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Advantage of Biodiversity to Human Health: A Descriptive Research

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Abstract: *Biodiversity underpins all life on Earth, and refers to biological variety in all its forms, from the genetic make-up of plants and animals to cultural diversity. Along with us, many animals also live on the earth on which we live. From micro-organisms to leeches, from tiny plants to giant banyan trees, from rats, squirrels to elephants and hippopotamuses to small fish to the big blue whale, all live together on Earth. The main objective of the study was to describe and analyze current situations, beliefs, ideologies, and attitudes about the advantages for Human health of bio-diversity. Several studies show that there are many things for which we depend on biodiversity and we need to conserve it. Take for example agriculture is incredibly dependent on invertebrates, they help maintain soil health, while many fruits, nuts, and vegetables are pollinated by insects. Additionally, the biological diversity of microorganisms, flora, and fauna provides extensive benefits for biological, health, and pharmacological sciences. Significant medical and pharmacological discoveries are made through a greater understanding of the earth's biodiversity.*

Keywords: Bio-diversity; diversity; diversity and human; biodiversity; human health; environment.

I. INTRODUCTION

Biodiversity is a combination of life and diversity that generally refers to the diversity and variability of life on Earth. According to the United Nations Environment Program (UNEP), biodiversity typically measures the genetic, species, and level of ecosystem diversity. Biodiversity refers to the health of a biological system (Adebayo, 2019). Life on Earth today exists in the form of millions of distinct biological species. The year 2010 has been declared the International Year of Biodiversity, "Biodiversity is a natural resource that meets all our needs of life."There are three types of biodiversity. (i) genetic diversity, (ii) species diversity; and (iii) ecosystem diversity. The genetic variation found in species is known as genetic diversity (Morand & Lajaunie, 2018).

According to the National Biodiversity Authority, India is one of the 17 most biodiverse countries in the world. 7-8 percent of the world's species live in India. So far, more than 46,000 plants and 81,000 species of animals have been recorded in the country by the Botanical Survey of India and the Zoological Survey of India (Vattakaven, et al., 2016). India is an acknowledged center of crop diversity and has hundreds of millions of microbial diversity, insects, and other species in addition to many wild animals and domestic animals, and fish breeds. India's ecosystem diversity is also unique compared to other countries of the world (Nulkar et al., 2021).

Healthy communities rely on well-functioning ecosystems (Kumar & Gautam, 2019). They provide clean air, fresh-water, medicines, and food security (Morand & Lajaunie, 2018). They also limit disease and stabilize the climate. But biodiversity loss is happening at unprecedented rates, impacting human health worldwide, according to a state of knowledge article published by the Convention on Biological Diversity (CBD) and the World Health Organization (WHO).

The study synthesizes the available information on the most important inter-linkages between biodiversity, ecosystem stability, and epidemic infectious diseases such as the Ebola virus; and the connection between biodiversity, nutritional diversity, and health (Agnihotri, 2018). It also covers the potential benefits of closer partnerships between

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conservation and health, from improved surveillance of infectious diseases in wildlife and human populations to promoting access to green spaces to promote physical activity and mental health. It also highlights the many areas in which further research is needed (Cianfagna et al., 2021).

The descriptive study hopes to provide a useful reference for the to describe and analyzing current situations, beliefs, ideologies, and attitudes about the advantages for Human health of bio-diversity. The study represents a unique opportunity to promote integrated approaches to biodiversity and health by highlighting that biodiversity contributes to human well-being, and highlighting that biodiversity needs protection for development to be sustainable (Kumar & Gautam, 2021).

II. METHODOLOGY

This is a descriptive study, that describes and analyzes current situations, beliefs, ideologies, and attitudes about the advantages for Human health of bio-diversity. The descriptive researcher not only collects the facts related to the problem but also tries to find the relationship between the various variables related to the problem (Aggarwal & Ranganathan, 2019).

III. RESULTS

Biodiversity plays an important role in environmental protection along with fulfilling the needs of our food, clothing, medicine, fuel, etc. Biodiversity helps in maintaining ecological balance (Aerts, 2018). Apart from this, it provides relief from natural calamities like floods, drought, etc. People depend on biodiversity in their daily lives, in ways that are not always apparent or appreciated. Human health ultimately depends upon ecosystem products and services (such as the availability of freshwater, food, and fuel sources) which are requisite for good human health and productive livelihoods (Bhujun et al., 2017). Biodiversity loss can have significant direct human health impacts if ecosystem services are no longer adequate to meet social needs. Indirectly, changes in ecosystem services affect livelihoods, income, and local migration and, on occasion, may even cause or exacerbate political conflict (Kumar et al., 2022).

3.1 Threats to Biodiversity and Health

There is growing concern about the health consequences of biodiversity loss. Biodiversity changes affect ecosystem functioning and significant disruptions of ecosystems can result in life-sustaining ecosystem goods and services. Biodiversity loss also means losing, before discovery, many of nature's chemicals and genes, of the kind that has already provided humankind with enormous health benefits (Morand et al., 2019).

Although we may not be able to save the extinct species with their lockup potential, we may at least be able to wrestle the endangered & threatened species from similar extinction (Kilpatrick, et al., 2017). Humanity needs to live a life accommodative of other species to promote healthy and robust dynamism among species, thereby sustaining healthy lives for ourselves and healthy interactions with the ecosystems (Kumar and Gautam, 2022). The ultimate goal, therefore, will be to halt the rate of biodiversity loss and ensure a stable ecosystem as soon as possible (Cianfagna et al., 2021).

3.2 Nutritional Impact of Biodiversity

Biodiversity plays a crucial role in human nutrition through its influence on world food production, as it ensures the sustainable productivity of soils and provides the genetic resources for all crops, livestock, and marine species harvested for food (Belgacem et al., 2021). Access to the sufficiency of a nutritious variety of food is a fundamental determinant of health (Kumar et al., 2019).

Nutrition and biodiversity are linked at many levels: the ecosystem, with food production as an ecosystem service; the species in the ecosystem, and the genetic diversity within species (Lachat et al., 2018). The nutritional composition between foods and among varieties/cultivars/breeds of the same food can differ dramatically, affecting micronutrient

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availability in the diet (Agnihotri, 2022). Healthy local diets, with adequate average levels of nutrients intake, necessitate the maintenance of high biodiversity levels (Jones, 2017).

Intensified and enhanced food production through irrigation, use of fertilizer, plant protection (pesticides), or the introduction of crop varieties and cropping patterns affect biodiversity, and thus impact global nutritional status and human health (Agnihotri, 2019). Habitat simplification, species loss, and species succession often enhance communities' vulnerabilities as a function of environmental receptivity to ill health (Bernhardt et al., 2021).

Food production is being affected, thereby endangering the nutritional status of the world population, especially in regions where the poorest habit. The economic activities of natural pollinators, e.g. bees which aids our plants to fruits are estimated at approximately $550billion. The aquatic species are being depleted. Fisheries currently provide 16% of the global protein source. The wild flora and fauna could mean alternative access to the nutritious source of the aforementioned is being wiped out (Saaka et al., 2021; Agnihotri et al., 2020).

A. Importance of Biodiversity for Health Research and Traditional Medicine

Traditional medicine continues to play an essential role in health care, especially in primary health care. Traditional medicines are estimated to be used by 60% of the world's population and in some countries are extensively incorporated into the public health system (Yuan, 2016). Medicinal plant use is the most common medication tool in traditional medicine and complementary medicine worldwide (Agnihotri, 2020). Medicinal plants are supplied through collection from wild populations and cultivation. Many communities rely on natural products collected from ecosystems for medicinal and cultural purposes, in addition to food (Stanford et al., 2022).

Although synthetic medicines are available for many purposes, the global need and demand for natural products persist for use as medicinal products and biomedical research that relies on plants, animals, and microbes to understand human physiology and to understand and treat human diseases (Adebayo, 2019).

B. Infectious Diseases

Human activities are disturbing both the structure and functions of ecosystems and altering native biodiversity (Cianfagna et al., 2021). Such disturbances reduce the abundance of some organisms, cause population growth in others, modify the interactions among organisms, and alter the interactions between organisms and their physical and chemical environments. Patterns of infectious diseases are sensitive to these disturbances. Major processes affecting infectious disease reservoirs and transmission include deforestation; land-use change; water management e.g. through dam construction, irrigation, uncontrolled urbanization, or urban sprawl; resistance to pesticide chemicals used to control certain disease vectors; climate variability and change; migration and international travel and trade; and the accidental or intentional human introduction of pathogens (Young, 2017).

Infectious diseases cause over one billion human infections per year, with millions of deaths each year globally. Extensive health and financial burden are seen from both established and emerging infectious diseases. Infectious diseases also affect plants and animals, which may pose threats to agriculture and water supplies with additional impacts on human health (Morand, 2020). This Question and Answers, prepared by the WHO and CBD Secretariat under their joint work program on biodiversity and health, and launched on the occasion of the International Day for Biodiversity 2020, summarizes some of the interlinkages between biodiversity and infectious diseases.WHO is continuously monitoring and responding to the COVID 19 outbreak. This Q & A will be updated as more is known about COVID-19, how it is affecting people worldwide, and the effectiveness of interventions against the disease (Agnihotri et al., 2021).

3.3 Climate Change, Biodiversity, and Health

Biodiversity provides numerous ecosystem services that are crucial to human well-being at present and in the future. Climate is an integral part of ecosystem functioning and human health is impacted directly and indirectly by the results of climatic conditions on terrestrial and marine ecosystems (Tangcharoensathien et al., 2022). Marine biodiversity is

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affected by ocean acidification related to levels of carbon in the atmosphere. Terrestrial biodiversity is influenced by climate variabilities, such as extreme weather events (ie drought, flooding) that directly influence ecosystem health and the productivity and availability of ecosystem goods and services for human use (Yong, 2017). Longer-term climate changes affect the viability and health of ecosystems, influencing shifts in the distribution of plants, pathogens, animals, and even human settlements (Williams, 2021).

IV. CONCLUSION

Biodiversity provides many goods and services essential to life on earth. The management of natural resources can determine the baseline health status of a community. Environmental stewardship can contribute to secure livelihoods and improve the resilience of communities. The loss of these resources can create the conditions responsible for morbidity or mortality. Biodiversity supports human and societal needs, including food and nutrition security, energy, the development of medicines and pharmaceuticals, and freshwater, which together underpin good health. It also supports economic opportunities and leisure activities that contribute to overall wellbeing. Land-use change, pollution, poor water quality, chemical and waste contamination, climate change, and other causes of ecosystem degradation all contribute to biodiversity loss and, can pose considerable threats to human health. Human health and well-being are influenced by the health of local plant and animal communities, and the integrity of the local ecosystems that they form. Infectious diseases cause over one billion human infections per year, with millions of deaths each year globally. Approximately two-thirds of known human infectious diseases are shared with animals, and the majority of recently emerging diseases are associated with wildlife.

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