International Journal of Spectrum Research in Medical and Clinical Practice (IJSRMC)
2(1), January-March, 2026, Pages 171-191

 ISSN: 3092-975X

https://doi.org/10.5281/zenodo.19364187

Influence of Disease Surveillance and Notification System on Control of Epidemic Outbreak in Ife East Local Government Area, of Osun State

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ABSTRACT

The global burden of infectious disease outbreaks has intensified in recent decades, driven by urbanization, climate change, and increased human-animal interactions, necessitating robust disease surveillance and notification systems. Disease surveillance and notification systems are critical for public health management because they provide the means for early detection and prompt response to epidemic outbreaks. The research work was conducted to Influence of Disease Surveillance and Notification on Control of Epidemic Outbreak in Ife East Local Government Area, of Osun State. This study employed a descriptive cross-sectional design with a mixed-methods approach. The study population consisted of 194 health professionals selected from the target wards in Ife East Local Government. A total enumeration approach was adopted for this study. This study employed a multi-stage sampling technique to ensure a systematic, unbiased, and representative selection of respondents. A combination of a questionnaire, interview and checklist was carefully designed as the research instruments for this study. The questionnaire was analyzed using frequencies, percentages, means, standard deviations, and Spearman's correlation coefficient with the aid of Statistical Package for the Social Sciences (SPSS) version 23. The interview questions were analyzed using thematic analysis. The study found that epidemic control activities were generally present across facilities in Ife East LGA, with strong agreement on the presence of Standard operating Procedure (mean = 3.31, SD = 0.90), preparedness drills (mean = 3.27, SD = 0.84), and training (mean = 3.38, SD = 0.87). However, community health education was less consistent (mean = 3.04, SD = 0.98), showing a notable outreach gap. Surveillance systems integrated passive (mean = 3.10, SD = 0.99) and active (mean = 3.30, SD = 0.92) approaches, supported by lab diagnostics (mean = 3.41, SD = 0.90) and outbreak investigations (mean = 3.35, SD = 0.94). Respondents affirmed the importance of surveillance in early outbreak detection and epidemic preparedness. Major barriers included workforce shortages (91.2%), training gaps (89.0%), poor infrastructure, and weak feedback systems (70.3%). These challenges significantly undermine surveillance efficiency. A significant positive correlation (ρ = .563, p< .01) confirmed that stronger surveillance systems lead to better epidemic control outcomes. The study confirmed that effective disease surveillance and notification systems play a vital role in controlling epidemic outbreaks Based on the conclusion, it is recommended The Ife East LGA Health Department and primary healthcare centers should intensify health education and public engagement to improve community awareness and participation in epidemic prevention and response.

Keywords: *Disease Surveillance, Epidemic Control, Notification Systems, Public Health Response, Outbreak Detection*

INTRODUCTION

The global burden of infectious disease outbreaks has intensified in recent decades, driven by factors such as urbanization, climate change, and increased human-animal interactions. These escalating threats necessitate robust disease surveillance and notification systems, which are critical for early detection, rapid response, and the containment of epidemics (McClymont et al., 2024). The COVID-19 pandemic served as a stark reminder of the disparities in surveillance capabilities globally; nations with

advanced digital frameworks mitigated transmission effectively, while regions with fragmented systems faced prolonged outbreaks (Li et al., 2024).

Disease surveillance and notification systems are the backbone of public health management. They facilitate the continuous collection, analysis, and dissemination of health data in real time, enabling rapid decision-making to limit the spread of infectious diseases (WHO, 2019). In Nigeria, the evolution of surveillance has shifted from manual, fragmented reporting to the Integrated Disease Surveillance and Response (IDSR) strategy. This framework aims to harmonize reporting procedures across local, state, and national levels, utilizing digital platforms to enhance data quality and response speed (Ibrahim et al., 2020). However, at the local level, such as in Ife East Local Government Area (LGA) of Osun State, infrastructural and resource limitations continue to challenge the full realization of these systems (Okeke et al., 2019).

Statement of the Problem

Despite the adoption of the IDSR strategy and digital reporting platforms like SORMAS, epidemic outbreaks continue to impose significant burdens on the public health system in Ife East LGA. Delays in disease detection and notification have historically led to high morbidity, mortality, and severe socioeconomic disruptions (Ibrahim et al., 2020). Many health facilities in the region struggle with incomplete reporting, poor feedback mechanisms, and inadequate laboratory capacity (Twene et al., 2024). These systemic gaps are compounded by a lack of trained healthcare workers, insufficient logistics for data management, and poor internet connectivity. Consequently, the response to outbreaks is often reactive rather than proactive. If these deficiencies remain unaddressed, the LGA faces the risk of larger, more protracted outbreaks, eroding community trust and overwhelming an already fragile healthcare infrastructure. Therefore, this study is necessary to critically examine the influence of disease surveillance and notification on the control of epidemic outbreaks specifically within Ife East LGA.

Objectives of the Study

The primary objective of this study is to examine the influence of disease surveillance and notification on the control of epidemic outbreaks in Ife East Local Government Area, Osun State. The specific objectives are to:

1. Examine the epidemic control activities currently in place in Ife East LGA.
2. Ascertain the existing methods of disease surveillance and notification systems utilized in the area.
3. Determine the relationship between disease surveillance/notification systems and epidemic control outcomes.
4. Identify factors that hinder the effectiveness of these systems in Ife East LGA.

Significance of the Study

This study is significant as it addresses critical gaps in the local public health infrastructure. By pinpointing specific weaknesses such as delayed reporting and training deficits—the findings will provide actionable insights for local policymakers and public health practitioners to design targeted interventions. Strengthening the surveillance system in Ife East will not only improve immediate outbreak responses but also contribute to long-term health security, reducing mortality rates and minimizing the socioeconomic impact of future epidemics.

LITERATURE REVIEW

Conceptual Review

Disease Surveillance and Notification Systems:

Disease surveillance is the systematic, ongoing collection, collation, and analysis of health data essential for public health planning and response (WHO, 2019). These systems have evolved from passive, manual reporting to sophisticated, technology-driven frameworks incorporating Artificial Intelligence (AI) and big data. Effective surveillance is categorized into passive (routine reporting), active (proactive case search), sentinel (site-specific monitoring), and syndromic (symptom-based) surveillance. Notification systems serve as the communication arm, ensuring that critical information reaches stakeholders rapidly to trigger interventions (Sarıkaya & Dicle, 2024).

Epidemic Control in Nigeria:

Epidemic control in Nigeria is spearheaded by the Nigeria Centre for Disease Control and Prevention (NCDC) through the Integrated Disease Surveillance and Response (IDSR) framework. This approach integrates data from laboratories, health facilities, and communities to manage threats like Lassa fever, cholera, and meningitis (Otu et al., 2021). Despite progress with tools like SORMAS, challenges such as funding constraints, weak infrastructure, and security issues persist.

The Relationship between Surveillance and Control

Literature consistently demonstrates that robust surveillance systems are a prerequisite for effective epidemic control. Early detection allows for the timely implementation of interventions such as isolation, vaccination, and contact tracing—which significantly reduces morbidity and mortality (Colomb-Cotinat et al., 2024). For instance, regions utilizing real-time digital reporting have shown lower case fatality rates during epidemics compared to those relying on delayed manual systems.

Theoretical Framework

This study is grounded in three key theories:

1. **Health Belief Model (HBM):** This model suggests that the willingness of individuals and healthcare workers to report diseases depends on their perception of susceptibility, severity, benefits, and barriers. In Ife East, if healthcare workers perceive the reporting process as burdensome (barrier) or do not see the immediate value (benefit), surveillance efficiency drops.
2. **Epidemiological Triangle Theory:** This theory explains disease outbreaks through the interaction of the Agent (pathogen), Host (human population), and Environment. Surveillance systems function by monitoring these three elements to detect imbalances that lead to epidemics.
3. **Diffusion of Innovation (DOI) Theory:** This theory explains how new technologies (like digital surveillance tools) are adopted. It categorizes users into innovators, early adopters, and laggards. Understanding this helps explain why some facilities in Ife East may lag in adopting modern notification protocols.

Empirical review

Epidemic control activities

Ezeocha (2024) conducted a study on the effectiveness of financial technology in enhancing epidemic response mechanisms in Nigeria. Using a mixed-method approach, the researcher collected data from 200 healthcare administrators and finance experts across Lagos, Abuja, and Kano. The study found that 75% of respondents acknowledged the role of financial technology in facilitating real-time disbursement of epidemic response funds. However, 40% identified issues such as lack of digital infrastructure and financial mismanagement as major obstacles to implementation. The study emphasized the need for policy-driven integration of financial technology into epidemic control strategies.

Oluwasegun and Ajibade (2023) examined the impact of community engagement programs on the control of Lassa fever outbreaks in Edo and Ondo states. Using survey data from 300 healthcare workers and local community leaders, the study found that 67% of respondents believed community education significantly improved early disease reporting. However, 48% indicated that cultural misconceptions and distrust in health authorities hindered full participation in epidemic response efforts. The study recommended targeted health campaigns to bridge communication gaps.

Ibrahim, Kuti, and Adebayo (2022) assessed the effectiveness of Nigeria's Integrated Disease Surveillance and Response (IDSR) framework in managing cholera outbreaks. The study analyzed cholera surveillance data from 2018 to 2021 across six states and conducted interviews with 150 disease surveillance officers. The results showed that timely detection and response under the IDSR framework reduced cholera-related mortality by 32%. However, challenges such as inadequate laboratory capacity and poor inter-agency coordination were identified as barriers to full implementation.

Adegboye and Yusuf (2020) analyzed the impact of border control measures on the spread of infectious diseases in Nigeria. Using a comparative study of Ebola (2014) and COVID-19 (2020), the study found that border screening and travel restrictions delayed virus importation by an average of 18 days, allowing time for response planning. However, inconsistencies in enforcement and inadequate quarantine

facilities reduced the overall effectiveness of these measures. The study highlighted the need for standardized border health policies.

Methods of Disease Surveillance and Notification Systems in Nigeria

Eze, Anwagom, and Calista (2024) conducted a study evaluating the implementation of the Integrated Disease Surveillance and Response (IDSR) system in Enugu State, Nigeria. Using a mixed-method approach, the researchers collected data from 150 health professionals across public health institutions. Their findings revealed that while 73% of respondents acknowledged improvements in disease reporting, only 45% believed that real-time surveillance data influenced epidemic response planning. The study highlighted gaps in laboratory diagnostics and data integration as key challenges affecting the effectiveness of the IDSR system.

Omoleke and de Kiev (2024) assessed the surveillance system for monitoring adverse events following immunization (AEFI) in Kebbi State, Nigeria. The study employed a mixed-method research design, combining quantitative data from vaccination reports and qualitative interviews with 120 healthcare workers. Findings indicated that 68% of cases were reported within 24 hours, but delays in follow-up investigations affected overall system efficiency. The study recommended enhanced training programs and digital reporting tools to improve response accuracy.

Atere, Ogaje, and Ahmad (2024) conducted a study on the role of laboratory-based disease surveillance in Nigeria. Data from 15 public health laboratories were analyzed to determine their capacity to detect and report outbreaks. Results showed that 79% of laboratories had sufficient diagnostic tools for common infectious diseases, but only 38% had rapid electronic reporting systems. The study emphasized the need for infrastructural investment and harmonized surveillance protocols to enhance outbreak detection.

Ogunniyi, Dike, and Turzin (2024) explored community-based disease surveillance strategies in Nigeria, focusing on lessons learned from the COVID-19 pandemic. The study used surveys from 200 community health workers and in-depth interviews with public health officials. Findings revealed that grassroots reporting mechanisms helped detect 52% of early-stage infections in rural areas. However, inconsistencies in data transmission and lack of financial support limited the effectiveness of the approach. The study recommended integrating community health surveillance into national disease monitoring systems.

Ugwu, Adekeye, and Ringwald (2025) conducted a study on the role of gender-responsive surveillance in tuberculosis (TB) monitoring in Nigeria. Using a researcher-led collaborative approach, the study engaged 250 TB patients and healthcare workers in designing a tailored reporting system. Findings indicated that gender-sensitive surveillance improved TB case detection rates by 40%, particularly among women in underserved communities. The study advocated for the adoption of gender-focused data collection strategies to enhance disease notification.

Adomi, Asogun, and Rwuaan (2024) conducted a study on the effectiveness of digital disease surveillance tools in Nigeria. Using a survey of 300 healthcare workers across federal and state hospitals, the study found that 67% of respondents believed digital surveillance systems improved real-time disease monitoring. However, 45% cited limited internet connectivity and cybersecurity concerns as major challenges. The study recommended investment in health informatics infrastructure to optimize digital reporting.

Olowe, Olawumi, and Adeyemi (2024) examined the role of syndromic surveillance in detecting early warning signs of disease outbreaks in Nigeria. The researchers analyzed hospital records and conducted interviews with 250 frontline health workers. The study found that syndromic surveillance contributed to a 30% faster identification of disease clusters but suffered from high false-positive rates due to misclassification of symptoms. The authors recommended integrating laboratory confirmation into syndromic surveillance models to enhance accuracy.

Relationship between Disease Surveillance and Notification Systems and Epidemic Control

Fischer (2024) conducted a study on the epidemiology of Legionnaires' disease in Switzerland, highlighting the role of disease surveillance and notification systems in controlling outbreaks. The research analyzed data from national surveillance databases and assessed how early detection influenced public health interventions. Findings revealed that timely notification led to improved case management and

reduced hospitalizations by 40%. However, delays in reporting cases due to fragmented health information systems hindered swift response measures. The study emphasized the need for strengthening real-time disease reporting frameworks to improve epidemic preparedness and response efficiency.

Abbasi, Lund, Hallas, and Pottegård (2025) examined how real-world epidemiological data can be used to enhance disease surveillance and notification systems. The study focused on drug safety surveillance, assessing how automated notification systems influenced public health decision-making. Using a self-controlled study design, the researchers found that surveillance tools improved the detection of adverse drug reactions and reduced response times by 55%. However, challenges such as inconsistent data collection and underreporting limited the system's effectiveness. The study recommended enhancing digital integration between disease surveillance databases and healthcare facilities.

Bamgboye, Ojo, and Adeyemi (2023) conducted a study on Nigeria's Integrated Disease Surveillance and Response (IDSR) system, evaluating its role in epidemic control. The study surveyed 200 disease surveillance officers across six states and analyzed the effectiveness of real-time disease notification mechanisms. Results indicated that IDSR interventions led to a 30% reduction in cholera-related mortality by enabling faster outbreak response. However, limited laboratory capacity, delays in case reporting, and funding constraints were major challenges. The study suggested investment in diagnostic tools and inter-agency collaboration to enhance disease surveillance in Nigeria.

Nwachukwu and Eze (2022) examined the impact of digital health tools on epidemic control, particularly in the COVID-19 notification system in Nigeria. The study surveyed 250 healthcare professionals in Lagos and Abuja and found that mobile health (mHealth) applications improved case tracking by 78% and enhanced contact tracing efficiency. Despite these benefits, poor internet connectivity and data privacy concerns limited widespread adoption. The study recommended expanding digital infrastructure and enforcing cybersecurity measures to protect sensitive health data.

Ihemezie et al. (2023) assessed the impact of the Ebola outbreak in West Africa and its influence on COVID-19 preparedness and response. The study reviewed empirical literature, policy documents, and case reports from Nigeria, Sierra Leone, and Liberia, identifying the importance of pre-existing surveillance infrastructure in managing outbreaks. Results showed that countries with strong surveillance frameworks had 50% faster response times than those with weak health systems. However, political instability and weak governance structures hindered effective disease notification. The study recommended strengthening institutional frameworks and increasing cross-border health collaboration.

McGowan et al. (2022) conducted a global systematic review on community-based disease surveillance, evaluating its role in epidemic control efforts. The study synthesized evidence from 20 countries, assessing how community involvement improved disease reporting. Results indicated that engaging local communities in disease surveillance increased outbreak detection rates by 35%. However, barriers such as low public awareness, inadequate funding, and weak integration with national reporting systems limited the effectiveness of community-based approaches. The study emphasized the need for strengthening local health education programs and integrating community-led reporting into national surveillance strategies.

Manirambona et al. (2024) explored strategies for mitigating infectious disease outbreaks in tropical Africa, with case studies from Nigeria, Ghana, and Rwanda. The study assessed how digital health strategies, early warning systems, and rapid response teams influenced epidemic control efforts. Findings showed that countries with robust digital health frameworks had 40% better epidemic response outcomes than those with outdated notification systems. However, limited access to electronic surveillance tools and inadequate data-sharing mechanisms hindered full implementation. The study recommended expanding digital health adoption and training frontline health workers in data management.

Factors Hindering the Effectiveness of Disease Surveillance and Notification Systems in Nigeria

Owushi (2024) examined the barriers to effective disease surveillance in Nigeria, focusing on infrastructure and workforce limitations. The study analyzed data from 12 public health institutions and found that inadequate funding and lack of trained personnel reduced reporting accuracy by 65%. The research highlighted that weak infrastructure delayed case detection, impacting outbreak response times. Additionally, poor data integration across regions led to fragmented reporting, making it difficult to track disease spread effectively. The study further emphasized that outdated surveillance technology contributed to delays in information dissemination.

Makau and Kiarie (2024) investigated how data inconsistencies and poor coordination affected disease monitoring in Nigeria. Their study involved 150 healthcare workers in Lagos and Abuja, revealing that 58% struggled with delayed notifications due to unreliable data transmission. Findings showed that integrating a unified digital reporting system could enhance efficiency by 47%. Furthermore, the study identified that the lack of interoperability between state and federal health databases caused significant discrepancies in case reporting. Many healthcare workers also reported difficulties accessing updated disease protocols, which hindered timely responses.

Osaro et al. (2024) explored the awareness and practice of disease notification among private healthcare providers in Rivers State. A survey of 200 health workers found that only 40% had adequate knowledge of disease reporting protocols. Key barriers identified included poor incentives, lack of training, and minimal government support. Additionally, findings showed that many private healthcare providers did not consider disease notification a priority, often focusing more on patient treatment than reporting. The study highlighted that weak enforcement of notification policies led to underreporting of critical diseases such as Lassa fever and cholera.

Atere et al. (2024) analyzed recent disease outbreaks in Nigeria, focusing on surveillance system gaps. The study found that limited laboratory capacity and slow case reporting resulted in a 30% delay in outbreak response. Findings suggested that digital health tools and community-based reporting could reduce reporting delays by 50%. The study also identified that reliance on manual data collection methods contributed to errors and inconsistencies in case reporting. Many rural health facilities lacked internet access, making real-time reporting difficult and forcing them to rely on paper-based logs. Additionally, weak government oversight led to inconsistent reporting standards across different states. Additionally, the study found that political instability affected long-term health policy implementation, as frequent changes in leadership led to inconsistent priorities. The study recommended establishing clear policy guidelines, increasing budget allocations for emergency response teams, and creating a national oversight body for disease notification.

Olowe et al. (2024) reviewed malaria surveillance challenges in Nigeria. Their study identified poor data management and lack of collaboration among health agencies as major setbacks. The findings showed that while malaria reporting had improved with donor-funded programs, the absence of long-term government investment weakened surveillance sustainability. Additionally, the study noted that some local government areas lacked trained personnel to interpret surveillance data effectively. Many community health workers reported difficulties in using electronic reporting tools due to insufficient training. The study found that malaria notification rates were higher in urban centers but significantly lower in rural areas due to access barriers.

RESEARCH METHOD

Area of Study

The study was conducted in Ife East Local Government Area (LGA) of Osun State, Nigeria. Ife East LGA is one of the three Ife LGAs and comprises 10 political wards with a mix of urban, peri-urban, and rural communities. The LGA has a projected population of approximately 250,000 (based on the 2006 census figure of 188,027). The area is home to Obafemi Awolowo University Teaching Hospitals Complex and several public and private health facilities. The tropical climate, high population density in Modakeke and parts of Ile-Ife, poor sanitation in some communities, and seasonal flooding create favourable conditions for recurrent outbreaks of cholera, Lassa fever, measles, and other notifiable diseases. These characteristics make Ife East LGA a suitable setting for assessing the functionality and impact of disease surveillance and notification systems at the grassroots level.

Research Design

This study adopted a descriptive cross-sectional design using a mixed-methods approach (QUAN + QUAL). The quantitative component employed a structured questionnaire, while the qualitative component utilized semi-structured interviews and a documentary checklist. This design allowed for a comprehensive assessment of current practices, system functionality, relationships between variables, and contextual barriers at a single point in time among healthcare workers actively involved in surveillance activities.

Population of the Study

The target population comprised all 194 healthcare professionals directly involved in disease surveillance, notification, and epidemic response across 12 public health facilities in Ife East LGA. These included medical officers, nurses/midwives, community health extension workers (CHEWs), disease surveillance and notification officers (DSNOs), medical laboratory scientists, pharmacists, and health records/information officers.

Staff Distribution by Ward and Health Facility

Ward	Health Facility	No. of Staff
Ward 1: Okerewe	State Hospital, Oke-Ogbo	29
	Iloro PHC	20
	Gbodo PHC	18
Subtotal		67
Ward 2: Ilode	Odowara PHC	22
	Omitoto PHC	10
	Ifelodun PHC	16
Subtotal		48
Ward 3: Moore	Moore PHC	8
	Ajigbore PHC	12
	Agric Opa PHC	14
Subtotal		34
Ward 4: Modakeke	Oke D.O PHC	17
	Oke Bola PHC	15
	Ade Owo PHC	13
Subtotal		45
Grand Total		194

3.4 Sampling Technique and Sample Size

A multi-stage sampling technique was combined with total enumeration to achieve maximum representativeness and inclusiveness. Stage 1: Four out of the ten political wards (Okerewe, Ilode, Moore, and Modakeke I) were purposively selected based on high population density, burden of notifiable diseases, and presence of functional public health facilities. Stage 2: From each selected ward, three public health facilities were chosen using simple random sampling (balloting), giving a total of 12 facilities. Stage 3: Because the total population of eligible healthcare workers in these 12 facilities was manageable (N = 194), total enumeration (census) was applied. All 194 eligible professionals who were present and gave consent were included in the study.

Data Collection Instrument

Three instruments were used:

1. Structured Questionnaire: Divided into six sections (A–F) containing both closed- and open-ended items measured primarily on a 4-point Likert scale (Strongly Agree to Strongly Disagree / Always to Never).
2. Semi-Structured Interview Guide: Administered to 12 key informants (one DSNO or facility head per selected ward) to obtain in-depth perspectives on challenges and recommendations.
3. Documentary Checklist: Used to assess completeness, accuracy, and timeliness of surveillance forms, registers, and reporting records in each facility.

Validity and Reliability of Research Instrument

Content and face validity were established through expert review by three public health physicians, one epidemiologist, and two health information management experts from Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife. Necessary adjustments were made based on their feedback. Reliability

was determined through a pilot study conducted among 15 healthcare workers at Comprehensive Health Centre, Eleyele, Ile-Ife (outside the study area). Cronbach's Alpha and Split-Half methods were used.

Reliability Statistics (Pilot Study, N=15)

Component	**Value**	**Interpretation**
Cronbach's Alpha (Raw)	0.817	Good barang
Cronbach's Alpha (Standardized)	0.835	Good
Split-Half (Part 1)	0.730	Acceptable
Split-Half (Part 2)	0.868	Very Good
Spearman-Brown Coefficient	0.930	Excellent
Guttman Split-Half Coefficient	0.830	Good

Per-objective Cronbach's Alpha values ranged from 0.764 to 0.994, confirming high to excellent internal consistency.

Data Collection Procedure

Ethical approval and introductory letters were obtained from the School of Health Information Management, OAUTHC, Ile-Ife. Permission was secured from the Ife East LGA Primary Health Care Coordinator. Trained research assistants (final-year Health Information Management students) administered the questionnaires after a brief orientation session in each facility. Questionnaires were completed on the spot and retrieved immediately to maximize return rate. Interviews were audio-recorded with consent and lasted 20–30 minutes each. The documentary checklist was completed by the principal researcher in collaboration with the facility records officer.

Method of Data Analysis

Quantitative data were cleaned, coded, and analyzed using IBM SPSS version 23. Descriptive statistics (frequencies, percentages, means, standard deviations) were used to summarize responses. Spearman's rank correlation coefficient was used to test the hypothesis on the relationship between disease surveillance/notification systems and epidemic control (significance level set at $p < 0.05$). Qualitative data from interviews were transcribed, coded, and analyzed thematically using NVivo 12 to identify recurring themes and sub-themes. Checklist data were analyzed descriptively to assess system functionality.

Ethical Considerations

Ethical approval for the study was obtained from the Research and Ethics Committee of the School of Health Information Management at OAUTHC in Ile-Ife. All participants provided written informed consent, ensuring that their involvement was voluntary, with the option to withdraw at any time without consequence. To maintain confidentiality and anonymity, no names or personal identifiers were included on the questionnaires. Data were stored securely on password-protected devices, accessible only to the research team. The results are presented in aggregate form to further protect the identities of individual respondents and facilities.

RESULTS AND DISCUSSION

A total number of 194 questionnaires were administered. Analysis was made based on the total number of 182 questionnaires retrieved from the respondents. This gave a response rate of 94%

Demographic Information

Table 4.1 Demographic Characteristics of Respondents (n = 182)

Variable	**Category**	**Frequency**	**Valid Percent**
Age	Under 25	38	20.9%
	25–34	34	18.7%
	35–44	45	24.7%
	45–54	30	16.5%
	55 and above	35	19.2%

	Total	**182**	**100.0%**
Gender	Male	99	54.4%
	Female	83	45.6%
	Total	**182**	**100.0%**
Educational Qualification	OND	36	19.8%
	HND	35	19.2%
	B.Sc/BNSc	36	19.8%
	M.Sc	39	21.4%
	Others	36	19.8%
	Total	**182**	**100.0%**
Job Designation	Doctors	30	16.5%
	HIM Professionals	30	16.5%
	Nurses	25	13.7%
	Laboratory Staff	25	13.7%
	Community Health Officers (CHO)	39	21.4%
	Others	33	18.1%
	Total	**182**	**100.0%**
Years of Experience	Less than 1 year	54	29.7%
	1–5 years	49	26.9%
	6–10 years	44	24.2%
	Above 10 years	35	19.2%
	Total	**182**	**100.0%**
Facility Name	State Hospital, Oke-Ogbo	29	15.9%
	Iloro PHC	20	11.0%
	Gbodo PHC	18	9.9%
	Odowara PHC	20	11.0%
	Omitoto PHC	10	5.5%
	Ifelodun PHC	15	8.2%
	Moore PHC	8	4.4%
	Ajigbore PHC	11	6.0%
	Agric Opa PHC	14	7.7%
	Oke D.O PHC	17	9.3%
	Oke Bola PHC	10	5.5%
	Ade Owo PHC	10	5.5%
	Total Facility	**182**	**100.0%**

Source: Field work, 2025

Table 4.1 above shows that; age distribution of respondents indicates a fairly balanced representation across all age categories. The largest proportion of respondents (24.7%) were aged 35–44 years, followed by those aged 55 and above (19.2%) and under 25 years (20.9%). Those within the 25–34 age bracket made up 18.7%, while respondents aged 45–54 accounted for the remaining 16.5%. In terms of gender, the data shows a slight male predominance, with males accounting for 54.4% of the total respondents, while females constituted 45.6%. The educational qualification of respondents reveals a fairly even distribution across all levels of academic attainment. Respondents with a Master's degree (M.Sc) formed the largest single group, representing 21.4% of the sample. Other categories such as OND, HND, B.Sc/BNSc, and "Others" each made up 19.8% or 19.2% respectively. Regarding job designation, the most represented group were Community Health Officers (CHOs), accounting for 21.4% of respondents. This was followed by others (18.1%), doctors and Health Information Management (HIM) professionals (each 16.5%), nurses (13.7%), and laboratory staff (13.7%). The data on years of experience shows that the majority of respondents (29.7%) had less than one year of professional experience, suggesting the presence of many new or recently employed staff. Those with 1–5 years of experience constituted 26.9%, followed by 6–10 years (24.2%), and those with over 10 years (19.2%). Lastly, respondents were drawn from twelve different

health facilities, with the State Hospital, Oke-Ogbo contributing the highest number (15.9%) of respondents. Other prominent facilities included Odowara PHC and Iloro PHC (11.0% each), while Moore PHC had the smallest representation (4.4%). All other facilities, including Gbodo PHC, Ifelodun PHC, Oke D.O PHC, and others, had varying levels of contribution, ranging from 5.5% to 9.9%.

Answers to Research Questions

Research Question 1: What are the epidemic control activities in Ife East Local Government Area, Osun State?

Table 4.2: Epidemic Control Strategies and Activities (N = 182)

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std. Dev
Our facility has standard operating procedures for epidemic outbreak control.	94 (51.6%)	61 (33.5%)	17 (9.3%)	10 (5.5%)	3.31	0.900
Epidemic preparedness drills are regularly conducted in this facility.	85 (46.7%)	69 (37.9%)	21 (11.5%)	7 (3.8%)	3.27	0.837
Staff receive periodic training on outbreak response protocols.	103 (56.6%)	53 (29.1%)	18 (9.9%)	8 (4.4%)	3.38	0.873
Health education on epidemics is regularly provided to patients.	69 (37.9%)	69 (37.9%)	26 (14.3%)	18 (9.9%)	3.04	0.975
There is a functional emergency response team in this facility.	81 (44.5%)	64 (35.2%)	24 (13.2%)	13 (7.1%)	3.17	0.952

Source: Field work, 2025

Table 4.2 shows the responses of healthcare workers regarding epidemic control strategies and activities. Respondents agreed that their facility has standard operating procedures for outbreak control, as indicated by a mean ± standard deviation of 3.31 ± 0.900. There was also agreement that epidemic preparedness drills are regularly conducted, reflected by 3.27 ± 0.837. Strong agreement was recorded on the view that staff receive periodic training on outbreak response protocols (3.38 ± 0.873), showing that training is perceived as adequately provided. However, the belief that health education is regularly provided to patients received a slightly weaker agreement (3.04 ± 0.975), indicating possible inconsistencies. The existence of a functional emergency response team also drew agreement, supported by a mean ± SD of 3.17 ± 0.952. These findings suggest that epidemic preparedness measures are generally in place, though public health education efforts may need improvement.

Research Question 2: What are the existing methods of disease surveillance and notification systems in Ife East Local Government Area, Osun State?

Table 4.3: Methods of Disease Surveillance and Notification Systems (N = 182)

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std. Dev
Our facility monitors and reports diseases without actively seeking information (like passive methods).	74 (40.7%)	68 (37.4%)	24 (13.2%)	16 (8.8%)	3.10	0.993
Our facility actively looks for cases of disease and reports them.	94 (51.6%)	59 (32.4%)	18 (9.9%)	11 (6.0%)	3.30	0.921
Our facility tracks and reports diseases that are found in the hospital.	99 (54.4%)	63 (34.6%)	13 (7.1%)	7 (3.8%)	3.40	0.842
Our facility uses lab tests to help track and report diseases.	107 (58.8%)	52 (28.6%)	14 (7.7%)	9 (4.9%)	3.41	0.899
Our facility investigates and reports when there is an outbreak of disease.	100 (54.9%)	56 (30.8%)	16 (8.8%)	10 (5.5%)	3.35	0.937

Source: Field work, 2025

Table 4.3 presents how disease surveillance and notification systems are implemented. Respondents showed moderate agreement that their facility uses passive surveillance methods, with a mean ± standard deviation of 3.10 ± 0.993. Active case detection was better supported, with a stronger agreement at 3.30 ± 0.921. The highest agreement was with the statement that the facility tracks and reports diseases detected within the hospital (3.40 ± 0.842), and uses lab tests to support surveillance efforts (3.41 ± 0.899). Similarly, the belief that outbreak investigations are conducted was well supported (3.35 ± 0.937). Overall, these responses show confidence in the integration of both passive and active surveillance strategies, supported by laboratory and outbreak investigation protocols.

Research Question 3: What is the relationship between disease surveillance and notification systems and epidemic control in Ife East Local Government Area, Osun State.

Table 4.4: Relationship Between Surveillance Practices and Epidemic Control (N = 182)

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std. Dev
Effective surveillance improves our ability to detect epidemics early.	111 (61.0%)	55 (30.2%)	12 (6.6%)	4 (2.2%)	3.50	0.777
Disease notification contributes significantly to controlling outbreaks.	105 (57.7%)	57 (31.3%)	14 (7.7%)	6 (3.3%)	3.43	0.850
A strong relationship exists between reporting systems and timely response to outbreaks.	108 (59.3%)	60 (33.0%)	11 (6.0%)	3 (1.6%)	3.50	0.766
Facilities that implement surveillance protocols are better prepared for health emergencies.	106 (58.2%)	59 (32.4%)	13 (7.1%)	4 (2.2%)	3.47	0.799
Inadequate surveillance weakens outbreak preparedness and response capacity.	110 (60.4%)	54 (29.7%)	11 (6.0%)	7 (3.8%)	3.47	0.870

Source: Field work, 2025

Table 4.4 explores the perceived relationship between surveillance practices and epidemic control. The strongest agreement was observed for the statement that early detection of epidemics is enabled by effective surveillance, with a mean ± standard deviation of 3.50 ± 0.777. Similar strong agreement was recorded regarding the role of disease notification in outbreak control (3.43 ± 0.850) and the link between reporting systems and timely response (3.50 ± 0.766). Respondents also agreed that implementing surveillance protocols improves emergency preparedness (3.47 ± 0.799) and that inadequate surveillance weakens outbreak response (3.47 ± 0.870). These responses reflect a clear understanding among health workers of the importance of surveillance systems in epidemic preparedness and rapid response.

Research Question 4: What factors hinder the effectiveness of the disease surveillance and notification system in Ife East Local Government Area, Osun State?

Table 4.5: Challenges Hindering Effective Disease Surveillance (N = 182)

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std. Dev
Inadequate manpower limits effective disease surveillance.	102 (56.0%)	61 (33.5%)	13 (7.1%)	6 (3.3%)	3.42	0.838
Lack of regular training affects reporting accuracy.	100 (54.9%)	62 (34.1%)	12 (6.6%)	8 (4.4%)	3.40	0.874
Poor access to reporting tools and technology slows down the surveillance process.	98 (53.8%)	60 (33.0%)	15 (8.2%)	9 (4.9%)	3.36	0.897
There is inadequate feedback from higher health authorities after reporting.	91 (50.0%)	64 (35.2%)	18 (9.9%)	9 (4.9%)	3.30	0.899

Communication gaps between departments affect the reporting of notifiable diseases.	92 (50.5%)	66 (36.3%)	15 (8.2%)	9 (4.9%)	3.33	0.888

Source: Field work, 2025

Table 4.5 highlights challenges hindering effective disease surveillance. The most agreed-upon challenge was lack of manpower, with a mean ± standard deviation of 3.42 ± 0.838. The view that absence of regular training affects reporting accuracy was also strongly agreed upon (3.40 ± 0.874). Poor access to reporting tools and technology was noted as a constraint, supported by 3.36 ± 0.897. Respondents also agreed that inadequate feedback from higher authorities (3.30 ± 0.899) and communication gaps between departments (3.33 ± 0.888) negatively impact reporting. These findings show that structural, technological, and communication-related factors are recognized barriers to efficient disease surveillance in healthcare settings.

Hypothesis Testing

Correlations				
			Epidemic Control Strategies and Activities	Methods of Disease Surveillance and Notification Systems
Spearman's rho	Epidemic Control Strategies and Activities	Correlation Coefficient	1.000	.563**
		Sig. (2-tailed)	.	.000
		N	182	182
	Methods of Disease Surveillance and Notification Systems	Correlation Coefficient	.563**	1.000
		Sig. (2-tailed)	.000	.
		N	182	182
**. Correlation is significant at the 0.01 level (2-tailed).				

The result shows a positive correlation (Spearman's rho = 0.563) between disease surveillance and notification systems and epidemic control strategies in Ife East Local Government Area. The relationship is statistically significant at p = 0.000, which is less than 0.05. This means the null hypothesis (H_o), which states that there is no significant relationship between the two variables, is rejected. The implication is that improved disease surveillance and notification systems are associated with better epidemic control efforts in the area.

Interview

Summarized Themes and Responses:

Interview Question	**Key Responses from Participants**
Q1: Epidemic control activities	Educating patients, informing DSNO, following SOPs, occasional drills.
Q2: Coordination	Training through seminars; activities coordinated by LGA health team.
Q3: Surveillance methods	Mainly passive methods; limited active surveillance.
Q4: Effectiveness of methods	Surveillance seen as effective if acted upon quickly.
Q5: Example of impact	A diarrhea outbreak identified through clustered community cases.
Q6: Reporting timeliness	Early reporting helps fast containment of epidemics.
Q7: Challenges	Staff shortage, lack of tools, poor training, caregiver resistance.
Q8: Resource issues	Inadequate staff for sample collection; transport cost barriers.
Q9: Training initiatives	Attended seminars or workshops, but not consistent.
Q10: Recommendations	More funding, more staff, protection for health workers, community sensitization.

Frequency Table (Thematic Summary)

Theme	No. of Respondents (n=6)	Percentage (%)
SOPs	5	83.3%
Preparedness Drills	4	66.7%
Passive Surveillance	6	100.0%
Active Surveillance	2	33.3%
Surveillance Effective	5	83.3%
Staff Shortage	5	83.3%
Training Gaps	5	83.3%
Infrastructure Gaps	5	83.3%
Lab Support	4	66.7%
Timely Reporting	5	83.3%
Outbreak Experience	5	83.3%
Stakeholder Coordination	6	100.0%
Motivation/Support	6	100.0%
Communication Gaps	4	66.7%
Feedback Issues	5	83.3%
Health Worker Protection	6	100.0%
Employment Needed	5	83.3%
Community Education	5	83.3%
Transport Challenges	5	83.3%

Interview Outcome

The qualitative interviews revealed that epidemic control activities in Ife East LGA are largely reactive and rely heavily on passive strategies such as educating patients and reporting cases to the Disease Surveillance and Notification Officer (DSNO). While some facilities conduct drills and provide occasional seminars, training was described as irregular. Respondents highlighted challenges such as staff shortages, poor funding, and inadequate infrastructure, which hinder effective disease surveillance. Timely reporting was acknowledged as crucial to outbreak control, with one notable example being the identification of a diarrhea outbreak through community clustering. Resource constraints—particularly transport and lab confirmation delays—also emerged as key issues. Additionally, caregivers' attitudes, especially among mothers, were mentioned as affecting child-related epidemic responses. Overall, while systems exist, their implementation is hampered by operational and systemic barriers.

Integration of Quantitative and Qualitative Findings by Objective

Examine the epidemic control activities in Ife East LGA

Quantitative data showed strong implementation of epidemic control measures: 85.1% of respondents reported the presence of standard operating procedures, 84.6% affirmed the regularity of preparedness drills, and 85.7% acknowledged staff training on outbreak response. However, only 75.8% agreed that health education was consistently provided to patients, suggesting a gap in community engagement. Qualitative responses echoed these findings. Interviewees confirmed the availability of

response protocols and acknowledged that drills and training occurred, albeit irregularly. Several respondents described their role as primarily passive, focusing on educating patients and informing the Disease Surveillance and Notification Officer (DSNO). One said:

> "Educating patients and reporting suspected cases to DSNO, that's all we do mostly."

Another added:

> "We coordinate through meetings and trainings organized by the LGA health team. Most of the training we get is through seminars. But it's not regular."

This alignment confirms that while formal systems exist for outbreak management, actual implementation especially community education is uneven.

Ascertain the existing methods of disease surveillance and notification system in Ife East LGA

Quantitative findings demonstrated a mixed use of passive and active surveillance methods. While 78.1% of respondents affirmed passive surveillance, 84.0% supported active case detection. Additionally, 89.0% agreed their facility tracked and reported hospital-based diseases, and 87.4% confirmed the use of lab tests in tracking diseases. Outbreak investigations were reported by 85.7% of respondents. Qualitative data reinforced this, with interviewees indicating a preference for passive methods due to staffing or resource constraints. Yet, many acknowledged the value and partial implementation of active surveillance:

> "Passive surveillance is what we use most; we wait for patients to report symptoms."

Another added:

> "It's quite effective if we follow up quickly. But when we delay, the outbreak spreads fast."

Thus, while both systems are present, passive surveillance remains dominant due to operational realities.

Determine the relationship between disease surveillance and notification systems and epidemic control in Ife East LGA

Quantitative responses revealed overwhelming consensus on the critical link between surveillance and outbreak control. For example, 91.2% of respondents agreed that effective surveillance leads to early epidemic detection, while 89.0% agreed that notification contributes to outbreak control. Strong agreement also existed on the connection between surveillance and preparedness (90.6%) and the risks posed by poor surveillance (90.1%). Qualitative findings offered real-life validation of these links. Respondents shared concrete cases:

> "A diarrhea case where all patients came from the same area helped us detect an outbreak. We acted fast."

And:

> "Timely reporting helps us control things fast. If we delay, it spreads."

This illustrates that notification systems, when effectively applied, serve as the backbone of rapid epidemic containment in Ife East LGA.

Identify factors that hinder the effectiveness of disease surveillance and notification systems in Ife East LGA

Quantitative data revealed multiple barriers: 89.5% cited inadequate manpower, 89.0% indicated lack of training, and 86.8% reported limited access to tools. Additionally, 85.2% of respondents noted poor feedback from higher authorities, while 86.8% identified communication gaps across departments. Interview data deepened these insights. Key reported issues included staffing shortages, financial limitations, irregular training, inadequate reporting tools, and poor interdepartmental collaboration. A respondent noted:

> "There are not enough staff to take samples. Even when we want to help, there's no fund to transport samples."

Another emphasized:

> "Some staff don't even know what to do in such cases. Government should motivate us more and provide protective gear."

Some also highlighted the role of caregivers:

> "Encourage they play a role in controlling spread."

These findings suggest that surveillance effectiveness is constrained not only by institutional deficits but also by social and behavioral barriers at the community level.

Joint Display Table (Mixed-Methods Integration)

Research Objective	Quantitative Findings	Qualitative Themes	Participant Quote
Objective 1: Epidemic Control Activities	SOPs: 85.1%, Drills: 84.6%, Training: 85.7%, Health Ed: 75.8%	Passive control, uneven education, irregular training	"Educating patients and reporting suspected cases to DSNO, that's all we do mostly.""Most of the training we get is through seminars. But it's not regular."
Objective 2: Surveillance Methods	Passive: 78.1%, Active: 84.0%, Hospital tracking: 89.0%, Lab use: 87.4%, Outbreak investigation: 85.7%	Passive methods dominate, active systems partial	"Passive surveillance is what we use most; we wait for patients to report symptoms."It's quite effective if we follow up quickly. But when we delay, the outbreak spreads fast."
Objective 3: Surveillance and Epidemic Control	Early detection: 91.2%, Notification impact: 89.0%, Preparedness link: 90.6%, Impact of poor surveillance: 90.1%	Timely reporting enhances control, direct outbreak response	"A diarrhea case where all patients came from the same area helped us detect an outbreak." Timely reporting helps us control things fast. If we delay, it spreads."
Objective 4: Hindrances to Surveillance Effectiveness	Manpower: 89.5%, Training: 89.0%, Tools: 86.8%, Feedback: 85.2%, Communication gaps: 86.8%	Staff shortage, poor funding, caregiver behaviour, lack of motivation	"There are not enough staff to take samples. Even when we want to help, there's no fund to transport samples.""Some staff don't even know what to do in such cases.""Encourage mothers especially—they play a role in controlling spread."

Checklist

Objective: Examine the epidemic control activities in Ife East LGA.

Section A: Epidemic Control Activities

Objective 1: Examine the epidemic control activities in Ife East LGA.

Assessment Criteria	Yes (n/%)	No (n/%)
Does the facility have an updated epidemic preparedness and response plan?	10(83.3)	2 (16.7)
Are there trained Rapid Response Teams (RRTs) available for outbreak situations?	9 (75.0)	3(25.0)
Are simulation exercises or drills for epidemic response conducted regularly?	10(83.3)	2 (16.7)
Is there a stockpile of essential supplies (e.g., PPE, medications) for epidemic response?	11 (91.7)	1 (8.3)
Are community engagement activities conducted to raise awareness about epidemic prevention and control?	9(75.0)	3(25.0)

The findings reveal that 83.3% of the respondents confirmed the presence of an updated epidemic preparedness and response plan within their facilities. Additionally, 75.0% indicated that trained Rapid Response Teams (RRTs) were available to respond to outbreak situations. Regular simulation exercises or drills for epidemic response were conducted in 83.3% of the facilities, suggesting moderate levels of preparedness testing. A stockpile of essential supplies, including personal protective equipment and medications, was reported in 91.7% of the facilities. However, only 75.0% of the respondents affirmed the implementation of community engagement activities aimed at raising awareness on epidemic prevention and control, pointing to a potential gap in public health communication strategies.

Section B: Disease Surveillance and Notification Methods

Objective 2: Ascertain the existing methods of disease surveillance and notification systems in Ife East LGA.

Assessment Criteria	Yes (n/%)	No (n/%)
Are standard case definitions for priority diseases available and utilized?	10(83.3)	2 (16.7)
Is there a functional system for immediate case-based reporting (e.g., IDSR 001A forms)?	10 (83.3)	2 (16.7)
Are weekly and monthly surveillance reports submitted timely to the LGA/state authorities?	10(83.3)	2 (16.7)
Is electronic reporting (e.g., DHIS2, SORMAS) utilized for disease surveillance data submission?	10(83.3)	2 (16.7)
Are feedback reports received from higher authorities regarding submitted surveillance data?	9(75.0)	3 (25.0)

Regarding surveillance practices, 83.3% of the respondents acknowledged the availability and use of standard case definitions for priority diseases. A functional system for immediate case-based reporting, such as the use of IDSR 001A forms, was present in 83.3% of the facilities. Timely submission of weekly and monthly surveillance reports to the appropriate authorities was confirmed by 83.3% of the respondents. Notably, 83.3% reported the utilization of electronic platforms such as DHIS2 or SORMAS for disease surveillance data submission. Despite these strengths, only 75.0% indicated that they received feedback reports from higher-level authorities, suggesting an area for improvement in the feedback loop of the surveillance system

Section C: Relationship Between Surveillance and Epidemic Control

Objective 3: Determine the relationship between disease surveillance and notification systems and epidemic control in Ife East LGA.

Assessment Criteria	Yes (n/%)	No (n/%)
Has timely disease surveillance data led to prompt outbreak detection in the past?	11(91.7)	1(8.3)
Are surveillance data analyzed and used to inform epidemic control strategies?	10(83.3)	2(16.7)
Is there evidence of coordinated action between surveillance and response teams during outbreaks?	10(83.3)	2(16.7)
Are lessons learned from previous outbreaks documented and used to improve surveillance and response activities?	10(83.3)	2 (16.7)

The data further show that 91.7% of respondents agreed that timely surveillance data had previously facilitated the prompt detection of outbreaks. In 83.3% of the cases, surveillance data were reportedly analyzed and used to inform epidemic control strategies. Coordinated actions between surveillance and response teams during outbreak situations were reported by 83.3% of the respondents. However, only 83.3% indicated that lessons learned from previous outbreaks were documented and used to enhance surveillance and response activities, indicating limited institutionalization of learning mechanisms within the system.

Section D: Challenges Hindering Effective Surveillance and Notification

Objective 4: Identify factors that hinder the effectiveness of the disease surveillance and notification system in Ife East LGA.

Assessment Criteria	Yes (n/%)	No (n/%)
Are there shortages of trained personnel for disease surveillance activities?	7(58.3)	5 (41.7)

Is there inadequate infrastructure (e.g., computers, internet) for electronic data reporting?	9 (75.0)	3 (25.0)
Do financial constraints limit surveillance and response activities?	8(66.7)	4 (33.3)
Are there delays in laboratory confirmation of suspected cases due to logistical challenges?	11(91.7)	1 (8.3)
Is there a lack of motivation or incentives for health workers to participate in surveillance activities?	9 (75.0)	3 (25.0)

Several operational challenges were identified. A significant proportion of respondents (58.3%) reported shortages of trained personnel involved in surveillance activities. Furthermore, 75.0% indicated that inadequate infrastructure such as lack of computers and poor internet connectivity hindered electronic data reporting. Financial constraints were reported by 66.7% as a major barrier to effective surveillance and response. Additionally, 91.7% of respondents acknowledged delays in the laboratory confirmation of suspected cases due to logistical limitations. Finally, 75.0% highlighted the lack of motivation or incentives for health workers to participate actively in surveillance efforts, emphasizing the need for workforce support and morale boosting.

Discussion of Findings

Socio demographic profile of respondents reveal a fairly balanced distribution across age, gender, educational qualification, professional designation, and years of experience. The age composition was notably diverse, with the highest representation from the 35–44 age group (24.7%), closely followed by those aged 55 and above (19.2%) and those under 25 (20.9%). This range suggests both early-career professionals and senior personnel are involved in disease surveillance and epidemic control activities across Ife East LGA. This balanced demographic is consistent with findings from Ogunniyi, Dike, and Turzin (2024), who emphasized that community-based disease surveillance benefits from intergenerational workforce engagement, with younger health workers contributing digital skills and older professionals offering contextual field knowledge. In terms of gender distribution, the sample leaned slightly male (54.4% male vs. 45.6% female), reflecting broader trends in health workforce composition reported by Ugwu, Adekeye, and Ringwald (2025). Their study on gender-responsive TB surveillance systems in Nigeria found that while female professionals play vital roles in frontline disease detection, their overall representation remains under 50% in most rural and semi-urban settings, echoing the distribution seen in this study. The respondents' educational background was well spread, with those holding a Master's degree forming the largest single academic category (21.4%), while OND, HND, B.Sc/BNSc, and others followed closely (between 19.2% and 19.8%). This pattern suggests a well-educated health workforce.

In terms of job designation, Community Health Officers (CHOs) were the most represented (21.4%), followed by HIM professionals and doctors (16.5% each), with nurses and lab staff each accounting for 13.7%. Regarding work experience, nearly one-third (29.7%) of respondents had less than one year of experience, suggesting an influx of new personnel or increased recruitment during public health crises. The remaining respondents were fairly distributed across 1–5 years (26.9%), 6–10 years (24.2%), and over 10 years (19.2%). This pattern aligns with Owushi (2024), who identified a growing reliance on recently trained staff in disease surveillance programs, often due to high attrition rates and underinvestment in long-term workforce retention. Lastly, the broad facility representation, led by State Hospital Oke-Ogbo (15.9%), followed by Iloro PHC and Odowara PHC (11.0% each), confirms wide geographic coverage. The inclusion of multiple PHCs and hospitals reflects the integrative strategy adopted in the area, supporting McGowan et al. (2022) who found that community-linked disease surveillance is most effective when primary and secondary facilities are jointly engaged.

The Findings presents healthcare workers' perceptions of epidemic control strategies and activities in Ife East LGA. The presence of standard operating procedures (SOPs) for outbreak control received a mean of 3.31 (SD = 0.900), while preparedness drills had a similar level of agreement (mean = 3.27, SD = 0.837). These findings align with Ezeocha (2024), who highlighted that well-defined operational frameworks particularly when integrated with digital finance systems enhanced readiness for epidemic response by ensuring timely allocation of critical resources. Periodic staff training on outbreak response protocols recorded a mean of 3.38 (SD = 0.873), the highest among the items, indicating strong institutional

investment in workforce capacity. This corroborates the findings of Oluwasegun and Ajibade (2023), who reported that community-based training initiatives improved early detection and response efforts during Lassa fever outbreaks in Edo and Ondo States. They stressed that continued training is key to equipping local health workers with updated knowledge on emerging infectious threats.

In contrast, the relatively lower agreement with the statement that health education is regularly provided to patients (mean = 3.04, SD = 0.975) suggests a weakness in community-facing interventions. This is consistent with Oluwasegun and Ajibade (2023), who noted that nearly half of their respondents identified community distrust and cultural barriers as limiting the effectiveness of health campaigns. It also resonates with McGowan et al. (2022), who emphasized the importance of integrating community health education into national surveillance frameworks to ensure early disease reporting at the grassroots level. Furthermore, the existence of a functional emergency response team was supported by a mean score of 3.17 (SD = 0.952), reflecting moderate confidence among healthcare workers in their facility's readiness to respond to outbreaks. This is echoed in Adegboye and Yusuf's (2020) findings, where emergency preparedness was found to benefit significantly from coordinated protocols such as border screening and institutional rapid response teams.

Findings outlines the implementation of disease surveillance and notification systems across healthcare facilities in Ife East LGA. The mean score for passive surveillance practices was 3.10 (SD = 0.993), indicating moderate agreement among respondents. A concern previously raised by Ogunniyi, Dike, and Turzin (2024), who found that passive surveillance dominated in rural areas due to workforce shortages and limited financial support. Stronger agreement was observed for active case detection, with a mean of 3.30 (SD = 0.921). This is consistent with the findings of Atere, Ogaje, and Ahmad (2024), who reported that 79% of public health laboratories in Nigeria were equipped with diagnostic tools enabling more active surveillance. Respondents expressed the highest levels of agreement with in-hospital disease tracking and laboratory-supported diagnosis (mean = 3.40, SD = 0.842 and mean = 3.41, SD = 0.899 respectively). This aligns closely with the study by Adomi, Asogun, and Rwuaan (2024), which found that 67% of healthcare professionals across federal and state hospitals believed digital surveillance tools improved real-time disease monitoring, particularly when integrated with lab-confirmed testing.

Additionally, the belief that outbreak investigations are routinely conducted was well-supported (mean = 3.35, SD = 0.937). This confirms the field-level engagement of health professionals during suspected outbreaks. The study by Omoleke and de Kiev (2024) supports this, showing that while 68% of disease events were reported within 24 hours, delayed follow-up remained a major bottleneck.

Findings on healthcare workers' perceptions of the relationship between surveillance practices and epidemic control. Strongest agreement was recorded for the role of surveillance in early epidemic detection (mean = 3.50, SD = 0.777) and in enabling rapid outbreak response (mean = 3.50, SD = 0.766). Disease notification was also seen as crucial for control efforts (mean = 3.43, SD = 0.850), while surveillance protocols were linked to improved preparedness (mean = 3.47, SD = 0.799). In contrast, inadequate surveillance was perceived as a key weakness in outbreak control (mean = 3.47, SD = 0.870). These views align with Bamgboye, Ojo, and Adeyemi (2023), who reported that Nigeria's IDSR system led to a 30% reduction in cholera mortality through faster outbreak responses. Similarly, Fischer (2024) found that effective disease notification systems in Switzerland reduced hospitalizations by 40% through timely detection and action.

On the key challenges hindering effective disease surveillance. The most pressing concern was shortage of manpower (mean = 3.42, SD = 0.838), followed closely by inadequate training (mean = 3.40, SD = 0.874). Limited access to reporting tools and infrastructure was also acknowledged (mean = 3.36, SD = 0.897), alongside inadequate feedback from authorities (mean = 3.30, SD = 0.899) and interdepartmental communication gaps (mean = 3.33, SD = 0.888).These findings are consistent with Owushi (2024), who identified workforce shortages `and poor infrastructure as key barriers to surveillance accuracy in Nigeria, leading to a 65% drop in reporting reliability. Similarly, Makau and Kiarie (2024) emphasized that weak data integration and delayed feedback between federal and state levels hinder timely disease response. Additionally, Osaro et al. (2024) highlighted poor incentives and limited training among private providers as major contributors to underreporting, further reinforcing the impact of system-level weaknesses.

The analysis reveals a statistically significant positive correlation between disease surveillance and notification systems and epidemic control strategies in Ife East LGA (Spearman's rho = 0.563, $p = 0.000$). Since $p < 0.05$, the null hypothesis is rejected, confirming that improvements in disease surveillance are

associated with enhanced epidemic control outcomes. This finding aligns with the study by Bamgboye, Ojo, and Adeyemi (2023), which demonstrated that real-time notification under the IDSR framework reduced cholera-related mortality by 30% due to faster outbreak responses. Similarly, Fischer (2024) found that effective surveillance in Switzerland improved case management and reduced hospitalizations by 40%. In Nigeria, Nwachukwu and Eze (2022) also confirmed that digital health tools used during the COVID-19 pandemic significantly boosted case tracking and contact tracing efficiency.

CONCLUSION

The study demonstrates that epidemic control measures are generally in place across healthcare facilities in Ife East LGA, with strong adherence to standard operating procedures, preparedness drills, and staff training. While disease surveillance practices are well-integrated combining passive and active methods community health education remains inconsistent and needs strengthening. Respondents affirmed the critical role of surveillance systems in early outbreak detection and effective epidemic response, with a clear understanding of the link between disease notification and preparedness. However, key challenges such as workforce shortages, limited training, inadequate digital infrastructure, and weak feedback mechanisms hinder optimal performance. The significant positive correlation found between surveillance systems and epidemic control further reinforces the importance of strengthening surveillance to enhance public health outcomes.

RECOMMENDATIONS

Based on the findings, the following recommendations are suggested;

1. The Ife East LGA Health Department and primary healthcare centers should intensify health education and public engagement to improve community awareness and participation in epidemic prevention and response.
2. Active surveillance should be expanded with support from the Osun State Ministry of Health. This includes training health workers, ensuring timely reporting, and integrating laboratory diagnostics with digital tools for real-time data capture.
3. Government agencies should recruit more trained personnel, invest in digital infrastructure, and provide consistent feedback mechanisms across all surveillance units to enhance system responsiveness and accuracy.
4. Establish a multi-stakeholder epidemic preparedness task force involving local health authorities, hospitals, laboratories, and emergency response teams to streamline outbreak investigation and containment strategies.
5. Budgetary allocation from state and local governments should prioritize disease surveillance systems, epidemic drills, and ongoing staff capacity-building to maintain long-term readiness and resilience.

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