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INFLUENCE OF DISEASE SURVEILLANCE AND NOTIFICATION SYSTEMS ON EPIDEMIC CONTROL IN LOCAL GOVERNMENT AREAS OF OSUN STATE

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INFLUENCE OF DISEASE SURVEILLANCE AND NOTIFICATION SYSTEMS ON EPIDEMIC CONTROL IN LOCAL GOVERNMENT AREAS OF OSUN STATE

1.0 Introduction

Epidemic control involves the knowledge of the occurrence and distribution of diseases including the strategies of curbing or preventing them. The epidemiological division of the ministries of health in the state and national levels are responsible for conducting epidemiological surveys into some diseases that are infectious in nature. This results in the quick detection of epidemic and the provision of appropriate action for timely control of disease epidemics. Hence, epidemic control in the local government areas of Osun State requires the need for accurate, high quality health information, at the right place and at the right time, as indicated by information sharing for public health action theory which placed premium on use of surveillance information for epidemic control. This calls for health records management practices that can gather, organize, analyze, and summarize data into reports and assist in the successful carrying out of an active disease surveillance and notification systems that will result in effective epidemic control in local government areas of Osun State (Omole, 2015).

Epidemic control outcomes should result into curbing, checking, or regulating unusual occurrence of infectious disease(s) among the people within a geographical area, via the use of valuable information as indicated by information for public health action theory. This is why the relevance of control measures in disease epidemic control activities cannot be underestimated, because they contribute to reduction in morbidity and mortality, reduction in incidence rate of diseases and total stoppage of a disease epidemic. Availability of timely and relevant health information is also essential in epidemic control for mobilization resources for specific health intervention. It is at this instance that the researcher investigated the influence of patient records management practices, disease surveillance and notification systems on disease epidemic control in local government areas of Osun State.

Lucas & Gilles (2003) define surveillance as a system of constant monitoring of all aspects of the occurrence and spread of diseases and use of the information thus gathered for prevention and control of the disease in question. The characteristics of a good surveillance system have been grouped in terms of five domains by Lucas and Gilles: The public health importance of the health event (disease or condition) under surveillance, the usefulness of the system, the event

under surveillance, the flow of data within the system and the components of the system, a series of the epidemiological attributes of the system such as; simplicity, flexibility, acceptance, accuracy (sensitivity and specificity) representativeness and timeliness, and the resources required to operate the system.

Disease notification involves the official report to the appropriate health office at specific level, the occurrence of specific or notifiable disease, due to their effect on public health, while a system is a set of interrelated components, that interact together to perform a given task towards achieving a specific goal or objective. The usual sequence of event model that identified prompt identification of first case, detection and reporting, laboratory confirmation, and response, as the four sequences of events that must be regular part of health care delivery services is relevant to disease surveillance and notification system. The implementation of various components of disease surveillance and notification systems is to timely generate information for appropriate public health action, these include: detecting, investigating, reporting and managing cases and outbreaks, collecting and compiling data, analyzing and interpreting data, producing routine reports of the data and providing information to decision makers at the higher level and feed back to the peripheral levels.

Disease surveillance and notification systems involve official report of diseases to designated health authorities, through detection, investigation, reporting and managing cases and out breaks, collecting and compiling data, analyzing and interpreting data, and producing routine information for decision makers, and feed-back for efficient allocation of resources for effective disease epidemic control. It is therefore assumed that the quality, efficiency, and effectiveness of epidemic control, depends on an evidence-based, and result-oriented disease surveillance and notification systems, for the generation of accurate and reliable health information for action. Based on this assumption, the researcher examined the influence of disease surveillance and notification systems on disease epidemic control in Local Government Areas of Osun State.

1.1 Statement of the Problem

It has been observed by the investigator as disease surveillance and notification officer in one of the local government areas in Osun State that poor response to epidemic control by the concerned authorities usually results from passive disease surveillance and notification systems which use to have negative impact and grave consequences on epidemic control in the local

government areas. The problem therefore is that it is not clear the extent to which health care professionals in the local government areas pay attention to disease surveillance and notification systems for effective epidemic control.

Therefore, it is important to find out empirically the influence of disease surveillance and notification systems on effective epidemic control. It is in the light of this that the study investigated the influence of disease surveillance and notification systems on epidemic control in local government areas of Osun state; with a view to contributing to finding solutions to problems associated with disease surveillance and notification systems in relation to epidemic control in local government areas of Osun State.

1.2 Objective of the Study

The specific objectives of the study are to;

1. examine the epidemic control activities in the local government areas of Osun State;
2. ascertain the existing methods of disease surveillance and notification systems in the local government areas of Osun State;
3. find out the relationship between disease surveillance and notification systems and epidemic control in the local government areas of Osun State

1.3 Research Questions

The research questions for the study are;

1. What are the epidemic control activities conducted in the local government areas of Osun State?
2. What are the existing methods of disease surveillance and notification systems in the local government areas of Osun State?

1.4 Hypothesis

The study was tested under the following research hypothesis at 0.05 level of significance:

H_0: Disease surveillance and notification systems have no significant relationship with epidemic control in the local government areas of Osun State.

1.5 Scope of the Study

This study investigated the influence of Disease surveillance and notification systems on epidemic control among medical and health officers in local government areas of Osun State

1.6 Significance of the Study

Findings of this study would be of significance to the health care professionals, because the information generated from this study would enable them to address passive surveillance issues at the health facility level. The outcome of this research would help to identify sensitive types of disease surveillance and notification methods, which would allow effective epidemic control in the local government areas of Osun State.

The study would help to correct the attitude of health care professionals towards disease surveillance and notification activities which use to contribute to insufficient information gathering and the possible ways to reduce the deficiencies that would support epidemic control in local government areas of Osun State. The results of the study would be useful to the local government authorities to understand the need to provide necessary infrastructures that would enhance sensitive disease surveillance and notification systems that may lead to responsive epidemic control programmes within their catchment areas.

2.0 Review of Literature
2.1 The Concept of Epidemic Control

Epidemic Control is the process of curbing, checking, or regulating unusual occurrence of infectious disease(s) among the people within a geographical area. Epidemic is the occurrence of a number of cases of a disease, known or suspected to be infectious or of parasitic origin, that are usually large or unexpected for a given place or time. An epidemic often develops rapidly, so that a quick response is required (Federal Ministry of Health, 2011). Epidemic occurs when an infectious disease spreads rapidly among many people. An epidemic is a disease that spreads rapidly among many people in a community at the same time. It occurs when a disease is affecting many person at the same time and spreading from person to person in a locality where the disease is not permanently prevalent, (Random, 2016).

Epidemic control involves the process of instituting intervention programs against any epidemic disease with a view to curb its further spread. The control measures that may be put in place can be educative informative, preventive and curative, depending on the level of spread or prevalent rate, (Lucas & Gilles, 2014). Each level of surveillance has clear responsibilities based on its technical expertise, networks and resources. The emergency preparedness and response

committee and rapid response teams are the forums to ensure collaboration between all partners on epidemic control activities in the local government areas. The two committees (Emergency preparedness and response committee and rapid response team) of the local government area will convene when an outbreak occurs. The ideal composition of these teams and their specific responsibilities are discussed below:

2.1.1 Epidemic Preparedness and Response Committee (EPRC)

Erinoso (2015) asserts that local government area epidemic preparedness and response committee should periodically meet (whether or not there is an outbreak) to assess and review the epidemiological situation. When there is no outbreak, the epidemic preparedness committee should hold quarterly meetings to assess the trends of epidemics and monitor the implementation of the integrated disease surveillance and response plan, organize special preparatory meeting at the beginning of each epidemic season to review their level of preparedness, share conclusion and recommendations of these meetings with the state level and organize simulation exercises or drills to test the operation plans. The local government level epidemic preparedness committee should comprises of the chairman of the local government area, supervisory councilor for health, primary health care coordinator, disease surveillance and notification officer, health educator, zonal technical officer of partner agencies, pharmacist, divisional police officer and veterinary experts.

During an emergency or outbreak the epidemic preparedness committee should meet as soon as the epidemic is recognized, hold daily meetings at the beginning of an outbreak or epidemic and weekly, depending on the trend of the epidemic, assess and request support if the situation goes beyond the local government area's capacity. Also the committee regularly review and improve the epidemic response to ensure the success of epidemic control actions, prepare minutes after each meeting and forward a copy to the state level (minutes should be kept in a file for record purpose), document and communicate epidemic response actions to next higher level.

2.1.2 Rapid Response Team (RRT)

A Rapid Response Team is a technical, multi-disciplinary team that is readily available for quick mobilization and deployment in case of emergencies (Erinoso, 2015). The federal ministry of health (2013) explains that local government area emergency preparedness and response committee should constitute a local government area rapid response team, in order to respond to

epidemics promptly. The rapid response team provides technical support to the local government area epidemic preparedness and response committee and the members of the team should be oriented on epidemic preparedness and response. The rapid response team should be provided with adequate logistics (such as vehicle, kit of medicines, reagents, and supplies).

Members of the local government area rapid response team should include; primary health care coordinator, public health officer, laboratory scientist, clinician, environmental health officer, immunization officers, disease surveillance and notification officer, veterinary officer, pharmacist and others, based on the availability of technical staff and specificity of the outbreak. The local government area rapid response team should be responsible for; investigation of rumors or outbreak of diseases and other public health events, proposing appropriate strategies and measures for the rapid containment of the epidemics, and carrying out initial disease control measures to contain the outbreaks. Also, rapid response team will be responsible for coordination of rapid response actions with partners and other agencies, preparing detailed investigation report and contributing to the post epidemic evaluation of the outbreak response.

Therefore, epidemic preparedness management committee and rapid response team in each local government area should be dedicated to performing their roles towards effective epidemic control through epidemiology and surveillance, data management, specimen collection, transportation and processing, case management, immunization strategies and monitoring of the outbreak or event.

2.1.3 Epidemic Preparedness and Response

An epidemic often develops rapidly, so that a quick response is required. There is threatened or potential epidemic when the circumstances are such that the epidemic occurrence of a specific disease may reasonably be anticipated. This requires susceptible population, the presence of impending introduction of a disease agent and the presence of a mechanism that large scale transmission is possible such as contaminated water supply, a vector population and importation of a contagious disease (FMOH, 2011). This establish the fact that epidemic usually result into loss of human and economic resources, it usually pose political difficulties, if allowed to continue can throws the town, local government area, state country or even a continent into a total disarray and complete chaos.

Hence, structure must be in place to facilitate a responsive and effective epidemic control in local government areas such as strengthening of communication capacity, capacity building, strengthening data management, advocacy and sensitization, programs, management and coordination. Establishment of sentinel sites is important in disease control strategy for active case search of priority disease, and to promote active surveillance and to generate more detailed disease data disaggregated by sex, smaller age grouping and classification for specific target diseases of public health significance (FMOH, 2011). Also epidemic preparedness committee must be in place and must be well strengthened (Epidemic Preparedness Committee and Rapid Response Team). These committees shall meet on quarterly basis and when deemed necessary, with defined term of reference, plan of action and operation guidelines.

Laboratory network shall be established for integrated disease surveillance and response at states, central and reference laboratories and guideline must be developed for efficient laboratory services. Adequate mechanism should be established for communication with local government area for collection and transportation of specimens and feedback of results. Case based surveillance must be conducted when there is a suspected case of an epidemic prone disease or disease targeted for elimination, eradication and accelerated control such as polio, neonatal tetanus or measles or during outbreak of these diseases. Health workers shall conduct case based investigation to learn more about the specific disease pattern. Therefore health worker must use epidemiological case definition to identify suspected case and proceed to line list the suspected cases by age, sex, vaccination status (where applicable), home address and date of onset and take appropriate specimen for laboratory confirmation (National IDSR Policy, 2011). It could be inferred therefore that patient information needed for case line listing during case based surveillance are extracted from patient health records (Osundina, 2014).

2.1.4 Epidemic Control Management

Epidemic control involves the awareness of the distribution and determinants of disease and health related events in human population, and application of the knowledge for the prevention and control of health problems, (National IDSR Policy, 2011). Omole (2008) opines that epidemic control is the study or knowledge of occurrence of any disease considered to be infectious or suspected to be infectious or of parasitic origin and device means of preventing it.

Lucas and Gilles (2014) describe epidemiology as the study of the distribution of diseases in human population, against the background of their total environment. It includes a study of the patterns of disease as well as a search for the determinants of disease. It exploits the technologies from other disciplines microbiology, parasitology, social sciences, and so on, in analyzing the frequency, distribution and determinants of health and diseases in a population. The modern definition of epidemiology includes three important elements. First; all diseases are included, the term is no longer restricted to the study of infections but it includes cancer, malnutrition, road accidents, mental illness and other non-communicable diseases. Second; population, whereas clinical medicine is concerned with the features of disease in the individual, epidemiology deals with the distribution of disease in population communities or groups. Third; ecological approach, the frequency and distribution of disease are examined against the back ground of various circumstances in man's total environment; physical, biological and social. Therefore it could be deduced that epidemiology involves examining the occurrence of disease in terms of the interrelationship between human beings and their total environment.

Adegbesan (2014) buttresses that epidemic control measures involve all actions taken by health workers to put an end to the occurrence of new cases of diseases and preventing further spread of these diseases within a given geographical area. Lukas and Gilles (2003) submit that a programme for the control of communicable diseases should be based on a detailed knowledge of the epidemiology of the infection and on effective public health organization, to plan, execute and evaluate project. The epidemiological information should include; knowledge of the local distribution of the infection, the major foci and the overall effect of the infection on the population which could only be obtained through evidence based disease surveillance and notification systems

2.2 Disease Surveillance and Notification Systems

Disease surveillance and notification systems involve the act of carefully watching or maintaining a constant watch on the trend of occurrence of diseases within a geographical area through systematic data collection, and processing on morbidity and mortality and prompt reporting to the appropriate health authority for further necessary action (Oshotimehin, 2009). It is a branch of health information management practice that is concerned with a watchful vigilant approach to information gathering, which serves to improve or maintain the health of the

population, through timely and orderly reporting of the occurrence of specific diseases to the appropriate designated health authority (Ogunbodede, 2015). Thirty-three (33) medical conditions are notifiable in South Africa and disease surveillance is divided into passive surveillance, where routine reports are sent to the department of health, as well as, active surveillance where research projects are undertaken and reports are compiled. Disease Surveillance mainly comprises four types: Notifiable disease reporting system, Laboratory-based surveillance, Hospital-based surveillance, and Population-based surveillance (Wilson, 2014).

Fatiregun (2012) also posits that a functional disease surveillance system is essential for defining health problems and taking actions, as it involves an ongoing systematic collection, analysis and interpretation of health data in the process of describing and monitoring health events. The use of epidemiological methods in the service of surveillance, equip local government areas and local health team to set priorities, plan interventions, mobilize and allocate resources and predict or provide early detection of disease epidemic. Anibueze, (2009) reports that disease surveillance and notification system was introduced in 1988, following a major outbreak of yellow fever in 1987, which affected ten out of the nineteen states of the federation, the outbreak claimed so many lives in the South-Eastern part of Nigeria. The magnitude of the outbreak was attributed to weak or non-existence of disease surveillance and notification in most states in the country, and its effectiveness was a major cause of concern as it was not able to produce the required information needed for timely response to disease epidemic outbreaks.

Hence, in 1989, the National Council on Health approved the adoption of disease surveillance and notification system in the country and disease surveillance and notification forms 001 and 002 are the basic forms, used for collecting or obtaining information on disease surveillance and notification systems then. Forty notifiable diseases were addressed by the system, out of which ten epidemic prone diseases were selected for immediate reporting, and form 001, were for immediate reporting of epidemic prone diseases, while form 002 was for routine monthly reporting of all the forty diseases.

The introduction of the International Health Regulation (IHR) in 2005 and the recent outbreaks of emerging and re-emerging infectious diseases such as Ebola virus disease and other epidemic prone diseases in Nigeria demanding immediate public health action, there is a need to strengthen the existing notifiable disease surveillance and notification system with increased

clinicians' involvement in timely reporting of notifiable diseases to designated public health authorities for prompt public health action. This surveillance system gave way for the present integrated disease surveillance and response strategy being practiced in the country presently (Isere, Fatiregun & Ajayi, 2015)

2.2.1 Integrated Disease Surveillance and Response (IDSR)

Akpan (2014) asserts that integrated disease surveillance and response (IDSR) is a strategy and a tool to promote rational use of resources by integrating and streamlining common surveillance activities. Many intervention programs still rely on their own disease surveillance systems. Each program has made efforts through the years to improve its ability to obtain reliable data on time in order to use information for taking action. Disease control and prevention objectives are successfully met when resources are dedicated to improving the ability of health officials to detect the targeted diseases, obtain laboratory confirmation of the disease, and use thresholds to initiate action at the local government area level. It is in the light of this that World Health Organization (WHO) Regional Office for Africa (AFRO) proposes an integrated disease surveillance and response (IDSR) strategy for improving disease surveillance in Nigeria linking community, health facility, local government areas, state and national levels.

2.2.2 Integrated Disease Surveillance and Response Methods

Fatiregun (2013) in his report states that disease surveillance and notification systems are carried out through timely and orderly reporting of occurrence of specific diseases to the appropriate designated health authorities by collecting and compiling data on cases of diseases that reported for treatment in all the health facilities within all local government areas of Osun State. Health records practitioners are responsible for this exercise in every tier of health care service delivery in Nigeria. He submits further that, disease surveillance is divided into passive surveillance, where routine reports are sent to the local government area's disease surveillance and notification office, as well as active surveillance where the surveillance officer embarks on regular visit and records review at all health facilities within the local government area and reports are compiled.

Federal Ministry of Health (2008) stipulates that, to implement integrated disease surveillance and response activities, World Health Organization's Africa regional office has proposed to countries, a system of simplified tools and response actions. These tools are well simplified in

order to contribute to efficient and timely decision-making, based on the use of timely information, selection of appropriate response and effective use of available resources for preventing and controlling diseases epidemic. Also Federal Ministry of Health (2010) highlights forty (40) selected notifiable priority diseases in Nigeria.

The forty notifiable diseases according to F.M.O.H (2010) were selected on the basis of one of the following reasons: They are the top causes of high morbidity and mortality in the country (for example malaria, pneumonia, diarrhoea diseases, tuberculosis and HIV/AIDS); have epidemic potential (for example, cerebrospinal meningitis, measles, yellow fever and cholera), surveillance required internationally for addressing public health problem they pose (for example, onchocerciasis), and have intervention programs supported by World Health Organization (WHO) for prevention and control, eradication or elimination of the disease (for example, guinea worm, poliomyelitis, and leprosy). Also, disease surveillance and notification reporting forms (IDSR Forms) have increased from two (2) to five (5) reporting forms. These are;

1. **I.D.S.R. 001A** – Immediate case based reporting form: This form is called case investigation form. It is used for immediate reporting within twenty four hours of detecting or receiving the report of any epidemic prone disease from health facility or health facility worker to LGA health team.

2. **I.D.S.R. 001B** – Laboratory form: this form is used by the health facility, if laboratory specimen is collected, the form will be completed and a copy of this form is sent to the laboratory with the specimen.

3. **I.D.S.R. 001C** – Line list for reporting from health facility to L.G.A and for use during outbreaks: This form is used for line listing of cases for reporting from health facility to LGA and it is for use during outbreaks of any of the epidemic prone diseases in the local government area.

4. **I.D.S.R. 002** – Weekly reporting of new cases of epidemic prone diseases and other public health emergencies: The form is used for routine weekly reporting of new cases of epidemic prone diseases and other public health emergencies under surveillance.

5. **I.D.S.R. 003** - Routine Monthly Notification Form: This from is used at health facility level for routine monthly notification of the occurrence of any of the forty (40) notifiable diseases from health facility to local government area level. The same

form is replicated for LGA level for onward routine monthly notification of the occurrence of any of the forty (40) notifiable diseases to the state level (Federal Ministry of Health, 2014)

2.2.3 Methods of Disease Surveillance and Notification Systems

Federal ministry of health (2013) submits that several types of surveillance are used in disease surveillance and notification systems. The choice of method depends on the purpose of the surveillance action. In general, types of disease surveillance and notification systems are described below:

(a) **Hospital-based surveillance:** This includes the use of hospital discharge information as well as mortality data, to monitor disease trends and disease burden in a particular area served by the hospital. It is also called focused location for surveillance, such as health facility-based surveillance or community based surveillance.

(b) **Sentinel surveillance:** This involves prioritization and selection of health facilities for surveillance activities based on their size, the type of services rendered and level of their patronage. In sentinel surveillance, designated or representative health facility or reporting site is focused for early warning of epidemic or pandemic events.

(c) **Active surveillance:** This includes, regular visit of surveillance officers to the health facilities to conduct records review and clinical sensitization with a view to collect and use data for public health action. It also includes undertaking research projects and compilation of reports for specific health intervention.

(d) **Passive surveillance:** This is a situation where routine reports are sent to the department of health. In passive surveillance method, the surveillance officer stays in his office and reports are brought to his office from various health facilities within the jurisdiction of his local government area for onward transmission to the state and federal levels.

(e) **Laboratory-based surveillance:** This takes care of some diseases that can be monitored more accurately through the laboratory because of the non-specificity of their clinical syndrome. Laboratory data act only as a confirmation of the clinical diagnosis which serves as a tool for detecting events or trends of disease occurrence.

(f) **Disease-specific surveillance:** This involves the activities aimed at targeted data for a specific disease. For example, surveillance activity for Acute Flaccid Paralysis (AFP) is one of the polio eradication initiatives that are aimed at generating data for eradication of

poliomyelitis in Nigeria, which is also addressing surveillance needs for neonatal tetanus, measles, and other diseases.

(g) Population-based surveillance: A population-based surveillance system collects and analyses information in a well-defined population.

Regardless of the type of surveillance, the important issue is that the health data are used for public health action (Adeosun, 2013). In view of this; the disease surveillance officers in the thirty local government areas of Osun State ensure timely submission of the routine reports to the ministry of health on weekly and monthly basis. Also the immediate notification of epidemic prone diseases is done whenever there is occurrence of such diseases within the catchment area of their various local government areas to the state ministry of health for necessary action, which have contributed to making local government areas in Osun State an epidemic free environment.

Surveillance Officers also distribute standard case definitions to health facilities and simplified case definitions to the community. The case definition specifies those diseases and conditions that must be reported for surveillance purposes. The standard case definitions permit the surveillance system to obtain an improved detection of all cases of a disease or condition in a given population and exclude detection of other similar conditions (Isere, Fatiregun & Ajayi, 2015).

Involving community in plans to improve surveillance and response procedures in LGA is of paramount importance. If the community does not know how to notify health authorities when priority diseases or unusual health event occur, suspected cases will not be known at the health facility, probably until it is too late, and these cases will not be reported (FMOH, 2014). Therefore, using the same case definition throughout a country's public health surveillance system could ensure tracking of particular diseases or conditions as a signal for public health action. Data could be compared with better accuracy from one area to another for effective epidemic control.

3.0 Methodology

Survey research method was used. This study investigated the influence of disease surveillance and notification systems on epidemic control among medical and health officers in local government areas of Osun State. The instrument used for data collection was questionnaire. The

instrument was administered to medical and health officers who collected it. Administration and collection of the instrument lasted for three months. Retrieved data were analyzed and presented with the use of descriptive and inferential statistics that is: frequencies, percentages, means, standard deviation and simple correlation table.

4.0 Findings and Discussions

Data were collected through the questionnaire. Data generated through questionnaire were collated, coded, and analyzed using descriptive and inferential statistics that is: frequencies, percentages, means, standard deviation and simple correlation in analyzing the responses of the medical and health officers. Three hundred and six (306) copies of questionnaire were administered to all the medical and health professionals in the thirty (30) local government areas of Osun State while Two hundred and eighty five (285) copies of the questionnaire were successfully completed and retrieved.

The return rate of 306 copies of the questionnaire dispatched to the medical and health officers in the local government areas of Osun State show that 285 copies representing 93.1% were duly completed and returned while 21 copies representing 6.9% of the questionnaire were not duly completed. Therefore the results presented in the following sections were based on the 285 copies of the questionnaire that were duly completed and returned.

4.1 Socio-Demographic Distribution of Respondents

Table 4.1: Showing the Socio-Demographic Distribution of Respondents

Gender	Frequency	Percentage %
Male	119	41.7
Female	166	58.3
Total	285	100.0
Marital status	**Frequency**	**Percentage %**
Single	75	26.3
Married	197	69.1
Divorced	13	4.6
Total	285	100.0

Age range	Frequency	Percentage %
Below 30 years	44	15.4
31-35 years	61	21.4
36-40 years	121	42.5
41-45 years	47	16.5
46-50 years	12	4.2
Total	285	100.0
Religion	**Frequency**	**Percentage %**
Christianity	243	85.3
Islam	35	12.3
Traditional	7	2.4
Total	285	100.0
Educational Qualification	**Frequency**	**Percentage %**
Ph.D	6	2.1
M.Sc./M.HIM/MPH	43	15.1
B.Sc./B.Pharm./MBBS/BMLS	236	82.8
Total	285	100.0
Job status (Cadre)	**Frequency**	**Percentage %**
Senior staff	238	83.5
Directorate level	47	16.5
Total	275	100.0
Length of years in service	**Frequency**	**Percentage %**
1-5 years	25	8.8
6-10 years	124	43.5
11 years and above	136	47.7
Total	285	100.0

Source: Field Survey, 2016

Table 4.1 reveals the gender of the respondents in hierarchical order: Male respondents were 119(41.7%) while female respondents were 166(58.3%) in the distribution. Findings revealed that higher proportion of the respondents were female. This showed that more women are into medical and health care practices than men.

The marital status of the respondents as indicated in Table 4.1 shows that: Single respondents were 75(26.3%), Married respondents were 197(69.1%) and Divorced respondents were 13(4.6%) in the distribution. Findings revealed that majority of the respondents were

married. This implies that most of the respondents have marital commitments that enable them to have experience of indicating response to epidemic control issues.

Age of the respondents was indicated in the study as follows; below 30 years were 44(15.4%) of respondents; between 31-35 years were 61(21.4%) of respondents; between 36-40 years were 121(42.5%) of respondents; between 41-45 years were 47(16.5%) of respondents and between 46-50 years were 12(4.2%) of the total respondents in the study. Findings revealed that most of the respondents were within the age range 36 – 40 years (42.5%). This showed that the medical and health professionals in local government areas are relatively young. This implies that a larger percentage of the respondents were relatively active.

The religion of the respondents in hierarchical order as indicated in Table. 4.1 reveals that Christianity were 243(85.3%), Islam were 35(12.3%) while traditional was 7(2.4%) in the distribution. Findings revealed that most of the respondents were Christian. This implies that the health sector in the studied area is dominated by the Christian faith.

Educational Qualifications of the respondents in hierarchical order as indicated in Table 4.1 reveals that: Ph.D were 6(2.1%), M.Sc/M.HIM/MPH were 43(15.1%) while B.Sc/B.Pharm/MBBS/BMLS were 236(82.8%) in the distribution. Findings revealed that bachelor's degree holders (82.8%) constituted the highest population of the respondents. This showed that majority of the respondents had the basic qualification as a professional in their respective field of practice. This implies that they possessed adequate knowledge of the issues being investigated in the study.

The Job status (cadre) of the respondents in hierarchical order as indicated in Table 4.1 reveals that: Senior staff were 238(83.5%) while Directorate level were 47(16.5%) in the distribution. Findings revealed that majority of the respondents were senior staff (83.5%). This implies that the respondents consist of experienced officers who always participate in decision making process in the health sector especially on issues of epidemic control in the studied area.

The length of years in service of the respondents as indicated in the study reveals that: Between 1-5 years were 25(8.8%) of respondents; between 6-10 years were 124(43.5%) of respondents and finally, between 11years and above were 136(47.7%) of the total respondents in the study. Findings revealed that the working experience of majority of the respondents is 11 years and above (47.7%). This showed that majority of the respondents have adequate work

experience in the health sector. Their length of years in service implies that they have enough work experience to make the right judgment on the issues of epidemic control in the studied area.

4.2 Answers to Research Questions

This section consists of the results from the descriptive statistics on the account of the two Research Questions posed in the study:

Questions 1: What are the epidemic control activities conducted in the local government areas of Osun State?

Table 4.2: Showing Epidemic control activities conducted in the local government areas of Osun State

S/N	Items	SD (%)	D (%)	A (%)	SA (%)	Mean	Std. Dev
1	L.G.A. authorities use surveillance and notification information for specific control action	3 1.1	-	156 54.7	122 42.8	3.41	.555
2	Valuable information generated through patient records and disease surveillance systems enhances effective epidemic control	6 2.1	3 1.1	134 47.0	138 48.4	3.44	.630
3	Improved case management is achieved through epidemic control activities	-	18 6.3	146 51.2	117 41.1	3.35	.598
4	Appropriate control measures facilitate reduction of incidence rate of epidemic prone diseases	-	16 5.6	140 49.1	122 42.8	3.38	.594
5	Epidemic control activities usually enhance reduction in prevalence rate of epidemic prone diseases	-	22 7.7	146 51.2	110 38.6	3.32	.613
6	Awareness campaign on epidemic control strategies by L.G.A. authorities contribute to improved health and well-being	-	9 3.2	110 38.6	162 56.8	3.54	.560
7	Reduction in mortality rate is made possible via effective epidemic control activities	3 1.1	21 7.4	118 41.4	139 48.8	3.40	.674
8	Timely epidemic control intervention limits the number of infected persons within the shortest possible time	6 2.1	15 5.3	127 44.6	133 46.7	3.38	.687
9	Epidemic control activities reduce local government authorities' expenses on health issues within their catchment areas	10 3.5	21 7.4	123 43.2	127 44.6	3.31	.760

10	A well documented epidemic control activities provide information to guide subsequent outbreak	-	9 3.2	154 54.0	115 40.4	3.38	.549
11	Epidemic control activities facilitate stoppage of disease epidemics.	6 2.1	27 9.5	133 46.7	115 40.4	3.27	.721
12	Epidemic control plans are based on available relevant information	3 1.1	11 3.9	126 44.2	141 49.5	3.44	.625
13	Epidemic control plan usually attracts the attention of donor agencies	-	44 15.4	156 54.7	78 27.4	3.12	.652
14	Well implemented epidemic control activities provided specific information about the source(s) of the outbreak.	4 1.4	9 3.2	181 63.5	87 30.5	3.25	.581
15	Effective epidemic control activities facilitate reduction in case detection rate	12 4.2	21 7.4	116 40.7	132 46.3	3.31	.788

Source: Field Survey, 2016

SD = 1 = Strongly Disagree, D = 2 = Disagree, A = 3 = Agree, SA = 4 = Strongly Agree

X = Mean, Std. Dev. = Standard Deviation

The result in Table 4.2 reveals that (using the mean), respondents strongly agreed that awareness campaign on epidemic control strategies contribute to improved health and well-being ($\times$ = 3.54). This established the relevance of the implementation of activities involved in information sharing for public health action in epidemic control that is, information seeking, information sharing, task undertaken, collaboration and construction of organizational memory. It was revealed that valuable information generated through patient records and disease surveillance systems enhance epidemic control ($\times$ = 3.44), including the fact that epidemic control plans are based on available relevant information ($\times$ = 3.44). These confirmed the positive influence of patient records management practices and disease surveillance and notification systems on epidemic control.

The respondents also agreed strongly that reduction in mortality rate is made possible via effective epidemic control activities ($\times$ = 3.40), timely epidemic control intervention limits the number of infected persons within the shortest possible time ($\times$ = 3.38), appropriate control measures facilitate reduction of incidence rate of epidemic prone diseases ($\times$ = 3.38), a well documented epidemic control activities provide information to guide subsequent outbreak ($\times$ = 3.38) and epidemic control activities usually enhance reduction in incidence and prevalence rates of epidemic prone diseases ($\times$ = 3.38 & $\times$ = 3.32) respectively. These indicated the contribution

of the outcomes of epidemic control activities to improved well-being and mortality reduction in local government areas. Finally, the finding revealed that a well implemented epidemic control activities conducted in the local government areas through appropriate control measures will aid improved well-being, because they usually enhance reduction in prevalence rate of epidemic prone diseases and timely epidemic control intervention limits the number of infected persons within the shortest possible time.

Research Questions 2: What are the existing methods of disease surveillance and notification systems in the local government areas of Osun State?

Table 4.3: Showing the existing methods of disease surveillance and notification systems in the local government areas of Osun State

S/N	Items	SD (%)	D (%)	A (%)	SA (%)	Mean	Std. Dev
1	Integrated disease surveillance and response is the surveillance approach used in my LGA	6 2.1	20 7.0	148 51.9	111 38.9	3.28	.685
2	Surveillance and notification methods in my L.G.A. can be said to be passive in nature	6 2.1	46 16.1	176 61.8	53 18.6	2.98	.663
3	Prompt case identification is facilitated by the existing surveillance and notification methods in my L.G.A.	9 3.2	31 10.9	140 49.1	105 36.8	3.20	.753
4	Sentinel surveillance method is in place in my local government Area.	3 1.1	40 14.0	144 50.5	87 30.5	3.15	.698
5	Surveillance and notification methods in my L.G.A. can be said to be active in nature	6 2.1	19 6.7	114 40.0	143 50.2	3.40	.710
6	Active surveillance is used in my LGA to enhance prompt detection and reporting of outbreak	3 1.1	19 6.7	123 43.2	140 49.1	3.40	.662
7	Case detection and reporting are enhanced via the use of case definition and community involvement	3 1.1	24 8.4	160 56.1	98 34.4	3.24	.644
8	Laboratory confirmation is essential to determine specificity of clinical syndrome	-	6 2.1	150 52.6	129 45.3	3.43	.537
9	Laboratory data act as a confirmation of clinical diagnosis for detection of epidemic	6 2.1	9 3.2	105 36.8	165 57.9	3.51	.664
10	Availability of reporting forms facilitate effective investigation and response action	3 1.1	6 2.1	133 46.7	143 50.2	3.46	.596

11	Patient's demographic information enhances case investigation during surveillance	6 2.1	19 6.7	141 49.5	119 41.8	3.31	.689
12	Surveillance information extracted from patient records guarantee trend analysis of incidence cases reported	6 2.1	18 6.3	144 50.5	117 41.1	3.31	.683
13	Surveillance and Notification activities are dependent on patient records	3 1.1	25 8.8	120 42.1	137 48.1	3.37	.688
14	Surveillance reports are sent regularly and copies available at LGA. DSN office	-	16 5.6	160 56.1	109 38.2	3.33	.577

Source: Field Survey, 2016

SD = 1 = Strongly Disagree, D = 2 = Disagree, A = 3 = Agree, SA = 4 = Strongly Agree

X = Mean, Std. Dev. = Standard Deviation

The findings in Table 4.3 shows that (using the mean), people strongly agreed that laboratory data act as a confirmation of clinical diagnosis for detection of epidemics ($\times$ = 3.51).This enhances the usual sequence of events in health care service delivery. The events are: prompt identification of first case, detection/reporting, laboratory confirmation and response. It revealed that the most prominent surveillance method in the studied area is active surveillance method ($\times$ = 3.40). Availability of reporting forms facilitates effective case investigation and response action ($\times$ = 3.51) and that surveillance information extracted from patient records guarantee trend analysis including the fact that patient's demographic information enhances case investigation during surveillance ($\times$ = 3.31). Hence, it could be inferred that the efficiency of disease surveillance and notification activities contribute to epidemic control, because the surveillance information enhances trend analysis of incidence cases reported and the availability of reporting forms facilitate effective investigation and response action in the local government areas.

4.3 Test of Research Hypothesis

This section consists of the results from the inferential statistics on the account of the one hypothesis tested:

H$_0$: Disease surveillance and notification systems have no significant relationship with epidemic control in the local government areas of Osun State.

Table 4.4: Pearson Product Moment Correlation summary table, showing the relationship between disease surveillance and notification systems and epidemic control in the local government areas of Osun State

Variables	N	Mean	Std. Dev	Df	R	P	Sig
Epidemic Control Activities Disease surveillance and notification systems	285	50.356	5.404	283	.732**	.000	Sig
	285	49.583	5.710				

Source: Field Survey, 2016

Table 4.4 shows positive and significant relationship between disease surveillance and notification systems and epidemic control (Df = 283, N = 285, r = .732**, p < 0.05). The p-value associated with the r statistics is less than the 0.05 level of significance. Based on this, the null hypothesis is rejected. Therefore, there is a significant relationship between disease surveillance and notification systems and epidemic control activities. The table further revealed a positive significance exerted by disease surveillance and notification systems on epidemic control activities. It implies that a unit increase in disease surveillance and notification systems will increase the tendency for epidemic control activities in the studied area. To further understand the proportion of weight exerted by disease surveillance and notification systems with a determinant of coefficient r^2 $(.732)^2$ was estimated = 0.53582. This means that disease surveillance and notification systems factor accounted for 53.6% variation for the prediction of disease epidemic control activities. That is a unit increase in disease surveillance and notification systems improves epidemic control activities by 53.6%.

5.0 Summary of Findings

Major findings of the study are outlined below:

1. Findings established that awareness campaign on epidemic control strategies contribute to improved health and well-being. This established the relevance of the implementation of activities involved in information sharing for public health action in epidemic control that is, information seeking, information sharing, task undertaken, collaboration and construction of organizational memory. The respondents also agreed strongly that reduction in

mortality rate is made possible via effective epidemic control activities and that timely epidemic control intervention limits the number of infected persons within the shortest possible time.

2. The findings showed that laboratory data act as a confirmation of clinical diagnosis for detection of epidemics. This enhances the usual sequence of events in health care service delivery. The events are: prompt identification of first case, detection/reporting, laboratory confirmation and response. It revealed that the most prominent surveillance method in the studied area is active surveillance method, and that surveillance information extracted from patient records guarantee trend analysis including the fact that patient's demographic information enhances case investigation during surveillance.

3. The result showed that there is positive and significant relationship between disease surveillance and notification systems and epidemic control in the local government areas of Osun State.

6.0 Conclusion

The inference from this study established that disease surveillance and notification systems influence epidemic control in the local government areas. The effectiveness of epidemic control depends on an evidence-based, disease surveillance and notification systems for generation of accurate and reliable health information for action. Effective epidemic control depends on the extent to which disease surveillance and notification systems are taken seriously by health care professionals in the local government areas. Therefore, effective epidemic control can only be achieved through evidence based disease surveillance and notification systems that placed premium on the use of surveillance information for public health action in local government areas of Osun State.

7.0 Recommendations

On the basis of the findings and conclusion of this study, the following recommendations are made;

1. State government and the management of LGAs via ministry of health should ensure constant implementation of various strategies that are very essential to an effective epidemic control intervention
2. State and LGAs should provide logistics and materials to facilitate timely collection, processing, storage, analysis, dissemination and the use of surveillance information as well as adequate financing of its essential sub-systems and components
3. State government should provide a reliable and efficient system for the electronic notification of notifiable conditions and electronic clinical information management capacity in public health facilities