REVIEW
Ecological Epidemiology: A Perspective From One Health

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Abstract. *Ecological epidemiology is a distinct branch of the science of epidemiology that focuses on the complex interactions between environmental factors and population health. Instead of examining individuals in isolation, ecological epidemiology analyzes entire groups and the relationships among biological, social, and environmental factors. Its main concern is identifying the influence of the environment on the distribution of diseases within communities. In this review, we aim to analyze the main aspects of ecological epidemiology, covering everything from definition and methods to practical applications and specific challenges.*

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Introduction

Ecological epidemiology focuses on studying environmental factors and how they influence the distribution of diseases within populations. This approach is distinctive in that it does not analyze individuals in isolation but instead focuses on entire groups and the complex interactions among biological, social, and environmental factors [1].

The importance of ecological epidemiology lies in its ability to provide a holistic perspective on population health. By understanding the relationships between environmental factors and specific diseases, researchers can develop more effective prevention and intervention strategies [1,2].

I.   Study Methods in Ecological Epidemiology

Ecological epidemiological studies often involve analysing data collected at the group or community level. Common methods include correlation studies, spatial data analysis, and the use of mathematical models to assess the impact of environmental factors on population health [2].

Correlation studies examine the statistical association between environmental factors and disease rates within a population. Spatial data analysis uses geographic information to identify spatial patterns of diseases and environmental factors [3]. Mathematical modeling provides a way to simulate complex interactions between different factors and forecast the progression of diseases based on environmental changes [3].

II.   Practical Applications of Ecological Epidemiology

Ecological epidemiology has made significant contributions in various fields. In public health, it has been crucial to identify environmental factors involved in the onset and spread of diseases. For instance, ecological studies have been used to highlight