Outbreak Response Capacity of Clinical and Public Health Laboratories in Bayelsa State, Nigeria, 2023

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SUMMARY:
This study demonstrated inadequate laboratory capacity for outbreak response at sub-national levels in Nigeria. The laboratory surveillance system in Bayelsa State, Nigeria was found to be challenged with many factors such as a lack of administrative commitment, financial resources, functional equipment, testing capacity, and poor knowledge of laboratory personnel in public health and IDSR functions. These challenges increase the vulnerability of the state to infectious disease outbreaks.

Therefore, there is a need to strengthen sub-national Laboratory capacity through continuous training of skilled laboratory personnel in public health functions, infrastructural and equipment upgrades, and administrative commitment for effective outbreak response.

BACKGROUND

- Outbreaks of infectious diseases continue to pose a threat to public health with risk of international spread.
- Effective control of these outbreaks requires adequate laboratory capacity for swift detection and proactive response.
- However, laboratory services in sub-Saharan Africa have not received the same degree of attention as other health components for public health response.

OBJECTIVES

- To assess the capacity of public and clinical laboratories for outbreak response in Bayelsa State, Nigeria.
- To assess the level of knowledge of Medical Laboratory personnel on IDSR function.
- To identify the gaps and challenges with laboratory surveillance in Bayelsa State, Nigeria.

METHODOLOGY

- A descriptive cross-sectional study was conducted in 14 public and clinical laboratories on 10 domains using a modified WHO Laboratory Assessment Tool (LAT) .

- Laboratory capacity was assessed on a 100-point scale using the median score of each domain relative to the WHO LAT benchmark; inadequate (≤49%), moderate (50% - 79%), and adequate (≥80%).

RESULT

Diagnostic Capacity

- Among 14 laboratories assessed,14 (100%) could perform microbiological tests, two (14.3%) could perform water and food testing and none (0.00%) could perform toxicological test for public health purposes.

- In testing for infectious diseases using standard testing methods, three (21.4%) could test for Cholera by culture, 13 (92.9%) for HIV and malaria , nine (64.3%) for tuberculosis, one (7.1%) for COVID–19 by PCR, and none (0.00%) for measles.

Table 1. Overall outbreak response capacity by domains (n=14)

	Inadequate	Adequate	Overall
Domains	**n (%)**	**n (%)**	**Score (%)**
Availability of lab equipment	8 (57.2)	6 (42.9)	51.2
Diagnostic capacity	13 (92.8)	1 (7.1)	53.5
Public Health Functions	5 (35.7)	9 (64.3)	55.3
Data and Information Management	8 (57.1)	6 (42.9)	65.6
Communication and Quality control	12 (85.7)	2 (14.3)	35.6
Infection, Prevention and Control	9 (64.3)	5 (35.7)	32.2
Supply and Logistics	4 (28.5)	10 (71.4)	75
Facility and Infrastructure	3 (21.4)	11 (78.5)	60
Human Resources	11 (78.6)	3 (21.4)	69

RESULTS CONTINUED

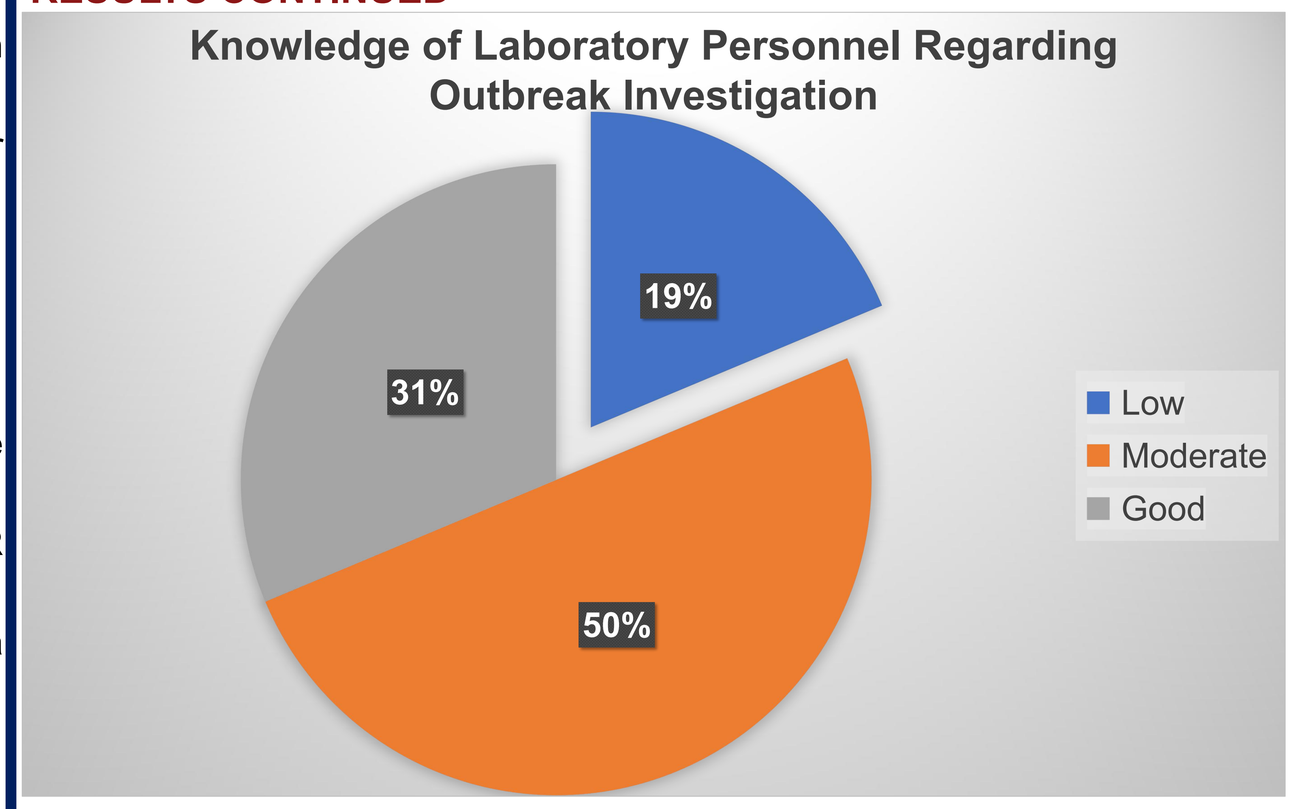

Fig 1: Knowledge score of participants on IDSR strateegy for disease control.

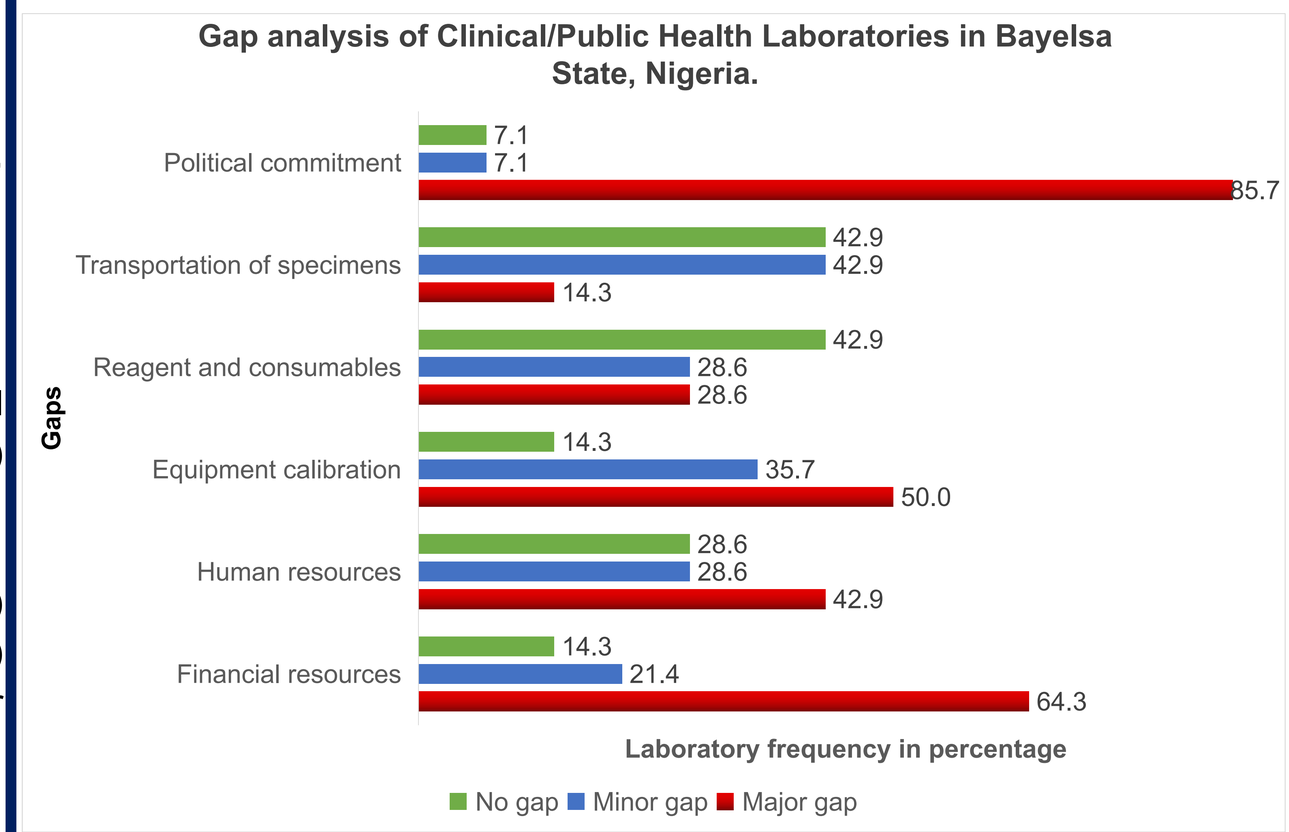

Fig 2: Gaps identified with laboratory capacity in Bayelsa State

CONCLUSIONS

- Overall, Laboratory capacity for outbreak response in Bayelsa State, Nigeria was inadequate across majority of the domains assessed, particularly communication and quality control, diagnostic capacity for infectious diseases, public health functions, and IPC.

- Laboratory system strenghtening at sub-national levels is essential for early warning surveillance and response systems.

- Decentralized local diagnostic capacity is for piority diseases is therefore reccomended.

ADDITIONAL KEY INFORMATION

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