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Editorial

The role of public health veterinarians in advancing One Health

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In an era of unprecedented health challenges—ranging from pandemics to food insecurity and climate-induced disease emergence—the concept of One Health has gained global prominence. One Health is a multidisciplinary, collaborative approach that recognizes the interconnectedness of human, animal, and environmental health. Nowhere is this convergence more apparent than in countries like Bangladesh, where zoonotic diseases, foodborne illnesses, ecological degradation, and climate stress coalesce (Shafique *et al.*, 2024; Tepa-Yotto *et al.*, 2024). In this context, public health veterinarians serve as pivotal actors in building resilient health systems, ensuring food safety, managing disease risks, and promoting sustainable development.

Bangladesh's dynamic and resource-sensitive environment presents a unique testing ground for the One Health approach. Veterinary professionals in the country are increasingly recognized for their role in safeguarding the quality and safety of foods of animal origin. Study suggested strategies to develop awareness profiling activities that link the quality of such food with broader health outcomes (Rahman and Kabir, 2012). The authors emphasized the critical role veterinarians can play in creating public awareness and strengthening community-based food safety initiatives. Further emphasizing the importance of veterinary education in shaping a healthier society, study advocated for integrating food safety and governance components into veterinary curricula (Rahman and Kabir, 2013). Their study underscored that well-trained veterinarians are instrumental not only in diagnosing and treating animal diseases but also in preventing zoonoses and ensuring the integrity of the entire food supply chain. These insights were echoed in subsequent work that traced the historical and future trajectories of food safety law enforcement in Bangladesh, stressing the need for technically competent professionals to support legal frameworks (Rahman *et al.*, 2014).

Food safety is not merely a matter of technical oversight; it is also deeply tied to nutrition, public awareness, and social equity. Study calling attention to the imperative of combining safety protocols with accessible and equitable nutrition for all (Kabir, 2024). In a country where a significant portion of the population relies on animal-sourced foods, veterinarians stand at the intersection of public health nutrition and food governance. Scientific research has increasingly demonstrated the veterinarians' role in hazard identification and risk management. For instance, Islam *et al.* (2025) conducted a qualitative risk assessment of *Campylobacter* transmission in dairy cattle, while Al-Mamun *et al.* (2023) extended this concern to fresh vegetables, identifying *Campylobacter jejuni* with virulence gene profiling and antibiograms in Mymensingh, Bangladesh. Such studies exemplify the One Health principle, where animal health data informs human health risk mitigation. Veterinarians serve as critical links in this chain, conducting surveillance, interpreting laboratory data, and advising on control measures that protect both animals and consumers.

As Bangladesh advances into organic and climate-smart agriculture, the role of public health veterinarians becomes even more relevant. Study investigated the status, challenges, and prospects of organic dairy farming, and their findings suggested that without robust veterinary involvement, these systems could falter due to poor disease control, inadequate feed regulation, and weak residue monitoring (Harun *et al.*, 2024). Neogi (2025) reinforced this perspective by addressing the climate-food-health nexus, advocating for ecosystem-based adaptation where veterinary expertise is integrated into broader environmental policy frameworks.

Bangladesh's complex aquatic ecosystems also demand veterinary attention. Residue monitoring in aquaculture has revealed alarming trends. Kabiraj *et al.* (2019) reported the presence of antibiotic residues in farm-raised tilapia, while Parvez *et al.* (2020) confirmed aflatoxin contamination in fish and shrimp using LC/MS-MS. Beyond ensuring food safety, veterinarians play a critical role in the surveillance and control of zoonotic diseases. The occurrence of zoonoses such as anthrax, tuberculosis, and campylobacteriosis in Bangladesh's livestock population underscores a significant public health and animal health vulnerability (Chakraborty *et al*., 2012; Islam *et al*., 2021; Hoque *et al*., 2021; Islam *et al*., 2024). Through diagnostic services, preventive interventions, and vaccination strategies, veterinarians actively manage these endemic threats, thereby safeguarding both economic stability and public health.

The social dimensions of health and food systems are equally significant. Dietary patterns vary widely across Bangladesh, influenced by geography, income, and education. Nazneen *et al.* (2016) conducted a dietary survey that revealed how seasonal, spatial, and socioeconomic factors shape food choices. Veterinary professionals engaged in public outreach and health promotion can tailor their communication strategies based on these insights, ensuring that food safety campaigns are inclusive and culturally relevant. Additionally, the livelihood security of communities dependent on livestock and fisheries is a vital aspect of One Health. Research on fish nursery operators in Jessore and fishers from Chalan *beel* revealed systemic vulnerabilities linked to poor disease control, limited market access, and climate disruptions (Halim *et al.*, 2016; Karim *et al.*, 2020). Veterinary interventions—ranging from training in animal husbandry to health monitoring—can stabilize these livelihoods. This aligns with the Sustainable Development Goals (SDGs), particularly SDG 1 (no poverty), SDG 2 (zero hunger), and SDG 3 (good health and well-being).

Veterinarians also contribute to sustainable innovation in agriculture and animal science. Experimental trials such as the use of sugar beet-mixed feed in ducks, organic manure in Napier-4 fodder production, and comparative studies on quail mutants all required close veterinary oversight (Ahmed *et al.*, 2017; Islam *et al.*, 2017; Ali *et al.*, 2018). More advanced reproductive technologies, such as those applied to Black Bengal goat oocytes for *in vitro* embryo production, further demonstrate the profession's evolving technical scope (Sarkar *et al.*, 2020). In the face of growing climate variability, veterinarians are integral to national adaptation strategies. As Abedin (2025) articulated, facing the storm requires coordinated disaster risk reduction involving animal health experts. From conducting pre- and post-disaster disease surveillance to maintaining food chain stability, veterinarians are indispensable in ensuring Bangladesh's climate resilience (Shahjahan and Bhuiyan, 2016; Begum *et al.*, 2019; Nahid *et al.*, 2020).

Moreover, ensuring safe food infrastructure is a critical domain where veterinarians contribute. Really and Mondal (2019) evaluated fish market infrastructure in Khulna, identifying hygiene gaps and public exposure risks. Veterinarians help establish protocols and regulations that protect both producers and consumers in these public spaces. As Nasirujjaman (2024) aptly puts it, keeping our food safe in a changing world necessitates multidisciplinary collaboration. Uddain (2024) also emphasized the need for sustainable agriculture through organic systems and innovative fertilization—sectors in which veterinarians must be proactive partners, ensuring that productivity does not compromise health or environmental integrity.

The role of public health veterinarians in advancing One Health in Bangladesh is both vast and vital. They operate at the heart of disease prevention, food safety governance, sustainable farming, and community education. As Bangladesh contends with rising zoonotic risks, climate change, and an evolving food system, it must empower its veterinary workforce through targeted education, research investment, and institutional collaboration. Only then can the country realize the full promise of One Health—resilient communities, healthy populations, and sustainable ecosystems.

Ethical approval and informed consent

Not applicable.

Data availability

Not applicable.

Conflict of interest
None to declare.

Author's contribution
Conceptualization, formal analysis, writing-original draft preparation, review and editing: S. M. Lutful Kabir. The author has read and approved the final version of the published editorial.

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