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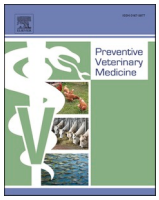

Prioritization, resource allocation and utilization of decision support tools in animal health: Results of qualitative interviews with experts

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ABSTRACT

A follow up to an online questionnaire survey (in a kind of a sequential study design), qualitative assessment was made on the views of selected animal health experts on disease prioritization methods, resource allocation and use of decision-support tools. This was done through in-depth interviews with experts working for national or international organizations and sectors. A semi-structured question guide was formulated based on the information generated in the online questionnaire and a systematic content analysis of animal and human health manuals for disease prioritization and resource allocation. In-depth, one-on-one, online interviews on the process of disease prioritization, animal health decision-making, types of prioritization tools and aspects of improvements in the tools were conducted during March and April 2022 with 20 expert informants. Prioritization approaches reported by experts were either single criterion-based or multiple criteria-based. Experts appreciated the single-criterion-based approach (quantitative) for its objectivity in contrast to multicriteria prioritization approaches which were criticized for their subjectivity. Interviews with the experts revealed a perceived lack of quality and reliable data to inform disease prioritization, especially in smallholder livestock production systems. It was found that outputs of disease prioritization exercises do not generally directly influence resource allocation in animal health and highlighted the paucity of funding for animal health compared to other agricultural sectors. The experts considered that the available decision-support tools in animal health need improvement in terms of data visualization for interpretation, management decision making and advocacy. Further recommendations include minimizing subjective biases by increasing the availability and quality of data and improving the translation of disease prioritization outputs into actions and the resources to deliver those actions.
Data Availability Statement: The data can be obtained from the corresponding author upon request.

1. Introduction

Livestock production supports the livelihoods of nearly a billion people globally, particularly important for rural households in low- and middle-income countries (Diouf, 2009). However, there are many constraints to efficient, profitable production. Animal disease is a priority constraint for production and productivity, impacting the livelihoods of the livestock keepers (Perry and Grace, 2009). The impacts of diseases are multi-dimensional and include production losses, wider economic impacts, impaired human health, reduced food and nutrition security, degraded environments, and increased greenhouse gases. More than 60 % of human pathogens originated from animals, including those that were initially transmitted from animals to humans but have since become purely human pathogens (Taylor et al., 2001). In addition, animal treatment accounts for an estimated 73 % of the antimicrobials administered globally (Van Boeckel et al., 2017) with resulting antimicrobial resistance, impacting both human and animal health (Kimera et al., 2020). Furthermore, a failure to control livestock disease brings

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unnecessary pain and suffering, and loss of well-being (Ducrot et al., 2011). Alleviating these negative impacts requires costly management including clinical treatment, and measures to control, prevent, or eradicate the disease, depending on the circumstances (Kim-Farley, 2015).

Resources for surveillance and control of animal disease are limited and prioritization based on animal health and non-animal health needs can aid in allocation. The process of prioritizing diseases can be complex encompassing various steps and criteria (Brookes et al., 2015). Ideally, intervention options should be compared in terms of monetary and non-monetary costs and benefits (Bennett, 2012; Mpouam et al., 2021). Resources would then be assigned to investments giving the greatest return and impact in terms of human and animal health and well-being (Brookes et al., 2015). More broadly, disease priority-setting should be used when developing prevention, surveillance and control strategies (Sibbald et al., 2009).

In both human and animal health, various prioritization techniques have been used. In general, prioritization techniques consider either a single criterion or multiple criteria (Baltussen and Niessen, 2006). Single criterion-based prioritization techniques do not consider the complexities of the diverse interests of different stakeholders, whereas multi-criteria disease prioritization techniques can capture these (Baltussen and Niessen, 2006). The ultimate objective of disease prioritizations is to guide rational and transparent resource allocation. Despite the existence of various disease prioritization techniques, studies assessing the usability of the techniques from the perspectives of end-users are lacking. As part of the Global Burden of Animal Diseases programme (Rushton et al., 2021) this study sought the opinions of animal health experts involved in disease prioritization exercises were collected focusing on the practices, strengths and weaknesses of the different approaches for prioritization, including the use of decision support tools and the influence of prioritization practices on budget allocation. It focused on existing techniques and how they are used in influencing decision makers in the allocation of financial resources, considering the future directions for disease prioritization and animal health decision support, identifying areas for improvement.

2. Methods

2.1. Informants' identification and selection

The experts interviewed were identified by the authors through existing networks as being experienced in animal health or food safety prioritization and were participants of a previous online survey on the use of animal health data in the global south (Grace et al., 2024). This previous survey successfully contacted 791 experts, of which 271 responded (34 % response rate), providing 185 complete and valid responses. Participants of the present study was selected from the previous study in which there was a question for the respondents whether they would like to be contacted for additional interview related to the topic of the study. Out of 96 respondents who agreed to a follow-up interview, 40 were purposively invited for an interview taking into geographic representation and professional experience in animal health development or policy. The selected participants had experience in the prioritization of specific diseases or general animal health, animal production, or food safety issues which we got from the earlier quantitative survey (Grace et al., 2024). Ideally data saturation is very useful to determine the number of informants to include in qualitative study and this can be achieved by interviewing 9–17 informants (Hennink and Kaiser, 2022). Accordingly, 40 participants were invited to get the number of informants with complete data which can potentially ensure data saturation. In qualitative research, data saturation is the point at which no new information or themes are observed and continuing the data collection will not bring significant ideas to the research. This means that data collection was stopped at the point of data saturation, where redundant ideas were emerging, and the identified themes appear stable from one informant to the next.

2.2. Study design

The study utilized an explanatory sequential research design, comprising quantitative assessment (Grace et al., 2024) followed by qualitative exploration (the present study). This method is valuable for delving deeper into concepts identified in the quantitative phase, subsequently investigated through qualitative means (Creswell and Clark, 2017).

2.3. Question guide content preparation

The question guide was focused on qualitative data on disease prioritization, resource allocation and the utilization of decision-support tools. The questions focused specifically on the experience of the interviewees, probing the strengths and weaknesses of various prioritization and decision- support tools (defined as a system that captures, analyses, and displays data to support the process of decision making). In the context of the present study, descriptions of the prioritization tools largely covered are presented in Table 1.

2.4. Data collection

This approach employed in the present study by conducting in-depth interviews was to gain deeper insights into disease prioritization methods, resource allocation, and the utilization of decision-support tools. Previous published article (Grace et al., 2024), primarily centered on the utilization of animal health data, informed this research endeavor. Potential bias stemming from carryover effects of the quantitative survey was minimized by implementing a time lapse of approximately 3–4 months between the two data collection phases. The initial data collection, involving the quantitative survey, took place from November to December 2021, followed by the second phase conducted from March to April 2022. Moreover, although the topics covered in both studies were related, they were not identical. In explanatory sequential study design, the use of same respondents/informants for both quantitative and qualitative is very common (Creswell and Clark, 2017). In-depth interviews with the experts were carried out using a semi-structured question guide. The guide was shared with the selected informants in advance and asked for a convenient date and time for the interview. The interviews were conducted online (e.g., via Zoom or Microsoft Teams) and were recorded with the consent of the interviewees (three individuals responded to the questions guide in writing).

2.5. Data analysis

For the analysis of the qualitative data, thematic analysis (Clarke and Braun, 2017) was used by identifying themes that were present in the question guide and that arose during the interviews. Summaries of the interviews were made by extracting information using a common template based on the questions guide. The points considered especially relevant are quoted verbatim and presented here.

3. Results

3.1. Profile of the interviewees

From the invited experts (40), 20 responses were obtained, with 17 interviewed online and three completing a question guide by themselves. The study participants represented a broad range of occupations in the veterinary domain. Out of the 20 experts, five were affiliated with global or regional inter-governmental organizations, four with government or public institutions, four with research or academia, four with private global animal health companies, two with professional

Table 1
Summary of disease prioritization methods in animal and human health (extracted from literature).

Prioritization approaches	Prioritization criteria (without weight)	Multi (single) criteria	Output of prioritization
WHO Methodology for prioritizing severe emerging diseases for research and development (Si Mehand et al., 2018)	Human transmission; Medical Countermeasures (commercialized products or advanced candidates (such as those undergoing clinical trials); Severity of disease or case fatality rate; Human-animal interface and other interfaces; Public health context of the affected area; Potential societal impacts; Evolutionary potential	Multicriteria	Disease ranking
One Health Zoonotic Disease Prioritization (OHZDP– CDC) (Rist et al., 2014)	Severity of Illness in Humans; Bioterrorism Potential; Economic Burden of Disease; Capacity to Collaborate; Epidemic Potential;	Multicriteria	Disease ranking
Phylum-WOAH (OIE) Listing and Categorisation of Priority Animal Diseases, including those Transmissible to Humans (WOAH method) (Phylum, 2010)	Disease impact (economic, human health, societal and environmental); control measures (feasibility, societal and environmental impact, economic impact)	Multicriteria	Disease ranking
Companion Animals multisectoriaL interprofessionaL Interdisciplinary Strategic Think tank On zoonoses (CALLISTO) (Cito et al., 2016)	Like WOAH method with minor modification of the process	Multicriteria	Disease ranking
DISCONTOOLS (a database to identify research gaps on vaccines, pharmaceuticals and diagnostics for the control of infectious diseases of animals) (O'Brien et al., 2017)	Disease knowledge; impact on animal health and welfare; impact on public health; impact on wider society; impact on trade; control tools	Multicriteria	Score +2 (major gap) to −2 for research
Global Burden of Diseases (GBD) of the Institute for Health Metrics and Evaluation (IHME) (Murray, 1994)	Human disease burden - Disability-Adjusted Life Years (DALYs)	Single (burden of disease)	DALY unit per 100 000 human population
Foodborne Disease Burden Epidemiology Reference Group (FERG) (Devleesschauwer et al., 2015)	Human disease burden - Disability-Adjusted Life Years (DALYs)	Single (burden of disease)	DALY unit per 100 000 human population

veterinary associations and one with a non-governmental organization (NGO). Seven of the respondents were women and thirteen were men. The areas of work undertaken by the respondents included academic/research, private animal health management, development and the public sector. The respondents were from various continents with most from Africa (Table 2).

3.2. Disease prioritization methods

Generally, two categories of disease prioritization, single criterion, or multi-criteria were described by the participants.

The perceived strengths and limitations of single compared to multi-criteria disease prioritization methods are summarized in Table 3 below. The key strengths of the single criteria tools are their objectivity, potential to incorporate stochastic modeling to accommodate uncertainty and ability to generate excellent visualization. Their limitation is the limited scope, restricted capacity to undertake animal health impact assessments and intensive data requirements (which are often not met in low -and Middle-income countries - LMICs). The key strengths of the multi-criteria tools are a) their multi-sectoral and collaborative approach - bringing together various stakeholders to reach a consensus on priority diseases, b) the coverage of a wide range of diseases, c) analysis of diseases at country, regional or global level, and d) considering a wide range of concerns and impacts. Their limitations are a) the potential for biases that can be created by the professionals involved in the prioritization process with ultimate impacts on the outputs, and b) the difficulties faced in bringing experts together for the prioritization exercise.

3.3. Practices of disease prioritization

3.3.1. Data quality and appropriate geographic scale of data for disease prioritization

According to most informants, the disease prioritization methods available do not adequately admit the capture and analysis of economic data, especially in smallholder livestock production systems. The importance of economic analysis in animal health is recognized, but the lack of relevant data to enable an informed analysis, especially in LMICs, poses a significant challenge. It was noted that results of a cost-benefit analysis provide a powerful economic argument for policymakers to support animal health. Another expert pointed out that the difficulty of getting economic data for smallholder livestock farming systems prevented its inclusion into animal health priority settings. For example, it was advised by an informant that foot and mouth disease (FMD) was not thought to be economically important for smallholder livestock systems in Asia until some applied socio-economic research was carried out that demonstrated the actual importance of the disease. A commonly held

Table 2
Profile of informants (experts) involved in study (qualitative interview).

Profile	Categories	Number
Gender	Women	7
	Men	13
Expertise area	Academic/research	4
	Government organization	4
	Inter-governmental organization	5
	Non-governmental organization	1
	Private company (global animal health)	4
	Professional association (veterinary)	2
Continent of major activities (engagements)	Africa	8
	Asia	2
	Australasia	1
	Europe	5
	North America	1
	Global	3

Table 3
Strengths and limitations of single compared to multi-criteria disease prioritization methods.

Strengths of single criteria	Limitations of quantitative or single criteria
• Quantitative criteria are good for objectivity and the possibility of stochastic simulation to accommodate uncertainty. • Excellent visualizations can be generated.	• Limited scope, not sufficient to undertake an economic animal health impact assessment. • Intensive data requirements which are often not met especially in LMICs.
Strengths of multi-criteria	**Limitations of multi-criteria**
• Multi-sectoral and collaborative bringing various stakeholders to reach consensus on priority diseases. • Coverage of a wide range of diseases possible. • Consideration of diseases at country, regional or global level possible.	• Unequal level of awareness by stakeholders related to the criteria used in human and animal health sectors. • Potential biases can be created by the professionals involved in the prioritization process with ultimate impacts on the outputs • Managing to bring experts together for a prioritization exercise can be difficult

view of the informants was that most prioritization practices in animal health do not involve a "full economics analysis".

According to one of our informants, attempts were made to carry out at least a financial analysis in place of a full economic analysis to develop a better understanding of the cost of prevalent diseases and argue for the funding needed to control them.

Some of our informants indicated that the existing disease prioritization methods in animal health are not using timely, reliable or quality data as inputs. The use of low-quality data and a smaller number of data points for any type of analysis and prediction can be challenging and problematic. In addition, access to existing data was mentioned as a problem given that some of the data collected from countries can be sensitive. The other issue raised was the geographic scale of data. For some diseases that are localized in their occurrence and severely affect the local population, emphasis may not be given because the scale of data collected at national or global levels may not be representative of the local situation.

3.3.2. Discrepancies on the objectives of disease prioritization among stakeholders

According to our informants, there is often a tendency in a disease prioritization process, to focus mainly on pre-existing prioritized listed and emerging diseases. It means priority diseases are pre-determined and the tools used are not dynamic enough to identify newly emergent disease threats. Additional informant derived critiques of the current disease prioritization tools include: prioritization of diseases is dependent on the goal and objectives of an organization or company, or the stakeholders' consideration of priority issues; priorities are not the same for all groups concerned, with often significant differences among the national government, donors, and individual farmers; and in some cases, the existing priorities (which are often not evidence-based) are affecting what is going to be prioritized. Generally, the results of the interviews showed poor alignment of priorities among different stakeholders and discrepancies in the scope of the prioritization (e.g., endemic diseases versus epidemic- where there is less attention given to the locally more important endemic diseases, such as tick-borne diseases, when priority settings are carried out). Farmers often prioritize endemic diseases while government or international organizations tend to focus on epidemic diseases covered in the legislation. For example, our informants mentioned the significance of setting an objective and ensuring broad stakeholder representation in the prioritization process to reduce bias and discrepancies. Private companies (for example those producing vaccines and pharmaceuticals) commented that given priorities are not matching those of the livestock keepers whose main concerns are productivity and income generation. The following illustrates these concerns.

> *"[At a country / institutional level] …, the focus is very much on diseases that are exotic …, and that would have impacts on trade…. There is less interest at this level in endemic disease. – a view largely mediated by the state government veterinary services. Farmers are far more interested in production losses and inhibitors to production caused by endemic diseases which accordingly are of far greater significance and concern to them. We've seen some of the producer bodies prioritize exotic diseases and present these for the information of their members whilst diseases, making quite a large contribution to production loss are receiving a relatively small amount of attention".*

3.3.3. Formal versus informal process of disease prioritization practices

Various points were raised by the informants regarding the level of formality or informality of disease prioritization. According to the respondents, the formal approach is often a top-down approach, and the informal approach is participatory in its nature. The informal approach may encourage intuitiveness when individuals may rely on personal experience and judgement. On the other hand, the reliance on informal approach can minimize the comparability of results. In the interviews, top-down or bottom-up (participatory) approaches were described. According to one of our informants, the top-down priority-setting related to transboundary diseases such as FMD is common practice, as this disease category attracts good donor support for control and prevention, particularly if supported by strong evidence-based risk assessment. The informal (bottom-up) approach was also found to be useful in some contexts as mentioned by some of the respondents although with some reservations. According to our informants, the bottom-up approach was perceived as a time-consuming process when many people are brought in for their views and opinions. Generally, the recommendation was to balance the use of formalized means of disease prioritization with that of informal approaches. It was suggested to merge the interests of various groups by involving many stakeholders. It was further noted that though in prioritizing animal diseases consultation with beneficiaries is made, the interests of donors can influence largely the outcome and further actions (See below quote).

> *"Too much donor driven – e.g., Highly Pathogenic Avian Influenza (HPAI) when it broke out in 2004 and then 2006, two years later, a lot of funds were mobilised for activities in developing countries but were not a country priority. They would not prioritize HPAI because they didn't see any cases. They engaged in the activities because the funding was there. I have always been advocating that we should look at endemic diseases which countries see a need for, and better to strengthen the systems that will also address any emerging issue, because then … already had good surveillance, laboratory and response capacity in place".*

3.4. Influence of disease prioritization on budget allocation and animal health decision-making process

Regarding the influence of disease prioritization on budget allocation and the decision-making process of animal health activities, some of our informants mentioned that all countries are not benefiting from the process of prioritization equally. The comment of an informant indicated that "the act of prioritizing diseases in low-resource settings has not led to meaningful improvements in One Health or zoonotic disease control". The informant further noted several issues and questions related to the practices of disease prioritization, for example by asking a question: "If no tangible changes occur from prioritization, why are we continuing to do the prioritization?". It was further noted that prioritizations must be carried out to reflect changing country preferences. Simply repeating the process will result in scattered and ineffective programs with rather negative outcomes. Even though prioritizations are carried out and priorities identified, implementation is difficult due

to the minimal resources available which are often dependent on donor funding schemes. In some cases, it was mentioned that budgets are predetermined by donors or funding agencies without consideration of the existing priorities. It was commented that though disease prioritization and decision-making tools are available, the inadequacy of funding made it challenging to implement prioritized action plans.

On top of the difficulty in getting good quality evidence-based data, particularly when reliant on poorly motivated field staff, decision-makers may already be committed to other priorities. For example, decision-makers routinely allocate a significantly greater proportion of resources (budget) to the crop production sector than to animal health services. Respondents commented that the lack of fair allocation of resources in terms of finance, laboratory facilities, infrastructure and supplies were a major constraining factor to implement activities targeting prioritized animal health problems. On the other hand, a successful attempt towards budget allocation through advocacy was mentioned in one instance. A veterinary official of a developed country adopted advocacy for more budget allocation, backed by an evidence-based presentation, by direct engagement with the prime minister of that country which resulted in an enlarged budget compared to previous allocations.

3.5. Recommendations for disease prioritization and decision support tools ('characteristics of ideal tools')

Various characteristics of good ('ideal') disease prioritization or animal health decision support tools were identified by the respondents, which were categorized into related to inputs, processes (methods) and outputs (Fig. 1).

In terms of the required inputs for disease prioritization, described characteristics include the ability to accommodate a multitude of different inputs targeting timely, reliable, and quality data. In addition, informants felt there was a need for broadening the scope of the inputs especially related to the impacts of animal health on poverty, nutrition and human health and the non-economic reasons for keeping animals (e.g., cultural, religious). From methodological perspectives, the desiderata of disease prioritization methods were given as objectivity, repeatability, open access, multisectoral embracing a One Health approach and consideration of endemic, zoonotic, emerging, and transboundary diseases. Regarding the outputs, the preferred characteristics recommended were providing disaggregated outputs at national or local scales and providing benefit-cost estimates to guide resource allocation. The other preferred characteristics of the outputs recommended by the informants were comprehensiveness and simplicity to the extent that the outputs should be comprehendible by a non-data specialist and enriched with data analytic visuals. The following verbatim quote from the interviews encapsulates these ideal characteristics.

> *"I'd like it to be quantitative. I'd like it to be transparent. I'd like it to be driven by a multitude of different input variables, so that it wasn't biased too much by one thing. I'd like it, if possible, to separate given a particular production context, to separate disease and economics. And of course, those things would have to be brought together overall, I imagine, but it would be nice to see them* disaggregated *inside the way that this works so that you could choose or not choose to include the economic side if you wanted. I'd like it to be open-access. Quite a big ask actually, but I'd like it to be all of those things".*

4. Discussion

This study assessed the opinions of experts working in animal health and related professions regarding the methods, processes and practices of disease prioritization and resource allocation, focusing on the strengths and weaknesses to identify good practices and areas in need of improvement. Experts with diverse work experience were interviewed, including those working in research and academia, international intergovernmental, national governmental and private organizations. The inclusion of individuals from diverse sectors in the present study can suggest a comprehensiveness of the output related to disease prioritization, decision making tools and resource allocation in animal health.

Overall, the present study showed the availability of various disease prioritization tools used in animal health but found that most of the tools lack comprehensiveness and objectiveness. Such a lack of objectivity/

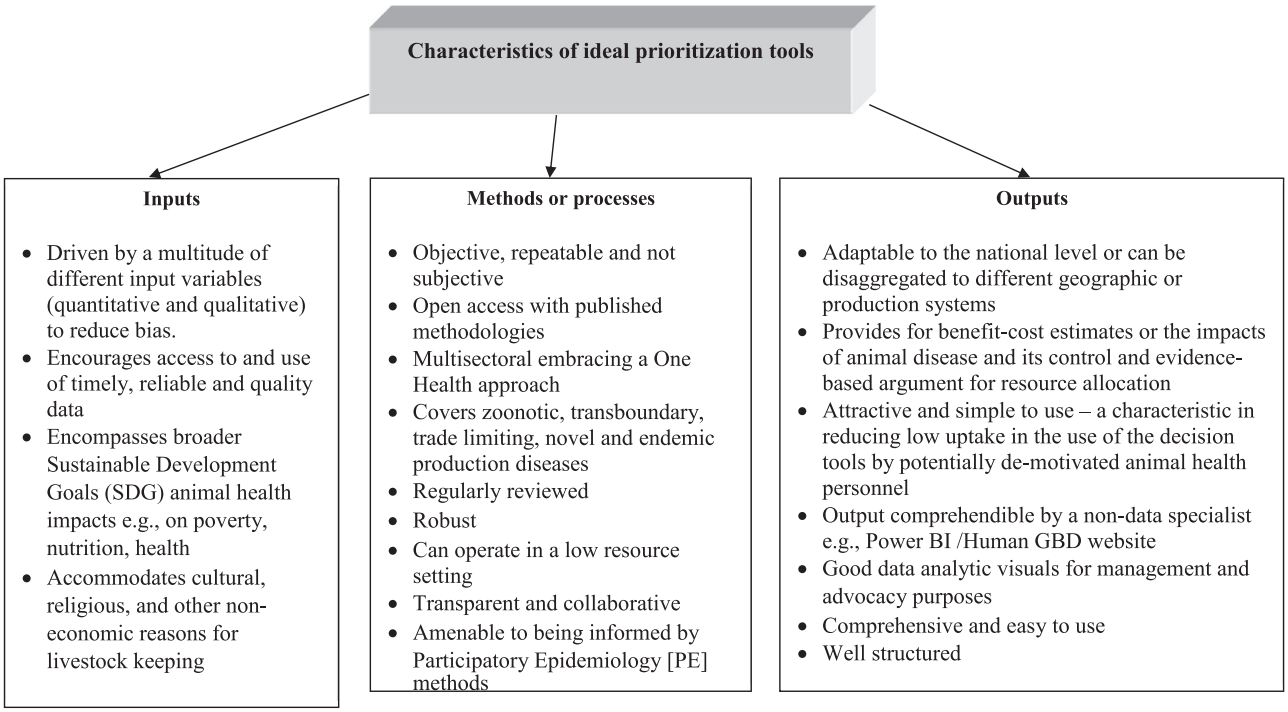

Fig. 1. The characteristics of an ideal disease prioritization or animal health decision-making support tools.

comprehensiveness can specifically lead to gaps in the decision-making when the prioritization outputs are going to be used. Disease prioritization is a complex decision-making process because of the multiplicity and often conflicting goals (Brookes et al., 2015). This makes it difficult to translate the outputs of the prioritization into actions and ensure credibility of the prioritization practice. Two major categories of disease prioritization techniques based on the number of criteria utilized can be conceptualized which include single criterion and multiple criteria. Some of the common single criterion-based techniques which help priority setting in human or animal health are the burden of disease estimation and economic analysis. Economic analyses measure the efficiency of interventions while the analyses of the burden of disease are towards identifying health needs. Single criterion methods are criticized for not accommodating the views of various stakeholders. As a result, nowadays, multi-criteria priority setting is being widely utilized to support policymakers in choosing various animal health strategies to accommodating conflicting interests. Multicriteria prioritization considers epidemiological, economic, social, environment and ethical aspects among others, with the ultimate goal multiple objectives set forth by stakeholders are met by creating trade-offs (Mourits et al., 2010). For example, contagious bovine pleuropneumonia (CBBP) which is not zoonotic is important from an economic perspective considering mortality and morbidity in animals, however the disease may not be as such important from public health point of view (Tambi et al., 2006). On the other hand, zoonotic diseases can cause both economic and public health impacts in which the various factors need to be considered during priority setting exercise. The way forward is designing adaptable and dynamic disease prioritization tools that can incorporate various aspects of animal disease management considering the local, national, regional and global contexts by integrating the objective and subjective methods. In the present study, the comparative views of experts on the performance of disease prioritization methods showed mixed results in which both strengths and weaknesses were revealed indicative of the presence of opportunities for improvements. Prioritization methods using multicriteria have strengths because of their ability to incorporate multiple attributes in terms of the views of stakeholders and the impacts of diseases and expert judgment can be used to complement available data (Montibeller et al., 2020). On the other hand, prioritization methods using multicriteria were criticized related to the potential biases in the identification and estimation of the criteria by stakeholders or experts. Motivation biases referring to the preference of desirability or undesirability-related events or outcomes are important in decision-making including disease prioritization (Hahn and Harris, 2014). Overall, the process and the approaches followed for disease prioritization in animal health should seek a balance between the subjective and objective nature of the criteria used.

The informants in the present study repeatedly commented on the lack of good quality economic data to make informed decisions - especially in smallholder livestock production systems. Obtaining quality data for decision-making in animal or human health is an essential process for disease management including prioritization. However, in many circumstances, it may be difficult to get reliable, high-quality, and timely data on animal or human health for decision- making, especially in LMICs. Integration of different sources can be a useful solution to improve the use of data for decision-making (George et al., 2021). In addition to the lack of quality data, an intrinsic difficulty in defining measurable criteria for the importance of disease in terms of public health can be challenging for disease prioritization (Krause, 2008).

The inability to translate disease prioritization into the planning of resource allocation is a critical failure point that needs attention from national and international organizations. The recommendations by the informants in the present study regarding improving animal health data visualization targeting both experts and non-experts is an initiative being implemented by the GBADs programme (see https://animalhealthmetrics.org prototype dashboards). The demand for data visualization tools in animal health in a framework of decision support tools can be areas of attention for the integration of various data. A recent study showed that decision makers in the health sector are more willing to utilize data visualization tools as they view them as engaging and important implements for knowledge transfer and policy-making process (Lundkvist et al., 2021). Interactive dashboards are nowadays becoming in visualization of animal health data toward assisting decision making process (Petukhova et al., 2023).

5. Conclusion

This study provides insight into the complexities of disease prioritization, pinpointing the strengths and weaknesses of currently available tools and highlighting that there is a lack of comprehensiveness. The prioritization tools using multi-criteria decision analysis techniques are subjective leading to biases reducing the validity of the output and quality of information available to decision makers. Disease prioritization outputs often fail to result in action. This relates to inadequacies of these outputs, or inadequate integration of prioritization studies in the overall policy and implementation process. Improved understandings with guidance are needed in these aspects. The is a demand for data interpretation and visualization tools, analogous to the GBD compare tool (IHME) possibly through the integration of relevant animal health information sources. However, widespread paucity of quality data is a major barrier to developing such tools for animal health.

The recommendations of this study include improving data visualization, minimizing subjective biases through quality data and further research on the factors affecting the translation of disease prioritization outputs into actions through their consideration during resource allocation and better decision making in the planning and implementation of disease control and prevention activities.

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Ethical statement

Ethical approval was sought and granted by the Institutional Research Ethics Committee (IREC) of the International Livestock Research Institute (ILRI) (Ref: IREC2021-48). The interviews were anonymized (removing names and specific institutional affiliations and country-specific information).

CRediT authorship contribution statement

Jonathan Rushton: Writing – review & editing, Resources, Project administration, Funding acquisition, Conceptualization. **Delia Grace:** Writing – review & editing, Writing – original draft, Investigation, Formal analysis, Conceptualization. **Amenu Kebede:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Chris Daborn:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation. **Benjamin Huntington:** Writing – review & editing, Resources, Project administration. **Theodore Knight-Jones:** Writing – review & editing, Project administration.

Declaration of Competing Interest

A conflict of interest occurs when an individual's objectivity is potentially compromised by a desire for financial gain, prominence, professional advancement or a successful outcome. *ASJSUR* Editors strive to ensure that what is published in the Journal is as balanced, objective and evidence-based as possible. Since it can be difficult to

distinguish between an actual conflict of interest and a perceived conflict of interest, the Journal requires authors to disclose all and any potential conflicts of interest.

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