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Food Safety Emergency Response in Africa: Institutional and Contextual Analyses from Eight Countries

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Abstract

Foodborne diseases remain a public health and socioeconomic development challenge in Africa, where fragmented systems limit preparedness and response. This study examined the institutional and contextual dimensions of food safety emergency preparedness and response across eight African countries: Nigeria, Egypt, Ghana, Kenya, Ethiopia, Uganda, Cameroon, and South Africa. A mixed-methods design was used, combining structured questionnaires and key informant interviews with stakeholders from regulatory agencies, public health institutions, academia, food businesses, development partners, and the general public. Thematic analysis, supported by a triangulation of survey findings, interviews, and a regional desk review, enabled cross country comparison of system functionality. Benchmarking was conducted against three major frameworks: FAO/WHO Food Safety Emergency Management (FSEM), the WHO Joint External Evaluation (JEE) tool, and Ghana's Food Safety Emergency Response Plan (FoSERP). Findings revealed recurring gaps across most countries including fragmented governance, poor coordination, under-resourced surveillance, uneven laboratory capacity, limited training, inadequate financing, compliance and communication, and One Health integration. Although some strengths were identified in selected countries (Ghana and Egypt), these were insufficient to offset systemic weaknesses. The benchmarking exercise highlighted significant gaps between existing global guidance and operational reality. Overall, the results underscore the need for integrated governance structures, institutionalized rapid risk assessment and incident management processes, and sustained investment in laboratory networks, workforce development, and proactive risk communication. Strengthening these foundational elements is essential for building resilient and responsive food safety emergency systems across Africa.

Keywords*: Africa, Emergency Response, Food Safety, Governance, Surveillance.*

Introduction

Food safety remains a critical public health issue across Africa, where foodborne diseases contribute substantially to illness, mortality, and economic strain. According to the World Health Organization [1], unsafe food is responsible for an estimated 137,000 deaths each year in the African region, being the highest burden globally. This persistent challenge is shaped by multiple structural weaknesses, including fragmented food control systems, limited surveillance and laboratory capacity, and poor multisectoral coordination [2, 3].

While food is essential for health and human development, it can also serve as a conduit for microbial pathogens, chemical contaminants,

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and natural toxins [4]. These risks are heightened in sub-Saharan Africa, where informal markets dominate food distribution and public awareness of food safety concerns is often low [3]. In many settings, emergency response structures for foodborne incidents are weak or absent, leaving food systems highly vulnerable to outbreaks that easily cross borders and escalate into national or regional crises.

A number of systemic challenges hinder timely and effective food safety emergency preparedness and response. These range from outdated or poorly implemented regulations to overlapping institutional mandates and insufficient funding or staffing for routine surveillance and incident management [5, 6]. Emergency responses tend to be reactive, with few countries conducting routine simulation exercises or adopting structured emergency management systems. The 2017 – 2018 listeriosis outbreak in South Africa, which remains the largest recorded globally, plainly illustrated limitations in traceability, surveillance, and inter-agency communication, resulting in delayed response and over 200 deaths [6, 7].

In contrast, high-income settings have developed more robust emergency response mechanisms. The European Union's Rapid Alert System for Food and Feed (RASFF) and the U.S. Food and Drug Administration's Emergency Operations Center exemplify integrated systems supported by strong legal mandates, coordinated communication channels, and institutionalized rapid response protocols [8, 9]. At the global level, the INFOSAN network provides a platform for rapid information exchange and coordination during cross-border food safety emergencies [10].

Across Africa, however, food safety governance remains uneven. National systems differ markedly in surveillance capacity, laboratory networks, and the presence or absence of emergency response plans. Even when policies exist, operational gaps persist due to resource constraints or institutional misalignment [11, 12]. The WHO Global Strategy for Food Safety 2022 – 2030 [13] underscores the urgency for African countries to adopt integrated food safety policies, build surveillance and laboratory infrastructure, and improve multisectoral collaboration. Some progress is emerging, Ghana's National Food Safety Emergency Response Plan (FoSERP) is one example of a formal, structured approach, but such initiatives remain the exception rather than the norm [14].

Existing research highlights recurring capacity gaps in preparedness, coordination, and risk communication [15, 16]. Emergency response efforts remain siloed, often excluding environmental or animal health actors despite the clear One Health dimensions of many foodborne hazards [17]. The One Health model, although increasingly recognized, is still not fully integrated into national food safety systems across the continent [13].

From a theoretical perspective, insights from systems theory, institutional theory, and risk governance suggest that effective preparedness and response depend on more than technical tools, they rely heavily on governance quality, institutional coherence, and responsive feedback structures [18-20]. Fragmented mandates, limited stakeholder engagement, and insufficient anticipation mechanisms collectively undermine the continent's ability to manage foodborne incidents proactively.

This study provides an institutional and contextual analysis of food safety emergency response systems across eight African countries. It draws on survey data and key informant interviews to explore strengths, gaps, and emerging opportunities within national systems. By triangulating stakeholder perceptions with desktop review evidence and benchmarking findings against international frameworks, the study aims to inform the development of more resilient, context-sensitive food safety emergency response systems in Africa, an increasingly critical need

as food systems become more complex and interconnected.

Materials and Methods

Study Design and Approach

This study used a structured questionnaire that combined multi-select items with open-text fields to capture both quantitative indicators and qualitative insights on food safety emergency response systems. The tool was administered across eight African countries: Nigeria, Egypt, Ghana, Kenya, Ethiopia, Uganda, Cameroon, and South Africa, to a wide range of stakeholders, including regulators, public health professionals, food business operators, academic experts, and community representatives. The closed-ended items enabled systematic assessment of institutional capacities and operational practices, while the open-ended responses allowed participants to share experiential knowledge and context-specific challenges. By integrating these complementary data types, the mixed-methods approach provided both statistical grounding and contextual depth, resulting in a more comprehensive understanding of strengths and weaknesses within national food safety emergency systems.

Study Population and Sampling

The target population included stakeholders involved in food safety management, emergency preparedness, and response across the eight study countries. Participants were drawn from regulatory agencies, public health institutions, food business operators, academia, local communities, and regional or international organizations such as WHO, FAO, AU entities, and Regional Economic Communities (RECs). A purposive sampling strategy was employed to ensure that diverse perspectives were represented across different sectors, geographic areas, and institutional roles [21].

Sample size calculations were informed by national population figures [22] and the estimated annual foodborne disease burden in Africa (91 million cases) [1]. These parameters were applied in the RAOSOFT sample size calculator [23], using a 95% confidence level. To achieve balanced representation, the sample was distributed across stakeholder groups: public (40%), regulators (15%), public health officials (15%), researchers/academics (15%), and food business operators (15%). An additional ten participants were drawn from international and regional organizations, in line with widely adopted principles of stakeholder engagement and risk communication [24-26]. The resulting country-specific sample allocations are presented in Table 1.

Data Collection

Data were collected primarily through structured questionnaires, supplemented in several cases by semi-structured key informant interviews (KIIs). Participants included national regulators, public health professionals, academic experts, food business operators, representatives of international agencies, and members of the general public. The questionnaire explored operational challenges, gaps in coordination, infrastructure limitations, and practical experiences with past food safety emergencies. It also captured perceptions of system functionality and capacity across surveillance, laboratory testing, risk communication, incident management, and governance structures.

All responses were consolidated into five datasets for qualitative and quantitative analysis. For thematic classification, responses were coded into eight predefined thematic areas: coordination/ governance, surveillance/ data, laboratories, human resources/ training, risk communication, compliance/ SOPs, funding/ logistics, and One Health/ laboratory networks [27].

Data Analysis

Qualitative and quantitative data from the survey and KIIs were analysed using thematic methods guided by Braun and Clarke's

framework [28]. The analysis involved familiarisation with the dataset, generation of initial codes, identification of recurring themes, thematic refinement, and cross-country comparison. The aim was to identify institutional strengths, operational weaknesses, and systemic gaps across the eight countries. Special attention was given to cross-cutting issues affecting rapid detection, coordinated response, surveillance functionality, workforce capacity, laboratory readiness, and risk communication. These themes were examined both within and across stakeholder groups to ensure robust interpretation of the data.

Triangulation of Findings

To strengthen the validity and depth of the analysis, findings from the survey and KIIs were triangulated with insights from a prior desk review [29] that examined policy documents, regulatory frameworks, and WHO Joint External Evaluation (JEE) reports. This triangulation enhanced context-specific interpretation and helped confirm areas of convergence between stakeholder perspectives and documented evidence [27].

Comparative Benchmarking

To assess policy relevance and practical gaps, a comparative benchmarking exercise was conducted against three major frameworks:

1. FAO/WHO Food Safety Emergency Management (FSEM) guidance [30],
2. WHO Joint External Evaluation (JEE) Tool for Food Safety [17], and
3. Ghana's National Food Safety Emergency Response Plan (FoSERP) [14].

The benchmarking focused on three strategic dimensions:

1. National policy and institutional frameworks,
2. Emergency detection and response mechanisms, and
3. Infrastructure and capacity.

This process helped identify both transferable global best practices and context-specific gaps that must be addressed to strengthen food safety emergency systems across African countries.

Table 1. Country Population and Determination of Sample Size for Key Informant Interview through Questionnaires

Country	Country population	Estimated Contribution to FBD incidence (%)	Population equivalent for FBD prevalence	Recommended sample size (95% C.L.)	General Public (40%)	Regulators (15%)	Public Health (15%)	Researchers (15%)	FBOs (15%)
Nigeria	237 527 782	33%	29 610 676	340	136	51	51	51	51
Cameroon	29 879 337	4%	3 724 816	60	24	9	9	9	9
Ethiopia	135 472 051	19%	16 888 210	237	95	36	36	36	34
Egypt	118 365 995	16%	14 755 736	207	83	31	31	31	31
Kenya	57 532 493	8%	7 172 113	114	46	17	17	17	17
Uganda	51 384 894	7%	6 405 741	101	40	15	15	15	16
Ghana	35 064 272	5%	4 371 181	73	29	11	11	11	11
South Africa	64 747 319	9%	8 071 527	126	50	19	19	19	19
International & Regional Organizations				10					
Total	**729 974 143**	**100%**	**91 000 000**	**1,268**	**503**	**189**	**189**	**189**	**188**

Results

Respondent Profile

A total of 1,259 stakeholders from eight African countries: Nigeria, Egypt, Ghana, Kenya, Ethiopia, Uganda, Cameroon, and South Africa participated in the survey, with several also completing key informant interviews. This represented a 99% completion rate relative to the planned 1,268 respondents. Stakeholder representation was strong and exceeded targets in most categories: regulators and public health institutions (102%), academic experts (101%), food business operators (102%), and development partners (250%). Participation from the general public reached 93%, still providing substantial insight into consumer-level perceptions. The broad geographical and institutional coverage delivered a robust and inclusive evidence base for analysis.

Thematic Findings

Across all respondents, eight recurring themes emerged: industry compliance and SOPs, coordination and governance, surveillance and data, human resources and training, laboratory capacity, risk communication, funding and logistics, and One Health/laboratory networks. As illustrated in Figure 1, the most frequently referenced areas were industry compliance and SOPs (110 mentions), coordination and governance (106), and surveillance and data (87).

These thematic areas reflected not only weaknesses but also existing strengths. Many respondents identified functional assets such as operational food safety committees, accredited laboratories in selected countries, and the uptake of HACCP and GMP standards by segments of the private sector. At the same time, persistent challenges, including unclear institutional mandates, resource-limited laboratories, and weak enforcement among informal vendors, were repeatedly highlighted.

Different stakeholder groups emphasized different aspects based on their functional roles.

1. Regulators and public health officials pointed to coordination bottlenecks, lack of clear recall authority, and gaps in surveillance.
2. Food business operators frequently requested clearer SOPs, more educative inspection approaches, and strengthened recall processes.
3. Academic experts focused on the underuse of surveillance data, gaps in event-based detection, and uneven laboratory harmonization.
4. Development partners emphasized persistent fragmentation, limited sub-national capacity, and inconsistent multi-sectoral integration.
5. The general public highlighted low awareness of food safety risks and inadequate risk communication during outbreaks.

Cross-Cutting Gaps

Although the eight themes provided a broad view of system strengths and weaknesses, five systemic gaps stood out across nearly all countries, as shown in Figure 2:

1. **Fragmented mandates and unclear leadership:** Overlapping responsibilities among ministries and agencies (health, agriculture, standards authorities, and local government) created uncertainty around incident command and recall authority, resulting in delayed responses.
2. **Under-resourced surveillance and trace-back systems:** Event-based surveillance signals, laboratory-confirmed foodborne disease reports, and market monitoring data were seldom integrated. Traceability in informal markets remained particularly limited.

3. **Uneven laboratory capacity and weak quality systems:** Outside capital cities, accredited laboratories were limited, shortages of reagents were frequent, and food-specific testing capabilities were inconsistent.

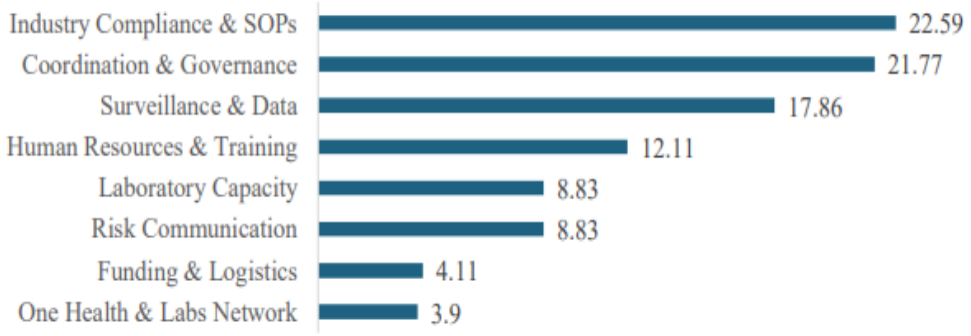

Figure 1. Percentage Distribution of Top Themes Across all Respondent

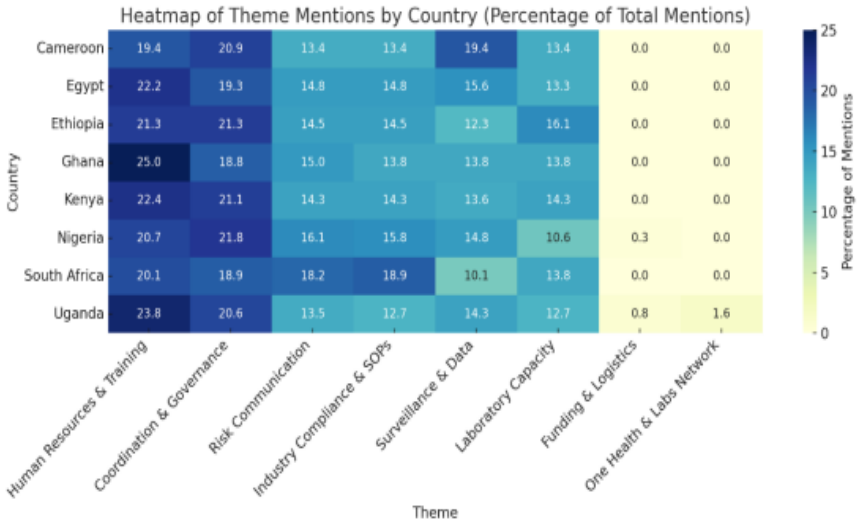

Figure 2. Heatmap of Gap-Related theme Mentions by Country (Percentage of total Mentions Per Count

1. **Skills gaps and limited continuous training:** Stakeholders noted insufficient training in outbreak investigation, risk communication, One Health incident management, and sub-national response capacity.
2. **Inadequate financing and logistics:** Few countries had dedicated budgets for food safety emergencies. Delays in fund mobilization, limited logistics capacity, and insufficient resources for sample transport were commonly reported.

Collectively, these systemic gaps interfered with rapid detection, slowed coordinated action, and reduced public confidence in food safety systems. Although some areas such as industrial compliance, risk communication, and One Health collaboration showed mixed performance, the five gaps above appeared consistently across all stakeholder groups.

Country-Specific Patterns

While the five systemic gaps were common across the eight countries, their relative prominence differed, reflecting national contexts and institutional realities:

Nigeria: Respondents emphasized coordination/governance (21.8%) and human resources/training (20.7%), reflecting the complexities of a federal system and a large informal food sector.

South Africa: Priorities included human resources/training (20.1%), governance (18.9%), industry compliance (18.9%), and communication (18.2%), indicating challenges despite robust infrastructure.

Ethiopia: Coordination/governance (21.3%) and training (21.3%) dominated, with laboratory capacity (16.1%) also heavily cited.

Ghana: Training (25.0%), governance (18.8%), and risk communication (15.0%) were major concerns, alongside balanced challenges in surveillance, laboratory capacity, and compliance.

Kenya: Training (22.4%) and governance (21.1%) were central, with other issues (laboratories, communication, compliance, surveillance) evenly distributed.

Cameroon: Governance (20.9%), training (19.4%), and surveillance (19.4%) were major themes, reflecting broad systemic constraints.

Egypt: Training (22.2%), governance (19.3%), and surveillance (15.6%) dominated, consistent with challenges in operationalizing strong institutional frameworks.

Uganda: Training (23.8%) and governance (20.6%) led the themes, with Uganda being the only country to notably highlight One Health networks (1.6%), reflecting early adoption of integrated approaches.

These differences underscore the need for country-specific strategies that respond to unique structural and capacity challenges while addressing shared continental gaps.

Dimensions of System Functionality

Three broader dimensions emerged when synthesizing thematic patterns across all countries:

1. **Policy and Institutional Frameworks**: Clear mandates, legal authority, and centralized structures were associated with stronger emergency responses, while fragmented mandates and outdated policies weakened system functionality.
2. **Emergency Detection and Response Mechanisms**: Integration of food safety into IDSR platforms, structured escalation pathways, and incident command arrangements were beneficial. However, under-reporting, weak traceability, and inconsistent risk communication remained widespread.
3. **Infrastructure and Capacity**: The availability of accredited laboratories, trained personnel, and operational logistics strengthened readiness. Nonetheless, most countries faced shortages in specialized laboratory capacity, workforce skills, and rapid mobilization mechanisms.

Triangulation with Desk Review

Findings from the survey and KIIs aligned closely with insights from the prior desk review [29]. Countries with established frameworks, Ghana's FoSERP and Egypt's NFSA, demonstrated clearer institutional arrangements, whereas others such as Cameroon and Uganda showed sustained fragmentation. The desk review also confirmed that many documented plans remain underutilized or insufficiently operationalized in practice.

Benchmarking with International Frameworks

Comparing empirical findings with the FAO/WHO FSEM guidance, WHO JEE Tool, and Ghana's FoSERP revealed broad alignment with global expectations regarding governance, surveillance, and capacity. However, significant operational gaps were evident, particularly in legal authority for recalls, institutionalized rapid risk assessment, laboratory accreditation, simulation exercises, and proactive risk communication. Table 2 provides a summary of these comparisons, highlighting specific enhancement needs for African contexts.

Discussion

This study provides fresh empirical insight into how stakeholders across eight African countries perceive the performance, strengths, and persistent weaknesses of their food safety emergency response systems. The combined survey and interview findings reveal a mix of institutional assets and deep-rooted system deficits across eight thematic domains, with three overarching dimensions, policy and institutional frameworks, emergency detection and response mechanisms, and infrastructure and capacity, emerging as the foundation of system functionality.

Policy and Institutional Frameworks

Across countries, stakeholders frequently emphasized governance arrangements as a major determinant of preparedness and response capacity. Regulators and development partners consistently highlighted fragmented mandates, unclear leadership structures and weak recall authority as major bottlenecks.

Table 2. Benchmarking International and National Food Safety Emergency Frameworks against Empirical Findings from Eight African Countries

Strategic Dimension	International/National Framework Provisions	Empirical Findings	Enhancement Needs for the African Context
Policy and Institutional Frameworks	FSEM and JEE require national emergency plans with legal mandate, clear inter-agency roles, and a multisectoral approach. FoSERP includes multi-tiered coordination (national, regional, district).	Only 2 of 8 countries had documented emergency plans. Legal mandates are weak, unclear, or overlapping. Limited authority to declare emergencies. Inter-agency roles are not documented. No centralized response structure in several settings.	Enact and enforce legal frameworks for food safety emergencies. Develop/update national food safety emergency plans. Formalize institutional roles (e.g., via ToRs, MoUs, SOPs). Integrate food safety within national emergency response laws. Cascade national plans to districts.
Emergency Detection and Response Mechanisms	FSEM promotes risk-based surveillance, early warning systems, and response triggers. JEE assesses rapid risk assessment (RRA), early warning systems, escalation, and response protocols. FoSERP features decision trees, incident command, and pre-assigned teams.	Fragmented surveillance systems. Triggers for escalation are not well defined. Limited RRA capacity. Delays in mobilizing response teams. Weak subnational response coordination.	Institutionalize multi-agency RRA teams with defined authority. Standardize and operationalize escalation thresholds. Train dedicated rapid response teams (RRTs) in foodborne outbreak investigation. Ensure response SOPs are pre-approved. Adapt Ghana's decision tree and field coordination models.
Infrastructure and Capacity	FSEM emphasizes SimEx, public communication, learning, laboratory systems, and after-action reviews. JEE evaluates lab networks/capacity, simulation records, communication capacity, and INFOSAN contact.	Labs are under-resourced or lack food-specific capacity. Rare or undocumented SimEx. Weak or no public communication strategy. INFOSAN focal points are often unknown/inactive.	Strengthen lab networks with food-specific testing capabilities. Institutionalize annual SimEx and AARs. Develop a public risk communication strategy and toolkits. Develop digital repositories of response tools and partner lists.

	FoSERP includes templates, SitReps, and contact directories.		Activate and train INFOSAN/IHR focal points. Allocate domestic budget lines for preparedness.

These concerns echo earlier lessons from significant foodborne disease outbreaks, such as the South African listeriosis event, where overlapping institutional roles and ambiguous responsibilities delayed decisive action [6, 31].

Conversely, countries with clearer and more centralized food safety frameworks—such as Ghana's FoSERP and Egypt's National Food Safety Authority were viewed as demonstrating comparatively stronger coordination and faster decision-making during emergencies [14, 32]. These observations reinforce institutional theory arguments that emphasize the role of clearly defined mandates, legitimacy, and enforcement power in shaping how effectively institutions function [19]. In essence, legal clarity and empowered leadership remain prerequisites for effective food safety emergency management.

Emergency Detection and Response Mechanisms

Stakeholders repeatedly identified operational challenges related to early detection, risk assessment, and escalation. Many of the issues raised, fragmented surveillance systems, weak traceability mechanisms, delays in laboratory confirmation, and reactive rather than anticipatory responses, mirror concerns highlighted in global assessments and WHO JEE reports [33, 34]. Participants called for institutionalized multi-agency rapid risk assessment (RRA) teams, predefined escalation triggers, and standardized decision-support tools. These priorities are well aligned with FAO/WHO FSEM guidance and WHO JEE indicators, both of which emphasize structured detection and response pathways as critical elements of effective emergency management [15, 17]. Without these mechanisms, national systems default to a reactive posture, making timely containment difficult and eroding public confidence in the authorities' ability to manage food safety threats [18].

Infrastructure and Capacity

Laboratory systems and workforce capabilities emerged as persistent weak points across the study countries. While some respondents highlighted existing accredited laboratories and noted pockets of HACCP implementation within the private sector, a more common narrative centered on inadequate laboratory coverage outside capital cities, shortages of reagents, insufficient food-specific testing capacity, and uneven workforce skills.

These deficiencies hinder both speed and accuracy during emergencies, underscoring the importance of foundational infrastructure, accredited labs, well-trained inspectors, epidemiologists, and risk communicators, as the backbone of readiness [35]. The limited emphasis on One Health approaches, noted mainly in Uganda, highlights a gap between stated policy aspirations and actual operational integration across human, animal, and environmental health sectors [13].

Risk Communication and Public Engagement

Feedback from the general public and food business operators underscored risk communication as a critical challenge. Respondents noted that public awareness of food safety risks is low and that communication during emergencies, when it occurs, is often delayed or inconsistent. Such gaps create opportunities for misinformation and undermine public trust.

These concerns mirror earlier cases, such as Uganda's 2019 relief food poisoning incident,

where delays in official communication allowed speculation to spread [36]. Conversely, the transparent communication approach used during South Africa's listeriosis outbreak helped foster greater public collaboration and trust [7]. These examples illustrate why culturally responsive, proactive communication strategies must be embedded into national preparedness plans [26].

Triangulation and Benchmarking

Triangulating survey and interview findings with desk review evidence [29] highlighted strong alignment between stakeholder perceptions and documented institutional realities. Countries with established frameworks (e.g., Ghana and Egypt) showed clearer organizational structures, while others (e.g., Cameroon and Uganda) continued to exhibit fragmentation.

Benchmarking against international/national frameworks, FAO/WHO FSEM, WHO JEE, and Ghana's FoSERP, revealed that while many countries broadly recognize the importance of governance, surveillance, and capacity-building, operationalization remains inconsistent. Respondents often identified the same priorities emphasized in the global frameworks, clear mandates, accredited laboratories, rapid risk assessment, and structured communication, but gaps remained in translating these priorities into day-to-day practice [17, 30]. Bridging this gap requires adapting international models to national realities, ensuring that legal authority, protocols, and institutional arrangements are formally embedded and functional.

Implications

Overall, the findings suggest that food safety emergency systems across the eight countries assessed remain partially functional. While some institutional progress is evident, most systems continue to operate with fragmented mandates, reactive mechanisms, and resource limitations. Strengthening food safety emergency response will require attention to three core priorities:

1. Codifying institutional clarity and authority through national food safety emergency plans formally anchored in legislation [14, 32].
2. Institutionalizing rapid risk assessment, escalation protocols, and incident command tools to ensure that weak signals are detected and acted on quickly [15, 17].
3. Investing in foundational capabilities, including laboratory networks with food-specific testing capacity, sustained workforce development, simulation exercises, and proactive communication systems [8, 13].

Without these measures, emergency responses will continue to be delayed, fragmented, and insufficiently anticipatory, leaving countries vulnerable to recurring outbreaks.

Limitations

Several limitations should be taken into account when interpreting these findings. Although the study achieved a high overall response rate (99%), participation from the general public fell slightly short of the target, which may have influenced the balance of perspectives across stakeholder groups. In addition, the sample size calculations were based on national population estimates and an assumed distribution of Africa's foodborne disease burden [1]; while this approach offered a reasonable foundation for determining sample adequacy, it may not fully reflect subnational variations in exposure or institutional capacity.

The qualitative components, survey open-text responses and key informant interviews, provided valuable contextual insights but are inherently subject to interpretation bias. This risk was mitigated through multi-coder thematic analysis and triangulation with secondary evidence [27], though some degree of subjective interpretation is unavoidable.

Finally, the diversity of political, institutional, and socioeconomic contexts across the eight countries limits the generalizability of findings to all AU Member States. Nonetheless, the consistency with which key gaps, fragmented governance, weak surveillance, limited laboratory capacity, and inadequate risk communication, appeared across countries suggests that the overarching conclusions are broadly relevant to many low- and middle-income African settings.

Conclusion

This study provided a multi-country analysis of food safety emergency preparedness and response across eight African countries, drawing on perspectives from a wide spectrum of stakeholders. The findings highlight three interconnected domains: policy and institutional frameworks, emergency detection and response mechanisms, and infrastructure and capacity, as central to determining system effectiveness. While countries such as Ghana, Egypt, and South Africa displayed promising practices, most national food safety systems remain constrained by fragmented mandates, under-resourced surveillance structures, uneven laboratory capacity, and limited risk communication.

These results underscore the pressing public health and economic implications of food safety emergencies across the continent, which contribute to approximately 91 million foodborne disease cases annually [1]. By integrating systems theory, institutional theory, risk governance, and a One Health perspective, this study offers both conceptual insights and practical guidance for national and regional policymakers. The benchmarking exercise further highlights the need to adapt international frameworks, such as FAO/WHO FSEM and the WHO JEE, to the African context, emphasizing legal clarity, empowered leadership, and operationalized protocols.

The findings have clear policy and programmatic implications. National authorities can use this evidence to develop or revise food safety emergency response plans, institutionalize rapid risk assessment and incident management structures, and enhance laboratory and workforce capacity. Regional bodies and development partners may leverage these insights to harmonize approaches, strengthen cross-border surveillance networks, and align investments with identified national priorities. Beyond Africa, the results contribute to global dialogues on tailoring international food safety governance tools to low- and middle-income settings.

Strengthening food safety emergency systems is ultimately both a public health necessity and a development priority. Achieving durable improvements will require sustained political commitment, multi-sector collaboration, and targeted investments in foundational capacities to transition African food safety systems from reactive, fragmented arrangements toward integrated, proactive, and resilient emergency response models capable of safeguarding public health, trade, and livelihoods.

Ethical Approval

This study used data obtained through structured questionnaires and key informant interviews. As no clinical or experimental procedures involving human subjects were undertaken, formal ethical approval was not required. Nonetheless, the research was conducted in accordance with established ethical principles, including integrity, transparency, confidentiality, and informed consent. Participation was voluntary, and respondents were informed of the purpose of the study and their right to decline or withdraw at any stage.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon credible request. Access is restricted to

safeguard confidentiality and comply with ethical commitments made to participants.

Author Contributions

Modupe Adeyemo conceptualized and designed the thesis research, conducted data collection, performed data analysis, interpreted the findings, and drafted the manuscript presented here as part of the broader dissertation output under the guideship of Yemisi Jeff-Agboola. Both authors, Modupe Adeyemo and Yemisi Jeff-Agboola, reviewed the manuscript critically for intellectual content and approved the final version for submission.

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Conflict of Interest

The authors declare that there are no conflicts of interest regarding the conduct of this study or the preparation of this manuscript.

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