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Livestock markets as overlooked biosecurity risks to One Health in Somalia

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Short Report

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Abstract

Livestock markets are central to Somalia's economy and food security, but weak biosecurity in these settings creates an important One Health risk. The frequent movement of animals across long distances, together with informal trading practices, overcrowding, limited inspection, and poor sanitation, increases the likelihood of zoonotic pathogen circulation at the human-animal-environment interface. Recent One Health evidence from Somalia shows that the country remains highly vulnerable to zoonoses because of its heavy reliance on livestock, weak surveillance systems, climate stress, and institutional fragility. Priority diseases identified for the country include Rift Valley fever, brucellosis, anthrax, Middle East respiratory syndrome, and zoonotic influenza. Evidence from Somalia's livestock export system further suggests that market inspection alone is insufficient unless it is combined with quarantine, vaccination, laboratory testing, and certification. In addition to disease risk, livestock markets contribute to environmental degradation through waste accumulation and poor manure management, while livestock production remains a major source of methane emissions in national reporting. Strengthening market biosecurity, veterinary oversight, laboratory-linked surveillance, and risk communication is therefore essential to protect public health, animal health, trade, and environmental sustainability in Somalia.

Main text

Livestock is the backbone of Somalia's economy, food security, and rural livelihoods, yet the systems through which animals are traded remain a persistent blind spot in national health security. In particular, livestock markets without adequate biosecurity are not merely a veterinary concern; they are a One Health threat that can amplify zoonotic transmission, undermine export confidence, and sustain environmental contamination across the animal-human interface. Somalia's dependence on mobile pastoral production, long-distance animal movement, and informal marketing creates ideal conditions for pathogen circulation, especially where market sanitation, animal separation, inspection, and movement controls are weak or inconsistently enforced Recent One Health work in Somalia has emphasized that the country remains highly vulnerable to zoonoses because of its heavy reliance on livestock, weak surveillance capacity, climate extremes, and instability, while national prioritization exercises have identified Rift Valley fever, brucellosis, anthrax, Middle East respiratory syndrome, and zoonotic influenza among the highest concerns(Osman et al., 2024).

The problem is not hypothetical. Somalia's recent One Health and zoonoses literature repeatedly points to major gaps in integrated surveillance, laboratory capacity, and field-level control, with most evidence still derived from humans and animals rather than the markets and environments where transmission risk is often concentrated. A scoping review found that only a small share of published zoonoses studies in Somalia included laboratory work conducted inside the country, and environmental data were especially limited, despite the obvious importance of shared spaces such as markets, holding grounds, and transport corridors. This matters because livestock markets are not passive points of exchange: they are dynamic mixing sites where animals from different herds, districts, and sometimes countries are held in close proximity, increasing opportunities for direct contact, fomite spread, aerosol exposure,

and contamination of water, feed, pens, and soil. In Somalia, where formal veterinary infrastructure remains thin and the interface between informal trade and export systems is poorly regulated in many settings, market biosecurity failures can become a bridge between local endemic disease and cross-border spread(Osman et al., 2024).

Evidence from Somalia's export history shows why market-level control cannot be ignored. A published risk assessment on Somali livestock exports found that inspection at regional markets alone, without strong quarantine and certification, was ineffective for most of the diseases considered, while combining market inspection with quarantine, vaccination, laboratory screening, and certification substantially reduced the risk of exporting infected animals. That same work underscored that diseases with limited clinical signs, especially Rift Valley fever and brucellosis, are particularly difficult to manage without diagnostic testing. This is directly relevant to domestic markets as well, because if infected animals are moving through markets with minimal separation, cleaning, or traceability, then the same conditions that threaten export chains also threaten farmers, traders, slaughterhouse workers, transporters, and nearby communities. Somalia's livestock sector strategy itself recognizes the need to improve animal health services, strengthen market oversight, monitor zoonoses, and provide pre-quarantine holding areas with water, pasture, and vaccination facilities, which implicitly acknowledges the gaps that currently make unregulated markets risky(Knight-Jones et al., 2014).

The broader implications extend beyond zoonotic disease alone. Livestock is also a major source of Somalia's greenhouse gas emissions, with national reporting showing that agriculture and livestock dominate emissions inventories, especially methane from enteric fermentation and manure management. The climate-health connection is important here: poor market hygiene, overcrowding, waste accumulation, and inadequate manure handling increase local environmental degradation and may intensify pathogen survival in the surrounding ecosystem. In a country already facing recurrent drought, fragile rangelands, and shifting mobility patterns, poorly managed markets can intensify pressure on water points and grazing areas while also contributing to the environmental conditions that favor disease amplification. In this sense, market biosecurity is not only about preventing outbreaks; it is also about reducing the ecological footprint of livestock trade and improving the resilience of the production system(*THE FEDERAL REPUBLIC OF SOMALIA MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE*, 2022)

Comparable experiences from other livestock-exporting contexts suggest that practical improvements are achievable when biosecurity is treated as a public good rather than a purely private cost. The Somali policy and strategy documents already point in the right direction by calling for stronger veterinary oversight, standardized quarantine systems, and better coordination between public authorities and private operators. Yet implementation remains the core challenge. Fragmented governance, variable enforcement, limited laboratory access, and the dominance of informal trade can all weaken compliance. Lessons from One Health implementation studies in Somalia indicate that a formal integrated One Health structure is still lacking, even though the technical priority diseases and

collaborative intent have already been identified. Without operational mechanisms at market level, policy aspirations will continue to outpace practice(Bank & Fao, 2019).

Action should therefore focus on realistic, high-yield interventions. First, livestock markets should adopt minimum biosecurity standards, including controlled entry and exit, species separation, cleaning and disinfection of pens, waste management, isolation of sick animals, and designated areas for inspection and rest. Second, routine veterinary presence at major markets should be strengthened through mobile teams and clearer public-private oversight, especially during peak trade periods and pre-export movements. Third, market-based surveillance should be linked to laboratory confirmation and not rely solely on clinical inspection, particularly for priority diseases such as Rift Valley fever, brucellosis, anthrax, and MERS-related camel trade risks. Fourth, trader and herder awareness should be improved through targeted risk communication on zoonotic disease signs, hand hygiene, animal handling, and reporting of illness in animals and people. Finally, biosecurity investment should be integrated into climate and livestock policy so that market infrastructure improvements also address manure control, water use, and waste disposal, reducing both disease transmission and environmental harm(*Federal Government of Somalia Ministry Of Environment and Climate Change Somalia's Third Generation Nationally Determined Contribution (NDC 3.0)*, n.d.)

In conclusion, livestock markets without biosecurity represent an underestimated One Health threat in Somalia because they sit at the intersection of zoonotic disease emergence, economic vulnerability, and environmental stress. The country already has the evidence base, strategic documents, and disease prioritization needed to act; what is needed now is enforcement, coordination, and sustained investment at the market level. If Somalia is to protect its people, animals, trade reputation, and ecosystems, market biosecurity must move from an overlooked aspiration to a routine standard of livestock governance(Knight-Jones et al., 2014)

Declarations

Ethical Approval

This study did not involve any human or animal subjects, and thus, did not require review by an Institutional Review Board (IRB).

Conflicts of Interest

None

Clinical Trial Number

Not applicable.

Ethics Approval and Consent to Participate

Not applicable. This study did not involve human participants, human data, human tissue, or animals; therefore, ethics approval and informed consent were not required.

Consent to Publish

Not applicable.

Author Contribution

M.A.H. conceived the study, conducted the literature review, analyzed the evidence, and drafted the manuscript. A.M.F. contributed to the study design, data interpretation, and critical revision. S.N.M. assisted with literature collection, reference management, and manuscript editing. S.M.A. contributed to data interpretation, language editing, and manuscript review. A.T.T. supervised the study, provided methodological guidance, and critically reviewed the manuscript. All authors read and approved the final manuscript.

Data Availability

No new datasets were generated or analyzed during the current study. All information used in this manuscript was obtained from publicly available sources cited in the reference list.

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