fatality rates over the years and should be sustained (Adagbada et al, 2012). Intervention measures that address the root cause of poor sanitation can also be introduced in order to prevent disease epidemics. Simple

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measures such as boiling water for drinking and cooking purposes; proper disposal of infected materials; treatment of infected facilities; and prompt reporting of suspected cases could go a long way to preventing the outbreak of diseases. Studies have also indicated that hand washing with soap can achieve a 26% to 62% decrease in the incidence of cases such as diarrhoea and other infectious diseases especially in developing countries (Shahid, et al, 1996).

Studies have shown that modelling techniques using climate data, remote monitoring, and geographic information systems are valuable techniques in the effective management of epidemics (Colwell et al. 1996). Such models can aid understanding of epidemic processes and help design effective control strategies. Studies have also utilised geographic and mathematical information systems to assess spatial distribution of diseases at local levels, identifying case clustering and disease risk areas (Myaux et al, 1997). These type of surveillance systems can provide early alerts to outbreaks of certain diseases that are prevalent in the country, therefore leading to coordinated response (Medical Surge Guidelines. 2007)

1.2   Statement of Problem

Over the years, millions of deaths have been caused by the outbreak of communicable diseases throughout sub-Saharan Africa and Nigeria has been among the most affected countries. The high mortality, morbidity and disability that follow a disease epidemic with its grave socio-economic consequences, are evident and therefore should be prevented. In the later part of 1970, the first case of cholera in Nigeria was recorded in a village near Lagos, leading to an epidemic of 22,931 cases and 2.945 deaths with a Case Fatality Rate (CFR) of 12.8% - the highest in the country till date (WHO Global, 2012). In 1991, more than 59,000 cases and 7,600 deaths from cholera, malaria and sleeping sickness were reported. Cases

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started to be registered in January of that year and among the worst affected states were Kano, Akwa Ibom, Bauchi, Niger and Oyo. By September, the diseases had spread to about 19 of the then 21 States including the Federal Capital (WHO Global, 2012). With 59,134 cases and 4,508 deaths in 1995, the Case Fatality Rate was 7.6% but in 2010, the country was again challenged with massive cholera outbreak which ended with 46,782 cases, 1,841 deaths and a Case Fatality Rate of 3.9% (FMOH, 2012). Reports have shown that more than 90% of cholera cases worldwide occur in Africa (Kebede et al 2010). In 2010 there was outbreak of cholera and gastroenteritis which led to the death of people leaving in poor communities most especially children. The outbreak was caused by the rain which washed sewage into open wells and ponds, where people obtain water for drinking and household needs. This could have been avoided if proper sanitary conditions were maintained by the members of the community. The regions affected by this outbreak include: Jigawa, Bauchi, Gombe, Yobe, Borno, Adamawa, Taraba, FCT, Cross River, Kaduna, Osun and Rivers (Adagbada et al, 2005). In 2013, within 10 days of the outbreak of cholera in Nigeria, more than 70 people died of the disease in a number of states across the country, especially in the North-West. The infection spread to Lagos with more than 13 cases and 3 deaths (Hannah, 2013)

Between 1984 and 1992, the Yellow Fever epidemic affected one third of the states in the country and in the end over 20,000 cases with 5,000 deaths with a Case Fatality Rate of 25% were recorded - figures believed to be underestimated (FMOH, 2012)

Similarly, in 2009 the country recorded her worst outbreak of cerebrospinal meningitis with 38,586 cases and 2,172 deaths with a Case Fatality Rate of 5.6%. In 2009-10 there was an outbreak of meningitis in which a total of 13,516 people were infected and 931 were killed. Over half of the total cases and deaths occurred in Nigeria and this was reported by WHO as the worst outbreak in the region (WHO, 2014)

Major outbreaks of Lassa fever occurred between 2010 and 2012 with more than 3,700 cases. In 2010, the country experienced a serious outbreak of Lassa fever which subsided with more than 1700 cases with 112 deaths and a case fatality rate of 66.6%. The first case of Lassa fever was reported in Nigeria in 1969 and since then, there had been sporadic cases (FMOH, 2012). In the first quarter of 2012, there was an outbreak of Lassa fever with a total of 623 cases and 70 deaths with Case Fatality Rate (CFR) as 11.2%, as reported from 19 States out of 36 States.

Between March and June 2010, series of lead poisonings in Zamfara State led to the deaths of about 163 people including 111 children, the Health Ministry discovered about 355 cases with Case Fatality Rate as 46% (Abdullahi, 2010).

There was an outbreak of measles in Kano, between 16th February and 9th March, 2013 which led to the death of 36 children and infected over 4,000 people in Northern Nigeria. The government health officials said this was linked to a drop off in immunizations due to vaccine shortages in the regional health clinics and widespread suspicion of the vaccine as being harmful (Aminu, 2013).

In July 2014, Nigeria recorded its first case of the Ebola Virus Disease (EVD) through a Liberian-American diplomat who flew into Lagos. According to WHO 2014, as of September 2014, 16 cases were recorded in Lagos state with 6 deaths and a case fatality rate of 37.5%, four cases were also recorded in Rivers state with 2 deaths and a case fatality rate of 50%.

With the adoption of the IDSR Strategy and International Health Regulations (2005), Nigeria has reduced the mortality and morbidity from outbreak of diseases; however progress has not been made in developing capacities for early detection, confirmation and characterization of epidemic threats. In the past, comprehensive risk assessments that facilitate the identification of populations and geographic areas at risk of epidemics have not been conducted. There is

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the need to develop technical capacity required to expedite risk assessment activities for other communicable diseases. Local communities are often not aware of common local disease and their associated risk factors (WHO, 1999)

Although the country has surveillance systems capable of detecting epidemics but the systems are unable to function as early warning systems. For most epidemics in the country, the time between case detection and reporting is more than the recommended 24 hours (WHO/CDC, 2008). This is often caused by inadequate community-based surveillance, low index of suspicion among health workers, inadequate laboratory equipment and referral network at local level, weak communication and disease notification systems. (Grais et al, 2008).

Communities where response capacity has improved are those where there are ongoing activities to enhance community awareness and participation in safe behaviors related to personal and community hygiene. Additionally, improved response has been seen in communities where health-care workers, community health agents, volunteers and other partners in at-risk communities have been trained in recognition and case management of local epidemic-prone diseases. Nevertheless, response capacity is limited at local level in most states because of lack of awareness and inadequate supplies (WHO, 2012).

Some of the underlying factors associated with recurring epidemics include ecological, environmental and socioeconomic changes. Inadequate access to safe water and sanitation, prolonged rainy or dry seasons, and population displacements associated with natural and man-made disasters contribute to the frequency and severity of epidemics (Kirigia et al, 2009)

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1.3   Justification

One of the major challenges of disease control has been poor coordination of epidemic detection and response (Kebede et al, 2010). The promptness of health authorities in responding to outbreaks can be far reaching in reducing the number of cases.

In recent times, flooding has become one of the very rampant environmental issues/challenges in the country and when this occurs, there is contamination of water bodies, increase in the volume of dirt from the gutters to litter the streets and food pollution. Furthermore, there have been epidemic outbreaks of some diseases such as cholera, measles and lassa fever in Ibadan which can spread to the neighbouring states such as Lagos state, Ogun state. Osun state and Ekiti state. Consequently, there is a need to be fully prepared for any potential outbreak that might occur.

The understanding is that not all Local Government Areas are on the same level of environmental sanitation. In 2013, across existing LGAs in Lagos State, Alimosho LGA was identified as one of the filthiest LGA (Agbesola, 2013). Consequently, epidemic outbreak has become imminent in the area following the unresponsiveness of the Lagos State Waste Management Authority (LAWMA) to clear the heap of debris around the vicinity. This has left the people leaving in Alimosho exposed to epidemics. This unhygienic situation therefore became a source of concern as the situation has deteriorated to the extent that people go about covering their noses from the stench oozing out from the refuse heaped in front of their houses waiting to be cleared by LAWMA.

The behavioural approach of the community towards adequate sanitation also has a huge impact on the control of epidemic diseases. Most people in overcrowded areas have become comfortable with their living conditions and environment and feel their environment have no

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The behavioural approach of the community towards adequate sanitation also has a huge impact on the control of epidemic diseases. Most people in overcrowded areas have become comfortable with their living conditions and environment and feel their environment have no

link with their health, hence preventing achievement of programs meant to control disease outbreak.

In terms of challenges faced with preparing for epidemic outbreak, communities such as Alimosho experience more serious and difficult ones. There are little or no communication strategies aimed at raising community awareness about risks to human health and behaviours in this area. Deaths from these outbreaks are likely to be higher when compared to those in more organised and developed communities because of the availability of health infrastructures and interventions such as vaccines.

In the light of these challenges, there is the need to study the preparedness of health workers/ authorities as it relates to epidemic disease outbreaks. Empirical evidence on health emergency preparedness determines whether or not one is 'fully prepared' for disease outbreak. Hence, this study is aimed at assessing the perception of disease outbreaks by health workers and the preparedness of the public health care facilities in Alimosho Local Government Area.

Research Questions

1. How prepared are public health facilities in Alimosho Local Government Area for epidemic containment?

2. What are the factors affecting the level of epidemic preparedness of public health facilities in Alimosho Local Government Area?

3. Does knowledge and perception of health workers on disease outbreak have any effect on the epidemic preparedness level of the public health facility where they work?

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1.4 Objectives

1.4.1 Broad

To assess perception of disease outbreak by health workers and epidemic preparedness of public health facilities in Alimosho LGA, Lagos State.

1.4.2 Specific

1. To determine the perception of health workers regarding disease outbreak in Alimosho LGA

2. To assess the knowledge of health workers on epidemic preparedness in Alimosho LGA

3. To assess the level of epidemic preparedness of public health facilities in Alimosho LGA

4. To identify factors associated with the level of epidemic preparedness of public health facilities in Alimosho LGA

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CHAPTER TWO

LITERATURE REVIEW

2.1   Overview of Epidemics

An epidemic is the occurrence of a disease in terms of the magnitude of persons affected in a given time and place that is clearly in excess of what is expected as normal. This definition implies that there might be a disease within a geographical boundary which will not qualify to be called an epidemic but which sudden increase far above the prevailing local context stimulates panic, high morbidity and mortality and definitive response from the health system. Such epidemics are usually from a common source. For instance, when one attends a party and all those who ate an infected food item or drank from the same water source come down with an illness, epidemic is said to have occurred. It could also be when infection spreads rapidly from one person to another as a result of contact, by air, droplets, ingestion or penetration of body tissues (Onyebuchi, 2013).

Epidemics occur when many people in a community have the same infection at the same time. A lot more people become infected than in normal situations, and this leads to the inability of the community to cope since they have more people dying than those recovering (International Federation of Red Cross, 2008)

Epidemic also refers to the occurrence of disease or health related condition in excess of the usual frequency in a given area or among a specified group of people over a particular period of time (CDC, 2013). Epidemic threshold is a marker that alerts the public health officials to take action. It is the critical number or density of susceptible hosts required for an epidemic to occur. It helps to identify possible outbreaks with surveillance data by making use of the past data to determine the possibility of any abnormally. The epidemic threshold is used to confirm the emergence of an epidemic so as to step-up appropriate control measures (WHO, 2015). It is important to note that thresholds are disease specific, it can be according to their

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characteristics (severity, frequency of occurrence) or level of international acceptance (internationally accepted thresholds) or according to some external factors like politics or money.

Table 2.1: Major Epidemics and their thresholds

S/N	Disease	Alert Threshold	Epidemic Threshold
1	Yellow Fever	If a single case is suspected	If a single case is confirmed
2	Measles	5 or more suspected cases reported from a district/ health facility in a month	3 or more measles IgM+ confirmed cases in a district/ health facility in a month
3	Viral Haemorrhagic Fever (Lassa Fever)	If a single case is suspected	If a single case is confirmed
4	Cholera	5 or more suspected cases reported from a district/ health facility in a month	Doubling of cases per week
5	Tuberculosis	If a single case is suspected	If a single case is confirmed
6	Polio	If a single case is suspected	If a single case is confirmed

Outbreak is an epidemic of shorter duration covering a limited area; it is usually used interchangeable with epidemic. According to the CDC, outbreak is the occurrence of more cases of disease than normally expected within a specific place or group of people over a given period of time i.e. when it exceeds its threshold. An outbreak and epidemic usually means the same thing to an epidemiologist but the term epidemic has a more serious connotation than outbreak and it is used less frequently to avoid perception of a crisis situation.

Effective epidemic preparedness is the key to preventing a hazard as well as responding and recovering from adverse occurrence. Usually, a top- down approach is used to manage

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emergencies simply because public health practitioners and the necessary resources need to be quickly mobilized (Dynes, 1994).

In developing countries, there has been an increase in the volume of treated sewage being dumped into the rivers leading to the deterioration of water quality and standard in many of the main rivers (Roberts et al., 2001). Where there is an outbreak, emergency measures such as the provision of clean water and proper sanitation should be established. However, Bhattacharya et al (2009) revealed that these measures are not usually guaranteed to be sustained the moment the outbreak ends. Effective containment of epidemic outbreak and reduction in mortality begins with epidemic preparedness and effective detection and verification of the existence of such epidemic (Connolly et al 2004).

It has been proven that epidemic preparedness has been practiced from onset. Pandey & Okazaki, 2005 noted the great disaster that befell the people in the holy book; The Bible, in which the story of Noah and the ark surviving the great flood was recorded. Epidemic preparedness therefore is the act of taking necessary precautions and prompt notification and this is usually the responsibility of the national and local government (Haddow et al., 2007).

Based on the preparedness pyramid which identifies planning, infrastructure, knowledge, capabilities and training, emergency preparedness can be defined as a major component of maintaining a high level of response to disease outbreak (Adini et al. 2006). According to (Waugh Jr and Streib, 2006) the major actions/ steps taken while preparing for epidemics includes: alleviation of hazards to lessen the cause of epidemics, epidemic planning and training, epidemic response activities such as conducting search and recovery activities

Cases of epidemic outbreak are notified either through the surveillance system or the media or any other source. It is also good to have a special form with key questions which helps to differentiate rumors from real outbreaks. The emergency planning preparedness process is

probably the most effective process of developing the coordination that response or outbreak teams will need during an actual emergency. There are two ways in which such issues can be resolved. The first is by careful review of the emergency plans of individual agencies and the second is repeated drills, exercise and critique of the plan (Ronald et al., 2003). Good planning and preparedness level includes pre-deployment of medical reviews to ensure 'fitness for duty'. It also includes the following: Personal risk factors, hazards likely to be associated with particular field locations and risk involved with assigned tasks (Reissman et al., 2008)

With the growing rate of outbreak occurrence, many public, private, federal, state and local institutions have started developing some form of preparedness and response plans. Among those in the front line of preparedness are hospitals and medical professions who will be among the first responders in the event of such disaster (Schwartz, 2008). Drills are valuable means of training healthcare providers to respond to mass casualty incidents from acts of public health crises (Jenckes et al., 2007). Hospitals and healthcare provider teams respond to unexpected occurrences such as outbreak of an infectious epidemic (Mattox, 2001)

In a publication by the WHO, epidemic preparedness can be described as a programme of long-term events/activities aimed at reinforcing the capabilities of a country or community to effectively manage the different types of emergencies, and deliver relief and sustained development to the affected community. It involves developing emergency plans, recruiting and training personnel at all levels, educating communities at risk and regularly monitoring and evaluating the success of the entire programme (WHO, 2007).

Epidemic preparedness means to react positively to threat in the environment and also reduce negative effects on health of individuals and the operation of physical structures and systems (Ronald et al, 2003). The assessment of emergency plan done yearly guarantees epidemic

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preparedness. Preparedness assessments should include: (1) elements of disaster planning; (2) emergency coordination; (3) communication; (4) training; (5) expansion of hospital surge capacity; (6) personnel; (7) availability of equipment; (8) stockpiles of medical supplies; and (9) expansion of laboratory capacity (Adinni et al, 2006).

Some countries report only laboratory confirmed cases, even though many other cases are consistent with WHO's standard case definitions of various epidemics.

WHO standard case definition for measles: Any person in whom a clinician suspects measles infection or any person with fever and maculopapular rash (non- vesicular) and cough, coryza (runny nose) or conjunctivitis (red eyes) (WHO 2005).

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WHO standard case definition for cerebro-spinal meningitis: Any person with sudden onset of fever (>38.5°C rectal or 38.0°C axillary) and one of the following signs: neck stiffness, altered consciousness or other meningeal sign (WHO 2005).

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signs: bloody stool, vomiting blood, or unexplained bleeding from gums, nose, vagina, skin or eyes (WHO 2005).

Also, if there is a cholera epidemic, a patient aged 5 years or more develops acute watery diarrhea, with or without vomiting. Epidemics can be averted by providing an epidemic prevention and disease control to undertake the process of monitoring.

2.2   Epidemics and its Global impact

Epidemics pose a significant threat to public health and its development globally. In developing countries, nearly half of the major causes of death reported were from epidemics (Cockburn et al, 1973). Epidemics can be very destructive because it can reach pandemic proportions which leads to a major international health concern (Fournier and Quilici, 2007). Epidemics affect a large population and leads to economic damages and this affects the developing countries because they lack adequate resources and infrastructure that is needed for preparedness (Watson et al, 2007). The ability to forecast epidemics makes the health care facilities to respond to outbreaks appropriately and quickly, minimizing the impact and also saving limited resources (Wilson, 1994). For many communicable diseases especially those transmitted by arthropod vectors, advanced surveillance and modeling technologies incorporating environmental information leads to predicting the risks of epidemics. When linked with communication technologies, it provides important tools that are both cost effective and timely (Susser et al, 1996). Disease boundaries tend to shift, expand and cause more threats, therefore there is the need to develop operational models with extrapolative capacity. As more experience is gained in linking changes identified by global imaging with changes in the various patterns of diseases, geographical data come into play in predicting outbreaks especially vector- borne disease (Greenwood, 1998). According to Fournier and Quilici, 2007 epidemics are reported globally take for instance cholera, it was recorded that more than 100000 cases and 2000-3000 deaths are been officially reported. Nevertheless, the

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number of epidemics is known to be much higher than the number reported. This is due to under- reporting and other limitations of the surveillance systems such as irregularities in case definitions, lack of standard terminology which leads to inconsistencies in results (Sacks et al., 2004).

2.3 Health workers' perception of disease outbreak

Health workers are considered the backbone of public health response plan for any and all infectious disease outbreaks. Epidemic outbreak of infectious diseases is considered increasingly likely to occur especially in areas prone to disease outbreak and is more considered one of the most significant urgent threats to Nigeria's public health preparedness infrastructure. Changing lifestyles, patterns of behavior and several such complex factors have led to the emergence and spread of diseases in the country (Monalisa, 2003)

Successful containment of the disease outbreak relies on effective system for outbreak detection, rapid data collection, analysis, assessment and timely reporting (WHO, 2009). These activities would require an extensive prompt response by health workers. However, studies have shown that during extreme scenarios, a varying proportion of health workers may be unable or unwilling to report to duty due to their level of perception (Dausey, 2007)

In assessing the perception of health workers' response towards disease outbreak. Revathy (2009) revealed that health workers' perception of their role in the overall response was the most influential factor associated with willingness to report to work. Using the risk perception framework, which provides the basis for understanding response limitations and needs of public health workers. Revathy (2009) also discovered that perceived risk is the summation of actual risk and other peripheral influences independent of actual risk such as perceived authority, trust and situational control.

2.4   Knowledge of health workers on epidemic preparedness

Health workers traditionally have been trained to assess and address infectious disease outbreaks within their communities. With natural and or manmade disasters occurring more frequently across our nation, however, health workers are also facing new challenges that require competencies in public health preparedness and response (Audrey, 2012).

Dimitrova et al., 2006 revealed that during disease outbreaks, health workers display varying attitudes based on their knowledge and beliefs of the diseases. The knowledge, attitudes and perceptions of health workers on disease outbreaks play an important role in their ability to diagnose and care for individuals affected during the outbreak. A variety of factors, such as training, cultural and ethnic background, practice settings, preferred sources of information and learning styles influence them. The successful completion of the treatment of infectious disease is influenced greatly by 'how' care is delivered to individuals. It is paramount that health workers supporting clients with the infectious disease have positive attitudes (Damitrova et al., 2006). Personal and cultural factors may affect health care delivery, hence, health workers need to be aware of and understand the impact culture can have on patients. (Edington et al, 2002).

In certain environment, health workers view some disease as infectious, dangerous and threatening condition. These features were associated with widespread negative perceptions associated with poverty, poor housing and living conditions, malnutrition, unemployment, illicit use of drugs and alcohol (Damitrova et al., 2006).

During a disease outbreak in Nepal, between 1999 and 2001, health workers demonstrated poor knowledge of controlling and managing the outbreak. Affected patients didn't receive adequate explanations about their medications, the potential side effects and the length of the

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drug regimen. They believed that they were not listened to, taken seriously, or treated as having any integrity or being worthy of respect (Mishra et al., 2006). Health workers that had good knowledge about the disease had a lack of information about side effects and the consequence of non-completion of their regimen (Wares et al., 2003). Poor communication and negative attitudes of health workers were directly associated with non-compliance of the affected patients in Nepal between 1991 and 20011 (Mishra et al., 2006). A further South American study also revealed that the communication skills of most HCW were poor (Jaramillo, 1998).

The knowledge, skills, and attitudes to support training in epidemic preparedness and response are very important to successfully controlling and managing epidemic outbreak. They provide the foundation for developing core preparedness and response competencies required by public health workers to successfully address outbreaks that could potentially occur in a community as well as a region of a nation (Williams, 2012).

2.5 Assessment of Epidemic preparedness of Public Health facilities

Epidemics tend to occur in cycles, not in line (one after the other). The occurrence of an epidemic and the way it is handled and resolved determines to a large extent future epidemics, that means if we respond well to an epidemics when it occurs, it helps us to limit future occurrence. This concept is not a complicated one, it only helps us to know and play our role to an epidemic and all we are supposed to do when it occurs (International Federation of Red Cross, 2008).

Models for Epidemic preparedness/ Management

Epidemic response cycle is in four phases regardless of the epidemic.

Preparedness - This simply means getting ready for epidemic in the period between epidemics. When preparing for epidemics, there are some things that need to be in place such as health coordination meetings, surveillance systems i.e. weekly or daily reports to ministry of health, response plan for each disease outbreak i.e. the skills and activities required, stock piles i.e. sampling kits, intravenous fluids, vaccines and others, isolation centers and laboratory confirmation. An effective outbreak response requires proper planning and should be done with adequate provision to ensure availability of drugs, vaccines, and other provisions such as personal protective equipment that is required (Conolly et al, 2004).

Alert - When an epidemic is detected and mobilization of resources needed to respond to it begins. The surveillance system ought to have a threshold that serves as warning mechanism for epidemic-prone diseases. For example cholera, measles, diarrhea, meningitis, poliomyelitis to mention a few. If any case is seen to go beyond the alert threshold, the health coordinator should be informed as early as possible; the health coordinator would then inform the ministry of health (International Federation of Red Cross, 2008).

Response - This is the actual response to an epidemic outbreak. It is sub divided into confirmation, investigation and control. During confirmation stage, the health officials would thoroughly investigate the cases that were being reported or alerts to be sure that there is actually an outbreak (this is confirmed when the number of cases reported is higher than expected for same period of year and population). After this has been confirmed to be true, the specimens are then sent to the laboratory for testing (International Federation of Red Cross, 2008). Also, the health officials in conjunction with the outbreak control team with members from ministry of health, world health organization, and other nongovernmental organizations will then work on the report. During investigation, the following are done: the

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tested laboratory samples are confirmed, outbreak cases are defined, number of cases are counted and also the sample size is determined, data is collected and analyzed, at-risk population is determined, hypothesis is formulated, cases are followed up, further investigation are carried out and finally, a report of the investigation showing results and recommendations is developed lastly, for control; this is where the implementation and prevention is been done (Conolly et al, 2004). And this is done by preventing exposure, preventing infection and treatment of cases as recommended by WHO.

Evaluation – This phase focuses on assessing how epidemic outbreak was responded to. This is one of the steps taken in management of communicable disease outbreak. It deals with the effectiveness and appropriateness of containment measures, assessment of timeliness of outbreak detection and prompt response, general preparedness, writing and feedback of reports. It is a periodic assessment of overall program status, performance, effectiveness and efficiency. It is a situation analysis of inputs, processes, outputs of a project or program which was conducted to measure performance and the capacity to perform its roles and responsibilities and achievement of its objectives. (International Federation of Red Cross, 2008).

AFRICAN DIGITAL HEALTH REPOSITORY PROJECT
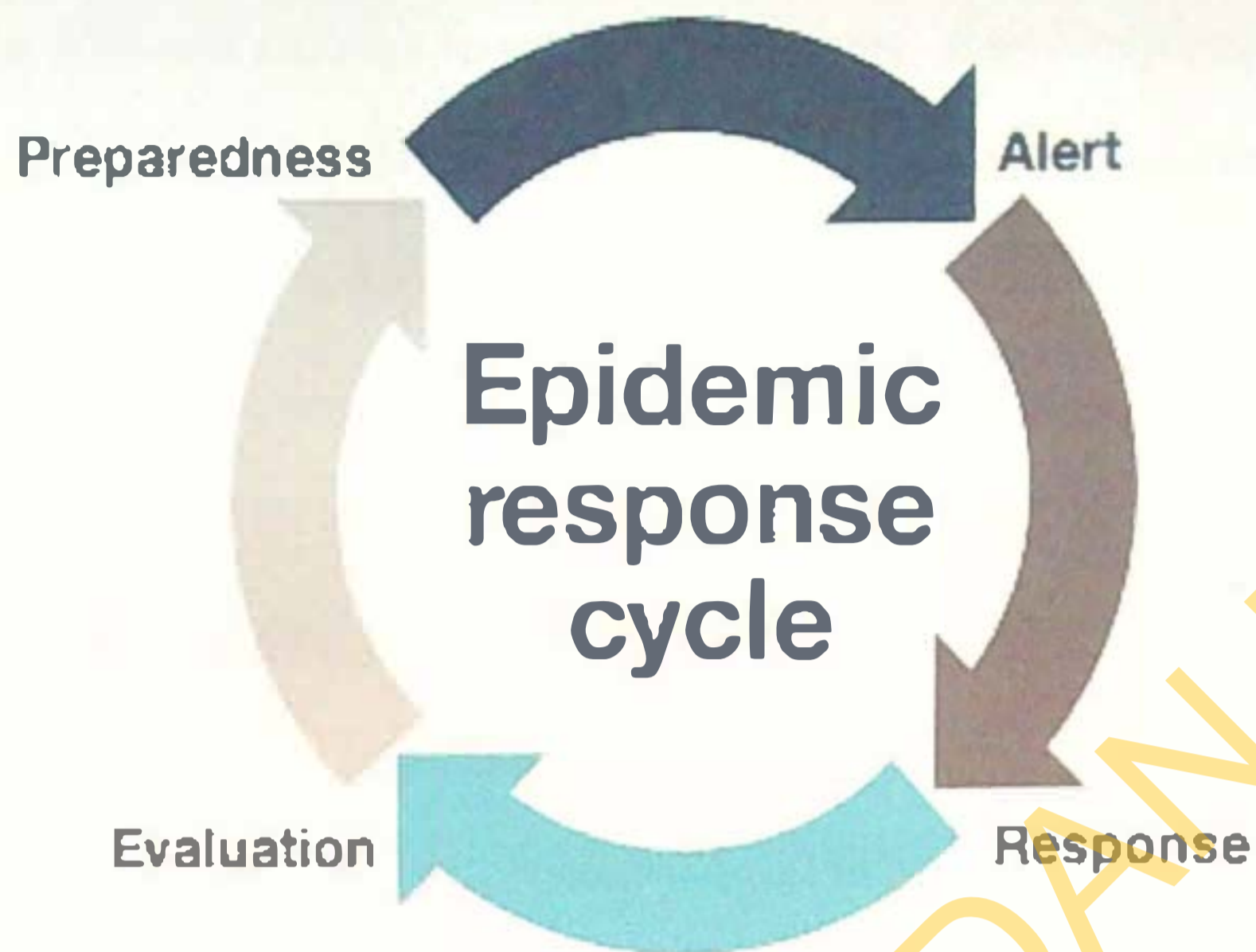
Figure 2.1: Four phases of epidemic response cycle

Source: International Federation of Red Cross and Red Crescent Societies, 2008

2.6   Factors associated with level of epidemic preparedness

The emergence and re-emergence of infectious diseases of epidemic potential, calls for improved preparedness, strong coordination and rapid response. Unprepared communities will always be subjected to worse disasters due to lack of systemic approach in dealing with problems (Fournier and Quilici, 2007). Epidemics, as other emergencies, can reach disastrous proportions where there is poor preparation and weak and uncoordinated response (Cockburn et al, 1973). Being well prepared increases the likelihood of rapid and effective response. Experience has shown that where epidemic preparedness plans have been

formulated and implemented, not only outbreaks have been detected timely, but also the response has been rapid and well targeted, resulting in effective and rapid control.

The benefits of a rapid and effective response are numerous. Rapid response helps shorten the duration of the outbreak. It helps keep the number of cases small. And also helps reduce fatalities. The above benefits help save resources that would be necessary to tackle a large epidemic. The ultimate result is the reduction of human suffering usually linked with high morbidity and mortality. It is therefore important for the Department to strengthen epidemic preparedness and response, particularly at district and community level. Attention need to be focuses on preparedness, response actions, ways to monitor these activities and, finally, on the evaluation of the effectiveness of control measures (EPR guidelines, 2006)

A number of factors are associated with epidemic preparedness and they are known to affect the eventual outcome of epidemic control. Some of such factors include: Availability of specialized expertise and supplies of drugs and relevant materials; Awareness of risk of epidemics and capacity to detect and manage them; Availability of competent health workers and volunteers during epidemic control. Emergency preparedness should be approached unanimously taking into consideration all the factors that can potentially affect the success of epidemic control (WHO, 2007)

2.7   Surveillance Systems in Nigeria and Health Care Facilities Involvement

Surveillance is defined as the ongoing, systematic collection analysis and interpretation of health data, linked with giving feedback to people at all levels of data collection systems as well as applying the information to disease prevention and control measures (International Federation of Red Cross, 2008). Disease surveillance and notification was introduced in 1988 and 40 notifiable diseases were addressed by the system. In Nigeria, surveillance and notification includes immediate notification of eleven diseases and routine notification of 22

diseases (FMOH, 2007). Surveillance is a continuous vigilance over the distribution and occurrence of disease through the systematic collection, alliance and evaluation of morbidity and mortality of all necessary reports and data (Alexander L, 1960).

Surveillance activities help to detect vaccine-preventable diseases and adequate information that helps in the control and prevention. Complete and accurate reporting of cases is very important in surveillance and is dependent on factors such as reporting source, timeliness of investigation and completeness of data. The common systems used for disease surveillance include national notifiable disease reporting; physician, hospital, population based surveillance (Thacker et al, 1983). Compared with other countries that practice the use of National Notifiable Disease Surveillance System, Nigeria uses Disease Surveillance and Notification system, a part of the Health Management Information System (HMIS), which comprises of databases, personnel and materials organized to collect useful information for making informed decisions (Nnebue et al, 2012)

To classify a surveillance system as a good one, it requires a case definition which can be clinical and/or with microbial criteria. It should have a systematic, orderly and regular collection of data. Data analysis should be done using time, place and person; interpretation of the analyzed data should be done appropriately and in time and lastly, dissemination of information is necessary to those who are to act on it promptly (Jamison et al, 2006).

Surveillance can be classified as: active, passive and sentinel. Active surveillance requires extra effort to look for and collect data and confirm diagnoses such as surveys and investigations of outbreaks. It requires both formal and informal communications (such as phone calls) just to seek information while passive surveillance makes use of routine sources of information such as laboratory reports, notifications, health episode statistics (HES) (Sarah et al, 2008). Sentinel surveillance on the other hand is one in which just a number of people

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such as health workers are recruited to participate in the survey and they are to report the health events that may be generalizable to the whole population at large (Birkhead et al, 2000). It is a sample surveillance that can either be geographic (reporting sources shown at specific sites) and the high risk group (drug users).

The purpose of surveillance in the healthcare system includes (1) It identifies each individual cases of infection, (2) It indicates the incidence rate of infectious diseases and potential outbreaks (3) It monitors the risk factors of infectious diseases (4) It assess the control measures that already exist (5) It helps us to identify new infections that are of public health importance (Sarah et al, 2008).

There are basic steps to be taken as health facility when evaluating a surveillance system which are: (1) Describe the public health importance of the health event under surveillance (2) Describe the surveillance system to be evaluated (3) Discuss validity and repeatability of case definitions in various types of surveillance data (4) Describe the actions taken as a result of data collected by the surveillance system (5) Analyze the cost needed to carry out surveillance (6) Evaluate the quality of the surveillance system by assessing its characteristics (7) List all the conclusions and recommendations (Sarah et al, 2008).

Information flow of IDSR in Nigeria as shown below:
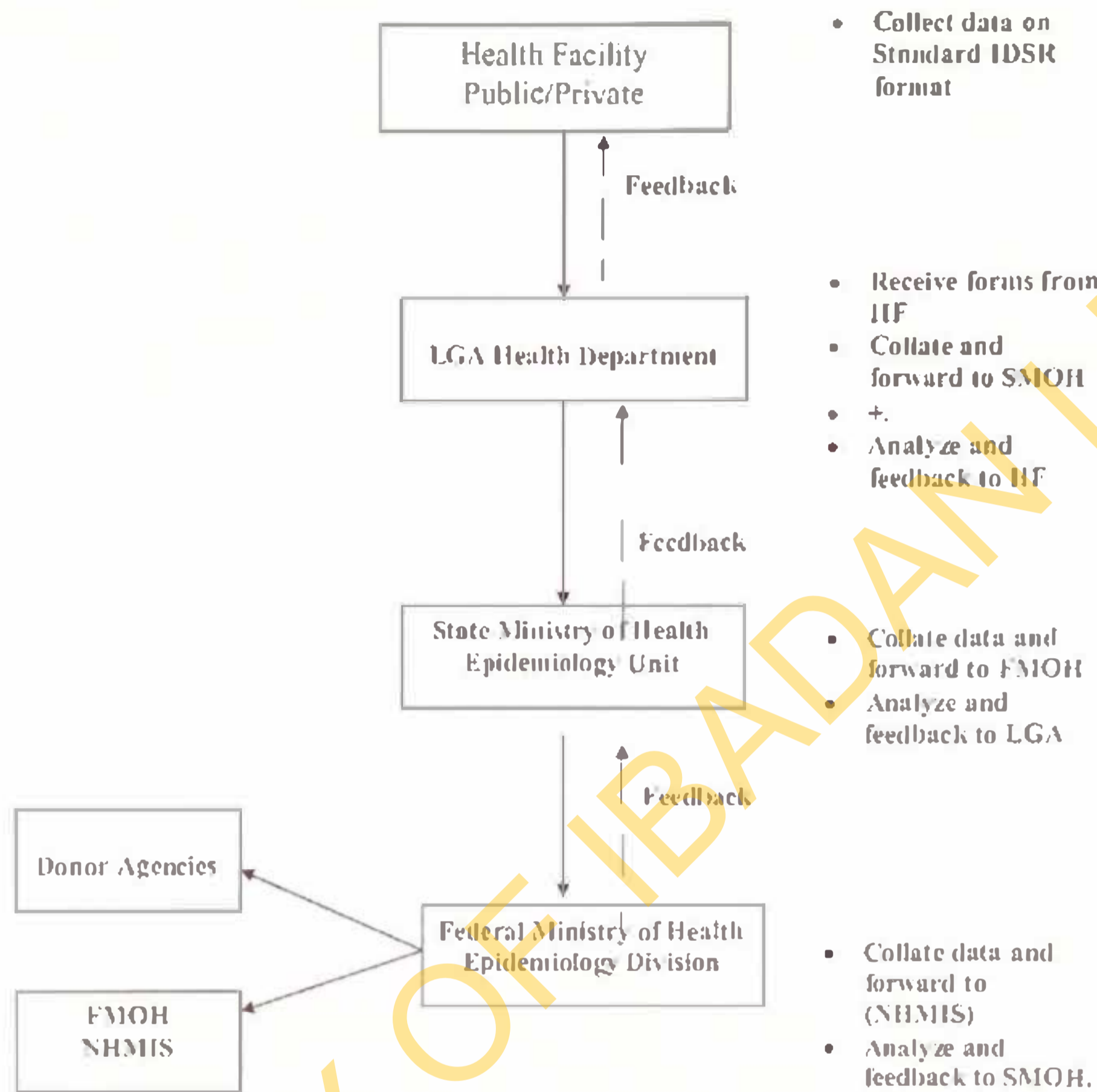
Figure 2.2: Information flow of IDSR in Nigeria

Source: Federal Ministry of Health, Abuja, 2005

The IDSR technical guideline of 2002 was used as criteria to assess the emergency preparedness to outbreaks in the LGA. The guideline/ recommendations include;

Criteria	IDSR Recommendations
Existence of LGA epidemic management committee (EMC)	Establishment of an LGA EMC
Adequacy/ completeness of the members of the LGA EMC	EMC should comprise members of the public sector, NGOs with health care activities in the area, community and private sector
Existence of LGA epidemic rapid response team	Establishment of LGA epidemic rapid response team
Adequacy/ completeness of members of the LGA epidemic rapid response	Members of the team include Medical officer of health/ PHC coordinator, Laboratory technician, community health officers, Environmental health officer, National program on immunization managers, monitoring and evaluation/ Disease surveillance and notification officer
Regularity of meetings of the LGA EMC	EMC to meet monthly in the absence of an epidemic
Functionality of the committee	EMC to meet monthly in the absence of epidemic
Existence of emergency preparedness and response plan	Prepare an emergency preparedness and response plan
Training on epidemic response/ IDSR	60% health workers should be trained on disease surveillance at LGA level
Availability of emergency stocks of drugs, supplies and materials for case management of outbreaks	Availability of prepositioned emergency stocks of drugs, supplies and materials for case management of outbreaks at LGA level
Availability of supplies for collecting and transporting laboratory specimens in outbreaks	Availability of supplies for collecting and transporting laboratory specimen in outbreaks (transport media for stool, appropriate collection materials for blood, sputum and cerebrospinal fluid)
Availability of standard procedure for procuring stocks of vaccines in the event of an outbreak	Availability of a written standard procedure for procuring stocks of vaccines in the event of an outbreak
Availability of resources for transportation in outbreaks	Availability of travel arrangements for getting to and from the site of investigation
Available communication methods used in the LGA when there are outbreaks	Availability of communication links between investigation team, LGA and the community
Availability of funds for emergency response to outbreaks	Availability of a budget line for outbreaks
Laboratory support in the LGA for confirmation of pathogens in epidemics	Availability of laboratory support in the LGA for confirmation of pathogens in epidemics

Source: IDSR Technical Guideline, 2002

2.8 Challenges faced by health workers and factors affecting preparation of epidemic disease outbreak

Financial constraints: Inadequate funds for outbreak response planning, preparedness and reimbursement for extraordinary institutional costs are a major challenge while preparing for disease outbreak because money is a necessity (Knobler, 2012).

Unavailability of vaccines: Vaccine is the very first line of defense to protect the people; vaccines are sometimes not available at the early stages of the epidemic and these lead to the spread of the disease which might go out of control if adequate care and action is not taken.

Health workers at risk: Health workers may be at risk for serious complications because of their involvement with the affected patients. The recent Lassa fever outbreak on the 22nd March, 2012, which the Federal Ministry of Health in Nigeria notified WHO that 19 out of 36 states were affected, killed about 7 health officials (three doctors and four nurses) with a total of 623 cases and 70deaths, CFR:11.2 %. Also, the recent Ebola outbreak in July 2014 killed about 4 health workers (WHO, 2014).

Lack of capacity and infrastructure: For a positive response to potential disease outbreak, the health care system must be in operation effectively prior to the outbreak.

If handling of day-to-day operation by the hospital is already a struggle due to lack of staff and equipment, it will be impossible for them to respond effectively to crises (CDC, 2008).

Absence of networks of collaborating institutions: This suggests that multiple health organizations and the public including the private sector should respond in an integrated manner so as to bridge gap (language barrier, culture and decision making) (Knobler, 2012).

Community resistance, strikes by health workers: Control efforts in some communities have been disrupted by community resistance, which has multiple causes. Fear and misperceptions about an unfamiliar disease have also contributed to the factors affecting epidemic preparedness (WHO, 2015).

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Strikes by hospital staff have further impeded control efforts. Most strikes occur when staff are not paid for weeks or months, or are asked to work under unsafe conditions associated with deaths of many colleagues (WHO, 2015).

Shortage of health workers: Public health departments still face barriers in recruiting and retaining qualified health workers. The aging public health workforce, high retirement rates, barriers to recruitment and retention, and the need to train the existing workforce in new methods and technology are all issues needing continuous attention (CDC, 2008). In Nigeria, there are 1.15 health workers per 1,000 population, which is far from the global standard of 3.87 health workers to 1,000 population (WHO 2007). The meager workforce of health workers has overtime been further diminished by unprecedented number of healthcare workers infected by the epidemics (WHO, 2015)

2.9 Public health facilities and health workers participation in managing epidemic outbreak

To effectively deal with the difficult issues in public health, the health facilities must develop an inclusive approach and method using various strategies to build and promote community health (Morgan & Lifshay, 2007). By this we mean that the health facilities takes responsibility at all levels such as preparation, detection and evaluation (Ronan and Johnston, 2005).

Public health facilities and health workers play an important role in managing and preventing epidemic outbreak and they are crucial for the provision of health interventions. The health workers play a central role in providing basic health surveillance in target community (Alexander et al. 2005). They are often in the best position to recognize the outbreak of a particular disease, sometimes they see an unusually high number of people with the same

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disease and at other times patients report that they know other people with similar symptoms. Even if the health worker does not suspect an outbreak, his reporting contributes to the detection of outbreaks. Filling in discharge summaries and death certificates, and reporting cases of notifiable disease all contribute to health surveillance. Ensuring that the forms are completed accurately and transferred in a timely fashion makes a major contribution to outbreak detection and general health surveillance. While public health authorities in the health facilities are ultimately responsible for ensuring the detection and control of outbreaks, health workers are major players in this area because they are usually the first point of contact with the affected population (Doherty, 2006).

Effectively controlling an outbreak requires rigorous assessment and follow-up of cases. Public health facilities are involved in adequately preparing and equipping the health workers with the necessary materials to provide timely health interventions. Investing in health workers, as a formal part of the health system response to epidemic outbreaks, is critical in containing the outbreak and protecting communities (Holland et al, 1991).

General precautions to be taken by people to protect themselves from outbreaks

These include: (1) Hand washing with soap and water or sanitizer for a minimum of 30 seconds (Shahid et al, 1996). (2) Keep living, study or even working areas clean with detergents and also sanitize floors and surfaces with alcohol. (3) Stay at home from work or school environment when you are indisposed. (4) Cover your nose and mouth with tissue when you sneeze and then wash hands thoroughly. (5) Eating of good food and fruits helps the bodies fight against germs. (6) Sleep well but exercise regularly to keep you alert, active and sharp. (7) Regular vaccine doses to protect one from strains that might be in circulation (Colwell et al, 1996).

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CHAPTER THREE

METHODOLOGY

3.1   Study area

The study area is Alimosho Local Government Area (LGA), Lagos State, Nigeria and is located in the south-western part of Lagos. The Lagos Bureau of Statistics (2012) put Alimosho LGA as the largest LGA in Lagos State with 2,047,026 inhabitants, mostly dominated by the Yorubas. With an annual growth rate of 3.2%, the Bureau estimated the population of Alimosho at 2,633,667 in 2014 (Lagos Bureau of Statistics, 2012). It is an area with high commercial and residential densities with low scale trading, especially for produce like yam.

The LGA has a high concentration of retail stores and informal markets. Most of the housing structures in Alimosho are mostly new flats, bungalows and a few "face-me-I-face-you" buildings. The inhabitants of Alimosho have access to education, internet, and telecommunication. Alimosho is a densely populated semi-urban settlement, it has poor road network with poor drainages, unplanned settlements, and inadequate water supply. Indiscriminate dumping of refuse is the common practice in this area. Alimosho LGA is a densely populated area with overcrowded houses which can enhance the spread of communicable diseases. The LGA consists of 36 political wards and 29 primary health centers. The health facilities in Alimosho through community participation help to manage disease outbreak, deliver qualitative, affordable and equitable services that affect the residents of Alimosho (Lagos Bureau of Statistics, 2012)

3.2   Study design

Cross sectional study design was employed; both quantitative and qualitative data collection methods were carried out. A work place checklist was also used to assess infrastructure available for outbreak containment in the Local government.

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The questionnaire had both open and close ended questions with options from which respondents could choose one or more alternatives. The open ended questions required that the respondent provided a simple sentence response to the question. Respondents were scored from 0 to 3 based on the degree of correct information provided. All the knowledge variables were then added together to a maximum of 27 (indicating that the respondent is extremely knowledgeable) and a minimum of 0 (indicating that the respondent is not knowledgeable).

3.3 Study population

The study population included Disease Surveillance & Notification Officers (DSNO), Medical Officers of Health (MOH), other health workers engaged in providing health care services in the local government such as doctors, nurses, environmental health officers, community health officers, community health extension workers, laboratory scientists & technicians, health assistants, pharmacists, pharmacy technicians and others. The public health facilities, available in the LGA were also studied.

- **Inclusion Criteria**:

  All health workers that had been working at the local government for at least 12months

- **Exclusion Criteria**:

  Temporary health workers with less than 12 month work experience in the local government

3.4 Sample size calculation and sampling technique

On the average, each of the public health facilities in Alimosho has about 10 to 15 staff. In addition to the DSNO, the estimated total population of health workers in the LGA was 290. Studying the 290 health workers in Alimosho provides information for assessing the perception of disease outbreak.

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3.4.1 Distribution of Respondents in Public Health facilities in Alimosho Local Government Area

In this study, a total of 29 Public health facilities were assessed using a total random sampling. Respondents were drawn from each of the Public health facilities in the following areas: Akowonjo, Orisunbare, Meran, Agbelekale, Amikonle, Agbado, Aboru, Ayobo-ipaja, Isheri-Osun, Isheri-Igando Ikotun-Igando, Abaranje, Okerube, Oke odo, Mosun-Okunola, Kokumo, Akinogun, Akinyele, Egan, Ijegun, Agodo, Eyin-Adegbite, Ogbomosotedo, Liasu road, Elf foundation, Igando, Isheri, Ejigbo road and Idowu egba. The distribution of respondents in all the Public health facilities in Alimosho LGA is indicated in Annex D. The number of respondents in each facility ranged from 3 to 15, amounting to a total of 290 in all the health facilities.

3.5   Data collection method

An interviewer administered semi-structured questionnaire (Appendix 1) was used to collect socio-demographic and occupational data of health workers as well as their knowledge and perception of disease outbreak for the quantitative data while Key Informant Interview (KII) using a KII guide (Appendix 2) was used to collect qualitative data. The interview was conducted with the DSNOs and the MOHs. Finally, a checklist (Appendix 3) to ascertain the level of epidemic preparedness of health facility was administered in the Local Government Area. The checklist included the available infrastructure and personnel for disease containment in the centers.

3.5.1   Data collection tool

1. The interviewer-administered questionnaire (Appendix 1) contained the following sections:

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Section A: Socio demographic data such as, sex, ethnicity, religion and marital status.

Section B: Occupational data such as duration of employment, professional group, on the job training

Section C: Knowledge of epidemic preparedness for outbreaks

Section D: Perception of disease outbreaks

2. Key informant interview guide (Appendix 2): This consists of questions segregated into sections pertaining to knowledge of epidemic preparedness and perception of disease outbreak.

3. Facility checklist (Appendix 3): This consists of questions that assess the epidemic preparedness level of the LGA, such as the existence of the LGA Epidemic management committee (EMC), functionality of the committee etc. Also to assess infrastructure available such as laboratories for outbreak containment in the Local government.

3.5.2 Validation and Pre-test

The pre-test of the study was conducted at Ifako-Ijaiye LGA in Lagos State among 30 health workers in one of the primary health centres. The pre-test was conducted by the researcher with requisite knowledge in conducting study-based interviews. The pre-test questionnaire was designed to be simple and viable, adequate for measuring the level of preparedness of public facilities, and assesses the perception of disease outbreak by health workers. Following results from the pre-test exercise, the questionnaire was re-designed to ensure that it was able to achieve the objective of the study. All the issues identified during the process were corrected and implemented on the questionnaire prior to production of the final copy.

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3.6   Data Analysis

The quality of the data was ensured through adequate supervision in the field by the Investigator. The data analyses were carried out with the SPSS Version 16.0.

Quantitative data such as age and duration of work were summarized using means and standard deviation and qualitative data like knowledge and perception were summarized using frequencies and proportions. The association between independent variables (age, sex, occupation, duration of work) and dependent variables [knowledge (good/ poor), perception (good or poor)], of epidemic preparedness was tested using Chi square test.

Logistic regression was done to identify variables independently associated with preparedness and perception of disease outbreaks, Level of significance was set at 5%.

Independent/predictor variables: Age, sex, occupation, duration of work, training, education.

Dependent/outcome variables: knowledge, perception of epidemic preparedness, perception of disease outbreak, level of preparedness

A total of nine questions, using four point Likert scale were used to assess knowledge of health workers on Epidemic preparedness. Each question asked had a maximum score of 3 points making a total score of 27 points. Each question was graded from 0-3 with 0 as Not Knowledgeable, 1 as Averagely Knowledgeable, 2 as Very Knowledgeable and 3 as Extremely Knowledgeable. These scores were then summed to give a total Knowledge score of each respondent.

Good knowledge: Respondents with scores ≥ 12 were assessed to have 'Good Knowledge'

Poor knowledge: Respondents with scores < 12 were assessed to have 'Poor Knowledge'

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A total of eleven questions, using five point Likert scale was also used to assess the perception of respondents to disease outbreak. Each question asked had a maximum score of 5 points giving the total score of 55 points. Each question was graded from 1-5 with 5 as Strongly agree, 4 as Agree, 3 as Unsure, 2 as Disagree, 1 as Strongly Disagree. These scores were then summed to give a total Perception score of each respondent.

Good perception: Respondents with scores ≥ 30 were assessed to have 'Good Perception'

Poor perception: Respondents with scores < 30 were assessed to have 'Poor Perception'

Qualitative data were collected from DSNO and MOH with the aim of determining the challenges and facilitating factors to adequate epidemic preparedness of public healthcare facilities. Content analysis was conducted on the qualitative data collected through interviews after transcribing.

3.7 Ethical Approval

The proposal for this study was obtained from the Lagos State Health Research and Ethics committee (Appendix 4) and permission to conduct research at the Local Government was obtained from the Chairman of the Local Government Area.

Adequate information was provided to all participants before written informed consent was obtained from each of them.

Confidentiality was assured and ensured with the use of code numbers instead of the names of participants.

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CHAPTER FOUR

RESULTS

4.1   Socio-demographic characteristics of respondents

A total of 290 health workers were interviewed in Alimosho LGA, 57 (19.7 %) were males and 233 (80.3%) were females. The mean age of the respondents was 35.91 ± 8.4 years. Two hundred and forty of the respondents (83.0%) were Christians, and 49 (17.0%) were Muslims. Two hundred and thirty six of the respondents (81.4%) were married. About 248 (87.6%) were Yorubas, while 30 (10.6%) and 5 (1.8%) of the respondents were Igbos and Hausas respectively.

Of the 290 respondents recruited in the study, 35 (12.1%) were non - graduates (OND or less), 229 (79.2%) had only graduate degrees while 25 (8.7%) had post graduate degrees.

Two hundred and twenty eight (78.6%) respondents were permanent staff while 62 (21.4%) were temporary staff. Two hundred and twenty nine (79.0%) were clinical staff, 37 (12.8%) were support staff while 24 (8.2%) were administrative staff.

Ninety six (33.1%) respondents were nurses, 34 (11.7%) were health assistants, 29 (10.0%) were doctors, 27 (9.3%) were pharmacist, 26 (9.0%) were laboratory workers, 23 (7.9%) were midwives, 22 (7.6%) were CHO's, 21 (7.2%) were CHEW, 9 (3.1%) were administrative staff while 3(1.0%) were auxiliary nurses as shown in Table 4.1 below

CHAPTER FOUR

RESULTS

4.1   Socio-demographic characteristics of respondents

A total of 290 health workers were interviewed in Alimosho LGA, 57 (19.7 %) were males and 233 (80.3%) were females. The mean age of the respondents was 35.91 ± 8.4 years. Two hundred and forty of the respondents (83.0%) were Christians, and 49 (17.0%) were Muslims. Two hundred and thirty six of the respondents (81.4%) were married. About 248 (87.6%) were Yorubas, while 30 (10.6%) and 5 (1.8%) of the respondents were Igbos and Hausas respectively.

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Table 4.1: Socio- demographic characteristics of respondents in health facilities in Alimosho LGA

VARIABLES	FREQUENCY (n)	PERCENTAGE (%)
Sex: N = 290		
Male	57	19.7
Female	233	80.3
Religion: N =289[1]		
Islam	49	17.0
Christianity	240	83.0
Marital Status: N = 290		
Never married	54	18.6
Ever married	236	81.4
Staff Classification: N = 290		
	62	21.4
	228	78.6
Temporary		
Permanent		
Staff Category: N = 290		
Administrative	24	8.2
Support	37	12.8
Clinical	229	79.0
Level of Education: N =289[2]		
	35	12.1
	229	79.2
Undergraduate	25	8.7
Graduate		
Post graduate		

1 - Figure is less than total sample size as one of the respondents did not indicate religion

2 - Figure is less than total sample size as one of the respondents did not indicate level of education

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4.2 Diseases prone to outbreaks as listed by respondents in the health facilities

Results shown in Table 4.2 were analysed using multiple response as each respondents listed multiple diseases common in their facilities. The most commonly reported epidemic prone diseases were measles 198 (33.3%), cholera 159 (26.7%) and tuberculosis 64 (10.8%).

Table 4.2: Analysis of responses using multiple responses

VARIABLES		FREQUENCY (n)	PERCENTAGE (%)
(a)	Cholera	159	26.7%
	Measles	198	33.3%
	Chicken pox	37	6.2%
	Tuberculosis	64	10.8%
	Diarrhoea	23	3.9%
	Dysentry	2	0.3%
	HIV	4	0.7%
	Yellow fever	44	7.4%
	Water borne diseases	2	0.3%
	Malaria	39	6.6%
	Polio	18	3.0%
	Meningitis	4	0.7%
	Small pox	1	0.2%
	Total	595	100%

4.3   Frequency distribution of responses to questions on perception

The perception-mean score of the respondents was 37.0 ± 5.04. One hundred and eighty nine of the respondents (65.2%) strongly agreed that health workers should be adequately prepared in case an epidemic outbreak occurs while 3 (1.0%) did not agree. Two hundred and thirteen of the respondents (73.4%) strongly agreed that training is necessary for all health workers while two (0.7%) strongly disagreed. About one hundred and forty six of the respondents (50.3%) thought it was necessary to have an outbreak plan, 9 (3.1%) of the respondents did not count it necessary to have an outbreak plan. (Table 4.3)

Table 4.3: Frequency distribution of responses to statements on perception of disease outbreaks

Perception Questions	Strongly Agree n (%)	Agree n (%)	Unsure n (%)	Disagree n (%)	Strongly disagree n (%)
I do not need to know about epidemic preparedness	9 (3.1)	7 (2.4)	4 (1.4)	134 (46.2)	136 (46.9)
Health workers should be adequately prepared in case an epidemic outbreak occurs	189 (65.2)	95 (32.8)	3 (1.0)	0 (0)	3 (1.0)
Epidemic preparedness is for selected health workers in the hospital	3 (1.0)	5 (1.7)	13 (4.5)	132 (45.5)	137 (47.2)
Potential hazards likely to cause outbreaks should be identified and dealt with	171 (59.0)	110 (37.9)	2 (0.7)	1 (0.3)	6 (2.1)
Training is necessary for all health workers	213 (73.4)	74 (25.5)	1 (0.3)	0 (0)	2 (0.7)
Is it necessary to have an outbreak plan?	146 (50.3)	132 (45.5)	2 (0.7)	1 (03)	9 (3.1)
The outbreak plan needs to be regularly updated	159 (54.8)	110 (37.9)	13 (4.5)	5 (1.7)	3 (1.0)
Outbreaks are unlikely to happen in our facility	15 (5.2)	27 (9.3)	53 (18.3)	120 (41.4)	75 (25.9)
Case management during an outbreak is for doctors and nurses only	13 (4.5)	14 (4.8)	28 (9.7)	135 (46.6)	100 (34.5)
Outbreak simulations should occur frequently in the facility	94 (32.4)	153 (52.8)	24 (8.3)	11 (3.8)	8 (2.8)
Contingency stock for outbreak should be available in your Local Government Area	155 (53.4)	127 (43.8)	6 (2.1)	1 (0.3)	1 (0.3)

4.4 Perception of disease outbreak by respondents

Table 4.4 shows that more than half (170, 58.6%) of the health workers who participated in the study had very good perception of epidemic preparedness.

One hundred and twenty (41.4%) health workers had poor perception to epidemic preparedness

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Table 4.4: Perception of disease outbreaks by respondents in Alimosho LGA

Variable	Frequency (n)	Percentage (%)
Perception of disease outbreak by healthcare workers:		
Good	170	58.6
Poor	120	41.4
Total	290	100

4.5 Frequency distribution of scores on statements on knowledge of epidemic preparedness

The mean score of the respondents was 7.0 ± 3.67. The minimum obtainable score was zero while the maximum obtainable score was 27. The highest obtained score was 19. Fifty two of the respondents (17.9%) were not knowledgeable on epidemic preparedness; Two hundred and twenty three of them (76.9%) were averagely knowledgeable, while just fourteen of them (4.8%) were very knowledgeable. One hundred and ninety one respondents (66.6%) had average knowledge on disease outbreak while fifty eight of them (20.2%) were not knowledgeable. (Table 4.5)

Table 4.5: Frequency distribution of responses to questions on knowledge of epidemic preparedness

Knowledge Questions	NK n (%)	AK n (%)	VK n (%)	EK n (%)	Total n (%)
Meaning of epidemic preparedness	52 (17.9)	223 (76.9)	14 (4.8)	1 (0.3)	290 (100)
Appropriate understanding of disease outbreak	58 (20.2)	191 (66.6)	38 (13.2)	0 (0.0)	290 (100)
Knowledge of case reporting	48 (16.6)	154 (53.1)	77 (26.6)	11 (3.8)	290 (100)
Ability to manage cases of epidemic outbreaks	76 (26.2)	140 (48.3)	67 (23.1)	7 (2.4)	290 (100)
Appropriate case definition of measles	111 (38.3)	102 (35.2)	69 (23.8)	8 (2.8)	290 (100)
Appropriate case definition for yellow fever	125 (43.3)	123 (42.6)	41 (14.2)	0 (0)	290 (100)
Appropriate case definition for cholera	121 (41.7)	134 (46.2)	35 (12.1)	0 (0)	290 (100)
Appropriate case definition for Lassa fever	204 (71.3)	75 (26.2)	4 (1.4)	3 (1.0)	290 (100)
How is measles reported	189 (65.2)	94 (32.4)	6 (2.1)	1 (0.3)	290 (100)

NK – Not Knowledgeable

AK – Averagely Knowledgeable

VK – Very Knowledgeable

EK – Extremely Knowledgeable

4.6   Knowledge of Respondents on Epidemic preparedness

Of the health workers interviewed, thirty-two (11.3%) had good knowledge of what epidemic

preparedness means while 250 (88.7%) had poor knowledge (Table 4.6).

Table 4.6: Knowledge of respondents on epidemic preparedness

Variable	Frequency (n)	Percentage (%)
Good knowledge	32	11.3
Poor knowledge	250	88.7
Total	**282**	**100**

4.7   Practice of epidemic preparedness

With reference to information displayed in Fig 4.1, only 23 (8.0%) of the respondents said there was ongoing epidemic preparedness training while 161 (55.0%) said there was no ongoing epidemic preparedness training and 106 (37.0%) were not sure.
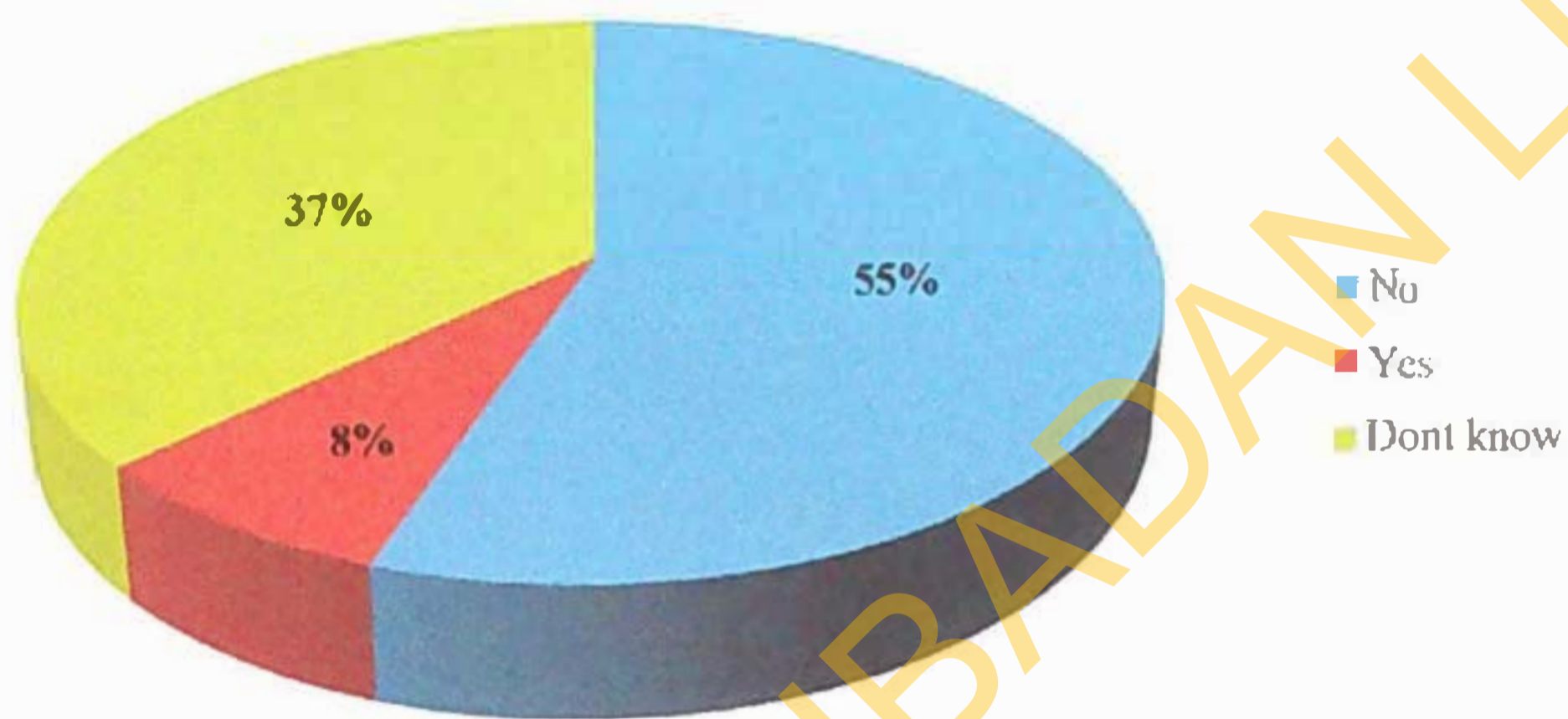
Figure 4.1: Practice of epidemic preparedness showing ongoing trainings

4.8 Relationship between Socio demographic characteristics and knowledge of epidemic preparedness

Table 4.7 shows that more of those who were married had good knowledge of Epidemic preparedness (13.2%) as against 3.7% of those who were single, (X^2 =3.87 p = 0.04).

Health workers with age above 35 years were significantly associated (p = 0.01) with good knowledge of epidemic preparedness (17.3%), compared to those who were 35 years or below (7.4%). There was significant association between the training status and knowledge of epidemic preparedness. Those who have been trained were more likely to have a good knowledge on epidemic preparedness compared to those who were not (24.2%vs 9.6%, p = 0.01).

Table 4.7: Association between socio demographic characteristics and knowledge of epidemic preparedness

Variable	Poor knowledge n (%)	Good knowledge n (%)	Total n (%)	X^2	p- value
Sex: N = 282					
Male	50 (87.7)	7 (12.3)	57 (100)	0.06	0.80
Female	200 (88.9)	25 (11.1)	225 (100)		
Marital Status: N = 282					
Married	198 (86.8)	30 (13.2)	228 (100)	3.87	0.04*
Single	52 (96.3)	2 (3.7)	54 (100)		
Religion: N = 281					
Christianity	208 (88.9)	26 (11.1)	234 (100)	0.11	0.74
Islam	41 (87.2)	6 (12.8)	47 (100)		
Age Group: N = 273					
≤ 35 years	151 (92.6)	12 (7.4)	163 (100)	6.41	0.01*
≥ 35 years	91 (82.7)	19 (17.3)	110 (100)		
Training status: N =282					
Trained	25 (75.8)	8 (24.2)	33 (100)	6.18	0.01*
Not Trained	225 (90.4)	24 (9.6)	249 (100)		
Educational level: N = 281					
Undergraduate	33 (100)	0 (0)	33 (100)	4.81	0.09
Graduate	195 (87.1)	29 (12.9)	224 (100)		
Post graduate	21 (87.5)	3 (12.5)	24 (100)		
Staff Classification: N = 282					
Temporary	52 (88.1)	7 (11.9)	59 (100)	0.02	0.89
Permanent	198 (88.8)	25 (11.2)	223 (100)		
Education Length (Years of experience since graduation): N = 279					
1-15 years	191 (90.5)	20 (9.5)	211 (100)	3.58	0.17
16-30 years	44 (86.3)	7 (13.7)	51 (100)		
31-45 years	13 (76.5)	4 (23.5)	17 (100)		

*Statistically significant at 5% sig level

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4.9 Relationship between Socio demographic characteristics and perception of disease outbreak

Table 4.8 shows that more of those who were graduate had high perception of disease outbreak (59.0%) as against those who were under graduates 42.9%, (X^2 =8.31 p = 0.02).

Table 4.8: Association between socio demographic characteristics and perception of disease outbreak

Variable	Low perception n (%)	High perception n (%)	Total n (%)	X^2	p- value
Sex: N = 290					
Male	21 (36.8)	36 (63.2)	57 (100)	0.60	0.44
Female	99 (42.5)	134 (57.5)	233 (100)		
Marital Status: N = 290					
Married	94 (39.8)	142 (60.2)	236 (100)	1.25	0.26
Single	26 (48.1)	28 (51.9)	54 (100)		
Religion: N = 289					
Christianity	101 (42.1)	139 (57.9)	240 (100)	0.48	0.49
Islam	18 (36.7)	31 (63.3)	49 (100)		
Age Group: N = 281					
≤ 35 years	70 (42.2)	96 (57.8)	166 (100)	0.13	0.72
≥ 35 years	46 (40.0)	69 (60.0)	115 (100)		
Educational level: N = 289					
Undergraduate	20 (57.1)	15 (42.9)	35 (100)	8.31	0.02*
Graduate	94 (41.0)	135 (59.0)	229 (100)		
Post graduate	21 (20.0)	20 (80.0)	25 (100)		
Staff Classification: N = 290					
Temporary	30 (48.4)	32 (51.6)	62 (100)	1.60	0.21
Permanent	90 (39.5)	138 (60.5)	228 (100)		
Education Length (Years of experience since graduation): N = 287					
1-15 years	86 (40.2)	128 (59.8)	214 (100)	1.66	0.44
16-30 years	22 (40.0)	33 (60.0)	55 (100)		
31-45 years	10 (55.6)	8 (44.4)	18 (100)		

*Statistically significant

4.10 Relationship between training and Respondents knowledge of epidemic preparedness

Table 4.9 shows that many of the health workers (255, 90.4%) had never received any training on epidemic preparedness in the past 12 months while just (8, 24.2%) had received training in the past one year.

Table 4.9: Association between training and knowledge of epidemic preparedness among respondents

Variable	Poor knowledge n (%)	Good knowledge n (%)	Total n (%)	X^2	df	p- value
Trained	25 (75.8)	8 (24.2)	33 (100)	0.01	1	6.177
Not Trained	255 (90.4)	24 (9.6)	249 (100)			
Total	250 (88.7)	32 (11.3)	282 (100)			

4.10.1 Relationship between training and Respondents perception on disease outbreak

A higher proportion of those trained on epidemic preparedness in the last one year have a good (68.6%) perception of disease outbreak, compared to those not trained (57.3%) as shown in table 4.10 below

Table 4.10: Association between training and perception of respondents to disease outbreaks

Variable	Poor Perception n (%)	Good Perception n (%)	Total n (%)	X^2	df	p- value
Trained	11 (31.4)	24 (68.6)	35 (100)	0.2	1	1.625
Not Trained	109 (42.7)	146 (57.3)	255 (100)			
Total	120 (74.1)	170 (125.9)	290 (100)			

4.10.2 Relationship between the staff category and perception of respondents to disease outbreak

A higher proportion of clinical staff had good perception of disease outbreak (61.6%) as compared with the non- clinical (administrative) (33.3%) and support staff (56.8), p =0.04 as shown in Table 4.11 below.

Table 4.11: Association between staff category and perception of respondents on disease outbreaks

Variable	Poor Perception on disease Outbreak n (%)	Good Perception on disease Outbreak n (%)	Total n (%)	X^2	df	p- value
Clinical	88 (38.4)	141 (61.6)	229 (100)	0.027	2	7.202
Administrative	16 (66.7)	8 (33.3)	24 (100)			
Support	16 (43.2)	21 (56.8)	37 (100)			
Total	104 (105.3)	149 (94.9)	253 (100)			

4.10.3 Association between perception of disease outbreak and knowledge of epidemic preparedness of health workers

Table 4.12 shows relationship was also observed between knowledge on epidemic preparedness and the perception of workers on disease outbreaks. A higher proportion of those who had poor knowledge of epidemic preparedness also had poor perception of disease outbreak (94.8%) as opposed to those who had good knowledge and good perception of the disease outbreaks (15.7%) P = 0.006.

Table 4.12: Association between respondents' knowledge on epidemic preparedness and their perception of disease outbreak

Variable	Poor Knowledge on Epidemic preparedness n (%)	Good Knowledge on Epidemic preparedness n (%)	Total n (%)	X^2	df	p- value
Poor Perception of disease Outbreak	110 (94.8)	6 (5.2)	116 (100)	7.470	1	0.006
Good perception of disease Outbreak	140 (84.3)	26 (15.7)	166 (100)			
Total	250 (179.1)	32 (20.9)	282 (100)			

4.11 Logistic regression analysis for socio-demographic characteristics and health worker's knowledge on epidemic preparedness

Table 4.13 shows that respondents who were less than 35 years of age were about 3 times less likely to have good knowledge of epidemic preparedness compared to those who were above 35years of age. (OR = 0.33, 95% CI = 0.132 – 0.825)

Those who were trained were about 2 and half times more likely to have good knowledge of epidemic preparedness compared with those who were not trained. (OR = 2.480, 95% CI = 0.874 - 7.040)

Table 4.13: Logistic regression of socio-demographic characteristics and respondents' knowledge of epidemic preparedness

Variable	Odds Ratio	95% CI	p-value
Age (years):			
≤ 35 years	0.329	0.132 - 0.825	0.018**
≥ 35 years (ref)	1		
Marital Status:			
Married	0.266	0.053 - 1.340	0.108
Never married (ref)	1		
Worker's Training:			
Trained	2.480	0.874 - 7.040	0.088
Not trained (ref)	1		
Staff classification:			
Temporary	3.091	1.008 - 9.478	0.048**
Permanent	1		

Reference group **Statistically significant at 5%/ 95% Confidence Interval

4.12 Logistic regression analysis for socio-demographic characteristics and health worker's perception of disease outbreak

Table 4.14 shows that respondents who had post graduate degree were about 5 times more likely to have good perception of disease outbreaks compared to those who were only graduates (OR = 5.429, 95% CI= 1.650 – 17.867)

Table 4.14: Logistic regression of socio-demographic characteristics and respondents' perception of disease outbreak

Variable	Odds Ratio	95% CI	p-value
Worker's Training: Trained	1.666	0.770 - 3.606	0.195
Not trained (ref)	1		
Worker's Education:			
Graduate	1	1.650 - 17.867	
Post graduate	5.429		0.05**

Reference group **Statistically significant at 5%/ 95% Confidence Interval

4.13 Qualitative study

Findings of the key informant interview carried out to determine the challenges and the facilitating factors to adequate epidemic preparedness of public health care facilities in Alimosho Local Government area of Lagos State are presented according to the following thematic areas:

- The epidemic preparedness plan on ground in case of an outbreak,
- General challenges being experienced while preparing for epidemic outbreaks,
- General practice of what to be done immediately an outbreak occurs,
- The person/ officer in charge of the preparedness response plan,
- How often the epidemic preparedness plan is been updated,
- Those that make up the epidemic management committee,
- How often the Local government area emergency response committee meet,
- Availability of funds when needed,
- General use of available funds,
- General support from the Ministry of Health

When asked about the Epidemic preparedness plan on ground in case of an epidemic outbreak, the respondent mentioned that there was always a trained contact person in the facility who responds promptly.

"... There is an immediate response through a contact person who has been trained and chosen in the community, He is the one who circulates the information to the committee members" {Medical Officer of Health of Alimosho PHC.}

"...I have a team that we work together in case of any outbreak and we are always at alert and ready, we can be called upon at any time. information is been circulated via text messages or any other means" {DSNO Alimosho LG}

In the Local government, the Medical Officer of Health was said to be in charge of the epidemic preparedness response plan even though he or she still has people working with him

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or her as a committee. When asked about the response plan, the health workers were unable to produce one and they mentioned that none was available at the time.

"...Here in this local government, the medical officer of health is in charge of the epidemic preparedness plan" {Medical officer of health (MOH) Alimosho LG}

With regards to how often the preparedness response plan is being updated, interviewee mentioned it is being updated monthly which is in line with the IDSR technical guideline of 2002.

"...The preparedness plan is being updated monthly here and the disease and surveillance notification officer is in charge of that." MOH, Alimosho LG

Here in Alimosho LG, the epidemic management committee is made up of seven people who meet regularly and they include: the DSNO, MOH, Chief nursing officer, Chief matron, Supervisory councilor for health, Primary health care coordinator and the Chairman of the LGA.

Assessing the regularity in meetings, how often the committee meets to deliberate on issues and look for possible and lasting solutions, the MOH explained they meet quarterly.

"...we meet quarterly but in case of an outbreak or reported cases messages are sent to everyone and we meet immediately" MOH.

"...we are always at alert in case of any emergency and we meet at any time there is a reported case and regularly too" DSNO

When we talk about the issue of funds, the authorities usually don't have access to funds, a lot of the drugs given are free from the government such as ACTs (Anti malaria combination therapy), and items such as LLIN (long lasting insecticide nets) including epidemic

66

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When we talk about the issue of funds. the authorities usually don't have access to funds, a lot of the drugs given are free from the government such as ACTs (Anti malaria combination therapy), and items such as LLIN (long lasting insecticide nets) including epidemic

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preparedness items such as Personal Protective Equipment (PPEs), and when they need more they request from the government.

"......we don't have access to funds because majority of the drugs and items needed are given freely from the state government and we have quite a number in stock (ACT, LLIN) and we can still request for more when the need arises". MOH

There were various issues they considered as challenges affecting preparation for Epidemic outbreak. These include paucity of information during outbreaks and shortage of man power before and even when the outbreak occurs.

".....the greatest challenge is lack of adequate information during outbreaks, we don't get detailed report and therefore that does not help us to plan well. Again, we have shortage of man power and this is not helping us but we are working on it, we hope to get more hands soon". MOH

It is worth mentioning that the Ministry of Health provides the health facilities with technical support.

"..Basically, I can say we get technical support from the Ministry of Health, because they provide us with trainings and epidemic preparedness equipment" MOH.

"...the Ministry of Health gives us their full support when we ask for it, our drugs and equipment are delivered in good time when we need them and we always have enough to store and fall back on later." DSNO

4.14 Additional Findings using Key Informant Interview

The result of the findings from the key informant interview stated above was compared to the IDSR technical guideline that was used as criteria to assess the emergency preparedness of the health workers in the local government and is summarized below.

IDSR recommends that there must be an existing local government area epidemic management committee (EMC). The EMC should comprise seven members which are the DSNO, MOH, chief nursing officer, chief matron, supervisory councilor for health, primary health care coordinator and the chairman of the LGA. In Alimosho, the MOH indicated that the LGA has the EMC and is made up of the seven members recommended by IDSR, however, there was no documentation to support it.

IDSR recommends that for the members of the LGA EMC to be complete, it should comprise members of the public sector, NGOs with health care activities in the area, community and private sector but for Alimosho LG, it only comprises of the public sector excluding the other and no supporting document (such as minutes of meeting) was seen.

For consistency and active involvement in emergency preparedness, IDSR recommends that EMC meets monthly in the absence of epidemics. In Alimosho LG, the EMC meeting is done quarterly. IDSR also recommends that prepositioned emergency stock of drugs, supplies and materials for case management of disease outbreaks must be available at the LGA level. Upon inspection, these items (stock of drugs) were sighted in Alimosho LGA.

Table 4.15: IDSR Recommendation and findings from the key informant interview

Criteria	IDSR recommendations	Findings	Evidence
Existence of Local Government Area (LGA) epidemic management committee (EMC)	Establishment of an LGA EMC	Establishment of LGA EMC	Not seen
Adequacy/ completeness of the members of the LGA EMC	EMC should comprise members of the public sector, NGOs with health care activities in the area, community and private sector	EMC comprise of the members of the public but not NGOs with health care activities in the area	Not seen
Regularity of meetings of the LGA EMC	EMC to meet monthly in the absence of an epidemic	EMC meets quarterly	Non available
Functionality of the committee	EMC to meet monthly in the absence of epidemic	EMC meets quarterly	Non available
Existence of emergency preparedness and response plan	Prepare an emergency preparedness and response plan	No preparedness and response plan	Non available
Availability of emergency stocks of drugs, supplies and materials for case management of outbreaks	Availability of prepositioned emergency stocks of drugs, supplies and materials for case management of outbreaks at LGA level	Availability of prepositioned emergency stocks of drugs, supplies and materials for case management of outbreaks	Seen (stock of drugs, PPEs- About 200 in number)
Availability of funds for emergency response to outbreaks	Availability of a budget line for outbreaks	Non accessibility of funds	Not seen

Table 4.15: IDSR Recommendation and findings from the key informant interview

Criteria	IDSR recommendations	Findings	Evidence
Existence of Local Government Area (LGA) epidemic management committee (EMC)	Establishment of an LGA EMC	Establishment of LGA EMC	Not seen
Adequacy/ completeness of the members of the LGA EMC	EMC should comprise members of the public sector, NGOs with health care activities in the area, community and private sector	EMC comprise of the members of the public but not NGOs with health care activities in the area	Not seen
Regularity of meetings of the LGA EMC	EMC to meet monthly in the absence of an epidemic	EMC meets quarterly	Non available
Functionality of the committee	EMC to meet monthly in the absence of epidemic	EMC meets quarterly	Non available
Existence of emergency preparedness and response plan	Prepare an emergency preparedness and response plan	No preparedness and response plan	Non available
Availability of emergency stocks of drugs, supplies and materials for case management of outbreaks	Availability of prepositioned emergency stocks of drugs, supplies and materials for case management of outbreaks at LGA level	Availability of prepositioned emergency stocks of drugs, supplies and materials for case management of outbreaks	Seen (stock of drugs, PPEs- About 200 in number)
Availability of funds for emergency response to outbreaks	Availability of a budget line for outbreaks	Non accessibility of funds	Not seen

4.15   Result of Health Facilities Assessment

As shown in Table 4.16, infrastructures across the health facilities in Alimosho LGA were assessed either as "Available & functional"; "Available and not functional"; "Needed" or have a "Shortfall".

Table 4.17 shows that 24 (83.0%) out of the 29 health facilities in Alimosho had functional power supply; 26 (90.0%) had functional communication system; 18 (62.0%) had at least an ambulance; only 4 (14.0%) had a functional record keeping system; 12 (41.0%) regularly organize training for its health workers and 2 (7.0%) routinely conduct monitoring and evaluation exercise.

Table 4.16: Infrastructure Considerations for Health Facilities in Alimosho LGA

Public Health Facility	Power supply	Communi cation	Reporting forms	Ambula nces	Consuma bles	Water supply	Record keeping	Training	Monitoring & Evaluation	Epidemic Map
Abaranje	S	AF	AF	AF	AF	AF	S	AF	N	N
Aboru	AF	AF	AF	AF	AF	AF	S	N	N	N
Agbado	AF	AF	AF	ANF	AF	AF	S	N	N	N
Agbelekale	S	AF	AF	AF	AF	N	S	N	N	N
Agodo	S	AF	AF	AF	AF	N	S	AF	N	N
Akinogun	AF	AF	S	AF	N	N	S	AF	N	N
Akinyele	AF	AF	AF	AF	AF	AF	AF	AF	N	N
Akowonjo	AF	AF	AF	AF	AF	N	AF	N	N	N
Amikonle	AF	AF	AF	N	AF	AF	S	AF	N	N
Ayobo ipaja	AF	AF	S	N	AF	AF	AF	AF	N	N
Egan	AF	AF	AF	N	AF	AF	S	AF	N	N
Ejigbo Road	AF	AF	AF	AF	AF	AF	S	AF	N	N
Elf foundation	AF	AF	AF	N	AF	AF	S	AF	N	N

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Table 4.16: Infrastructure Considerations for Health Facilities in Alimosho LGA

Public Health Facility	Power supply	Communication	Reporting forms	Ambulances	Consumables	Water supply	Record keeping	Training	Monitoring & Evaluation	Epidemic Map
Abaranje	S	AF	AF	AF	AF	AF	S	AF	N	N
Aboru	AF	AF	AF	AF	AF	AF	S	N	N	N
Agbado	AF	AF	AF	ANF	AF	AF	S	N	N	N
Agbelekale	S	AF	AF	AF	AF	N	S	N	N	N
Agodo	S	AF	AF	AF	AF	N	S	AF	N	N
Akinogun	AF	AF	S	AF	N	N	S	AF	N	N
Akinyele	AF	AF	AF	AF	AF	AF	AF	AF	N	N
Akowonjo	AF	AF	AF	AF	AF	N	AF	N	N	N
Amikonle	AF	AF	AF	N	AF	AF	S	AF	N	N
Ayobo ipaja	AF	AF	S	N	AF	AF	AF	AF	N	N
Egan	AF	AF	AF	N	AF	AF	S	AF	N	N
Ejigbo Road	AF	AF	AF	AF	AF	AF	S	AF	N	N
Elf foundation	AF	AF	AF	N	AF	AF	S	AF	N	N

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Public Health Facility	Power supply	Communication	Reporting forms	Ambulances	Consumables	Water supply	Record keeping	Training	Monitoring & Evaluation	Epidemic Map
Eyin Adegbite	AF	AF	AF	ANF	AF	AF	S	AF	N	N
Idowu Egba	AF	AF	AF	AF	AF	AF	S	N	N	N
Igando	S	AF	AF	N	AF	AF	S	N	N	N
Ijegun	AF	\AF	AF	AF	AF	AF	AF	N	N	N
Ikotun Igando	AF	AF	AF	AF	AF	AF	S	AF	N	N
Isheri Igando	AF	S	AF	ANF	N	AF	S	N	N	N
Isheri	AF	AF	AF	AF	AF	AF	S	N	N	N
Isheri Osun	AF	AF	AF	AF	AF	AF	S	N	S	N
Kokumo	AF	AF	AF	AF	AF	AF	S	N	N	N
Liasu Road	AF	AF	AF	AF	N	AF	S	N	N	N
Meiran	S	AF	AF	S	AF	AF	S	N	N	N
Mosun Okunola	AF	AF	AF	AF	AF	AF	S	N	N	N
Ogbomoshot edo	AF	S	AF	N	AF	AF	S	N	N	N
Oke Odo	AF	AF	AF	AF	S	AF	S	N	N	N

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Public Health Facility	Power supply	Communication	Reporting forms	Ambulances	Consumables	Water supply	Record keeping	Training	Monitoring & Evaluation	Epidemic Map
Eyin Adegbite	AF	AF	AF	ANF	AF	AF	S	AF	N	N
Idowu Egba	AF	AF	AF	AF	AF	AF	S	N	N	N
Igando	S	AF	AF	N	AF	AF	S	N	N	N
Ijegun	AF	\AF	AF	AF	AF	AF	AF	N	N	N
Ikotun Igando	AF	AF	AF	AF	AF	AF	S	AF	N	N
Isheri Igando	AF	S	AF	ANF	N	AF	S	N	N	N
Isheri	AF	AF	AF	AF	AF	AF	S	N	N	N
Isheri Osun	AF	AF	AF	AF	AF	AF	S	N	S	N
Kokumo	AF	AF	AF	AF	AF	AF	S	N	N	N
Liasu Road	AF	AF	AF	AF	N	AF	S	N	N	N
Meiran	S	AF	AF	S	AF	AF	S	N	N	N
Mosun Okunola	AF	AF	AF	AF	AF	AF	S	N	N	N
Ogbomoshot edo	AF	S	AF	N	AF	AF	S	N	N	N
Oke Odo	AF	AF	AF	AF	S	AF	S	N	N	N

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Public Health Facility	Power supply	Communi cation	Reporting forms	Ambula nces	Consuma bles	Water supply	Record keeping	Training	Monitoring & Evaluation	Epidemic Map
Okerube	AF	S	S	N	N	S	S	N	AF	N
Orisumbare	AF	AF	AF	AF	AF	S	S	AF	AF	N

AF – Available & Functional ANF – Available & Not Functional   N – Not available and Needed   S – Shortfall

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Table 4.17: Infrastructure assessment of health facilities in Alimosho LGA

Variable	Available n (%)	Needed n (%)	Shortfall n (%)	Available and Nonfunctional n (%)	Total n (%)
Power supply	24 (83.0)	0 (0)	5 (17.0)	0 (0)	29 (100)
Communication	26 (90.0)	0 (0)	3 (10.0)	0 (0)	29 (100)
Reporting forms	26 (90.0)	0 (0)	3 (10.0)	0 (0)	29 (100)
Ambulances	18 (62.0)	7 (24.0)	1 (3.0)	3 (10.0)	29 (100)
Consumables	24 (83.0)	4 (14.0)	1 (3.0)	0 (0)	29 (100)
Water Supply	23 (79.0)	4 (14.0)	2 (7.0)	0 (0)	29 (100)
Record keeping	4 (14.0)	0 (0)	25 (86.0)	0 (0)	29 (100)
Training	12 (41.0)	17 (59.0)	0 (0)	0 (0)	29 (100)
M&E	2 (7.0)	26 (90.0)	1 (3.0)	0 (0)	29 (100)
Epidemic Map	0 (0)	29 (100)	0 (0)	0 (0)	29 (100)
Total	159 (55.0)	87 (30.0)	41 (14.0)	3 (1.0)	290 (100)

Figure 4.2: Level of Infrastructure Availability for Epidemic Preparedness in the Health Facilities in Alimosho LGA

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Figure 4.2: Level of Infrastructure Availability for Epidemic Preparedness in the Health Facilities in Alimosho LGA

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CHAPTER FIVE
DISCUSSION, CONCLUSION AND RECOMMENDATIONS

The study findings revealed that though health workers in Alimosho LGA had a good perception of disease outbreaks - understanding that adequate preparation is critical to managing and controlling disease outbreak; they however had a poor knowledge of epidemic preparedness. This implies that with an outbreak of disease in Alimosho, health workers may not be able to manage and control such outbreak. In this chapter, five key study findings are discussed: (a) perception of disease outbreak by health workers; (b) knowledge and awareness of health workers; (c) level of epidemic preparedness; (d) factors associated with management of epidemic outbreak of diseases; and (e) Health facilities assessment

5.1   Perception of disease outbreak by health workers

This study assessed health workers' perception of disease outbreak, some of the questions asked include: Should health workers be adequately prepared in case an epidemic outbreak occurs? Is training necessary for all health workers? Is it necessary to have an outbreak plan? Should outbreak simulations occur frequently in the facility?

The findings from this study indicated that the health workers in Alimosho LGA had a good perception of disease outbreak as they understand that epidemic preparedness is very important in controlling disease outbreak but they have low knowledge of epidemic preparedness. More than 50% of the health workers have good perception of disease outbreak. In a similar study conducted in the urban residential area in Chinhoyi, Zimbabwe to assess health workers' perception of disease outbreak, it was shown that about 60% of health workers had good perception, demonstrating appropriate understanding of epidemic preparedness and its implications (Mukurnva, 2008).

5.2   Knowledge and awareness of health workers

Health workers play a significant role in implementing epidemic preparedness as it provides them (health workers), individuals, private and public health care institutions with the opportunity to learn and prepare for future outbreaks. Good knowledge of epidemic preparedness is critical to enabling health workers have a better understanding and attitude towards epidemic preparedness.

With epidemic preparedness, health workers are able to deliver healthcare, treatment and prompt reporting of disease outbreaks. Following our study in Alimosho LGA, it was surprising to note that only few health workers (11.3%) had a good knowledge of epidemic preparedness (as shown in Table 4.6), which is below expectations for health workers responsible for epidemic preparedness. To successfully prepare for epidemic outbreak in a particular area, a significant number of the health workers should have good knowledge of epidemic preparedness, including developing plans, educating communities at risk, measuring findings, and monitoring and evaluating them regularly (WHO, 2007). However, the situation here showed that a significant number of the health workers in Alimosho have poor knowledge of epidemic preparedness and consequently may not be able to successfully prepare for epidemic outbreak and address it.

The poor knowledge of epidemic preparedness of health workers in Alimosho stemmed from a real lack of preparation by the health facilities in the LGA. Results from the key informant interview shows that there is a shortfall in training for effective case management in Alimosho. The LGA EMC in Alimosho meets quarterly even though IDSR guidelines recommend monthly meetings whether or not there is an outbreak. A similar study in Uganda showed that 88% of districts had functional EMC (CDC, 2000) while in the assessment of IDSR in Nigeria, out of the 41% LGAs with existing EMC, only one was functional (FMOH, 2009). About 90% of the health workers had never undergone any training on epidemic

preparedness. To improve the knowledge of health workers in preparing for and addressing disease outbreak, health workers must be provided with appropriate education and training on epidemic preparedness.

5.3   Level of epidemic preparedness

Health care facility preparedness is the ability of a community healthcare system to prepare and respond promptly to outbreak of any disease (National Healthcare Preparedness Programs, 2013). This can be achieved by planning, organizing, equipping and training. This has substantial implications for health workers in implementing epidemic preparedness plan. The current attitudes towards epidemic preparedness and disease outbreak reveal that health workers acknowledge the need for epidemic preparedness but lack the adequate knowledge and training. Emergency preparedness needs to be an ongoing process in order to keep all health workers informed and alert, there is therefore need for training of all health workers at all levels as this study shows lack of adequate training. Only (24.2%) had ever received training in the last one year.

Similarly, a study conducted at Lagos State University Teaching Hospital and Lagos University Teaching Hospital on the knowledge, attitude and perception of health workers on level of preparedness showed that only 20.8% of them were knowledgeable (Izegbu et al, 2006).

5.4   Factors associated with the management of Epidemic outbreaks of diseases

In this study, we found out that the shortage of man power is a limiting factor to managing epidemic outbreaks as also indicated in the Ministry of Health and Social Welfare Report of 2008 (FMOH, 2008). It is said that most government health facilities have a shortage of between 65% and 70% required health care providers (HHMS 2008) and this results in difficulty in delivering quality health services.

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Apart from factors such as man power and other logistics, awareness of one's distinct role and responsibility in emergency preparedness was also identified as an important factor. Gebbie et al (2014) proposed that the first step towards emergency preparedness is the identification of preparedness activities and their owners. This implies that to successfully prepare for any disease outbreak, health workers must understand their role and responsibility. A study from China found out that 91.8% of health workers identified obscurity of their roles and responsibility as a key issue in emergency response (Wisner et al, 2002).

5.5   Health facilities assessment

All the health facilities in Alimosho local government were assessed using a health facility assessment checklist shown in Table 4.16. The purpose of the Health Facility Assessment is to evaluate the physical assets in the health facility and provide necessary information for policy, planning and management of health sector development.

Health facility assessments are designed to assist health system planners/managers to improve the health service delivery systems by identifying health facilities which do not meet the criteria required to provide key health services, types, and levels of capital investment required. The Health Facility Assessment could serve as a baseline assessment for monitoring and evaluation of investment into the health sector. Typical outputs include a book of maps of health facilities, a health facility database, a medical equipment database, infrastructure database and a capital investment cost-estimate program (Hozumi et al, 2008). The assessment was based on key parameters such as power supply, reporting form, ambulance, consumable, training, communication, monitoring & evaluation, epidemic map, record keeping and water supply.

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The assessment was based on key parameters such as power supply, reporting form, ambulance, consumable, training, communication, monitoring & evaluation, epidemic map, record keeping and water supply.

While Power supply is mostly available and functional across the health facilities visited, 17% of the health facilities in Alimosho do not have a reliable alternative source of power supply, especially when power from the national grid is not available for a particular period of time.

More than 80% of the health facilities visited in Alimosho have functional communication system within their facilities. Health workers in these facilities have the physical means to communicate with each other and to consult on difficult cases.

To effectively manage disease outbreak in the LGA, about 90% of the health facilities have reporting forms where cases are reported to the appropriate quarters for necessary action. The health facilities with shortfall in the reporting forms need to update the reporting forms to make them relevant for every case and health workers should be encouraged to ensure that the reporting forms are completed and forwarded to the appropriate authorities for necessary action.

All health facilities need Ambulances as they are useful in providing support to the team managing disease outbreak in a community (WHO 2007). About 40% of the health facilities either don't have an ambulance or have one that is not functional. Improving the conditions of the ambulances will go a long way to effectively managing any form of disease outbreak in that community.

IDSR recommends that emergency stock of drug, supplies and materials for case management should be available across all health facilities (IDSR 2015). However, assessment of the health facilities in Alimosho shows that about 17% of the health facilities do not have consumables such as drugs and personal protective equipment (PPE) in their centres. More than 80% of the facilities have consumables in their centres for effective case management.

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Both the quantity and quality of water are important in health facilities. Water quality is a key element of infection control within health facilities. It is particularly important to provide adequate water for hand washing at multiple sites in the health center (WHO 2007). However, the assessment of the health facilities in Alimosho reveals that 79% of the health facilities have access to water supply in the right quantity and quality. About 21% of the health facilities either do not have access to good water supply or do not have required quantity of water supply for the health facility.

Medical records are very important and great care should be taken to ensure the safe holding of such records. In an outbreak situation, it can be used for line listing, identification of cases and surveillance (Tyndall, 2006). It serves as information for public health action in which their primary purpose is to document the assessments underlying the progress of the patient's care and case management and so contribute to the quality of that care. Poor record keeping can lead to a patient's care being adversely affected through; an increased risk of medication or other treatment being duplicated or omitted, communication problems among health workers, and a failure to place on record significant observations and conclusions (Tyndall, 2006). From the assessment of the health facilities in Alimosho, only about 14% of the health facilities keep patient's medical records consistently. More than 80% of the health facilities are not consistent with keeping the medical records of patients and even the available records are not adequate. There is a need to improve record keeping across most of the health facilities in Alimosho.

Training of health workers in effectively managing disease outbreaks is very important in the epidemic preparedness process. Only about 40% of the health facilities frequently conduct training that equips health workers to set priorities, plan and respond to disease outbreak in a community. Across the health facilities, 60% of them need to equip the health workers in

these facilities with the appropriate training for disease surveillance and monitoring including managing outbreaks.

Only 2 out of the 29 health facilities in Alimosho conduct "Monitoring and Evaluation" the performance of the surveillance system. This is very crucial in order to improve the effectiveness of the implementation of IDSR in Alimosho as it is able to identify areas that require strengthening and taking action.

From the assessment of the health facilities, "Epidemic map" was not available across all the health facilities visited in the LGA.

There is the need for all the health facilities to improve the existing infrastructures within their facilities. While some are not available, others are either "Available and not functional" or have "Shortfalls"

5.6   Predominant disease mentioned to be prone to outbreak

Measles and Cholera were identified as the predominant diseases prone to outbreak in Alimosho. About 33% of the respondents identified measles as the major disease prone to outbreak. Measles is one of the Epidemic prone diseases in the IDSR. It is almost eliminated in most parts of the world, but measles outbreaks are still among the common epidemics contributing to high mortality and morbidity in sub-Saharan Africa especially among children with malnutrition (CDC, 2006).

Measles is a vaccine preventable disease with severity in under- fives. Within the National Programme on Immunisation, the vaccine is given at 9 months.

The accelerated measles control strategy that began in 1998 introduced case based surveillance activity that was built upon the acute flaccid paralysis (AFP) surveillance infrastructure and closely linked to IDSR principles. This has brought the disease burden and mortality due to measles to a significantly low level. However small and infrequent measles

outbreaks continue to occur due to low immunization coverage and gaps in surveillance activities (WHO, 2008).

Studies have shown that in 1999, approximately 871,000 deaths from measles was reported worldwide while 61% occurred in sub-Saharan Africa. In 2004, of the 1,590 districts under case-based surveillance, 80 (5%) reported outbreaks of measles. In 2005, 47 (2.5%) districts reported outbreaks of measles out of 1,850. In 2006, 178 (6%) of 2,923 districts also reported outbreaks of measles, which spanned across 29 countries. The most affected countries were: Nigeria (2,919 cases/18 deaths), Ethiopia (1,665 cases/0 deaths) and Tanzania (1,606 cases/8 deaths) (Kebede, 2010). Following these outbreaks, the different countries adopted the IDSR strategy in strengthening communicable disease control including epidemic outbreaks. Using a protocol developed by WHO and CDC, affected countries also assessed their national surveillance system with a view of determining gaps in the existing surveillance system (Kebede, 2010).

In order to curb the outbreak of these diseases, an effective epidemic preparedness program must be developed that focuses on capturing surveillance information, clearly articulating action steps aimed at epidemic preparedness and defining emergency response both from governmental and non-governmental agencies, based on the outcome of the disease outbreak.

5.7   Limitations of the study

There is potential reporting bias associated with self-administered questionnaire as we are concerned about whether the responses reflects what the health workers actually do or what they think is right to do as they tend to over report work done.

Also, the issue of self- reporting may pose a bias as recalling of respondents may be altered leading to recall bias. The possibility of differential recall by the respondents may thus lead to a misclassification bias

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The study design used was cross-sectional and this type of study does not have the ability to establish causality. It however has the advantage of being able to study a large group of people at a single point in time and identify correlates and predict associations.

Respondents' unwillingness to divulge relevant information and unfavorable attitude of the respondents towards completing the questionnaire were some of the limitations of the study. We overcame these limitations by informing them that information collected will be used for research purpose only and it will be kept safe.

5.8   Conclusion

This study provided evidence on the perception of disease outbreak by health workers and also shows the level of epidemic preparedness of the public health facilities. Across developing countries, epidemic outbreaks of various diseases have become an issue to consider and deal with very seriously. The scope of this study revolved around the preparedness level among the health care facilities, knowledge and perception of disease outbreak by health workers in Alimosho Local Government. In this study, it was found that more than half of the health workers had a good perception of disease outbreak but only few had good knowledge of epidemic preparedness. However, a significant number of health workers will need lots of training and education on epidemic preparedness.

The level of epidemic preparedness among health workers in Alimosho is low when compared to epidemic preparedness standards recommended by IDSR. Though they appreciate the need for epidemic preparedness they lack adequate knowledge and training. Most of the health workers are at risk if they are not knowledgeable about their role in managing disease outbreak. Knowing who to report to and when to report; and adequate training are important factors that affect the overall performance of the health worker

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The most significant factor associated with managing epidemic outbreak of disease in Alimosho is the inadequate human resources with good knowledge of epidemic preparedness. After the qualitative study was conducted, it was discovered that more health personnel are needed in the local government. As at the time of this study, public health facilities in Alimosho engage the services of health assistants/volunteers to do a lot of work but more specialized people like the doctors and nurses are needed for more severe cases.

5.9   Recommendations

The following recommendations are made:

1. Trainings on Epidemic preparedness and practices should be done for the workers regularly including refresher training in management of epidemic- prone diseases, prevention and control of infection for effective response to disease outbreaks in Alimosho Local Government and also in the State at large.

2. There should be effective epidemic rapid response teams at all levels with adequate preparation in case of any outbreak of disease.

3. There should be more man power in the local government.

4. Epidemic Management Committee (EMC) to be fully constituted and have monthly and regular meetings.

5. More importantly, emergency preparedness should be understood by all as a programme for capacity building.

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Annex A

Definition of Terms

Epidemic: An epidemic is defined as the occurrence of a disease in a geographic area clearly in excess of expected or known rate for given area and time period.

Epidemiology: The study of the distribution and determinants of diseases and health related events in human population, and the application of the knowledge for the prevention and control of health problems.

Surveillance: A system of constant monitoring and watchfulness over all aspect of the occurrence and spread of diseases and the use of information gathered for the purpose of designing preventive and control measures

Monitoring: Is the process of measuring, recording and collation of information on project performance on a continuous basis, to assist management in decision making.

Evaluation: Is the measurement of achievement in relation to set goals for a project over time.

Epidemic assessment: Is the gathering of information on the nature, extent and cause of an epidemic. This includes asking questions, collecting and analyzing information, and using and reporting the information to others in order to respond to the epidemic properly. It answers the questions: What? Who? Where? When?

Annex A

Definition of Terms

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Surveillance:	A system of constant monitoring and watchfulness over all aspect of the occurrence and spread of diseases and the use of information gathered for the purpose of designing preventive and control measures
Monitoring:	Is the process of measuring, recording and collation of information on project performance on a continuous basis, to assist management in decision making.
Evaluation:	Is the measurement of achievement in relation to set goals for a project over time.
Epidemic assessment:	Is the gathering of information on the nature, extent and cause of an epidemic. This includes asking questions, collecting and analyzing information, and using and reporting the information to others in order to respond to the epidemic properly. It answers the questions: What? Who? Where? When?

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Active Surveillance: Surveillance where public health officers seek report in the surveillance system on a regular basis, rather than waiting for the reports to be submitted at the discretion of the participating facilities.

Annex B

Alert and epidemic thresholds of epidemic prone diseases

S/N	Disease	Alert Threshold	Epidemic Threshold
1	Yellow Fever	If a single case is suspected	If a single case is confirmed
2	Measles	5 or more suspected cases reported from a district/ health facility in a month	3 or more measles IgM+ confirmed cases in a district/ health facility in a month
3	Viral Haemorrhagic Fever (Lassa Fever)	If a single case is suspected	If a single case is confirmed
4	Cholera	5 or more suspected cases reported from a district/ health facility in a month	Doubling of cases per week

Annex C

State Disease Surveillance and Response Committee (DSRC) Membership/ Composition

The DSRC shall be composed of:

> - Honorable Commissioner for health

> - Director PHC/Public Health

> - Director Hospital Services

> - Director of Pharmaceutical Services

> - Director of Nursing Services

> - Director of Medical Laboratory Services

> - State Epidemiologist

> - Representative of partner agencies

Annex D

Distribution of respondents in all the Public health facilities in Alimosho LGA

Location of public health Facilities	No of Respondents (n)	Percentage (%)
Abaranje	10	3.4
Aboru	10	3.4
Agbado	6	2.1
Agbelekale	10	3.4
Agodo	10	3.4
Akinogun	3	1.0
Akinyele	7	2.4
Akowonjo	15	5.2
Amikonle	6	2.1
Ayobo Ipaja	8	2.8
Egan	10	3.4
Ejigbo Road	8	2.8
Elf foundation	13	4.5
Eyin Adegbite	10	3.4
Idowu Egba	7	2.4
Igando	12	4.1
Ijegun	12	4.1
Ikotun Igando	15	5.2
Isher Igando	10	3.4
Isheri	13	4.5
Isheri Osun	13	4.5
Kokumo	10	3.4
Liasu Road	10	3.4
Meran	12	4.1
Mosun Okunola	15	5.2
Ogbomoshotedo	10	3.4
Oke Odo	10	3.4
Okerube	5	1.7
Orisumbare	10	3.4
Total	**290**	**100**

100

IDSR Core Indicators

S/N	IDSR Activity	Indicators
6.1	Routine reporting (IDSR 002, 003 forms)	Proportion of health facilities submitting weekly or monthly surveillance reports on time to the LGA
6.2	Reporting outbreaks from the LGA to the National level	Proportion of reported outbreaks of epidemic prone diseases notified to the next higher level within 2 days of surpassing the epidemic threshold
6.3	Case- based reporting	Proportion of cases of diseases targeted for elimination/eradication and any other diseases of public health importance, which were reported using case-based forms or line list
6.4	Case- based data analysis	Proportion of reports of investigated outbreaks that include analyzed case- based data
6.5	Data analysis	Proportion of health facilities/LGAs that have current trend analysis (line graphs) for selected priority diseases
6.6	Laboratory support	Proportion of reported outbreaks of epidemic prone diseases that occurred in the past year with laboratory confirmation of results
6.7	Outbreak response	Proportion of confirmed outbreak with appropriate and timely response (48- 72 hours) at the LGA level during the last 12 months
6.8	Case fatality rate- CFR	$\dfrac{Number\ of\ deaths}{Number\ of\ cases} \times 100\%$
6.9	Attack rate	$\dfrac{Total\ number\ of\ cases}{Total\ population\ exposed} \times 100\%$

QUESTIONNAIRE

PERCEPTION OF DISEASE OUTBREAK BY HEALTH WORKERS AND LEVEL OF EPIDEMIC PREPAREDNESS OF PUBLIC HEALTH FACILITIES IN ALIMOSHO LOCAL GOVERNMENT AREA, LAGOS

Dear Respondents,

This questionnaire was designed to assess epidemic preparedness of public healthcare facilities and perception of disease outbreak by health care workers in Alimosho Local Government Area. It contains five sections;

- A - Socio-demographic data,
- B - Occupational data,
- C - Knowledge of healthcare worker towards epidemic preparedness,
- D – Perception towards epidemic preparedness,
- E- Practice.

Please answer all questions as honestly as you can, all your responses will be made confidential and we will protect any information you give us to the best of our ability.

However, this study is entirely voluntary, you have no risk or any form of disadvantage if you do not want to participate. Please in order to be sure that you actually accepted to take part in the study voluntarily, kindly sign your signature in the space provided.

Thank you for granting your audience.

_____   _____
Date   Signature of respondent

APPENDIX I

QUESTIONNAIRE

PERCEPTION OF DISEASE OUTBREAK BY HEALTH WORKERS AND LEVEL OF EPIDEMIC PREPAREDNESS OF PUBLIC HEALTH FACILITIES IN ALIMOSHO LOCAL GOVERNMENT AREA, LAGOS

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Thank you for granting your audience.

_____   _____

Date   Signature of respondent

SECTION 1- Background Information

Date ....

Serial Number ....

1. Age (in years)..

2. Sex
   1. Male ☐ Female ☐

3. Marital status

   1. Single (never married) ☐

   2. Married ☐

   3. Separated ☐

   4. Divorced ☐

   5. Widowed ☐

   4. Religion
      1. Christianity ☐

      2. Islam ☐

      3. Traditional ☐

      4. Others (please specify ....

   5. Ethnicity
      1. Yoruba ☐

      2. Igbo ☐

      3. Hausa ☐

      4. Others (please specify).....................

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6. Highest level of education attained

    1. Senior secondary school leaving certificate   ☐

    2. School of Nursing   ☐

    3. Bachelor's degree (BSc)   ☐

    4. Registered Nurse (RN)   ☐

    5. Master's degree   ☐

    6. Doctorate degree (PhD)   ☐

    7. Others (please specify)...

7. What year did you attain this level?........................

Section 2- Occupational profile

8. What category of staff are you?

    1. Clinical   ☐

    2. Administrative   ☐

    3. Support services   ☐

9. Are you a temporary or permanent staff?

    1. Temporary   ☐

    2. Permanent   ☐

10. Occupation of respondent:

    1. Doctor   ☐

    2. Nurse   ☐

    3. Midwife   ☐

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4. Community health officers ☐

5. Community health extension workers ☐

6. Auxilliary nurse ☐

7. Others (please specify)...

11. How long have you been a health worker? ....

12. Have you ever received any training on epidemic preparedness in the past 12months?

    1. Yes ☐

    2. No ☐

13. If yes to question 12, specify

S/N	Name of Programme (Training)	Date and Duration of Programme
*1		
2		
3		
4		
5		

*please specify the most recent training in row 1 above

14. If No to question 12, why were you not trained?.............................

15. Are you currently a member of any professional association(s)?

    1. Yes ☐

    2. No ☐

16. If Yes to question 15, which association(s)...

....

....

Section 3- Knowledge of Epidemic preparedness

17. What does the term 'epidemic preparedness' mean to you

....

....

....

18. What do you understand by 'disease outbreak'

....

....

....

19. What are the diseases prone to outbreaks in this local government?

....

....

....

20. How would you rate your knowledge of case reporting?	Not knowledgeable	Averagely knowledgeable	Very knowledgeable	Extremely knowledgeable

21. How would you rate your ability to manage cases of epidemic outbreaks?	Not satisfactory	Just Satisfactory	Very good	Excellent

22. What are the case definition of these following diseases during an outbreak:

1. Measles ....

....

....

2. Yellow fever

....

....

....

3. Cholera..

....

....

4. Lassa fever

....

....

....

23. How is measles reported?

....

....

24. Who do you report to in case of an outbreak?

....

25. Where do you get your vaccines? ....

26. Do you have a public health laboratory in Alimosho Local Government Area?

    1. Yes   ☐

    2. No   ☐

27. Have you ever received training on infection control?

    1. Yes   ☐

    2. No   ☐

28. If yes, what year?.........................

29. Where was the training done?........................

30. What was the duration of the training?..................

31. If more than one training, please specify the most recent...............

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Section 4- perception of disease outbreak

	Strongly Agree	Agree	Unsure	Disagree	Strongly disagree
32. I do not need to know about epidemic preparedness					
33. Health workers should be adequately prepared in case an epidemic outbreak occurs					
34. Epidemic preparedness is for selected health workers in the hospital					
35. Potential hazards likely to cause outbreaks should be identified and dealt with					
36. Training is necessary for all health workers					
37. Do you think it is necessary to have an outbreak plan?					
38. The outbreak plan needs to be regularly updated					
39. Outbreaks are unlikely to happen in our facility					
40. Case management during an outbreak is for doctors and nurses only					

41. Outbreak simulations should occur frequently in the facility					
42. Contingency stock for outbreak should be available in your Local Government Area?					

Section 5- practice of epidemic preparedness

	Yes	No	Don't know
43. Are there adequate and skilled man powers in your facility?			
44. If yes, 1. How many are skilled?			
45. Is there any epidemic preparedness ongoing training?	Yes	No	Don't know
46. If yes, 1. How often? 2. In the last 12months how many times have you had the training?	**Once a month, once in 3months, once in 6months, once a year, 0-1, 2-5, more than 5times**		
47. Is the epidemic plan periodically updated?	Yes	No	Don't know
48. If yes, how often?	**Once a month, ponce in 3months, once in 6months, once a year**		

APPENDIX II

PERCEPTION OF DISEASE OUTBREAK BY HEALTH WORKERS AND LEVEL OF EPIDEMIC PREPAREDNESS OF PUBLIC HEALTH FACILITIES IN ALIMOSHO LOCAL GOVERNMENT AREA, LAGOS

A key informant interview questions for the:

Disease surveillance and notification officer (DSNO) and Medical officer of health (MOH)

to assess level of epidemic preparedness in Alimosho local government area, Lagos state.

1. What epidemic preparedness plan do you have on ground in case of an epidemic outbreak

   ....

2. Who is in charge of this epidemic preparedness response plan?

   ....

3. How often is this epidemic preparedness response plan been updated?

   ....

4. How many people consist/make up your epidemic management committee

   ....

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5. How often do the members of the local government area emergency response committee meet?

....

6. How available are the funds when needed?

....

7. How are the available funds been used?

....

8. What are the challenges you face while preparing for epidemic outbreak

....

9. What is the first thing an health worker should do in case of an epidemic outbreak

....

10. What support do you have from the ministry of health

....

11. How can the ministry of health support your efforts?

....

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APPENDIX III

PERCEPTION OF DISEASE OUTBREAK BY HEALTH WORKERS AND LEVEL OF EPIDEMIC PREPAREDNESS OF PUBLIC HEALTH FACILITIES IN ALIMOSHO LOCAL GOVERNMENT AREA, LAGOS

A workplace checklist to assess the level of epidemic preparedness and available infrastructure for outbreak containment in Alimosho Local Government Area in Lagos State

Following a best practice study of emergency preparedness of outbreaks, the Federal Ministry of Health developed a National Policy on Integrated Disease Surveillance and Response (IDSR), with specific guidelines/ criteria to assess the emergency preparedness of outbreaks across the country.

The IDSR guidelines will be used to assess the emergency preparedness of outbreaks in Alimosho Local Government Area. The guideline/ recommendations include;

Criteria	IDSR recommendations	Study findings at Alimosho LGA	Any supporting document
Existence of Local Government Area(LGA) epidemic management committee(EMC)	Establishment of an LGA EMC		
Adequacy/ completeness of the members of the LGA EMC	EMC should comprise members of the public sector, NGOs with health care activities in the area, community and private sector		
Existence of LGA epidemic rapid response team	Establishment of LGA epidemic rapid response team		

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Criteria	IDSR recommendations	Study findings at Alimosho LGA	Any supporting document
Adequacy/ completeness of members of the LGA epidemic rapid response	Members of the team include Medical officer of health/ PHC coordinator, Laboratory technician, community health officers, Environmental health officer, National program on immunization managers, monitoring and evaluation/ Disease surveillance and notification officer		
Regularity of meetings of the LGA EMC	EMC to meet monthly in the absence of an epidemic		
Functionality of the committee	EMC to meet monthly in the absence of epidemic		
Existence of emergency preparedness and response plan	Prepare an emergency preparedness and response plan		
Training on epidemic response/ IDSR	60% health care workers should be trained on disease surveillance at LGA level		
Availability of emergency stocks of drugs, supplies and materials for case management of outbreaks	Availability of prepositioned emergency stocks of drugs, supplies and materials for case management of outbreaks at LGA level		
Availability of supplies for collecting and transporting laboratory specimens in outbreaks	Availability of supplies for collecting and transporting laboratory specimen in outbreaks(transport media for stool, appropriate collection materials for blood, sputum and cerebrospinal fluid)		
Availability of standard procedure for procuring	Availability of a written standard procedure for		

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Criteria	IDSR recommendations	Study findings at Alimosho LGA	Any supporting document
stocks of vaccines in the event of an outbreak	procuring stocks of vaccines in the event of an outbreak		
Availability of resources for transportation in outbreaks	Availability of travel arrangements for getting to and from the site of investigation		
Available communication methods used in the LGA when there are outbreaks	Availability of communication links between investigation team, LGA and the community		
Availability of funds for emergency response to outbreaks	Availability of a budget line for outbreaks		
Laboratory support in the LGA for confirmation of pathogens in epidemics	Availability of laboratory support in the LGA for confirmation of pathogens in epidemics		

NAME OF PUBLIC HEALTH CARE FACILITY

....

....

DATE ....

SIGNATURE...

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PERCEPTION OF DISEASE OUTBREAK BY HEALTH WORKERS AND LEVEL OF EPIDEMIC PREPAREDNESS OF PUBLIC HEALTH FACILITIES IN ALIMOSHO LOCAL GOVERNMENT AREA, LAGOS

HEALTH FACILITIES ASSESSMENT CHECKLIST

Public Health Facility	Infrastructure	Communication	Reporting forms	Ambulances	Consumables	Water supply	Record keeping	Training	Monitoring & Evaluation	Situation Analysis	Epidemic Map
Abaranje											
Aboru											
Agbado											
Agbelekale											
Agodo											
Akinogun											
Akinyele											
Akowonjo											
Amikonle											

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Public Health Facility	Infrastructure	Communication	Reporting forms	Ambulances	Consumables	Water supply	Record keeping	Training	Monitoring & Evaluation	Situation Analysis	Epidemic Map
Ayobo ipaja											
Egan											
Ejigbo Road											
Elf foundation											
Eyin Adegbite											
Idowu Egba											
Igando											
Ijegun											
Ikotun Igando											
Isheri Igando											
Isheri											
Isheri Osun											
Kokumo											
Liasu Road											

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Public Health Facility	Infrastructure	Communication	Reporting forms	Ambulances	Consumables	Water supply	Record keeping	Training	Monitoring & Evaluation	Situation Analysis	Epidemic Map
Ayobo ipaja											
Egan											
Ejigbo Road											
Eli foundation											
Eyin Adegbite											
Idowu Egba											
Igando											
Ijegun											
Ikotun Igando											
Isheri Igando											
Isheri											
Isheri Osun											
Kokumo											
Liasu Road											

Public Health Facility	Infrastructure	Communication	Reporting forms	Ambulances	Consumables	Water supply	Record keeping	Training	Monitoring & Evaluation	Situation Analysis	Epidemic Map
Meiran											
Mosun Okunola											
Ogbomoshot edo											
Oke Odo											
Okerube											
Orisumbare											

F – Functional   N – Needed   A – Available   S – Shortfall   NA – Not Available

AF – Available and Functional

NAME OF PUBLIC HEALTH CARE FACILITY

....

DATE ....

SIGNATURE...

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LAGOS STATE UNIVERSITY TEACHING HOSPITAL, IKEJA

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DIRECTORATE OF CLINICAL SERVICES AND TRAINING

HEALTH RESEARCH AND ETHICS COMMITTEE
REG. NO. NHREC04/04/2008
(www.nhrec.net)

PROJECT TITLE: EPIDEMIC PREPAREDNESS OF PUBLIC HEALTH CARE FACILITIES AND
PERCEPTION OF DISEASE OUTBREAK BY HEALTH CAREWORKERS IN AJIMOSHO LOCAL
GOVERNMENT AREA, LAGOS STATE
REF. NO.: LREC/10/06/310
PRINCIPAL INVESTIGATOR: FOLARIN TOLULOPE MOTUNRAYO
ADDRESS: DEPT. OF PUBLIC HEALTH, UNIVERSITY OF IBADAN
DATE OF RECIEPT OF VALID APPLICATION: 20/06/13
DATE OF APPROVAL: 05/07/2013

This is to inform you that the research described here in the submitted
protocol, the consent forms, advertisements and other participant information
have/have been reviewed and exempted by the Health Research and Ethics
committee of LASUTH.

There is no possibility of harm arising as a result of the conduct of this research
project and the information being evaluated is already available in the public
domain.

THE NATIONAL CODE FOR HEALTH RESEARCH AND ETHICS(www.nhrec.net)
REQUIRES YOU TO COMPLY WITH ALL INSTITUTIONAL GUIDELINES, RULES
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YOUR RESEARCH SITE WITHOUT PREVIOUS NOTIFICATION.

DR A ADEDOKUN
CMAC Director of Clinical Services
and Training

PROF D. A.A OKE