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Operationalizing One Health: A qualitative study of governance and implementation barriers in multisectoral coordination for health security

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Abstract

Background

Successful implementation of One Health depends upon institutions working together across administrative and sectoral borders. This paper explores perceptions of stakeholders in Pakistan about current multisectoral collaboration systems, challenges in their implementation, and ways forward for strengthening such collaborative efforts.

Methods

An exploratory qualitative approach was adopted involving 26 semi-structured interviews with human and public health sector, animal health sector, cross-sector advisory role, environment and water services, and wildlife sector stakeholders. Respondents included senior policymakers and implementers as well as field level personnel. Data collection involved organization of interviews in Microsoft Excel while thematic analysis was conducted incorporating domains from the interview guide and emergent themes from respondents' responses. First and second author supported the coding of the data and development of the thematic framework, the first author coded the entire dataset, and the second reviewer checked codes and the framework. The third author supported the write up and review of the results The analysis involved consideration of both convergent and divergent perspectives while no claims of thematic saturation were made.

Results

Six inter-related themes define the gap between formal and informal approaches. Neither committees nor focal points nor plan provided the authority for working together. Coordination was usually reactive to outbreaks or activities supported by partners and became less reliable after each event. Surveillance was sector specific in most cases and information exchange relied upon personal contacts rather than upon an efficient information-sharing mechanism. Resources for common functions were scarce and only available when part of donor-funded projects. There were clearer accountability mechanisms within rather than between departments. Respondents called for clear decision rights, recurrent financing, regular cooperation, and agreed methods of information exchange and follow-up actions.

Conclusions

Consistent One Health coordination requires clarity about responsibility for cross-institutional tasks, supplemented by recurrent financing and processes for implementing and reviewing joint decisions. Measurement of whether information translates into timely joint assessments and follow-through actions might be a practical starting point for implementation research. These hypotheses need to be tested prospectively across sectors and administration levels.

Background

One Health involves decision-making in organizations with divergent mandates. An atypical animal health event could be detected by the veterinary service, a pathogen relevant for this event could be detected in the lab, and the public health department would investigate a related human illness. The importance of these activities would partly depend on the availability of the information for interpretation and acting on it. This link is an institutional responsibility as well as a technical task.

The framework for the unity of human, animal, plant, and ecosystem health with equality and inclusion is provided by the One Health High-Level Expert Panel [1]. The vision of this process is presented by the Quadripartite One Health Joint Plan of Action and its national guidance that includes governance, sectoral coordination, and evidence [2, 3]. This provides the direction for change. The issue with implementing One Health lies in institutionalizing the cooperation between various stakeholders, which may differ in their budgeting and accountability mechanisms.

Other experiences show that formalization cannot be considered as proof of the implementation of collaborative activities. For instance, Buregyeya et al. describe the national platform, intersectoral agreement, and strategic plan of Uganda, along with the persistent problems of the extension of collaboration beyond meeting rooms [4]. Such descriptions indicate that the implementation research should explore the capabilities of institutions to act together rather than assume their functionality based on the existence of the committees. Another issue is the problem of continuity, when the arrangements are not preserved considering personnel changes, reduced outbreak relevance, and the withdrawal of the external aid.

In that respect, the case of Pakistan appears to be quite relevant. In addition to the federal organization of this country, the implementation of the International Health Regulations implies the coordination of the activities in technical and sectoral domains. The second Joint External Evaluation of Pakistan shows the results of the national and provincial consultations about the IHR core capacities [7]. The stakeholders of this study were operating in human, animal, environmental, and wildlife health areas, and their responsibilities included both the development of the national policy and the implementation of it in subnational levels. Their experiences enable shifting the attention from the endorsement of One Health to the way of organizing and preserving the collaboration.

This study explores the perspectives of the stakeholders in Pakistan about the transition from formal arrangements to the routine multisectoral collaboration. It considers the responsibilities that are linking institutions, the conditions for the collaboration during outbreaks, and the problems in the sustainable performance of these functions during non-outbreak periods. Combining the experiences, this study will provide the practice-oriented explanation of the implementation gaps and identify the shared functions to evaluate prospectively. This study is not going to estimate the national prevalence of barriers and evaluate the efficiency of a certain program. Instead, it aims to provide the analysis of the stakeholder perspectives about the process of the transition from the formal One Health arrangements to the practice of multisectoral response.

Methods

Study Design and Scope

This exploratory qualitative study examines stakeholder views on governance and implementation of One Health in Pakistan. A thematic analysis, using the Framework Method, was applied for organizing and comparing qualitative data. The unit of analysis comprised interview records, which were analyzed in 26 interviews.

Sampling and Participants

The participants were selected from stakeholders involved in the national JEE One Health Group in Pakistan using purposive sampling to achieve representation from the important sectors of One Health at different governance levels. In total, thirty-five participants were contacted through telephonic recruitment process. Twenty-six of them gave informed consent and participated in the interviews and thus were included into the study, while the remaining nine did not participate mostly due to the lack of time. The recruitment process was continued until the required target number of 26 interviews was reached. The sample includes professionals working in such areas as public health, animal health, cross-sectoral advice, environment/water services, wildlife, antimicrobial resistance (AMR) and IHR implementation. The participants are representatives of senior professionals from such institutions as Ministry of National Health Services Regulations and Coordination, National Institute of Health, Ministry of National Food Security & Research, Pakistan Council of Research and Water Resources and various development organizations. Sector categories are related to the predominant area of activity of each participant and do not constitute non-overlapping areas of expertise.

The predefined sample tried to cover the important sectors and governance levels. The inclusion of the senior professionals with policy and implementation experience helped to analyze the institutional process. Still, the representation of sectors in the sample is not equal and sampling for the predetermined number of participants does not guarantee thematic saturation. The research question and the unequal representation of sectors do not allow making any conclusion about those sectors and their administrative context.

Data Collection

A semi-structured interview guide, which included nine questions based on the framework for one health in Pakistan, was created. These questions included: the profession role, governance system, inter-agency collaboration, coordination during outbreaks, obstacles in implementation, surveillance integration, funding, accountability, and suggestions for improvements. As a result of conducting a pilot interview with five individuals who did not participate in the study, questions three and four were modified.

Data collection was performed by the first author in March-July 2026. It entailed interviewing 17 participants face-to-face and nine participants through Zoom, which lasted 25–40 minutes. The interviews were primarily carried out in English; however, in some cases, they took place in Urdu. Ten interviews have been transcribed verbatim while sixteen had been taken using contemporary notes.

Analysis and Interpretation

The analysis was started after completion of data collection. The first author organized and coded all transcribed interviews and field notes in MS Excel. Initially, the coding followed the substantive domains of the interview guide, with themes emerging inductively from participants' narratives. The data was charted by domain for each interview to facilitate comparison. The identified mechanisms comprised the reliance on personal contacts, activation in emergencies, disruption after projects, inequalities in sectors, and uncertainty in division of responsibility for collaborative work. The second author reviewed the coding and the thematic structure. There were no substantive disagreements; any interpretive differences were discussed and resolved. Convergent and divergent analyses were performed, and exemplars of effective outbreak coordination and departmental control were kept. Third author supported in writing of the article.

The Results section distinguishes the descriptions of the current practices from the future trends. For example, the planned surveillance unit was considered as a future potential rather than an existing structure. Lack of knowledge about certain aspects cannot be taken as the proof of absence of budget, legislation or mechanisms. Frequencies of themes are not reported as the argumentation relies on the meaning of narratives rather than on their frequency.

Reflexivity and Reporting

The professional experience of the first author in health security and multisectoral coordination provided necessary background, but could influence recruitment, questioning, and interpretation. The first author knows many participants through the general national One Health, JEE, and e-SPAR activities and has worked with certain individuals directly. This may facilitate access and technical discussion but, at the same time, can bias the participants' answers and the analysis. To avoid over-interpretation, the second author reviewed the interview records, codes and the thematic structure; contrasting cases were maintained in the analysis, and the distinction between the participants' narratives and independently verified institutional facts was made.

Reporting follows the Consolidated Criteria for Reporting Qualitative Research (COREQ) [5]. Independent dual coding, participant validation and the thematic saturation assessment were not performed. The quotations are attributed to participants by code and sector category; institutional detail is minimized whenever it is not necessary to understand the findings and to reduce identifiability.

Use of Generative Artificial Intelligence

OpenAI was used to assist in organization and language editing of the author-provided material. The authors reviewed the result and assume the responsibility for the accuracy and integrity of the manuscript.

Ethics

All participants were notified of the purpose of the study, voluntariness of participation, possibility of declining the questions or ceasing the interview, confidentiality, the use of data for research and publication and audio recording if applicable. The written consent without names of participants was received for the in-person interviews and the verbal consent was recorded for the online interviews. Participants, who did not give consent for audio recording, were able to participate via contemporaneous notes taking. The names and identifiers were not included in the interview records, and study codes were assigned during the interview.

No payment or other incentives were offered to the participants. Study files were stored in the restricted shared Google Drive folder with access possible only with individual accounts of the authors. The audio recordings will be stored until the publication and then will be deleted; the access to the qualitative data will be limited due to the potential possibility of re-identification by individuals with specific professional role. A formal ethics committee review was undertaken from Health Service Academy (Degree awarding institute of Government of Pakistan) under reference no. 7–82/IERC-HAS/2022 – 305 dated 10 March 2026 by Institutional Ethical Review Committee (IERC-HSA). The study was conducted in accordance with the ethical principles of the World Medical Association Declaration of Helsinki.

Results

Participant perspectives and thematic overview

There were 26 people in the sample, each reflecting the views of the twelve human and public health stakeholders, six animal health stakeholders, four cross-sectoral or partnership stakeholders, two environmental and water stakeholders, and two stakeholders from the wildlife and forestry department (Table 1). The human and public health stakeholders included senior officials from the Ministry of National Health Services, Regulations and Coordination, National Institute of Health and development agencies. The sub-national stakeholders included district animal health and provincial wildlife services. The sample was more insightful on human health and national institutional arrangements rather than provincial differences or environmental/wildlife contexts.

Table 1
Principal perspectives represented among participants

Principal perspective	n	Scope of experience described
Human and public health	12	Surveillance, preparedness, health security and AMR governance
Animal health	6	Veterinary and laboratory work, including district outbreak response
Cross-sector or partner	4	IHR, One Health and AMR advisory work
Environment and water	2	Environmental surveillance and water quality
Wildlife	2	Federal & Provincial services and emerging disease surveillance

Categories reflect principal role descriptions. Subnational roles overlap with sector categories and are not additional participants.

Six connected themes described the gap between formal arrangements and sustained practice. Participants recognized existing structures and examples of joint work, but questioned whether the authority, financing and procedures necessary for routine collaboration were sufficiently established. The accounts pointed particularly to responsibilities that fell between organizations.

Formal structures did not consistently enable joint action

Respondents described a national One Health hub, focal points, committees and plans. The AMR respondent also referred to national IHR arrangements, a recently notified multisectoral steering committee and some provincial IHR committees. The difficulty was translating these arrangements into authority that could be exercised across departments. A cross-sector respondent summarized this distinction:

“On paper, we have One Health, and One Health hub and focal person functionality need to improve.” (P06, cross-sector or partner)

Respondents identified lack of clarity with respect to roles, separate lines of reporting, and ambiguity as to who would initiate or mandate cooperation. In the AMR case, the respondent mentioned lack of authority on the part of the human health lead with regard to other ministries. The wildlife respondent noted that coordination was still in development and that there was a need for improvement in terms of permanent structures and responsibilities. This reflected by respondents’ views about operational and legal limitations without conducting a legal review.

This issue existed not only among different agencies within one level of governance but also across the administrative levels as well. For instance, P11 (*Animal Health*) suggested that a national committee was not enough by itself to foster collaboration at provincial and district level. In other words, implementation

problems related to a situation where vertical departmental structure interacts with horizontal decision-making process.

Outbreaks created coordination that was less reliable in routine periods

Outbreaks and externally supported activities often provided the occasion for sectors to communicate. Participants contrasted these episodes with less dependable routine interaction. An animal-health respondent described this pattern as follows:

“we all work in silos and only work in reaction mode” (P01, animal health)

Similarly, the environmental respondent did not know of any formal coordination system and talked about need-based involvement. According to P24 (*Human and Public Health*), a telephone call or a relationship could secure information which was not secured through a regular process. It made the task possible for them, but respondents were unsure whether the task continued since new officers would take the place of old ones.

There were also some examples of cooperation mentioned in the accounts. The district animal-health respondent talked about cooperative efforts on the part of the deputy commissioner or assistant commissioner in case of outbreaks where responsibilities were set and reporting was conducted. The AMR respondent mentioned cooperation in responses to Crimean-Congo haemorrhagic fever and cholera. This indicates that coordination was possible, yet it does not prove that it was sustained or better than other options.

The wildlife respondent pointed out another important difference:

“Meetings provide an opportunity to exchange information, but coordination between meetings and joint implementation are more challenging.” (P13, wildlife)

Participation could broaden without corresponding changes in decision-making, which remained largely within individual departments. Across these accounts, the difficult step was sustaining a shared task after the meeting or immediate emergency had ended.

Parallel surveillance systems left information exchange dependent on requests

The participants mentioned that surveillance systems were more sector-based or programme-based. The AMR respondent talked about human health surveillance reporting and laboratory systems, and animal health systems separately with some selected reports and emergency information being shared between them. Participant number 09 (*Environment and Water*) gave an example of this type of system but added wildlife and environmental information to it as well.

What was considered different between exchanging information periodically and having a regular information exchange system was that:

"person dependent to share the data, not as a system level data sharing." (P06, cross-sector or partner)

These challenges included varied definitions and reporting intervals, uncertain access and decision-making rights, and confusion around the interpretation and use of sensitive information. P11 (*Animal Health*) indicated another possible gap in terms of inadequate engagement of private animal production systems and laboratories with regard to disease surveillance. This is a challenge raised by that respondent rather than an analysis of gaps in the private sector.

With respect to the wildlife section, the respondent explained that disease surveillance had been improved via the creation of a new unit. In this regard, connections had been suggested to reporting related to human and animal health, risk assessment, and notification processes. Thus, the unit was a newly emergent sectoral capability.

P14 explicitly cautioned against equating integration with a single database:

"Integration should occur at the level of decision-making even when databases remain technically separate." (P14, human and public health)

In this account, the missing function was the dependable conversion of sectoral information into shared assessment and action.

Shared activities depended on financing that was difficult to sustain

Responses indicated that funding for coordination was not available, inadequate, or ambiguous. These respondents distinguished funds for running an institution itself from those allocated for coordination activities such as meetings, joint monitoring, information exchanges, and field coordination. The district account noted the lack of a budget item specifically designated even for meetings on coordination.

Some accounts related continuity to outside assistance. The environmental account revealed that Fleming Fund-funded activity had ended, while the animal health account related continuity of data exchange to partner funding:

"Once funding of the partner goes, there is no data sharing." (P07, animal health)

Similarly, the AMR informant talked about external funding for capacity-building and integration into surveillance, but faced difficulties in sustaining the cost after the termination of the project. Both of these sources suggest the dependence on projects; however, they cannot prove that every activity supported through external means has been halted or that the donor funding has not been effective.

The informant from wildlife qualified their source of information by saying that they did not have information about any sustainable budget that had been developed and was covering all of the participating sectors.

Accountability within departments did not ensure accountability between them

Participants described uncertainty over responsibility for shared outcomes. The issue was particularly apparent where one sector convened an activity but could not require another to act. P21 distinguished the two levels of accountability:

“We have accountability within sectors, but much weaker accountability between sectors.” (P21, human and public health)

The wildlife respondent also described departmental responsibility according to sectoral mandates, alongside unclear arrangements for following up joint decisions. These accounts suggest that assigning responsibilities within institutions did not necessarily identify who owned the work connecting them.

The district animal-health account provided a useful contrast. It described provincial monitoring visits and accountability through administrative reporting. This prevents an interpretation that accountability was entirely absent. Rather, monitoring could operate within a department or during an outbreak while responsibility for routine cross-sector action remained uncertain. The central difficulty was determining who should follow up an outstanding request, escalate a delay or verify completion of a jointly agreed task.

Participants sought clearer responsibilities and broader operational inclusion

Proposed improvements emphasized formal roles, procedures and sustainable resources. Some respondents favoured higher-level convening authority or legal backing. The AMR respondent proposed embedding requirements for joint surveillance, investigation and data exchange in an agreed legal framework. Others emphasized connecting existing arrangements through routine planning, focal points and explicit follow-up.

Leadership was not uniformly understood as permanent human-health control. A cross-sector respondent proposed:

“Relevant sector should lead and not always National Institute of Health.” (P16, cross-sector or partner)

The wildlife respondent welcomed recent engagement supported by the Food and Agriculture Organization of the United Nations (FAO), involving Wildlife, Fisheries and Environment alongside Health and Livestock, and argued for their continued inclusion as equal partners. That account presented

expansion of representation as a positive development, while identifying the surveillance, workforce and procedural support needed to make participation effective.

Participants also proposed a different basis for judging progress. P3 (*Human and Public health*) emphasized whether information moved faster and whether sectors assessed and responded jointly, rather than the number of meetings held. Taken together, the recommendations focused on making shared responsibilities practicable and visible in routine work.

Discussion

The responsibilities connecting institutions warrant explicit attention

The key finding shows that One Health coordination can be officially recognized while the coordination mechanisms among institutions remain insufficiently defined and under-resourced. Participants highlighted committees, expertise and cooperation efforts, as well as uncertainties about regular exchange of information and follow-up. These narratives situate the problem of implementation in terms of the connection between mandates of institutions and joint tasks, an institution can fulfill its reporting requirements without making sure that another sector gets the information and follows it up.

We interpret this problem as a problem of cross-sectoral responsibility. The term stands for the authority, resources and processes necessary for a task involving more than one institution. Cross-sectoral responsibility does not mean a newly created model and single reason for poor implementation. The value of the term lies in its practical application – it draws attention to a particular problem that can be hidden behind a general label of poor coordination. The delayed joint investigation can result from the ambiguity around who is authorized to travel and pay for the laboratory tests, not from a lack of recognition of the importance of One Health.

This interpretation is consistent with the principles of the Quadripartite implementation guide with respect to the aspects of governance, integration of sectors, and evidence as interlinked means [3]. Other recent reviews also focus on governance, leadership, intersectoral communication and resource sustainability as critical factors for the implementation of the One Health concept [8, 9]. The case studies show the specific way in which these interrelations can fail in real-life conditions. This description also echoes the example of Uganda, described in the context of formal arrangements and lack of cooperation outside official meetings [4]. Such comparisons demonstrate the wider relevance of the implementation challenge but do not prove the same reasons behind the problem.

Outbreak collaboration highlights opportunities and limitations

Positive outbreak experiences complicate the story of institutional failure. Participants provided examples of occasions in which administrative leadership, allocated roles and reporting facilitated

cooperation. In these examples, the particular required capabilities were present under particular conditions. These cases do not clarify which conditions were the critical and whether cooperation led to better epidemiological results since such relations were not assessed.

One conclusion is to find out what happened during the successful response. Did the convening authority gain legitimacy, became more accessible or received more resources? Were tasks more concrete and deadlines more transparent? Such questions will help to determine the mechanisms that can be maintained on regular basis and exceptional authorities which are only applicable in emergencies. Regular coordination cannot be achieved through constant emergency administration, it requires proportional approach to authorization, resourcing and following up on joint tasks.

The difference helps to understand why an increased frequency of meetings has a limited value. A meeting enables contacts and understanding but implementation requires decisions which participants can incorporate in their administrative system. The Tripartite multisectoral coordination mechanisms tool offers a framework for improving such arrangements [6]. The use of this tool should be adjusted to the authorities and resources available at each level, not seen as a template ensuring performance.

Data integration requires both governance rules and interoperability

The results on surveillance show that a technological approach alone would be insufficient. Participants raised questions about who can request information, how it will be interpreted and who is responsible for follow-up on it. These issues can persist even with the technical integration of databases. On the other hand, databases which are not technically integrated can still facilitate cooperation if the exchange of relevant information happens on agreed rules.

The first step to take would be to list a limited number of cross-sector information requirements for agreed priority hazards. For each requirement, the participating institutions should identify the trigger, the minimal information to be submitted, the responsible recipient and the expected action. The interoperability technologies would then support an agreed process but not substitute it. These implications follow from the accounts but not from the interventions tested within this study.

The description of the wildlife surveillance initiative is an illustration of this difference. The creation of a unit can improve the detection in the sector but its One Health contribution depends on how the alert will be sent to other services and followed up. The observation should be contextualized within the experience of the participant. It does not mean that the national wildlife surveillance is absent or that the development of a unit brings already the integrated intelligence.

Sustainable participation requires authority and resources

The financing accounts point at the work which may be universally prioritized but not fundable by a single department. The costing of the joint activity is different from assigning the budget owner who can

release the funds. The concerns of participants imply that the financing arrangements should cover both the recurrent cost of coordination and the procedure of raising the resources for a joint response.

The external support was also seen as an opportunity for the start of the new engagement, especially in the wildlife. The accounts therefore imply that sustainability should be ensured during partner-supported activities: which institution will carry on the joint function, which recurrent costs it will bear and how this transfer will be assessed. It has relevance for maintaining the infectious disease preparedness in changing program and financing circumstances. However, the study did not assess the effect of a recent change in the financing and the results cannot be seen as evidence of this effect.

The inclusion of sectors has also an operational side. The membership in a committee does not automatically give the capability to generate surveillance information and make decisions. The emphasis on parity and inclusion of the OHHLEP definition is relevant in this case [1]. Sufficient participation would require the proper technical capabilities, resources and possibility to influence the priorities. The low representation of the wildlife and environmental services limits conclusions regarding the proper arrangement for these sectors.

The progress should be assessed through fulfilled joint functions.

The accountability findings argue against the association of organogram or agenda of the meetings with the proper implementation. The experiences of participants imply that the evaluation should focus on the fulfillment of an agreed cross-sector function. Table 2 shows the candidates for such measures. They are the proposals for prospective testing but not the validated indicators and results of this study.

Table 2
Candidate measures for testing routine cross-sector functioning

Function	Candidate measure	Interpretive safeguard
Notification	Elapsed time from a qualifying sectoral signal to receipt by the agreed partner sector	Define eligible signals and required recipients in advance.
Joint assessment	Proportion of eligible alerts with a documented joint risk assessment within the agreed interval	Use the same eligibility criteria across reporting periods.
Follow-through	Proportion of due joint actions completed and verified by their deadline	Record action owners, extensions and reasons for delay.
Financing	Amount and proportion of approved recurrent funding released for specified shared functions	Separate approval, release and expenditure; distinguish funding sources.
Participation	Completion of agreed contributions from each relevant sector in a joint workplan	Assess substantive contributions, not meeting attendance alone.

These will require local assessments for feasibility, burden, and unintended consequences. A timeliness target will lead to superficial reporting or needless investigations in cases where the eligibility criteria are

not clearly specified. Therefore, performance should be understood in light of the quality of the shared assessment and appropriateness of the action. The study suggests to test the functions but cannot conclude that they are better predictors of health outcomes compared to other indicators.

Strengths and Limitations

The study involves perspectives of various professional groups, such as senior health professionals with expertise in national and provincial policies, inter-sectoral coordination, and implementation. They explain the administrative conditions facilitating or hindering joint work. Perspectives of sub-national services, examples of outbreak coordination and accountability of departments, and contrasting ones of departmental accountability add context to the analysis. The study distinguishes between new initiatives and systems and between knowledge of participants and independently verified facts.

There are several limitations to consider. The sample of 26 participants has been chosen to ensure representation of various sectors and levels of governance. However, it is not balanced since it includes 12 human and public-health perspectives and two perspectives from environmental and water services and wildlife sectors. Recruitment stopped upon reaching the predetermined target. It does not guarantee thematic saturation. The study does not allow one to produce estimates, compare provinces, and make claims about any sector since it only represents senior professionals. Although they can provide institutional insight, their accounts may differ from those of frontline workers and communities. No formal saturation check has been done.

Participants' accounts may suffer from recall bias, position, familiarity of the first author, and emphasis on issues put in questions. Questions related to financing, governance, and accountability explicitly invoked these areas, so their recurrence should not be confused with spontaneous salience. The study did not audit budgets, legislation, or information systems. The study did not evaluate the quality or health outcomes of the example of outbreak responses. Ten interviews have been transcribed verbatim while sixteen had been taken using contemporary notes. There may have been an influence of difference in the format and level of details of these types of records on the analysis.

The first author conducted and coded all interviews, and the second author reviewed records, codes, and thematic structure. Dual independent coding has not been used. Transcripts and findings have not been returned to participants for verification. Identical wording found in two records has been checked against the source materials, and it was found that they belong to different participants who gave similar but not identical answers.

Conclusion

Accountability of stakeholders about the arrangements connecting institutions is a major problem for implementing One Health in Pakistan. Cooperation during outbreaks and emerging engagement in wildlife shows that joint actions are possible, but regular information exchange, financing, and follow-up do not work reliably. Explicitly stated, adequately financed, and reviewable shared responsibilities seem

to be the way to go based on these observations. Further research will need to test whether these arrangements facilitate joint actions and improve the timeliness and quality of coordinated responses.

Abbreviations

AMR
antimicrobial resistance
COREQ
Consolidated criteria for reporting qualitative research
FAO
Food and Agriculture Organization of the United Nations
IHR
International Health Regulations
OHHLEP
One Health High-Level Expert Panel
JEE
Joint External Evaluation
e-SPAR
electronic States Parties Self-Assessment Annual Reporting.

Declarations

Ethics approval and consent to participate:

Administrative permission for data collection was obtained before recruitment; formal ethics committee review was undertaken from Health Service Academy (Degree awarding institute of Government of Pakistan) under reference no. 7–82/IERC-HAS/2022 – 305 dated 10 March 2026. The study was conducted in accordance with ethical principles of the world medical association Declaration of Helsinki. Written consent without participant names was obtained for in-person interviews, and documented verbal consent was obtained for online interviews. Participation was voluntary, and permission for audio recording was sought separately where applicable.

Consent for publication:

Participants were informed that anonymized information could be used for research reports and publications. No names or directly identifying individual data are included in this manuscript.

Availability of data and materials

Recordings, transcripts, interview notes and consent documentation are held in a restricted shared Google Drive location requiring individual account authentication and accessible only to the three authors. Audio recordings will be deleted after publication. The qualitative data will not be publicly

shared because contextual information from a small group of senior stakeholders could create a risk of re-identification.

Competing interests:

The authors declare that they have no competing interests.

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Author Contribution

MY.SQ developed and piloted the interview tools, conducted interviews and did coding and themes development H.A also developed coding separately and reviewed the author 1 coding and themes to make sure it aligns with the actual ones.SA.R supported the write ups and supported in study conducting process.

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Data Availability

The study generated qualitative data through 26 semi-structured stakeholder interviews. The interview transcripts and notes are not publicly available because contextual details could permit re-identification of participants within a small professional community. Supporting anonymized quotations are included in the manuscript.

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Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- OneHealthQuestionnaired1.pdf