



The Factors Influencing Disease Transmission

Jijun Gao*

Department of Earth and Environmental Sciences, Bahria University, Islamabad, Pakistan

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Description

A branch of ecology known as disease ecology studies the dynamics between hosts and pathogens, particularly those that result in infectious diseases. It investigates, for instance, how parasites affect and spread throughout wildlife populations and communities. In order to better understand how changes in our environment can affect the movement of viruses and other diseases, scientists are examining the spread of diseases within the natural environment. Hence, illness ecology aims to comprehend the connections between ecological processes and the evolution of diseases. Infectious diseases are re-emerging and developing at previously unheard-of rates, which might have long-term effects on human health, ecosystem health, and biodiversity.

Factors affecting spread of diseases

There are parasitic illnesses and other transmissible diseases in wildlife that can have serious health impacts on some people and populations. Disease ecology is crucial to conservation ecology because of ongoing host-parasite interactions.

Ecological factors

Population size, density, and composition are ecological characteristics that can affect the persistence and spread of diseases. In the context of host-parasite interactions, host population size is significant because the spread of illnesses requires a host population large enough to support parasitic interactions. The method that parasites and diseases spread among individuals will also depend on the general health of the community (and the number of weaker population members). The density of prospective hosts can also be affected by the dynamics of competition and predation in the ecosystem, which can either promote or inhibit the spread of illnesses.

Predator-prey interactions

When a parasite weakens an animal, it can occasionally make it simpler for a predator species to catch it. Some-

times, despite carrying a parasite, predators would prefer preying on sick or infected prey due to the chance weak prey presents. Without a predator species, the prey species would probably grow to unmanageable numbers, which would hasten the spread of infections among the prey population. Due to limited predation, the number of available hosts grew when the infected people were not eliminated. Yet, there are also circumstances when a virus that was previously dormant can be disturbed by predator feeding, causing an outbreak that otherwise would not have happened. Certain parasites can survive when their host species is eaten, which allows the parasite to spread through the predator's faeces and contribute to the spread of illness."

Parasitism

In disease ecology, parasitism is significant because, as disease carriers, it can influence how a variety of ecosystems operate. The timing of events, biogeochemical cycles, and even the flow of energy in a habitat can all be affected by these disorders. When species' population growth and reproduction are restricted by parasites, the ecosystem's balance may change. Through the cycles of nutrients, parasites also have an impact on systems. Through their interaction with a host and the host's nutrition, parasites can alter the balance of the elements in a system.

Biological factors

The level of the individual within the population is one set of biological criteria that can affect a disease's propensity to persist (one single organism). Disease transmission has been discovered to frequently involve sex differences. For instance, male American minks grow bigger and travel farther, which increases their risk of contracting illnesses and parasites. The age of the host species may also have an impact on how quickly illnesses spread. Younger members of groups are more vulnerable to parasite illnesses because they have not yet developed herd immunity.