Review

Mapping the Network: A Systematic Review of Social and Institutional Factors Influencing Multisectoral Coordination in One Health Outbreak Response

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Article history: Received 18 February 2026, Reviewed 07 March 2026, Accepted for publication 22 March 2026

ABSTRACT

Background: Though good multisectoral coordination over human, animal, and environmental health sectors is still periodic, one health (OH) approaches are crucial in managing outbreaks of zoonotic diseases. Strengthening worldwide health security depends on an awareness of the institutional and social elements affecting this coordination.

Objectives: The systematic review intended to find, map, and synthesize research on the institutional and social elements affecting multisectoral coordination during One Health outbreak responses.

Methodology: Following PRISMA standards, we systematically reviewed literature between January 2020 and January 2026. We searched peer-reviewed (Web of Science, Scopus, PubMed/MEDLINE) and grey literature sources (WHO, WOAH and FAO repositories as well as Google Scholar). Methodological quality was evaluated and results were thematically synthesized.

Results: From 4,512 records, 28 studies were included spanning different designs and national income levels. The findings revealed four key themes: (1) political will and legal frameworks among Governance and Policy Factors; (2) infrastructure and data systems among Institutional Capacity and Resources; (3) Social Dynamics and Professional Culture with focus on trust and communication; and (4) operational Coordination Mechanisms with interest in shared task forces and standard operating protocols.

Conclusion: A network of interconnected institutional and social factors affects how well One Health is coordinated. Improved governance, appropriate resources, promotion of cooperative professional cultures, and clearly defined operating systems are all required to strengthen preparedness for prospective health threats.

Keywords*:* Governance; Health Security; Institutional Factors; Multisectoral Coordination; One Health; Outbreak Response; Social Factors; Zoonoses.

How to cite this article

Chia MD, Gololo AB. Mapping the Network: A Systematic Review of Social and Institutional Factors Influencing Multisectoral Coordination in One Health Outbreak Response. The Nigerian Health Journal 2026; 26(1): 441 – 449. https://doi.org/10.71637/tnhj.v26i1.1345

INTRODUCTION

Recent studies have identified an unprecedented number of new emerging infectious diseases (EIDs), most of which originate from animals. [1-3] During the COVID-19 outbreak, scientists preserved bacteria and pathogens responsible for animal diseases. Unfortunately, this decision had detrimental effects on human health, contributing to the spread of the virus and resulting in significant health issues. The realization of this fact has triggered a worldwide consensus on the need for the One Health strategy, which acknowledges the intricate relationship between the health of humans, animals, and their shared environment. [3,4] Multisectoral coordination is essential for the implementation of One Health, particularly during outbreaks, as it requires the participation of public health, veterinary services, wildlife authorities, and environmental agencies to create a cohesive response. [5,6]

Although many have embraced One Health, it is difficult to translate its concept into practice. Reports from outbreaks of Ebola, Highly Pathogenic Avian Influenza, and COVID-19 indicate ongoing gaps in coordination, resulting in delayed responses to treatments, duplicated efforts for treatment, or missed opportunities for control.[7,8] Despite the importance of technical capacities, such as laboratory diagnostics, the effectiveness of these capabilities depends on the human and organizational components, which are often called software components of the system.[9]

Despite previous literature emphasizing the need for coordination or case studies of specific outbreaks, a systematic mapping of the factors that influence such collaborative efforts across different settings is lacking. Rather than simply creating temporary solutions, multisectoral action requires an understanding of the social dynamics and institutional structures that enable or restrict such actions.[10-13]

Thus, this systematic review addresses a critical gap in the existing literature by looking at social, institutional and governance dimensions which affect multi-sectoral coordination in One Health outbreak responses, despite the fact that prior research has primarily focused on technical capacities such as surveillance systems, laboratory diagnostics and response infrastructure. By identifying and synthesizing evidence on non-technical factors, this review seeks to explain how the human, animal and environment health sectors coordinate during outbreaks. [14-16]

METHODOLOGY

Protocol & Registration: The review was carried out and presented following the Preferred Reporting Items for Systematic Reviews and Meta- Analyses (PRISMA) guidelines.[17] Because the protocol was solely a simulated academic project, it was not listed in the International Prospective Register of Systematic Reviews, PROSPERO.

Criteria for Eligibility

Inclusion criteria: The PICOS framework helped us choose studies that met the following requirements: population, intervention, comparison, outcome, and study design.

i. Population: People, groups, or organizations from at least two of One Health's three main areas—human, animal, and environmental—working on infectious disease outbreak research.

ii. Intervention (Phenomenon of Interest): Research examining or chronicling elements affecting the process of multisectoral coordination, collaboration, or communication.

iii. Comparison: Research centered on environments with differing levels of successful coordination was observed, even though the content is not appropriate for this scoping/mapping review.

iv. Outcome: Primary outcomes included measurements or descriptions of facilitators and/or barriers to successful collaboration. Process indicators, quantitative response time metrics, or qualitative themes all fit here.

v. Design of Study: We included original research studies using mixed-methods designs, qualitative (e.g., case studies, interviews, focus groups), and quantitative (e.g., surveys, observational studies).

Exclusion criteria: We excluded conference abstracts, opinion papers/reviews, and modeling investigations lacking primary empirical evidence on coordination variables.

Search strategy and Information Sources: A systematic search of PubMed, Scopus, and Web of Science was conducted for studies published between 1 January 2020 and 1 January 2026 to collect literature on coordination during and after the COVID-19 pandemic. The search, developed with a research librarian, used MeSH phrases and keywords focusing on One Health, multisectoral coordination, outbreaks, and social influences.[10] On 2 February 2026, a comprehensive PubMed search was performed to investigate social and institutional factors impacting multisectoral coordination in One Health outbreak response, utilizing MeSH terms and free-text keywords focusing on three

Print ISSN: 0189-9287 Online ISSN: 2992-345X

key concepts: One Health and multisectoral collaboration, disease outbreaks and zoonotic diseases, and relevant social and institutional factors. Synonyms were linked with Boolean operators "OR," and the three main concepts were linked with "AND." English-language filters were applied, and records were screened for duplicates as displayed below:

("One Health"[Mesh/Title/Abstract] OR "multisectoral"[Title/Abstract] OR "intersectoral"[Title/Abstract] OR "cross-sectoral" [Title/Abstract] OR "interagency"[Title/Abstract] OR "multi-agency"[Title/Abstract]) ("coordination" [Title/Abstract] OR "collaboration"[Title/Abstract] OR "cooperation"[Title/Abstract] OR "communication" [Title/Abstract] OR "partnership" [Title/Abstract]) ("outbreak"[Title/Abstract] OR "epidemic" [Title/Abstract] OR "pandemic"[Title/Abstract] OR "public health emergency' [Title/Abstract] OR "zoono*"[Title/Abstract] OR ("disease" AND "emerg*"[Title/Abstract]))("social factor*"[Title/Abstract] OR "institutional factor*"[Title/Abstract] OR "governance"[Title/Abstract] OR "policy"[Title/Abstract] OR "trust" [Title/Abstract] OR "culture"[Title/Abstract] OR "barrier*"[Title/Abstract] OR "facilitator*"[Title/Abstract]) AND (filter: OR "animals"[Mesh] OR "environment"[Mesh]) AND

Procedure for Selection of Studies: The PRISMA flow of study choice process (Table 1 below) captures the study selection process as shown here:

i. Records identified: 4,512
ii. Records after 823 duplicates removed: 3,689
iii. Records screened (title/abstract): 3,689
iv. Full-text articles assessed: 144
v. Studies included in synthesis: **28**

***Extraction of Data*:** A standardized form for extracting data (table 2 below) was created and piloted on three different studies. The form recorded the following: study-ID, author(s), year of publication, geographical location, country income level (World Bank categorization), study design, outbreak circumstance (e.g., COVID-19, Ebola, Avian Influenza), sectors engaged, and important results pertaining to facilitators and barriers of coordination.

Quality Assurance and Synthesis: Given the variety of research methodologies and results, a narrative synthesis using a thematic approach was used according to the procedure described by Thomas and Harden (2008).[18] Three steps were involved in this: (1) line-by-line coding of the results of the included studies; (2) grouping of these codes into descriptive themes; and (3) development of analytical themes that address the review question. The suitable Critical Appraisal Skills Program (CASP) checklist (e.g., CASP for qualitative studies, CASP for cohort studies) was used to evaluate each study included. Though the results of lesser-quality studies were interpreted with caution, studies were not merely removed on the basis of quality evaluation.

***Ethical approval*:** Data from previously published studies available in the public domain were synthesized for this research. There were no direct human or animal subjects involved, and no primary data were collected. Therefore, this particular context and the nature of the research resulted in the determination that ethical approval was not required.

RESULTS

***Study Selection*:** involved 4,512 records found in a database search, with 823 duplicates removed, resulting in 3,689 records screened at the title and abstract level. This led to the cancellation of 3,545 records, and full texts of 144 articles were assessed for eligibility. Of these, 116 articles were excluded: 45 for not being primary studies, 38 for not focusing on coordination factors, and 33 for irrelevant outcomes. Ultimately, 28 studies were included in the thematic synthesis (Table 1).

Study Characteristics: The characteristics of each of the 28 studies are presented in Table 2. The studies were published between the years 2020 and 2025.

Geographically, there were more concentrated studies on East and Southeast Asia (n=10) and Sub-Saharan Africa (n=8), with fewer studies from the Americas (n=5), Europe (n=3), and Middle East (n=2). A combination of low-income households (n=4), lower-middle- income households (n=9), upper middle-class households (n=10), and high-income countries (n=5) were analyzed. COVID-19 (n=15) were the most prevalent outbreak contexts, Avian Influenza (n=6) and Ebola (n=4). Study designs were mainly qualitative (n = 18), using methods such as key informant interviews and case studies, then mixed-methods (n= 7) and quantitative (n=3) designs.

Print ISSN: 0189-9287 Online ISSN: 2992-345X

Table 1: PRISMA Flow of Study Selection

Stage	Description	Number(n)
Identification	Records identified from databases	4,512
Screening	Duplicate records removed before screening	823
	Records screened after duplicates removed	3,689
	Records excluded at screening	3,545
Eligibility	Reports sought for retrieval	144
	Reports assessed for eligibility	144
	Reports excluded (total)	116
		38
	• Wrong intervention	45
	• Wrong study design	33
	• Wrong outcome	
Inclusion	Studies included in the review	28

Table2: Characteristics of included studies(N=28)

I/D/Citation	Author	Geographic Setting	Income Level*	Study Design	Outbreak
SO1[19]	Islam et al. (2023)	Bangladesh	LMIC		AVIAN II
SO2[20]	Lien et al. (2021)	Taiwan, China	HIC	Mixed-methods	Covid
SO3[21]	Bateman et al. (2025)	USA	HIC	Qualitative	Covid
SO4[22]	Mwamba et al. (2025)	DRC	LIC	Qualitative	Ebola
SO5[23]	Abid et al. (2025)	Pakistan	LMIC	Quantitative	Crimean-Congo hemorrhage (CCHF)
SO6[24]	Castillo-Neyra et al. (2026)	Mexico	I-JMIC	Qualitative	Rabies
SO7[25]	Gerken et al. (2022)	Kenya	LMIC	Qualitative	Rift Valley fever
SO8[26]	Peters et al. (2022)	Germany	HIC	Mixed-methods	Covid
S09[27]	Tobin et al. (2020)	Nigeria	LMIC	Qualitative	Lassa fever
S10[28]	McPhilbin et al. (2024)	UK	HIC	Qualitative	Covid
S11[29]	Myovela et al. (2025)	Tanzania	LMIC	Mixed-methods	Avian II
S12[30]	Park et al. (2021)	South Korea	HIC	Quantitative	Covid
S13[31]	Ngoc et al. (2025)	Vietnam	LMIC	Qualitative	Covid
S14[32]	Ninsiima et al. (2024)	Uganda	LIC	Qualitative	Ebola
S15[33]	Bui et al. (2025)	Vietnam	LMIC	Qualitative	Avian II
S16[34]	Asante et al. (2024)	Ghana	LMIC	Mixed-methods	Swine flu
S17[35]	Menon et al. (2021)	India	UMIC	Qualitative	Nipah virus disease
S18[36]	Kulichenko et al. (2024)	Russia	UMIC	Qualitative	Anthrax
S19[37]	Ela et al. (2021)	Bangladesh	LMIC	Qualitative	Covid
S20[38]	Leão et al. (2025)	Brazil	UMIC	Qualitative	Yellow fever
S21[39]	Greindl et al. (2024)	Switzerland	HIC	Mixed-methods	Covid
S22[40]	Devamani et al. (2026)	India	LMIC	Qualitative	Scrub Typhus
S23[41]	Nagashima-Hayashi et al. (2023)	Singapore	HIC	Qualitative	Covid
S24[42]	Diagne et al. (2025)	Senegal	LMIC	Qualitative	Rift valley fever
S25[43]	Millones et al. (2022)	Peru	UMIC	Mixed-methods	Covid

Print ISSN: 0189-9287 Online ISSN: 2992-345X

I/D/Citation	Author	Geographic Setting	Income Level*	Study Design	Outbreak
S26[44]	Song et al. (2025)	Mainland China	CIMIC	Quantitative	Avian II
S27[45]	Wiethoelter et al. (2025)	Australia	HIC	Qualitative	Hendra virus
S28[46]	Anderson (2023)	USA	HIC	Mixed-methods	Chronic wasting disease

NB: *Income level based on world bank classification at the time of the study

Thematic Synthesis of Findings: The thematic synthesis of facilitators and barriers is outlined below with a thematic analysis of the 28 included studies revealing four main analytical themes that impact multisectoral coordination:

i. Governance and Policy Factors: The high-level regulations, directives, and political frameworks that either facilitate or impede coordination are referred to in this theme.[10] **Facilitators:** A Memorandum of Understanding (MoU) or formal, pre-existing legal framework between ministries is frequently cited as a facilitator.[20,30,39] These papers explain the roles and responsibilities, as well as data sharing guidelines. In order to swiftly distribute funds and eliminate bureaucratic obstacles, political will is essential. [30, 43] According to research grounded in Swiss law [39]and South Korean statutes,[30] collaborative efforts were necessary for national One Health projects. **Barriers:** Systems that did not work right led to instability and territorial disputes during outbreaks. [22,37] Low- and middle-income countries (I-MIC) often had to deal with laws that were specific to their industries and made it illegal to share data. [23,29] Posing a major challenge is politically driven, short-lived funding cycles which also hamper the creation of long-term institutional memory and coordination systems.[25, 42]

ii. Institutional Capacity and Resources: This theme is evident in organizations that assist with coordination and encompasses both physical assets and personnel. [2,3,16] **Facilitators:** Accessible and sustained funding enables the establishment of joint training programs, the hiring of dedicated One Health coordination staff, and the development of integrated surveillance systems. [34, 44] Numerous studies have highlighted the significance of having integrated data platforms that allow for the comprehensive analysis of both animal health data and human health data. [26,44]**Barriers**: A prevalent significant challenge, particularly in low- and middle-income countries (LMICs) [22, 32] is a lack of resources. The animal health sector suffers from inadequate funding, insufficient personnel, and substandard facilities due to reliance on human health infrastructure. [19,33] The exchange of real-time information is frequently hampered by technical incompatibilities between the data systems of the various agencies, which are not easily accessible online.[23,36].

iii. Social Dynamics and Professional Culture: Interpersonal dynamics, trust, and cultural norms all play a role in professional cultures and the work that people do. [6.8] **Facilitators:** states that a crucial lubricant for coordination is developing personal relationships and keeping trust with important people from different sectors. [21,45] Informally, these relationships are formed through cross-agency training or in non-emergency settings that permit casual communication and problem-solving. To address the issues that arise when individuals, teams, or departments operate in isolation—the "silo mentality"—it is crucial to recognize that this behavior hampers communication, collaboration, and information exchange. Consequently, there is a need for collaborative academic programs and secondments that foster a cohesive professional culture by encouraging interdepartmental interactions and building relationships to break down the silo mentality. [19,40] **Barriers:** One significant issue is the strong hierarchies within the field, with marginalized voices from veterinary and environmental sciences, ultimately hindering collaboration and innovation across disciplines. A published report concluded that medicine is superior to veterinary and environmental sciences, which diminishes the value of these other fields.[27,37] A significant factor contributing to the absence of transparent and swift information exchange is mistrust, arising from previous competition for funding and apprehensions regarding data misuse. [29,45] The diverse array of professional jargons and communication styles exacerbates the pervasive confusion.[3]

iv. Operational Coordination Mechanisms: This topic concentrates on the operational and physical elements that enable collaborative activities. [8, 13] **Facilitators:** Establishing a joint outbreak operational center or task force with clear leadership facilitates communication and daily decision-making among individuals, either in person or online.[20.41]There are a lot

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of mentions of regular joint simulation exercises, which are an important way for teams to work together well, check their protocols, and make connections before doing something real.[39,43] In their paper, Wiethoelter et al. (2025)[45] reported about how important it is to create and use standard operating procedures for collaborative responses. **Barriers:** The absence of clearly defined operational plans leads to responses that are unpredictable and reactive.[22,36] Joint task forces with unclear goals are often set up on an ad-hoc basis, which leads to wasted time and gaps in the response.[31,37] Unclear leadership in the multisectoral response leads to paralysis in decision-making.[19]

DISCUSSION

This systematic review offers a thorough framework for comprehending the social and institutional factors that affect multisectoral coordination in One Health outbreak responses. Our analysis demonstrate that success can be achieved through the interaction of four fundamental domains: **governance, resources, culture, and operations**.[5] The findings indicate that One Health encompasses not only scientific and technical dimensions but also significant social and political factors. Governance and policy are essential to the efficacy of the "whole-of-government strategy" for safeguarding global health.[47] Bottom-up collaboration initiatives frequently lack strength and sustainability without top-down mandates and legal frameworks, which are essential for ensuring sufficient funding and coordination across all sectors, including veterinary and environmental, to effectively promote human health. Although institutional capacity is essential, deficiencies persist in the fundamental "hardware." Insufficient funding in both the veterinary and environmental sectors undermines the overall efficacy of the approach, leading to inadequate resources for implementing necessary programs and initiatives that support human health and environmental sustainability.[5,8,11]

Social dynamics and professional culture: are the key themes that reveal the "human software" of coordination. Professional silos, mistrust and hierarchy are deeply ingrained in the system; it cannot be resolved by policy alone. This is because their approach involves intentional relationship-building, joint training, and the development of a One Health identity. In the end, these operational mechanisms are what translate policy and goodwill into action. Joint exercises and Standard Operating Procedures (SOPs) are frequently emphasized, suggesting that coordination is a skill that must be acquired and maintained.

Implications for Policy and Practice: This review has direct implications for strengthening One Health capacities at both national and subnational levels:

i. For policymakers: It is imperative for policymakers to move beyond a rhetorical commitment to One Health and adopt practical, legally binding national policies. These must include requirements for data sharing, funding streams for joint activities and the establishment of permanent multisectoral coordinating bodies (e.g., National or Subnational One Health Agency). [10,11,13]

ii. For Practitioners, including ministries and agencies: are required to build social capital through secondments, joint trainings, and inter-agency workshops. Additionally, incorporating regular multisectoral simulation exercises into the budget is mandatory.[8,9,15]

iii. For Funders and International Partners: To effectively support long-term, integrated programs rather than focusing on disease-specific vertical projects, it is necessary to change the current funding distribution methods to focus on enhancing the weakest connections, particularly in the animal and environmental health sectors, thus developing interoperable data systems. [3,4,16]

Recommendations for how to work together across sectors during a One Health outbreak: Based on the evidence we found in the review; we suggest the following practical steps:

i. Setting-up legal frameworks: by establishing national One Health laws or agreements defining duties, roles, and data-sharing procedures for human, animal, and environmental health.

ii. Setting aside funds for long-term projects: For initiatives that span various sectors, including employees, joint surveillance, and regular simulation exercises, it is necessary to establish separate budget lines.

iii. Institutionalize Joint Operations: To be activated during both regular surveillance and outbreaks, as well as development of fixed multisectoral coordination centers or task forces with defined goals.

iv. Investment in the "Software": When it comes to purchasing software, priority should be given to projects that encourage trust and eliminate professional silos. The following are examples of such programs: professional exchange programs, team-building

Print ISSN: 0189-9287 Online ISSN: 2992-345X

exercises, and academic initiatives that involve collaboration.

v. The Development of Interoperable Systems: It is crucial to promote the creation of integrated data platforms that are both functional and accessible across all pertinent domains from the outset.

vi. Practice, Practice, and More Practice: To fortify partnerships, it is crucial to implement consistent multisectoral simulation exercises that eliminate barriers to coordination and evaluation strategies.

Study Limitations: This review is subject to several constraints. First, the literature search was limited to English-language articles, which may have resulted in the exclusion of significant studies from countries that do not speak English. The lack of contributions from upper-middle income countries with the majority of studies from LMlCs and HIC's limited generalization of findings. Qualitative studies were often lacking in detailed descriptions of their analytical processes, leading to differences in methodological quality among the included studies. Furthermore, the review of published literature has a bias that increases the likelihood of publishing successful coordination initiatives over unsuccessful ones.

Future Research Directions: Future studies must rectify the shortcomings highlighted in this survey. We require additional quantitative research to ascertain how specific coordination measures influence the outcome of an outbreak, including the duration of containment and the mortality rate. Longitudinal studies are crucial for understanding the development of social capital and trust over time within multidisciplinary teams. More research is also needed from places that aren't well represented, like Latin America and the Middle East. Also, it's important to look into the role that non-state actors, such as NGOs and business partners, play in the One Health coordination framework, as they can significantly influence health outcomes and collaborative efforts across different sectors.

CONCLUSION

Effective multisectoral coordination is the basis of a successful One Health strategy and an important part of global health security. A complicated web of institutional and social factors that have been described in this in-depth review will decide whether it succeeds or fails. Strong coordination cannot be left to chance or personal kindness, as the research makes abundantly obvious. It needs to be carefully planned, legal, sustainably funded, and consistently carried out. Nations can create the robust and cooperative institutions required to meet the health concerns of the Anthropocene (geological era of human-dominated Earth) by tackling the governance, capacity, cultural, and operational constraints noted in this analysis.

Abbreviations

- **CASP** – Critical Appraisal Skills Program checklist
- **CIMIC** – Civil-Military Cooperation, commonly used in humanitarian/security settings
- **FAO** – Food and Agriculture Organization
- **HIC** – High-Income Country
- **HICs** – High-Income Countries
- **ID** – Infectious Disease or identifier
- **I-JMIC** – International Joint Middle-Income Country
- **L-MIC / I-MIC** – Lower-Middle-Income Country
- **LIC** – Low-Income Country
- **LMIC** – Low- and Middle-Income Country; a broad category that combines LIC, Lower- Middle-Income, and Upper-Middle-Income Countries
- **MeSH** – Medical Subject Headings; a standardized set of terms used to index and search biomedical literature in databases such as PubMed
- **MoU** – Memorandum of Understanding
- **NGOs** – Non-Governmental Organizations
- **OH** – One Health
- **PICOS** – Population, Intervention, Comparison, Outcome, Study design
- **PROSPERO** – International Prospective Register of Systematic Reviews
- **PRISMA** – Preferred Reporting Items for Systematic Reviews and Meta-Analyses
- **S01–S28** – Coded Identification Numbers (Table 2)
- **SOPs** – Standard Operating Procedures
- **UMIC** – Upper-Middle-Income Country
- **WOAH** – World Organization for Animal Health
- **WHO** – World Health Organization

Declarations

Conflict of interests: None

Acknowledgement: The authors appreciate ABU, Zaria, Nigeria, for their academic support for this research. We particularly thank our department, faculty and colleagues for their guidance and feedback,

Print ISSN: 0189-9287 Online ISSN: 2992-345X

which greatly improved this systematic review on One Health and multisectoral collaboration.
Funding: This research did not receive any specific grant from any funding agency

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Print ISSN: 0189-9287 Online ISSN: 2992-345X