

Achievements and Challenges to Effective Disease Surveillance in Primary and Secondary Health Facilities in Cross River State

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Abstract:

➤ Background

In recent years, cases of priority diseases such as Lassa fever, Cerebrospinal meningitis, Cholera and most recently Monkey pox have been sporadically reported outside routine epidemiological sources in Cross River State. This has raised concerns on the effectiveness of the surveillance system in reporting sensitive health events in the past. This study therefore aims to assess the achievements of the surveillance and challenges to disease surveillance in Cross River State.

➤ Methods

The study was conducted in Cross River State, Nigeria. A descriptive cross sectional study design with mixed approach was used to assess surveillance achievement and challenges in Primary and Secondary health facilities of the State. Respondents included the Epidemiologist, surveillance officers and head clinicians. Key informant interviews were conducted to explore the in-depth challenges of implementation and operationalization of surveillance system as well as the achievements of the system in the past. Audiotaped interviews were transcribed verbatim and inductively analyzed into themes describing their perceptions and acceptance.

➤ Results

The findings show that only 46.2% of PHCs and 19.0% SHFs had provided early warning for epidemics in the past, preventing outbreaks of Cholera, Monkey Pox and Lassa fever, Cerebrospinal Meningitis and Guinea worm infections, indicating a low level of effectiveness. The major challenges identified were poor funding of the surveillance system and inadequate infrastructure. Other challenges were lack of human resources, mobility and transportation challenges and poor integration of digital facilities into surveillance activities.

➤ Conclusion/ Recommendation

The surveillance system has shown low level of effectiveness in some respects, major challenges still exist that impede optimum functionality of the system. Addressing these challenge will optimize system functionality and effectiveness.

Keyword: Achievements, Challenges, Disease Surveillance, Health Facilities, Cross River State.

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I. INTRODUCTION

Disease surveillance is the continuous and systematic collation, analysis, and interpretation of health data in order to describe and monitor health events (Elson, 2026). This information is needed for planning, implementing, and assessing public health interventions and programs (Kagoma

et al, 2026). Surveillance data are used both to determine the need for public health action and to assess the effectiveness of programs (Ogundeko-Olugbami et al, 2025). The effectiveness of disease surveillance systems is critical to the success of all public health programs and interventions for epidemics (Ingelbeen et al, 2025). It is necessary to constantly evaluate the surveillance systems to makes for

the best use of public health resources by ensuring that only important problems are targeted and that surveillance systems operate efficiently.

The overall objective for evaluation of surveillance system is to assess whether the system is serving its intended public health function. Because surveillance systems vary widely in methodology, scope, and objectives, characteristics, efforts to improve certain attributes such as the ability of a system to detect a health event (sensitivity) is very important (Abbasi, 2026). The strength of an evaluation depends on the ability of the evaluator to assess these characteristics with respect to the system's objectives (Ingelbeen et al, 2025). In an effort to accommodate these objectives, any approach to evaluation must be flexible.

Since a well-functioning surveillance system is crucial for effective disease control programs, the Integrated Disease Surveillance and Response (IDSR) strategy was developed and adopted in 1998 for Africa as a comprehensive public health tool for effective monitoring of data collection and timely reporting (Kambalame et al, 2026). Subsequently, in 2012, the IDSR data was reported through the new District Health Information Management System II (DHIMS2) network into the WHO data base (Saeed et al, 2026). Presently, other methods of reporting such as Electronic IDSR (eIDSR) which applies digital tools to the IDSR approach, Community-based surveillance (CBS) which enables early warning and the mobilization of early intervention and response to disease outbreaks, Remote sensing, and Geographic Information System (GIS), a computer-based tool used for capturing, storing, analyzing, and presenting geographic data which have revolutionized surveillance and reporting have taken surveillance to a whole new level (Kambalame et al, 2026).

Disappointingly however is the fact that, in spite of the IDRS concept having existed for over twenty years, its implementation has not been complete. Available data indicate that as at 2017, only 23 (49%) out of the 47 countries in the WHO African Region had achieved the recommended threshold of over 80% for IDSR reporting (Kambalame et al, 2026). Nigeria still faces numerous challenges that impede implementation of the IDSR program in many places. As a result, the extent of implementation is still unknown in many areas (Aliyu et al, 2026).

Apart from this challenge, data collected through routine reporting from health facilities are usually incomplete and not representative, as the poorer and more vulnerable portions of the population have less access to health facilities (Atijosan & Atijosan, 2026). Besides this, other factors such as poor motivation, poor supervision and inadequate feed-back, and over working of staff by multiple disease-specific reporting interests also limit surveillance (Qidwai et al, 2026). In addition to this, community perceptions on specific diseases influence their health seeking behavior to a large extent determine their willingness to report to health facilities and summarily impacts on the representativeness, completeness, quality

and usefulness of facility-based data. This study therefore seeks to assess surveillance usefulness as the basis for determining its usefulness and also identify challenges that impede systems performance.

➤ Objectives of the Study

The objectives of this study are to:

- Determine the usefulness of surveillance data in preventing public health emergencies.
- Identify challenges of implementation and operationalization of diseases surveillance in Cross Rivers State.

II. METHODS

➤ Survey Setting

The study was conducted in Cross River State Nigeria. Cross River State had an estimated population of 4,406,200 projected in 2022 with a population density of 209.6/km² and an annual population change rate of 2.7% between 2006 and 2022 (*National Population Commission/ National Bureau of Statistics, 2022*). The state is located between latitude 4°27' and 5°32' North, and longitude 7°50' and 9°28' East. It is one of Nigeria's 36 states. Created in 1987, Cross River State is in the southeastern corner of Nigeria and shares a common boundary with the Republic of Cameroon to the East, Benue State to the North, Ebonyi State to the Northwest, Abia and Anambra States to the West, Akwa- Ibom State to the South.

➤ Study Design

A descriptive cross sectional study design with mixed method (concurrent nested) approach was used to assess the usefulness and challenges diseases surveillance in the State. This design allows both qualitative and quantitative data to be collected at the same time.

➤ Study Population

Qualitative data was collected from epidemiologist, surveillance officers and head clinicians.

• Inclusion Criteria

For PHCs the criteria for inclusion were: The facility-

- ✓ Must be public owned
- ✓ Must be designated as PHC, Polyclinic, Comprehensive Clinic or Model PHC.
- ✓ Must be assigned an identification code by the Cross River State Ministry of Health.

➤ For Secondary Facilities:

• Inclusion Criteria

- ✓ Must be public owned or government supported
- ✓ Must be assigned an identification code by the Cross River State Ministry of Health.
- ✓ Must provide secondary health services.

➤ Sample Size

The sample size for the study was determined as follows:

➤ *For Quantitative Data:*

The sample size for facilities selected for quantitative data collection was estimated using Taro Yamman's formula for sample size estimation. This formula is suitable for sample size estimation from a finite population.

• *For PHCs*

Sample size $n = 93$

• *For Secondary facilities*

$n = 21$

• *For Qualitative Data*

$n = 34$

➤ *Sampling Technique*• *For Quantitative data collection:*

Stratified sampling and simple random sampling methods were used to select Primary and Secondary health facilities for the study. Each Senatorial zone of the state was considered as stratum. The estimated sample size was divided proportionately to the total number of health facilities (that meets the criteria for inclusion in the study) in each Senatorial zone and afterwards the various LGAs. Thereafter, simple random sampling was used to select the facilities from each stratum for quantitative data collection.

• *Instrument for Data Collection*

The data collection tool was adapted from the WHO Regional Office for Africa (WHO-AFRO) assessment protocol for national disease surveillance systems and epidemic preparedness and response. Also, key informant interviews were conducted to explore the in-depth experiences of the disease surveillance officers and facility heads on the performance and challenges of implementation and operationalization of surveillance in the state. The quantitative data collection tool comprised two sections.

Section A was for health facility details and Section B was for effectiveness (usefulness) and challenges of implementation.

➤ *Data Collection Technique*

The instrument for quantitative data collection was interviewer- administered to respondents in the sampled facilities. Qualitative data was collected through key informant interview administered using an interview guide developed by the researcher.

III. DATA ANALYSIS

The returned questionnaires was sorted and checked for errors during data collection thereafter, the instruments was coded accordingly before entry into SPSS version 23.0 for analysis. Results were presented as proportions and standpoints summaries. The audiotaped interviews were transcribed verbatim and inductively analyzed into themes describing their perceptions and acceptance.

➤ *Validity and Reliability of the Instrument*

The face and content validity were determined by giving the instrument to two professors in the Institute of Public Health, University of Nigeria Nsukka. The reliability was carried out on twenty copies of the instrument (representing approximately 20% of the sample size) administered to twenty Primary and Secondary health facilities in Benue State, Nigeria using the test -retest method. Pearson correlation coefficient of 0.82 was obtained and adjudged reliable.

➤ *Ethical Considerations*

Ethical clearance for the survey was obtained from the University of Nigeria Teaching Hospital, Enugu where the training institution is located and Cross River State Health Research Ethics Committee, Ministry of Health where the survey was conducted.

IV. RESULTS

Table 1: Usefulness of Surveillance System in Preventing Epidemics in Primary and Secondary Health Facilities (n= 93 Primary Health Facilities and n=21 Secondary Facilities).

SN	Item	Primary facilities		Secondary facilities	
		Yes	No	Yes	No
1.	Evidence that the surveillance system has provided early warning against any epidemic in the past.	43(46.2%)	50(53.8%)	4(19.0%)	17(81.0%)
2.	Evidence of intervention instituted in the past that worked effectively as a result of surveillance reporting	25(26.9%)	68(73.1%)	0(0.0%)	21(100.0%)
3.	Evidence of feedback from higher level that rhymes with suspected case.	37(40.0%)	56(60.0%)	0(0.0%)	21(100.0%)

Table 1 above shows that 43(46.2%) of Primary facilities and 4(19.0%) Secondary facilities demonstrated that the surveillance system has provided early warnings against epidemics in the past. Also, 25(26.9%) of PHCs and

0(0.0%) SHFs showed evidence of interventions instituted in the past that worked effectively as a result of surveillance reporting demonstrating greater usefulness of surveillance data from PHCs than SHFs.

Table 2: Thematic Engagement of Key Informants on Challenges of Implementation and Operationalization of the Diseases Surveillance System of Cross River State (n= 34)

Themes	Subthemes	Key Findings	Illustrative Quotes
Poor funding of the Disease Surveillance System	Low priority for funding of Disease Surveillance in the state	Respondents stated that there is very low priority for funding of disease surveillance in the state. As a result of this, the system has suffered numerous setbacks in its implementation.	<i>“There is no dedicated funding for surveillance in the state, how do they expect us to be effective in our service delivery?”</i>
	Over reliance on donor agencies.	There is over reliance on donor agencies which in many occasions are not handy. The only partners who offer some financial support are the WHO. The support the DSNOs with ten thousand naira (N10000) monthly which respondents complain is for too insignificant compared to the job expectation.	(Respondent I) <i>“The only help we get is from the implementing partners such as the WHO. The government is always very reluctant to fund any surveillance activities”</i> (Respondent XI)
	Using personal funds for surveillance activities	As a result of poor funding and support, respondents complain of having to use personal incomes to fund the work and this negatively impacts the coverage and timeliness of reporting as well as follow-up of cases.	<i>“We have to spend our personal money on data and internet connectivity as well as transportation. In fact, I use my personal money to repair the surveillance bike all the time.”</i> (Respondents II) <i>“As I speak to you, my assistant has stopped working with me because she is not benefiting anything”</i> (Respondent III)
Inadequate human resources for Implementation for Disease surveillance.	General shortage of trained surveillance staff in the state.	Respondents complained of general shortage of trained surveillance staff in the state. Most officers have to shuttle between many facilities to increase coverage.	<i>“...due to poor remuneration and incentives, most officers are reluctant to work in rural area where surveillance is most needed”.</i> Respondent IX
	Excessive workload for DSOs.	In many cases, Diseases surveillance officers are also assigned clinical responsibilities due to shortage of staff. This often limits their attention to disease surveillance and reporting.	<i>“Due to shortage of Staff, Surveillance staffs particularly at the facility levels have to do clinical work and observe shift just like every other facility staff. It makes it difficult to attend to all the work schedules”.</i> (Respondent IX)
	Frequent posting of trained staff	Frequent posting of staff to other areas, and retirement of staff often creates a huge gap in the surveillance work force.	<i>“After training a staff on surveillance, they may be posted to another area where they may not even be involved in surveillance”.</i>

Challenges of Mobility and Transportation.	Poor state of surveillance motor cycles and cost of fueling. Accessibility of some places due to difficult terrains and high cost of transportation.	Respondents complained of transportation and mobility challenges. Despite the fact that DSNOs and ADSNOs were given motor cycles in the past to ease transportation, most of these motorcycles are in deplorable conditions. This limits the places they can access for monitoring and feedback reporting. For those who do not have the bikes, the challenge of transportation is even bigger. It is far more difficult to pay transportation fare to distant and difficult to reach places.	<i>“The cost of fuelling nowadays is high. Having to use our personal money to fuel and maintain bikes is a big challenge”.</i> (Respondent V) <i>“There is also the problem of accessibility due to bad road networks. In the rainy seasons, some places cannot be reached due to deplorable road conditions. In that case, even if there cases for notification, the information can only reach the health facility after a very long time.”</i> Respondent III
Poor Integration of Digital Facilities for Surveillance activities	Lack of digital facilities for surveillance and power supply challenges, lack of internet access and training of surveillance staff on ICT usage.	The respondents highlighted that there are very few digital facilities such as smart phones, tablets and laptops for surveillance. They complained that despite having been given tablets and laptop devices for reporting on SORMAS platform, there are still challenges regarding powering the devices due to poor power supply. Also, internet access is remarkably low not to mention lack of proficiency in the use of such devices. The resultant effect of these is that the surveillance system has not been able to integrate these facilities into monitoring and reporting particularly at the community and facility levels. The respondents also reported that in 2024, the Nigerian Center for Disease Prevention and Control donated some equipment for disease surveillance, only DSNOs and few Secondary and Primary facilities benefited. This has made transition from paper – based reporting unfeasible at the moment.	<i>“... facilities do not have the facilities to transition us to electronic reporting... Also, there is the problem of power supply in rural facilities.”</i> (Respondent VII)

Poor infrastructure as a result of low Prioritization of Disease Surveillance.	Low political will and prioritization of disease surveillance.	The respondents explained that the poor infrastructure and low funding of disease surveillance in the state is as a result of low prioritization of disease surveillance. This is evident in the inadequate facilities available, poor furnishing of surveillance offices lack of isolation facilities and laboratories for analysis of samples.	<i>“We have to provide for ourselves since government has little or no interest in surveillance activities. My office has no chairs, tables or shelves for storing of records. My record files are lying on the floor. There is no freezer for storing samples. I have to borrow ice packs from the immunization unit most times to preserve samples before transportation. This may affect the quality of the results obtained at the end of the day.”</i> Respondent XII
Low provision for training and retraining of disease surveillance staff		Respondents complained that the training and retraining of staff is left in the hands of agencies and organizations such as WHO and NCDC. The state and LGA has not made any efforts to organize trainings for disease surveillance officers. They often complain of lack of funds to finance such trainings.	<i>“It is only NCDC and WHO that usually organize trainings for surveillance staff. The state always complains that they don’t have money”.</i> (Respondent IV)

Table 2 above shows the shows the challenges affecting disease surveillance in Cross River State. The results show that the major challenges are poor funding for disease surveillance, inadequate human resources for implementation surveillance programs, mobility and transportation challenges, poor integration of digital facilities for Surveillance activities, poor infrastructure as a result of low prioritization of disease surveillance and absence of opportunities for training and retraining of surveillance personnel.

V. DISCUSSION

The usefulness of surveillance system in preventing epidemics is an important index in assessing the effectiveness and functionality of the system. Genovese et al (2026) explained that an effective surveillance system should be able to detect the slightest change in the health trend of the target population. This study has shown that the surveillance in both PHCs and SHFs have provided early warnings against epidemics in the past. However, the surveillance in PHCs appear to be better organized than SHFs as 37(40.0%) of PHCs presented evidence of feedback from higher levels of surveillance which were not available in SHFs. PHCs recorded more than twice the level of usefulness than secondary facilities. This could be attributed to PHCs being the first point of access to the health care, receiving data directly from the community through community informants (Majola, 2026).

Qualitative data provided also revealed that surveillance had prevented outbreaks of Cholera in Amana, Obanliku LGA, in Wanihem Yala LGA, Mpox in Obudu LGA, COVID 19 and Lassa fever in Wanihem Yala and Cerebrospinal Meningitis. The Surveillance also detected an unusual increase in malaria cases around May/ June, 2025 in Wanikade, Yala Local Government Area that called for swift intervention. In addition to this, 25(26.9%) of PHCs showed evidence of interventions instituted in the past that worked effectively as a result of surveillance reporting. On the contrary, Secondary facilities had no such records. This finding may be attributed to PHC receiving more supervision and partnerships than Secondary facilities which serve as referral points to PHCs (Muhammad et al, 2025).

One major challenge identified during was poor funding of the Surveillance System and Poor infrastructure as a result of low prioritization of surveillance. The Cross River State budgetary allocation for health care was 25billion Naira for the year 2025 (Cross River Sate Budget, 2025). In spite of this significant allocation for health, there is no ‘dedicated fund’ as stated by one the respondents, for disease surveillance. As a result, diseases surveillance has been underfunded, relying mostly on funding from external donors. This situation is not too far from findings of *Olaleke et al (2022)* while elucidating challenges and strength of the Mpox surveillance system in Nigeria. They revealed that due to a low political will, disease surveillance often receives less priority and funding in Nigeria. However, other countries with similar economic features appear to have better priorities. For instance, *Moradi et al (2019)* in their

report on challenges and opportunities of the Communicable Diseases Surveillance System (CDSS) in Iran identified good funding, infrastructures and the technical support and the suitable electronic systems were among the strengths of their surveillance system. In this regard, increase funding for surveillance can enhance its functionality in the state.

Another challenge identified in the study was inadequate human resources for implementation of disease surveillance programs. Respondents complained of gross shortage in man power as a result of retirement, redeployment low employment rate from the government. This is a particularly worrisome since disease surveillance runs basically on human labour. If this persists, the entire system can be crippled. This finding aligns with Reddy *et al* (2026) who blamed the weak surveillance system of WHO–AFRO region on shortage of skilled staff in public health facilities, insufficient human capacities for testing, power instability, and low level in service training. This findings underscore the fact that surveillance effectiveness can only be restored through capacity building.

Mobility and transportation challenges were also reported in the study. Respondents complained that some facilities and communities are difficult to reach and as a result, challenging to monitor. This problem is further compounded by the high cost of fuel in the recent months amid poor remuneration from the government. Respondents complained of having to use personal funds to finance movement to certain locations during surveillance activities completely impede smooth functionality of the system. Olaleke *et al* (2022) recorded similar challenges in a systematic review and proposed a constant reevaluation of surveillance strategies to meet emerging trends in the public health system.

Poor integration of ICT facilities into surveillance activities was another challenge identified in the study. The findings showed that despite the overall shortage of digital facilities, the few available ones are poorly utilized primarily due to poor training, lack of electricity or lack of access to internet services. This implies that reporting is still to a large extent, manual. This approach does not imply efficiency of the system. Lar *et al* (2015) who studied the challenges of integrated disease surveillance response reporting among healthcare personnel in Mangu, Plateau State, Nigeria noticed that the challenges that health care workers experience during surveillance can only be mitigated through full integration of digital reporting. Similarly, Adewumi (2025)'s review which examined Nigeria's need for enhanced infectious disease response and surveillance systems, stated that to improve disease surveillance and response in Nigeria, there must be a rapid implementation of digital health technologies including *mHealth* and GIS mapping; while also enhancing healthcare worker training, instituting integrated disease surveillance systems, and fortifying health policy frameworks.

The study also identified low provision for training and retraining of disease surveillance officers as a major challenge affecting smooth working of the system. As

explained by the respondents, almost all trainings attended are facilitated by either WHO or NCDC. The government has indicated little interest on financing such programs. This discover aligns with Igho and Igunma (2023)'s observation that the Nigerian surveillance characterized by weaknesses such as insufficiencies in health infrastructure, low level of staff training and retraining, insufficient man power availability, technical, and unfavorable international or local policies as well as lack of intra-and inter sectorial collaboration. Most of these challenges of man- power can be overcome by man-power development.

VI. RECOMMENDATIONS

- There is need for increased funding of disease surveillance by creating a dedicated fund or allocation for surveillance in the yearly budget of the state.
- There is need for policy shift to capture replacement of surveillance motorcycles for DSNOs and ADSNOs every 4-6 years to enhance mobility and access to difficult terrains.
- Surveillance officers should be paid monthly allowances to encourage stay on the job as this will minimize neglect of responsibility and encourage voluntary conversion into disease surveillance office.

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