

VETERINARIANS: GUARDIANS OF LIFE ACROSS SPECIES AND SYSTEMS

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ABSTRACT

Veterinarians play a pivotal and multidimensional role in modern society, extending far beyond traditional animal healthcare. Their contributions span public health, livestock production, wildlife conservation, environmental sustainability, and legislative enforcement, making them essential to global development. Central to their role is the concept of One Health, which integrates human, animal, and environmental health. Veterinarians are actively involved in monitoring zoonotic diseases, ensuring food safety, controlling antimicrobial resistance, and strengthening biosecurity systems. In the livestock sector, they enhance productivity, improve food security, and support rural livelihoods, thereby contributing to economic stability. Their role in wildlife conservation under frameworks like the Wildlife Protection Act, 1972, helps maintain biodiversity and ecological balance. Additionally, veterinarians promote animal welfare through ethical practices aligned with emerging concepts like One Welfare. They also contribute to policymaking and implementation of laws such as the Prevention of Cruelty to Animals Act, 1960. With growing involvement in research, innovation, and technology-driven solutions, veterinarians are increasingly shaping sustainable and resilient systems. Overall, their interdisciplinary contributions make them indispensable for ensuring a healthier, safer, and more sustainable future.

Keywords: Veterinarians, One Health, Wildlife Conservation, Food Safety, Animal Welfare.

Introduction

Veterinarians today are far more than animal doctors. They are public health experts, food safety regulators, wildlife conservationists, policymakers, and social change agents. Their role spans across human health, animal welfare, environmental sustainability, and economic development, making them indispensable in modern society (Garcia *et al.*, 2020). At the heart of this expanding responsibility lies the concept of One Health, which recognises that the health of people is closely connected to the health of animals and the environment. Veterinarians work on the frontlines of disease surveillance, preventing zoonotic outbreaks such as COVID-

19 and Nipah virus infection, ensuring safe food production, and promoting responsible use of antimicrobials. Their expertise helps safeguard not only animal populations but also global public health systems. Beyond health, veterinarians contribute significantly to economic stability and social development, particularly in agriculture-dependent countries like India. By improving livestock productivity, ensuring quality milk and meat, and supporting rural livelihoods, they play a direct role in poverty reduction and food security (Voith, 2009). At the same time, their involvement in wildlife conservation, environmental protection, and implementation of laws like the Prevention of Cruelty to

Animals Act, 1960, reflects their commitment to ethical and sustainable practices (Edwards, 2004). Whether advising farmers, guiding policymakers, or educating communities, veterinarians serve as a crucial link between science and society, helping build a healthier, more balanced world.

One Health: The Core of Veterinary Science

The concept of One Health highlights the deep interconnection between human, animal, and environmental health. Veterinarians are central to this approach, working across disciplines to prevent and control diseases. Scientific evidence shows that emerging global challenges such as zoonotic diseases, antimicrobial resistance, and food insecurity have reinforced the importance of this integrated framework (Pal *et al.*, 2026). Veterinarians play a crucial role in safeguarding global health by actively monitoring zoonotic diseases, many of which have the potential to spread from animals to humans. Strict biosecurity measures in livestock systems, they help prevent the introduction and spread of infectious agents within and between animal populations. In the event of disease outbreaks, veterinarians are deeply involved in investigation, diagnosis, and control strategies, working alongside public health professionals and researchers. Their contribution also extends to strengthening interdisciplinary health systems under the framework of One Health, where collaboration across human, animal, and environmental health sectors is essential. Thus, veterinarians serve as frontline defenders against emerging and existing global health threats (Van Herten & Meijboom, 2019).

Livestock Sector: Economic and Food Security Role

Livestock is a major pillar of rural economies, and veterinarians play a crucial role in sustaining and enhancing this sector through disease prevention and vaccination, reproductive management, nutritional planning, and overall productivity

improvement. By maintaining animal health and efficiency, they help ensure a steady supply of milk, meat, and other animal products. Healthy livestock directly contributes to improved food security and economic stability, particularly in developing countries where agriculture is a primary source of livelihood. Veterinarians are uniquely positioned to support sustainable food systems by promoting safe, ethical, and efficient animal production practices. Additionally, livestock health is closely linked to human nutrition and household income, highlighting a strong and direct connection between animal health and socio-economic well-being (Kelly *et al.*, 2013).

Wildlife Conservation and Environmental Balance

Veterinarians play a vital role in biodiversity conservation under legal frameworks such as the Wildlife Protection Act, 1972. Their responsibilities include the treatment and rehabilitation of injured or rescued wild animals, continuous disease surveillance in wild populations, and active support in conservation programs, including wildlife translocation and habitat restoration efforts. By monitoring and managing health issues in wildlife, veterinarians help prevent the spread of diseases that could threaten entire species or ecosystems. Since wildlife health is closely linked to ecosystem stability, veterinarians serve as essential custodians of ecological balance, ensuring the sustainability of biodiversity and natural resources (Edwards, 2004).

Animal Welfare and Ethics

Modern veterinary science strongly emphasizes animal welfare as a core ethical and professional responsibility. The emerging concept of One Welfare expands on the principles of One Health by recognizing the close relationship between animal welfare, human well-being, and environmental sustainability. In practice, veterinarians ensure the humane treatment of animals, promote ethical livestock production systems, and carry

out regular welfare assessments and monitoring to minimize stress, pain, and suffering. Research increasingly shows that improvements in animal welfare not only enhance productivity and sustainability but also have positive impacts on human health, livelihoods, and overall societal well-being (Hernandez *et al.*, 2018).

Public Health and Food Safety

Veterinarians play a critical role in protecting public health by ensuring the safety and quality of food derived from animals. They are involved in inspecting meat and other animal products, preventing foodborne diseases through hygiene and monitoring systems, and controlling zoonotic infections that can spread between animals and humans. Additionally, they address the growing challenge of antimicrobial resistance by promoting the responsible use of drugs in livestock. Working within the framework of One Health, their efforts help ensure that food of animal origin is safe, hygienic, and free from harmful residues, thereby safeguarding consumer health and public confidence in the food system (Kelly *et al.*, 2013).

Following table showing the year over year growth of animal husbandry sector that ensure the food security in india.

ITEMS	2023-24	2024-25	Y-o-Y*
Milk Production (million tonnes)	239.30	247.87	3.58
Per Capita Milk (g/day)	471	485	2.97
Egg Production (billion nos.)	142.77	149.11	4.44
Per Capita Egg (numbers per annum)	103	106	2.91
Meat Production (million tonnes)	10.25	10.50	2.46
Per Capita Meat (Kg/Annum)	7.39	7.51	1.62
Wool Production (million kg)	33.69	34.57	2.63

*Y-o-Y: Year on Year Growth (Percentage)

(Source: BAHS 2025 Brochure)

Social Role: Strengthening Rural Communities

In rural areas, veterinarians are key contributors to social development:

- Educating farmers and livestock owners
 - Supporting women and smallholder farmers
 - Providing services during disasters and disease outbreaks
 - Improving livelihoods through better animal management
- Their work enhances community resilience and rural development.

Legislative and Policy Role

Veterinarians are actively involved in implementing and shaping animal-related laws:

Major Legal Frameworks

- Prevention of Cruelty to Animals Act, 1960
- Wildlife Protection Act, 1972

They contribute by:

- Certifying animal fitness for transport and work
- Monitoring welfare compliance
- Advising policymakers
- Supporting enforcement agencies

Veterinarians act as a bridge between scientific knowledge and legal implementation, ensuring ethical and practical governance.

Expanding Role in Research and Innovation

Veterinarians are increasingly involved in advanced and interdisciplinary fields that extend beyond traditional animal care. Their contributions include biomedical and vaccine research, where they play a key role in developing preventive and therapeutic solutions for both animal and human diseases. They are also responsible for ensuring ethical standards and welfare in laboratory animals used for research. With the rise of modern technologies, veterinarians are actively engaged in precision livestock farming, using data-driven tools to monitor animal health and productivity. Additionally, the integration of artificial intelligence in disease diagnosis is enhancing their ability to detect and manage health issues more accurately and efficiently, marking a significant transformation in veterinary science (Shrivastava *et al.*, 2025).

Conclusion

Veterinarians are the unseen force powering a healthier, safer, and more sustainable world, with a role that spans health, economy, environment, law, and ethics, making veterinary science one of the most dynamic and multidisciplinary professions of our time. On World Veterinary Day, it is important to recognize them not just as animal doctors, but

as protectors of public health, champions of animal welfare, drivers of economic growth, and guardians of biodiversity. In an era defined by pandemics, climate change, and food insecurity, veterinarians stand at the frontline of global challenges, proving that their contribution is not only valuable but absolutely indispensable for building a sustainable and healthier future for all.

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