

ONE HEALTH AND ECOSYSTEM SUSTAINABILITY

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INTRODUCTION

The health of humans, animals, and the environment is deeply interconnected. Diseases that affect people often originate in animals, environmental degradation influences food and water security, and climate change alters ecosystems in ways that directly impact public health. In recent decades, scientists, governments, and international organizations have increasingly recognized that health cannot be understood in isolation. This understanding has given rise to the concept of "One Health," an integrated approach that emphasizes collaboration across multiple disciplines to achieve optimal health outcomes for people, animals, plants, and ecosystems. At the same time, the idea of ecosystem sustainability has become central to global development and environmental protection. Ecosystem sustainability refers to the responsible management and conservation of natural systems so they can continue to provide essential services such as clean air, fertile soil, fresh water, climate regulation, and biodiversity. Sustainable ecosystems are necessary for the survival and well-being of all living organisms.

One Health and ecosystem sustainability are closely linked because healthy ecosystems support healthy animals and healthy human populations. When ecosystems are damaged through pollution, deforestation, urbanization, overexploitation of natural resources, and climate change, the balance between humans, animals, and nature is disrupted. This disruption increases the risk of disease outbreaks, food insecurity, biodiversity loss, and environmental crises.

ONE HEALTH CONCEPT

One Health is a collaborative, multidisciplinary, and transdisciplinary

approach that recognizes the interconnectedness of human, animal, and environmental health. It involves experts from medicine, veterinary science, environmental science, public health, agriculture, ecology, sociology, and policymaking working together to prevent and control diseases and promote overall well-being. The One Health approach is based on the understanding that human health depends on healthy ecosystems, animals can transmit diseases to humans, environmental changes influence disease patterns, and sustainable use of natural resources is essential for long-term health.

ECOSYSTEM SUSTAINABILITY

An ecosystem is a community of living organisms interacting with one another and with their physical environment. Ecosystems include forests, wetlands, rivers, oceans, grasslands, deserts, and agricultural systems. Ecosystem sustainability means maintaining the balance and functioning of these natural systems so they can continue supporting life over time. Sustainable ecosystems provide food, water, medicine, climate regulation, soil fertility, and cultural benefits. Healthy ecosystems also reduce disease transmission, protect biodiversity, and strengthen resilience against climate change.

RELATIONSHIP BETWEEN ONE HEALTH AND ECOSYSTEM SUSTAINABILITY

One Health and ecosystem sustainability are interdependent concepts. Healthy ecosystems create conditions that support healthy humans and animals, while unsustainable practices increase environmental and health risks. Biodiversity plays an important role in maintaining

ecological balance and reducing disease transmission. Climate change contributes to the spread of vector-borne diseases, food insecurity, water scarcity, and environmental disasters. Sustainable agriculture and responsible water management are important for ensuring both ecosystem sustainability and public health.

MAJOR THREATS

Major threats to ecosystem sustainability include deforestation, pollution, climate change, biodiversity loss, rapid urbanization, industrialization, and antimicrobial resistance. These challenges affect ecosystems, wildlife, and human populations worldwide.

ROLE OF GOVERNMENTS AND COMMUNITIES

Governments and international organizations play a key role in implementing environmental policies, promoting sustainable development, supporting research, and strengthening public health systems. Local communities and indigenous groups also contribute valuable knowledge about ecosystem conservation and sustainable resource management.

STRATEGIES FOR SUSTAINABILITY

Strategies for achieving One Health and ecosystem sustainability include biodiversity conservation, sustainable agriculture, renewable energy use, pollution control, disease surveillance, environmental education, and global cooperation.

CONCLUSION

One Health and ecosystem sustainability are essential for the survival and prosperity of humanity and the planet. Human health cannot be separated from the health of animals and ecosystems. Environmental degradation, climate change, and biodiversity loss increase global health risks and threaten sustainable development.

The One Health approach provides an effective framework for addressing interconnected environmental and health challenges through collaboration and sustainable practices. Protecting ecosystems is therefore both an environmental responsibility and a public health priority. By promoting conservation, sustainable development, and global cooperation, societies can build a healthier, safer, and more resilient future for present and future generations.

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