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A Cross-Sectoral Coordination in One Health: A Case Study of Anthrax Prevention and Control in Maros, Indonesia

Nur Azizah Azzahra[1]*, Dwi Sutiningsih[2], Mateus Sakundarno Adi[2], Nurul Fuadi Yusuf[3], Khairunnisaa[4], Rifka Haristantia[5], Nur Mila Sari[6], Amilah Eka Putri[7], Trisna Widyanti[8]

[1]Department of Epidemiology, Public Health Study Program, Faculty of Public Health, Tadulako University, Palu, Indonesia
[2]Department of Epidemiology and Tropical Diseases, Faculty of Public Health, Diponegoro University, Prof. Soedarto, S.H., Tembalang Street, 50275, Semarang, Central Java, Indonesia
[3]Hasanuddin University, Makassar, Indonesia
[4]Department of Health Promotion, Public Health Study Program, Faculty of Public Health, Tadulako University, Palu, Indonesia
[5]Department of Reproductive Health, Public Health Study Program, Faculty of Public Health, Tadulako University, Palu, Indonesia
[6]Health Administration and Policy, Public Health Study Program, Faculty of Public Health, Tadulako University, Palu, Indonesia
[7]Department of Occupational Health and Safety, Public Health Study Program, Faculty of Public Health, Tadulako University
[8]Puskesmas Siantan Hulu, Pontianak, Indonesia

***Corresponding Author: E-mail:** nazizahazzahra79@gmail.com

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ABSTRACT

Introduction: This study aimed to explore how the One Health (OH) approach was applied in the prevention and control of anthrax in Maros Regency, an anthrax-endemic area of Indonesia with recurrent human and animal cases. With the continued public health threat posed by anthrax as a zoonotic disease, especially in endemic regions, our objective was to assess intersectoral coordination and collaboration efforts to address gaps in disease prevention identified in existing literature.

Methods: This qualitative study involved a case study design conducted across the Maros Regency from February 2022 to June 2022. A total of 29 informants were enrolled, including 17 from the human health sector, five from the animal health sector, and seven from local government, through purposive sampling method. Ethical approval was obtained from the Health Research Ethics Committee of Public Health Faculty, Diponegoro University (Approval Number: 74/EA/KEPK-FKM/2022), and all participants provided informed consent.

Results: The primary outcome of the study was the One Health approach has been applied in the Maros Regency, including sharing information; cross-sectoral meetings; coordination and collaboration.

Conclusion: In conclusion, our study contributes to the understanding of anthrax prevention and control by highlighting the role and implementation of the One Health approach in an anthrax-endemic setting. This research provides insights into the practical benefits of cross-sectoral coordination and shared responsibilities. Future studies should explore strategies to institutionalize One Health mechanisms and evaluate their impact.

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INTRODUCTION

Anthrax is a zoonosis, caused by *Bacillus anthracis* which naturally can survive for decades in the environment in the form of spores due to its high resistance including various disinfectants (1–4). The term 'Anthrax' is derived from the Greek '*anthrakos*,' which means coal, directing to the eschar in cutaneous anthrax in humans (5). Generally, *B. anthracis* spores can enter humans through lesions on the skin (cutaneous), lungs (pulmonary), or digestive tract (gastrointestinal anthrax) and will then germinate to produce a vegetative form (1). Also, biting flies can act as mechanical vectors after eating carrion (6). This environmental persistence and multiple transmission routes make anthrax a continuing public health threat in endemic regions, highlighting the importance of understanding its epidemiology for effective control and prevention strategies.

Anthrax in animals can develop into a peracute, acute, subacute, or chronic disease, depending on the level of susceptibility of the species. Anthrax affects a wide range of mammals, in which herbivores is more vulnerable compared to carnivores. The sudden death of the animal usually characterizes this disease. Sometimes, the sign of anthrax-infected cows is the presence of blood from the infected animal's nose, mouth, and anus (5,7). Generally, animals can catch anthrax if they ingest spore-contaminated soil while grazing. Meanwhile, carnivores can be infected by eating infected animals (8,9). Other animals, such as horses, pigs, antelopes, deer, and wild animals, can also become infected with anthrax (8). Anthrax's ability to infect a wide range of species—including herbivores, carnivores, domesticated animals, and wildlife—underscores the challenges in its prevention and control.

Anthrax is a complex zoonotic disease resulting from the close connection between human, animal, and environmental health, highlighting the need for strong collaboration across different fields and sectors through the One Health (OH) approach.(10,11). However, describing the environment context alone is insufficient to guide effective policy unless it is combined with community engagement, veterinary services, and locally managed response mechanisms (12)**.** Effective anthrax prevention and control require coordinated efforts among various sectors, including the human health sector, animal health, environmental health sector, law enforcement, policymakers, community, animal breeder, and other related sectors, must collaborate, coordinate, and communicate to tackle this issue (13–16).

Although the OH approach has been officially endorsed and is increasingly recognized as a creative and sustainable strategy, its implementation remains hampered by limited intersectoral coordination, uneven institutional capacity, and the absence of shared operational frameworks (11,12,17–20). Most countries lack a mechanism for coordination and collaboration between sectors such as human health, animal health, and environmental sectors. The OH builds on current capabilities, but bringing together various sectors is new to give more comprehensive health advantages (11). Therefore, it is crucial to explore how the implementation of the OH in preventing and controlling health threats, including anthrax to better understand its operational dynamics and potential for scaling (21).

In Indonesia, The OH policy has been formally adopted in Indonesia, but its implementation in anthrax-endemic regions remains limited due to a lack of operational clarity, intersectoral coordination, and community involvement, with efforts still largely centralized and minimally operationalized at the local level; despite the establishment of national structures such as the National Zoonosis Committee and the OH Coordinating Unit, regional capacity remains weak, facing major challenges including fragmented coordination among sectors, limited funding, misaligned policies, and insufficient capacity building, which hinder effective collaboration, surveillance, and community-based disease control, particularly in integrating efforts across ministries and local institutions (22,23). This gap is reflected in preliminary findings, which indicate that studies on OH application in anthrax prevention and control at the district level are still scarce. Previous studies on the OH application at the regional and district levels have been conducted in Pontianak City, Sanggau District, and Ketapang District (West Kalimantan), Bali, Banten, and Aceh, with identified limitations including limited resources, weak cross-sector coordination, low community participation, technical and logistical challenges, socio-cultural and environmental barriers, and capacity gaps between regions(9,24–28). Establishing a clear and adaptable OH framework at the local level is therefore critical to facilitate broader adoption in other areas.

The Maros Regency is recognized as one of the anthrax-endemic areas in Indonesia, with recurring cases reported over the years (29–32). Its tropical monsoon climate and limestone-rich soils of Maros, creating ecological conditions that may facilitate the long-term survival of the spores in the environment (33). Ecological factors, such as rainfall, seasonal, and soil factors, can influence the occurrence and the persistence of anthrax outbreaks (6). Given

Maros's ecological profile and the limited integration of OH in its local health system, this study aimed to explore the application of the OH approach in the prevention and control of anthrax in the Maros Regency.

METHOD

Research Type

This research was a case study on the application of the OH approach in the prevention and control of anthrax cases in Maros Regency, South Sulawesi Province, Indonesia. The selection of informants using a purposive procedure involved 29 informants. Data collection was carried out through in-depth interviews, which were recorded using an audio recorder. This research was carried out from February 2022 to June 2022

Population and Sample/Informants

Twenty-nine informants were selected as informants using purposive sampling, including 17 human health officers, five animal health officers, and seven informants from the local government.

Research Location

The study was conducted in Maros Regency, such as the Maros Animal Health Center, The Maros District Health Office, the Community Health Centers, and Sub-district Offices.

Instrumentation or Tools

A semi-structured interview guide was developed to explore the participants' experiences, focusing on their coordination and collaboration in preventing and controlling anthrax in the Maros Regency.

Data Collection Procedures

In-depth interviews were conducted face-to-face at participants' office, lasting approximately 45–90 minutes each. Before the interviews, the participants provided the informed consent. Data collection was carried out through in-depth interviews, which were recorded using an audio recorder using Indonesian (the local language).

Data Analysis

This study employed a qualitative research design using a case study approach. Data analysis was carried out using Indonesian (the local language). Excerpts from the transcript for publication purposes were subsequently translated into English. Data were analyzed through thematic identification of patterns and issues related to the implementation of the OH. Thematic analysis was carried out iteratively, with data collection continuing until thematic saturation was achieved defined as the point at which no new themes or categories emerged from the data. The analysis was conducted manually, without the use of qualitative data analysis software. Instead, the process involved in-depth reading of interview transcripts, open coding, categorization of codes, and the identification of core themes aligned with the research objectives. To ensure the validity and reliability of the findings, both technique and source triangulation were employed. Technique triangulation was implemented through the integration of multiple data collection methods, including direct observation, in-depth interviews, and document review. Source triangulation was conducted by comparing and validating information obtained from primary informants with that from triangulation informants. These informants served to clarify and confirm key findings. This triangulation process was applied to enhance the methodological credibility and replicability of the study.

Ethical Approval

The ethical approval of this study was approved by the Faculty of Public Health, Diponegoro University, Number 74/EA/KEPK-FKM/2022. All informed consents were obtained from all informants. The confidentiality of all participants was strictly maintained throughout the research process.

RESULTS

The application of the OH in the anthrax prevention and control in Maros Regency comprises three themes such as (1) sharing information, (2) cross-sector meeting, and (3) coordination and collaboration.

Theme 1: Sharing information

Sharing information theme consists of four sub-themes, such as (1) sharing information of detected suspected anthrax, (2) sharing information of suspected patient identities, (3) sharing information of laboratory test result, and (4) whatsapp group existence.

Sharing information of detected suspected anthrax

The animal and human health sectors share information with each other if an anthrax case or suspected anthrax is detected. Information related to anthrax cases detected for the first time by a community health center (*puskesmas* or *pusat kesehatan masyarakat*) was also conveyed to animal health officers (Table 1). Patients with anthrax are usually exposed to animals suspected of having anthrax diseases, such as horses and cows, so animal health workers also need to know this information to start investigating, preventing the spread, and handling cases. Information is also usually conveyed from the animal health center (*puskeswan* or *pusat kesehatan hewan*) regarding cases of sudden death in livestock, one of the symptoms that refer to suspected anthrax. Through this information, human health workers can immediately investigate whether there are suspected cases in humans.

Sharing information of suspected patient identities

Information related to patient identities, such as the name, address, and phone number of a patient suspected of anthrax, was also conveyed from the human health sector to the Animal Health Center so that animal health officers could follow up and investigate as soon as possible. Based on interviews with human health officer, he sent GPS addresses to animal health officers, making it easier for animal health workers to find the location of suspected patients (Table 1).

Sharing information of laboratory test result

Information was also provided from the animal health sector to the human health sector regarding the results of laboratory tests. Information regarding the positive test results of human health workers was obtained from animal health officers (Table 1). When anthrax cases occurred during a pandemic, laboratory tests on human samples were not carried out. Therefore, the laboratory results of the animal health sector were helpful in the confirmation of anthrax cases. Examination of anthrax cases is also commonly found to be negative in human samples because the patient has taken antibiotics, so the results of an examination from the animal health sector can also be used as a benchmark in confirming the presence of anthrax disease.

WhatsApp group Existence

Based on the interview, there is a WhatsApp group containing an Animal Health Officer and a Human Health Officers, making it easy to share information (Table 1). Information related to zoonotic cases, including detected anthrax, is usually shared in the group, whether it is first reported by animal health officers or human health workers.

Table 1. Theme 1: Sharing Information

Subthemes	Quotes
Sharing information of detected suspected anthrax	• *"...we were informed by friends from the puskesmas…there was a patient who came to the puskesmas, with the condition, anthrax on the skin" (AH, Animal Health Officer)* • *"…Sometimes, the puskeswan also contact us first…the puskesmas who knew that there was a case of death [of cattle]…" (GN, Human Health Officer)*
Sharing information about suspected patient identities	• *"Yes, he [human health officer] gave [patient number phone], said his name [patient name]…here is the number, here is the address. After that, it was shared with the Puskeswan group..." (DK, Animal Health Officer)* • *"...I sent the GPS point to the health animal [officer], the patient home..." (QX, Human Health Officer)*
Sharing information of laboratory test result	• *"…Whether it's a patient from a puskesmas who is suspicious or a positive lab result from us"(AH, Animal Health Officer)* • *"...then from the animal health [officer] sent it to us if it turned out that the result was positive, the soil [sample]..." (HO, Human Health Officer)*

WhatsApp group existence	• *"…Because we also have a WA group with the health service…" (AH, Animal Health Officer)* • *"…we cooperate with the Puskeswan, Animal Husbandry Service… Then, there is also a WA group there …" (FM, Human Health Officer)*

Theme 2: Cross-sector meeting

Cross-sector meeting theme consists of three sub-themes, such as (1) attended by various sectors, (2) discussing the role of each sector, (3) and the existence of an agreement or commitment.

Attended by various sectors

Cross-sector meetings are usually held as cross-sector mini-workshops attended by various sectors, with the sub-district head as the regional leader. This meeting is held regularly every three months. This meeting is a community health center program in collaboration with the sub-district government (Table 2).

The involved sectors in cross sectoral meeting include Public Health Centre, Health Service, Agriculture Service, Animal Health Officers, education supervisors, school principals, teachers, Office of Religious Affairs (*Kantor Urusan Agama*, or *KUA*), supervisors of the Regional Population and Family Planning Agency (*Badan Kependudukan dan Keluarga Berencana Daerah*, or *BKKBD*), sub-districts, village heads, hamlet heads, Village Leadership NCO (*Bintara Pembina Desa*, or *Babinsa*), Village Leadership NCO for Social Security and Order (*Bintara Pembina Kamtibmas*, or *Babinkamtibmas*), Sector Police (*Kepolisian Sektor* or *Polsek*), Commander of a Military Sub-District Command (*Komandan Rayon Militer* or *Danramil*), village midwives, Military District Command (*Koramil* or *Komando Rayon Militer*), Integrated Health Post (*Pos Pelayanan Terpadu*, or *Posyandu*) cadres, religious leaders, community leaders, local communities, and Empowerment Family Welfare (*Pemberdayaan Kesejahteraan Keluarga*, or *PKK*) (Table 2).

Discussing the role of each sector

The cross-sector meeting inadvertently discussed OH, which discussed cross-sectoral roles in tackling or preventing related health problems. The roles discussed included the roles of the sub-district head, police, army, village head, head of urban village, Empowerment Family Welfare, Education Department, Agriculture, and Food Security Service, community leaders, all stakeholders, heads of community health centers, the private sector, and the other related sectors in supporting the program and achieving the target (Table 2).

The existence of an agreement or commitment

The cross-border meeting resulted in the existence of an agreement or commitment containing the duties and authorities of each cross-sector, including the role when there is an outbreak (Table 1). The roles contained in the agreement are based on those discussed at cross-sectoral meetings. In addition to the roles of various sectors, this agreement contains health program achievement targets—the head of the sub-district signs this agreement (Table 2).

Table 2. Theme 2: Cross-sector meeting

Subthemes	Quotes
Attended by various sectors	• *"…So, the term cross-sector mini-workshop... That's where the Sub-district Head is present as the regional leader…including the education supervisor, then the sub-district KUA, Religious Affairs Office, and there is also the BKKBD supervisor..." (NA, Human Health Officer)* • *"Those who attended were the sub-district head, village head, Babinsa, Babinkamtibmas, animal health"* (AH, Animal Health Officer) • *"…Three-monthly mini-workshops, all sectors of the village were attended, including the sub-district head, village head, village head, hamlet head, cadres, PKK women..."* (GN, Human Health Officer) • *"All cross. sub-district head, Babinkamtibmas, Babinsa, village heads, PKK women, KUA, moreover teachers. All cross-sectors are invited"* (MT, Human Health Officer) • *"Sub-districts, Health Offices, Village Heads, Babinsa, Cadres are also there, village midwives. It is also common for school principals to cross sectors..."* (NU, Human

	Health Officer) • *"…the sub-district head, then the police chief, and the Danramil, the heads of the UPTD… then the village heads and village heads, religious leaders, community leaders, cadres, with those in charge of the puskesmas program"* (SZ, Human Health Officer) • *"...including community leaders, that's what I said earlier, Mr. Danramil, Mr. Kapolsek, including Babinsa, Babinkamtibmas, from UPT elements which include agriculture, there were midwives ...KUA... Posyandu cadres..."* (CX, Local Government) • *"... koramil, from the police, village heads, hamlet heads, and local communities..."* (DW, Local Government)
Discussing the role of each sector	• *"…at that meeting, we discussed who did what and sharpened the job description…" (AH, Animal Health Officer)* • *"...[meeting] across sectors in the first quarter, we describe the role of each cross-sector…" (SZ, Human Health Officer)*
The existence of an agreement or commitment	• *"The agreement is in every cross-sectoral meeting in January...the first cross-sector. In the first quarter, all the duties and authorities of each cross-sector role, their respective roles include one of them if there is an outbreak" (SZ, Human Health Officer)*

Theme 3: Coordination and collaboration

Coordination and collaboration theme consists of three sub-themes, such as (1) visiting case location together, (2) joint socialization, (3) and other cross-sectoral involvement.

Visiting case location together

The OH approach has long been applied to face zoonotic diseases in Maros Regency by visiting together the location of cases from the animal health sector and the health sector. The animal health sector and the human health sector sometimes visit suspected cases of anthrax together. In addition, human and animal health workers were together in the monitoring post when there were anthrax cases (Table 3). Post-monitoring was made at the case site for 14 days when an anthrax outbreak occurred to facilitate the treatment process and tracking.

Joint socialization

The OH approach to overcoming zoonotic diseases, including anthrax in Maros Regency, namely conducting joint socialization with the village government. This socialization was carried out jointly by animal health officers and human health officers at the village office (Table 3). This socialization was related to how the handling of anthrax will be carried out and its prevention. This socialization was addressed to the village head and the community.

Other cross-sectoral involvement

In addition, the OH approach to tackling zoonotic diseases also involved other cross-sectoral, such as the local government to mobilize community including the village head, the subdistrict head, and hamlet head. Besides, police, and army for security, and community. Involving others such as Village Leadership NCO *(Babinsa)*, Village Leadership NCO for Social Security and Order *(Babinkamtibmas)* aimed to help with security like related to traffic control of cattle during quarantine period (Table 3). Village Leadership NCO is included in the army unit, and Village Leadership NCO for Social Security and Order is included in the police unit.

In addition, collaboration is also carried out ahead of Eid al-Fitr and Eid al-Adha with Village Leadership NCO, Village Leadership NCO for Social Security and Order, and Municipal Police in conducting surprise inspections (*Inspeksi Mendadak* or *SIDAK*) and in supervising (Table 3). Municipal Police is engaged especially if the officer wants to confiscate beef or livestock if they do not meet the health standard.

Furthermore, the supervision of sacrificial animals when approaching Eid al-Adha is also carried out in coordination with the Indonesian Ulema Council (*Majelis Ulama Indonesia,* or *MUI* (Table 1). One of the requirements for the sacrificial animal is healthy, as evidenced by an animal health certificate obtained from an animal health center officer. This is equally monitored by both sectors to ensure that the animal sacrificed is a healthy animal.

Table 3. Theme 3: Coordination and collaboration

Subthemes	Quotes
Visiting case location together	• *"Actually, before One Health [term] was triggered, we often went with friends from the puskesmas. The anthrax case was [since] 2010 until now…"* (AH, Animal Health Officer) • *"…the health animal [officers], I was with (health animal officers) at the patient's house where the cow was slaughtered…"* (QX, Human Health Officer) • *"... we have a kind of post for the next 14 days…so we were there, even though the animal health department was [there]..."* (JQ, Human Health Officer) • *"…we would open an integrated service post. [In] that post, there were friends from the puskesmas and technical friends from the puskeswan…"* (AH, Animal Health Officer)
Joint socialization	• *"Once when there was anthrax case, we went directly with friends from the puskesmas, we even went to do socialization at the village office, it was a panel, with health [officer] friends"* (AH, Animal Health Officer) • *"Yes, here is the photo, I and the vet, I went directly to the village office for intervention..."* (QX, Human Health Officer)
Other cross-sectoral involvement	• *"…we reported it to the village head and the sub-district head to mobilize the community… In the one-health concept, we actually involved cross-sectoral involvement …we also worked with Babinsa, Babinkamtibmas, Hamlet Head, Village Head, and Sub-district head..."* (AH, Animal Health Officer) • *"Yes, together [with the Animal Health Center]. The name is the team. there was Babinsa, there was Babinkamtibmas, for security"* (GN, 44 tahun, Tenaga epidemiolog) • *"Yes, yes, that is why we called the Babinsa, Babinkamtibmas, to help with security during the regional quarantine period, so Babinsa was the one who gave a warning to the Dusun Head not to give travel documents, cattle that would be moved out, or not to accept livestock into the village. In that area, we ask for help from Babinsa and, Babinkamtibmas"*(AH, Animal Health Officer) • *"Yes, we still, SIDAK on the traditional market, we are accompanied by Satpol PP, if there is (beef) want to be confiscated...we don't dare to confiscate, so the one who confiscates is Satpol PP"* (AH, Animal Health Officer) • *"For Eid al-Fitr and Eid al-Adha, the Babinsa and Babinkamtibmas accompany us when we carry out SIDAK, sudden inspections at traditional markets. That is what we accompanied"* (AH, Animal Health Officer) • *"Yes, they have usually been involved, if the inspection, (they are) usually involved, if the inspection, [there] are usually the police, the Satpol as are law enforcers"* (BI, Animal Health Officer) • *"Yes, from the puskeswan, which issued an animal health certificate. Because we also socialized that [we] cooperate with MUI, we also socialized that the sacrificial animals are not only big but healthy and old enough. Well, it is declared healthy when the buyer or seller of the sacrificial animal shows an animal health certificate"* (AH, Animal Health Officer)

The following is the table regarding the OH approach application in the prevention and control of anthrax in the Maros Regency:

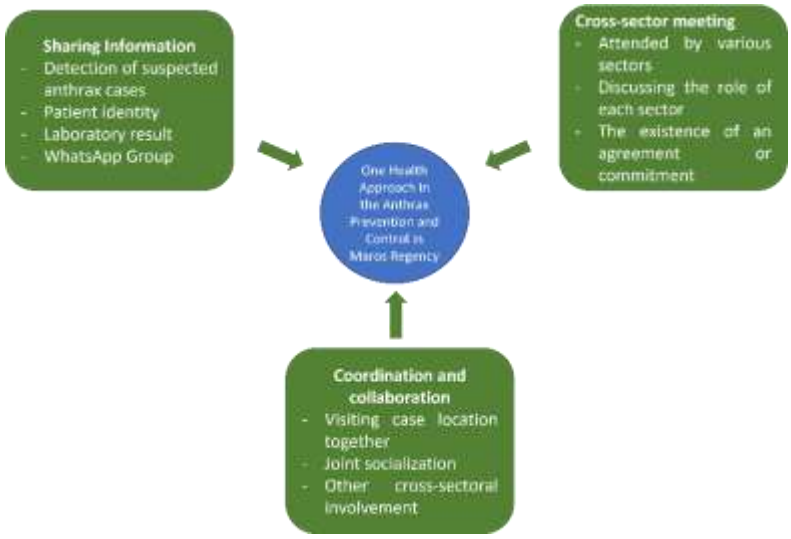

Figure 1. Flowchart of One Health Approach in The Anthrax Prevention and Control in the Maros Regency

DISCUSSION

Zoonotic diseases can effectively be addressed through a OH approach, through increased collaboration, communication, and synergy from various animal health sectors, human health sectors, and the policy-making sector (34). The concept of "OH" refers to an integrated and unified strategy for achieving a healthy balance for humans, animals, and the environment. The strategy encourages collaboration across a wide variety of fields (35).

Based on informants' perspectives from various sectors, coordination and collaboration are significant in handling health issues, including anthrax. Health issues resulting from the human–animal–environment interface cannot be solved by relying on the efforts of one individual, institution, or sector (14).

A recent study has shown that animal health officers share information when detecting suspected cases in animals, similar to human health officers. The existence of cross-sectoral communication and coordination in OH, such as information sharing, and exchange of information and reports between the human and animal health sectors (36), can support effective prevention and control efforts. Increasing the use of the OH approach by establishing communication between various disciplines is necessary for breaking the chain of transmission of zoonotic diseases (37). Applying the OH approach through sharing data between sectors is significant progress in preventing and controlling infectious diseases (38). It can effectively improve and strengthen early detection and response to health threats, including outbreaks (39,40). The use of digital communication platforms such as WhatsApp groups allowing the rigorous communication and information exchange. Sharing the information and knowledge exchange can accelerate the outbreak detection and response (41).

The existence of open meetings among various stakeholders is essential in zoonotic prevention, in line with the OH approach (42). One of the essential factors in a cross-sectoral approach is that there is a clear division of roles and responsibilities between various sectors.(42) Inter-sectoral collaboration through shared responsibilities and inter-sectoral coordination is beneficial for overcoming health risks, including zoonoses (39).

Field coordination and collaboration including joint visit, joint socialization, and other sector involvement demonstrates the OH application. Applying the OH approach by increasing collaboration and coordination across sectors, especially the human and animal health sectors, such as health promotion, is critical to support the success of prevention and control efforts (36). The OH approach is very relevant in zoonotic control (43). Previous studies have shown that most of the respondents from the human health sector have collaborated with the animal health sector. They consider that collaboration between the two sectors can accelerate the system in controlling infectious

diseases and allow them to have a more comprehensive understanding of modes of transmission, methods of prevention, and methods of disease control because they can learn from each other and share experiences (44). Multisectoral involvement strengthens the zoonotic disease mitigation systems (45).

This study provides an overview of the OH framework in endemic areas with limited resources, highlighting the importance of multisectoral collaboration to prevent and control zoonotic diseases, particularly at the district or local level. Previous studies in India have also demonstrated the application of One Health, including at the district level. A literature review showed that the implementation of OH in India remains limited, particularly in terms of formal coordination among veterinary, medical, and environmental professionals at the district or sub-district level. Such coordination typically occurs only during research activities or outbreaks, while routine activities such as disease surveillance and reporting are not consistently carried out (46). A systematic review conducted in Kerala State, India, revealed that the One Health approach, including its integration at the local level, faces various challenges stemming from complex political, legal, ethical, economic, and social factors (47).

Research on the implementation of the OH approach in Indonesia remains limited. However, this case study provides valuable insights that can inform broader OH frameworks and intersectoral policy design, particularly in endemic or resource-limited settings at the local level. Previous studies have emphasized that the absence or inadequacy of operational frameworks can hinder effective anthrax prevention and control. For instance, Yopa et al. (2023) highlighted that key drivers for OH adoption in developing countries include the existence of guiding documents, strong intersectoral coordination across levels, and the importance of joint multisectoral meetings (48). In Burkina Faso, Savadogo et al. (2021) found that multisectoral collaboration in zoonotic disease management—especially between human and animal health sectors—was largely ineffective (49). Gebreyes et al. (2014) further stressed the need for science-based risk management policies to tackle zoonoses in low-resource settings (50). Similarly, Chatterjee et al. (2016) reported that the sustainable implementation of OH in India is constrained by the lack of a clear operational framework. Therefore, this study contributes valuable information that can support the development of district-level OH implementation frameworks in Indonesia and other comparable settings (51).

This study was limited to three main sectors: animal health, human health, and local government. Other important stakeholders such as communities, the police, the military, and other relevant sectors were not included. The limited involvement of other sectors may have reduced the comprehensiveness of the study's findings. There is a risk that such a focus might create a segmented perception that anthrax prevention and control efforts rely solely on the human health sector, animal health sector, and local government. In reality, the OH approach requires broader multisectoral engagement. Specifically, effective anthrax control and prevention also depend heavily on the active participation of communities and other relevant sectors beyond the three traditionally involved. Therefore, future research is recommended to involve a broader range of sectors, as the One Health approach requires comprehensive collaboration from all related stakeholders to enhance methodological reflexivity. In addition, adopting a mixed-methods design in future studies may strengthen the findings by combining qualitative insights with quantitative data. Such efforts would contribute to a more robust and inclusive understanding of One Health implementation in zoonotic disease prevention and control.

CONCLUSION

This study investigated the application of the OH approach in the prevention and control of anthrax in the Maros Regency. The findings highlight the OH application included sharing information, cross-sectoral meetings, joint socialization, and involvement of other sectors. As research on OH implementation in Indonesia remains limited, this study offers valuable insights into how the OH approach is implemented at the local level, and provides a practical reference model for other regions aiming to improve zoonotic disease prevention and control. This study was limited to three main sectors—animal health, human health, and local government—thus further research is needed by expanding the study area or involving informants from additional sectors to enrich the understanding of OH practices across diverse local contexts.

AUTHOR'S CONTRIBUTION STATEMENT

Nur Azizah Azzahra: Conceptualization, Investigation, Project Administration, Resources, Writing – Original Draft Preparation
Dwi Sutiningsih: Conceptualization, supervision
Mateus Sakundarno Adi: Conceptualization, supervision
Nurul Fuadi Yusuf: Resources, Writing – Review & Editing
Khairunnisaa: Resources, Writing – Review & Editing
Rifka Haristantia: Resources, Writing – Review & Editing
Nur Mila Sari: Resources, Writing – Review & Editing
Amilah Eka Putri: Resources, Writing – Review & Editing
Trisna Widyanti: Resources, Writing – Review & Editing

CONFLICTS OF INTEREST

No conflict of interest.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

Authors have used several ai-assisted technologies, such as ChatGPT and Grammarly,—during the manuscript preparation process to support language refinement, and enhance clarity.

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DISCLAIMER

The contents and associated materials are the responsibility of the authors and do not necessarily reflect the views of USAID or the US Government.

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