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One Health Landscape in Zimbabwe: Current Status, Challenges and Opportunities for Institutionalisation

This case study was conducted to establish One Health (OH) baseline data on governance, research, education and implementation in Zimbabwe using specific assessment tools. The main actors, weaknesses and strengths of the OH governance and implementation were profiled. Opportunities for the improvement of coordination and institutionalisation of OH were suggested.

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Abstract

A baseline assessment was conducted to describe the current landscape and opportunities for operationalising One Health (OH) in Zimbabwe. A desktop review, focus group discussion and key informant interviews were used to collect data. A predetermined analysis and reporting format including sections on research and innovation, governance, education and implementation in Zimbabwe was used. Key informants and focus group discussants were selected from senior experts from government, academia, parastatals and private organisations. The study revealed that the current OH governance structure focused on antimicrobial resistance (AMR), implemented predominantly by government ministries, with minimal coordination of initiatives across other sectors. The governance was coordinated through the OH Secretariat that was established in 2022 by the three ministries involving human health, agriculture and environment. To improve the governance and operationalisation of OH activities, a holistic transdisciplinary governance structure was proposed to be anchored at a higher level in Government. Except for eight higher education institutions that offer OH-related courses and/or programmes, OH education was not firmly embedded into the curricula of the different tiers of the education sectors in the country. While OH research data and publications were available on zoonotic diseases (brucellosis, anthrax, plague, rabies and salmonellosis), AMR and holistic-planned grazing approach, the research activities were mainly sector-based. The areas that were identified as priority for research and innovation for Zimbabwe include neglected tropical diseases, food safety, zoonotic diseases and environmental health. The institutionalisation of OH would be required to strengthen the coordination, governance and long-term sustainability of implementation.

What is the Incremental Value that Makes this a One Health Case?

The occurrence and recurrence of pandemics have become common due to climate change and increased land use as result of the expansion of the human population, increased human contact with animals and the globalisation of trade (Pieret and Boivin, 2021). The interaction of humans, animals and the environment is believed to be at the centre of these pandemics (Cleaveland *et al.*, 2017). Zimbabwe has not been spared from the scourge of these pandemics (Chinomona and Mwambi, 2015; Munyenyiwa *et al.*, 2019), but does not have integrated and well-coordinated response mechanisms to deal with such threats (Zinsstag *et al.*, 2023). One such mechanism is to adopt a holistic and transdisciplinary One Health (OH) approach that promotes institutionalisation at all levels of society. OH is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems (One Health High Level

Expert Panel, 2022). It recognizes that the health of humans, domestic and wild animals, plants, and the wider environment, including ecosystems are closely linked and interdependent. The OH approach has been proffered as one of the solutions to address these global and societal health threats.

To be implemented fully, OH requires to be integrated into the existing government and private sector institutions, and local communities.

This case study utilized a multi-stakeholder consultative process to describe the current landscape and opportunities to bring different institutions together to promote the implementation of the OH approach in Zimbabwe. The incremental value in this case is that the baseline data is critical in future national OH strategic planning to promote transdisciplinary institutionalisation of OH in the country.

Learning Outcomes

The Zimbabwe OH case will help to achieve the following learning outcomes:

1. Describe the OH national context and the level of OH institutionalisation and implementation in Zimbabwe.
2. Describe the OH governance, education and research and innovation landscapes in Zimbabwe.
3. Assess how the OH governance structure impacts functionality of the OH platform.
4. Identify areas of improvement for OH institutionalisation implementation in Zimbabwe.

Background and Context

One Health approach

Infections that are transmissible from animals to humans and vice versa are classified as zoonoses (WHO, 2009). It has been estimated that about 60% of human infections are zoonotic (Taylor *et al.*, 2001). Zoonotic diseases are increasingly becoming a global threat to human health and contributing approximately 75% of recently emerged infectious diseases (Jones *et al.*, 2008). To combat these zoonotic diseases and the global threats posed by escalating antimicrobial resistance (AMR) (Salam *et al.*, 2023), and a myriad of other environmental health challenges, One Health (OH) approach is required. OH is a collaborative and multi-sectoral approach of achieving optimal health outcomes, recognising that the health of humans, animals, plants and their shared environment are interconnected (Mackenzie and Jeggo, 2019). In response, Zimbabwe established the One Health Secretariat for AMR, providing a platform for multi-sectoral collaboration on AMR and zoonotic diseases. However, these efforts tend to be sector-specific and lacking a multi-sectoral and transdisciplinary approach to include all levels of society. The implementation of a multi-sectoral and transdisciplinary OH health approach is believed to create ownership and improve coordination of activities. The main objective of this case was to describe the OH landscape in Zimbabwe through a baseline survey by engaging multiple stakeholders. This was critical for evidence-based planning and institutionalisation of OH interventions in the country.

Project structure

The Capacitating One Health in Eastern and Southern Africa (COHESA) was designed to address research and innovation at policy, research and uptake levels, as well as to improve public and private sector linkages on OH challenges. The project was implemented by the consortium of partners in collaboration with the University of Zimbabwe.

The COHESA project aimed to generate an inclusive research and innovation ecosystem, facilitating rapid uptake, adaptation and adoption of solutions to OH issues, with the OH concept embedded across society. The specific objectives include: (1) OH capacity, knowledge and information sharing; (2) enhanced national and sub-regional cross-sectoral collaboration between government entities with OH mandates and OH stakeholders across the society; (3) enhanced capacity for educational and research institutes to train the next generation workforce in tackling OH issues; and (4) increased capacity of government and non-governmental stakeholders to identify and deliver OH solutions to final beneficiaries.

Implementation of COHESA activities in Zimbabwe

The COHESA activities were implemented under four work packages (WP), representing each of the specific objectives above. To describe the OH capacity, knowledge and information-sharing (WP1), a baseline

survey was conducted. The main objective of the baseline survey was to identify the key OH issues and bottlenecks and assess sectoral collaboration and performance and local implementation capacity in Zimbabwe. The specific objectives of the baseline study were to: (1) describe the current OH research and innovation landscape in Zimbabwe; (2) identify OH capacities in Zimbabwe; (3) describe OH national challenges and gaps in Zimbabwe; and (4) assess OH performance and bottlenecks in Zimbabwe. The baseline study was conducted using pre-designed OH baseline survey tools for each of the following stages: (1) desktop review of published literature, acts and statutes and other relevant documents; (2) key informant interviews (KII); and (3) focus group discussions (FGD).

The desktop review was conducted through review of published literature. Publications were searched using the following key words: Zimbabwe, OH, Eco-health, Zoonotic diseases, and Research. The following search engines were used: Google Scholar, open databases (Google), PubMed and HINARI. PubMed, Google Scholar and HINARI were used for searching published literature, while Google was used for grey literature. Boolean logic was used to combine research key terms so as to come up with narrow and specific results. The following key terms were used: "OH AND Zimbabwe", "Eco-Health AND Zimbabwe", "Human, Animal, Environment AND Zimbabwe". Research articles only focusing on Zimbabwe and dealing with OH topics were included, while articles that did not have OH issues or where researches carried outside Zimbabwe were excluded. The publications were summarised according to a pre-determined format to document available Research and innovation, Governance, Education and Implementation in Zimbabwe.

The KIIs were conducted by two trained enumerators. Participants for the KIIs were senior managers who were purposively selected from key government ministries and departments, parastatals, and academia, targeting at least five from each sector. These were selected based on their technical expertise and experience and their institutions' involvement in OH. Key interviews, lasting about 1.5 hours, were conducted on-site using interviewer-administered questions on the OH baseline survey tool. Participants for the FGD were recommended by key informants. Individuals who participated in the key informant interviews were not eligible for the focus group discussions. Mid-level and junior professional employees were further recruited from the institutions with OH mandates including government, parastatals and academia. The FGDs were conducted using presentations and plenary discussions (Fig. 1). Because OH is still an emerging discipline in Zimbabwe, the purposively selected participants enabled an information-rich interface.



Fig. 1. Some participants to the workshop on focus group discussions held at Dzimbabwe Lodges and Conference Centre, Harare, Zimbabwe.

Key functions of academic institutions were mainly training, research, provision of technical support on OH issues and resource mobilisation through grant applications. Participants from academic institutions reported working with parastatals, mainstream government departments, private sector and non-governmental organisations (NGOs) in research and outreach activities. Those in the government sector reported that they were responsible for coordination of all partners, from academia to civil society organisations (CSO), NGOs, parastatals, multilateral organisations and private sectors. In addition to coordination, government also provided some budget support through human resource salaries and was responsible for policy formulation, such as the most recent Antimicrobial Resistance (AMR) OH national action plan. Parastatal organisations were working as government but were more independent to allow for efficiency and speed of delivery. The newly established AMR OH Office was focusing on integrated disease surveillance of AMR issues in Zimbabwe as well as strengthening the coordinating mechanisms to include other OH thematic areas.

A process of validating the findings from each of the components of the baseline survey was done through a net-mapping validation workshop and a combined workshop for the FGD, KI reports and desktop study (Fig. 2). The latter workshop employed Strengths Weaknesses Opportunities Threats (SWOT) as the validation tool. This baseline study approach was important for the Zimbabwe OH situation because it enabled reiterative focus and elucidation of pertinent key issues. Following this workshop, a consolidated OH validation report was produced. The key issues on strengths, weaknesses and opportunities for improvement of the institutionalisation and operationalising OH in Zimbabwe were recorded.



Fig. 2. Participants to the workshop on the validation of OH baseline reports and prioritisation of focus topic areas held at Kadoma Hotel and Conference Centre, Kadoma, Zimbabwe.

Transdisciplinary Process

The case adopted a multisectoral collaborative approach between the consortium, the multiplier institution (University of Zimbabwe) on the one hand, and key OH actors from government departments, parastatals, academia and the private sector on the other hand. This baseline survey helped to transcend individual disciplines to explore complex OH challenges that required multi-sectoral collaboration. This was important to create ownership by all sectors so that they contribute to the co-creation of innovative knowledge products that help to offer solutions to global problems that affect the health and co-existence of people, animals, plants and their shared environments (Aguirre *et al.*, 2016).

In addition to government ministries, departments and agencies (MDAs), parastatals and academia, the transdisciplinary approach that included the non-academic actors such as local communities would help embed OH into these sectors. For instance, during the OH baseline validation, stakeholders proposed the establishment of a OH advisory committee, which included traditional leadership (Chiefs) as key members.

Project Impact

Research and innovation landscape

OH was recognized as an important emerging issue with special focus on antimicrobial resistance (AMR). Areas that remained a priority in Zimbabwe for continued OH programming and implementation if adequately resourced are AMR, neglected tropical diseases such as schistosomiasis, food safety and zoonotic diseases such as anthrax, rabies and brucellosis. In the recent five years, OH and related research has been limited to some aspects of brucellosis, anthrax epidemiology, holistic planned grazing approach, rabies, plague and food safety (Mohan *et al.*, 1996; Munyenyiwa *et al.*, 2019; Mukarati *et al.*, 2020). Some of the important outputs of such a research included the documentation of frequent human-animal interface as determinants of increased risk of bovine brucellosis and tuberculosis in humans (Matope *et al.*, 2023). One environmental study demonstrated that a holistic planned grazing approach was important to promote soil nutrient cycling, which contributed to sustainable rangelands in Zimbabwe (Peel and Stalmans, 2018). A similar study from Kenya had shown that grazing management practices reduce disease transmission and parasite exposure to livestock (Sircely and Eba, 2021). Anthrax was demonstrated to be spreading due to increased human contact with infected carcasses, leading to recommendations for multi-disciplinary disease surveillance to minimise its impact (Mukarati *et al.*, 2020; Makurumidze *et al.*, 2021).

The absence of a national research agenda on OH has negatively affected the implementation of coordinated research activities. Inadequate research funding is a threat to OH research and innovation. Zimbabwe has done well in mobilizing domestic funding resources such as AIDS levy, rural electrification fund and others like carbon tax for vehicles. The country could utilize the same experience to create opportunities for funding OH research and innovation.

Because the majority of human diseases are originating from animals, early warning surveillance at the human, animal and environmental interface has been identified as a key area for intervention (Aarestrup *et al.*, 2021).

The majority of the studies on OH related topics have been in human health with few on the importance of management of environmental health and their linkages to human health. A study on how contamination of water bodies could affect human health in Zimbabwe recommended the adoption of strict monitoring activities of safe disposal of waste, training fishermen, vendors, and consumers on good hygiene practices and multi-sectoral monitoring of AMR (Gufe *et al.*, 2019). Mapping and continuous monitoring of hotspot areas for OH-related diseases has also been recommended in Zimbabwe following isolated outbreaks of *Yersinia pestis* (Munyenyiwa *et al.*, 2019). There is a need to broaden the scope of research and innovation in order to quantify the true burden of OH-related diseases in Zimbabwe.

OH governance

Existing coordinating mechanisms in Zimbabwe are through the OH AMR Secretariat that was established in 2022. This OH AMR Secretariat was constituted by seconded professionals from the following ministries: (1) Health and Child Care; (2) Lands, Agriculture, Fisheries, Water and Rural Development; and (3) Environment, Tourism and Hospitality Industry. A National Action Plan (NAP) for OH focusing on AMR provides guidance on the operation of the secretariat. The AMR Platform has successfully mobilised financial support, and human and research resources and has given Zimbabwe some valuable experience in coordinating a multi-disciplinary OH country team. Such experience is an important stepping stone towards a more comprehensive collaboration and institutionalisation of OH.

One of the key issues from the FGD and KII was the need to broaden the scope of OH in Zimbabwe beyond AMR issues and the medical and veterinary perspectives only. The discussions identified the need to establish a holistic OH governance structure which could preferably be pitched at a higher level in the government structures, such as the Office of the President and Cabinet. Further, the need to create a national OH advisory committee comprising multi-stakeholders, including traditional leadership, was proposed. It was concluded that, as a way forward, the development of a national OH Strategic Plan which outlined clearly the governance structure and how this could be institutionalised and implemented was a key priority for the country. This discussion was emphasized in one meeting to discuss advocacy for the institutionalisation of OH activities (Fig. 3).



Fig. 3. Participants to the workshop on the advocacy plan for institutionalisation of OH activities in Zimbabwe held at Bronte Hotel, Harare, Zimbabwe.

Financing OH activities required increased domestic resources to ensure sustainability and long-term commitment. This would be a need to enact legislation and policies that afford the national elevation and the support of OH. The various existing and potential external funding partners could be centrally engaged to ensure systematic, appropriately diverse and needs-based funding. The COVID-19 pandemic created an opportunity to mobilise resources and created OH awareness in Zimbabwe. Current seed funding and technical support from partners has created opportunities for a coordinated OH response. There are, however, areas that still require improvement such as developing OH policy supported by legislation, an all-inclusive governance structure and improved domestic funding. Sustainability in OH interventions will require dedicated domestic funding. The continued risk of climate change and other global threats will be minimised by addressing the aforementioned.

OH education situation

Zimbabwe has available qualified human resources to offer OH training at all levels as indicated by the eight higher education institutions that offered OH-related courses and/or programmes. Although there are no specific undergraduate degree programmes or diplomas in OH, many degree programs available from Universities offering public health, environmental health, microbiology and epidemiology offer OH and related courses. Two Universities offered Masters OH programmes. OH training was however not embedded in primary and secondary training to build the next OH conscious community. To further refine the OH situation and gap analysis, the COHESA project is providing financial and technical resources to promote infusion of OH content into pre-service teacher education curricula and reviewing undergraduate and postgraduate programmes at higher education institutions. The University of Zimbabwe (COHESA multiplier institution) is responsible for the accreditation of the teacher education curricula and is thus more poised to influence the infusion of OH content into the primary and secondary school curricula. The identified threat of limited OH job opportunities for qualified practitioners needs to be addressed through purposefully and strategically creating posts within the three focal government ministries of health and child care; agriculture, and the environments.

OH Implementation

OH implementation activities in Zimbabwe included research, training, prevention and control of zoonotic and neglected tropical diseases, AMR and food safety. Discussions with government, academia and quasi-government professionals revealed the need to strengthen coordination and governance, and breaking of professional operational compartments (silos) in order to improve OH implementation mechanisms in Zimbabwe. However, the issues of perceived domineering by some sectors need to be addressed.

A coordinated OH implementation mechanism was perceived to enable sharing of skills, cross-fertilisation of ideas and expertise, efficiency and achieving quality disease prevention and control outcomes. However, large multi-sectoral groups were perceived to impede timely decision-making. Limited knowledge, inadequate budget, absence of clear policies, and limited understanding of the OH concept was affecting

the implementation of OH activities in the country. In addition, there was a need to broaden the scope of OH implementation and funding beyond AMR. This baseline assessment revealed that, in Zimbabwe, OH implementation was an emerging discipline with current efforts limited to AMR. Other globally accepted focus areas of food safety, control of zoonotic diseases, laboratory services, neglected tropical diseases, environmental health were not being implemented in a coordinated manner. Therefore, all the OH focus areas remained a priority in Zimbabwe, except for AMR which was relatively well funded. Zimbabwe requires a OH national framework for the control of emerging and re-emerging zoonotic diseases, food safety, environmental health and neglected tropical diseases.

Furthermore, the dominant reliance on external financing of OH activities could have a negative bearing on the long-term sustainability of OH implementation in the country.

Capacity building and synergies with other OH activities in the country

The baseline survey revealed that senior experts on OH were available from academic institutions and government departments which could provide an anchor for building further transdisciplinary teams. Similarly, the momentum gathered through the Fleming-funded OH AMR governance structures and capacity development of the laboratory infrastructure in the human, environment and animal health sectors could provide impetus for further growth of OH implementation in the country. Therefore, to accelerate the process of institutionalisation and the implementation of OH, the COHESA project is required to create synergies with the AMR initiatives and other notable capacity-development projects such as the Research Platform–Production and Conservation in Partnership (RP-PCP) (Available at: www.rppcp.org, accessed 27 February 2024).

OH grounding

The baseline study produced data on the OH landscape in Zimbabwe, especially focusing on OH governance, research and innovation, implementation, education and capacity building. This provided the necessary reference material on pertinent OH issues upon which decisions and future interventions on advancement of the OH approach in Zimbabwe can be grounded. For instance, the need to create a holistic and coordinated governance structure for facilitating the implementation of OH activities was emphasized.

Stakeholder consultation and advocacy

Prior to the baseline survey, COHESA project had conducted a stakeholder net-mapping to determine the key actors, their influence on OH and the relationship that existed amongst them (Unpublished report). The baseline throughout all the process allowed the consultation of the stakeholders on how they could collaborate to implement the activities and to advocate for the institutionalisation of the OH approach.

Project Outlook

Zimbabwe has been implementing some OH activities but in an uncoordinated manner. One of the weakest components of OH implementation was the inadequate policy and governance framework that aim to promote synergistic collaboration between the human, animal and environmental sectors to reduce the risk of disease occurrence (Amuasi *et al.*, 2020). Improving local funding and establishment of a national multi-sectoral OH advisory mechanism that includes the private sector, media, business and community representatives were recommended as a priority intervention in Zimbabwe. Due to inadequate implementation, the country prioritised all the global recommended focus areas for OH implementation.

The past and current OH initiatives provided a platform upon which OH activities may be leveraged in Zimbabwe. For some time, Zimbabwe has been operating inter-ministerial zoonoses committees at national and provincial levels. In 2017, a national action plan (NAP) for the implementation of OH AMR surveillance and capacity building of laboratories was launched (NAP, 2017). A review of this NAP is currently under way. Further, other policy documents such as the 2021–2025 National Health Strategy (Ministry of Health and Child Care, 2021) could be integrated to improve the prospects for multi-sectoral OH collaboration in the country (Hailat *et al.*, 2023).

Conclusions

Final evaluations and recommendations, including for future study

The current OH governance structure in Zimbabwe focused on AMR and is coordinated through the OH Secretariat. There is potential to place OH governance above the ministerial level to improve coordination. The development and adoption of a national OH strategic plan could promote the institutionalisation and coordination of activities. The delivery of OH education at the tertiary level was evident; the need to streamline OH education in primary and secondary schools was identified as a priority for Zimbabwe. Although OH research data was available on zoonotic diseases and AMR, other areas such as environmental health and abortive syndromes were prioritized for further action.

To improve the capacity of OH implementation in Zimbabwe in the short term, there was a need for:

1. establishing a national multi-sectoral OH governance system;
2. the national OH technical structure to provide technical support to government to develop an all-encompassing National OH Strategic Plan document;
3. influence the ongoing review of the education sector curriculum review to include OH training;
4. developing coordinating mechanisms for OH research and innovation and implementation of activities; and
5. advocating for OH local funding mechanisms.

In the medium to long term, the following recommendations were proposed:

1. developing a OH research, innovation and implementation priority agenda;
2. conducting regular multi-sectoral OH meetings;
3. establishing online communication and data sharing platforms for information sharing, communication and collaborations;
4. developing OH curriculum for short courses;
5. conducting short-course OH training programmes; and
6. establishing dedicated OH funding.

Group Discussion Questions

1. What is the importance of using a multidimensional and multi-sectoral approach to base lining the OH landscape in a country?
2. What should be done to help the institutionalisation of OH in a country?
3. What is the importance of a nationally coordinated OH implementation system?
4. What is the importance of infusing OH into the curricula of primary and secondary schools?
5. Using the example of the recent COVID-19 pandemic, why is it important to strengthen the funding mechanisms by National Government?

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Conflict of interest

The authors have no conflicts of interest to declare.

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