

Research in Surgery

Understanding Prevalence and Its Calculation

Translation and Summary by: Dr. Seyed Abbas Mirmalek*

Abstract:

Prevalence refers to the total number of existing cases of a specific disease within a defined population during a specified period. This measure includes both previously existing and newly diagnosed cases.^{1,3,5-7}

Introduction

For instance, when quantifying the diagnosed cases of stomach cancer within a specified timeframe, one measures the prevalence of stomach cancer in that population. By dividing the total number of cases by the size of the population, it is possible to calculate the percentage prevalence of stomach cancer.^{1-3,5,7}

Calculation of Prevalence: Prevalence is calculated by dividing the total number of disease cases by the total population under consideration.

Types of Prevalence

a. Point Prevalence: This term refers to the number of existing cases at a specific point in time. For example, the Ministry of Health may announce that there are currently N cases of stomach cancer in the country.^{3,5,8}

b. Period Prevalence: In contrast, period prevalence refers to the total number of existing cases during a specified timeframe. For instance, the Ministry of Health might report that there were N cases of stomach cancer over the past year.^{3,5,8}

In situations where both incidence rates and population remain stable, without any migration, prevalence can be estimated by multiplying the incidence rate by the duration of the disease.

* Assistant Professor of General Surgery, Islamic Azad University of Medical Sciences, Tehran Branch

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Corresponding Author: Dr. Seyed Abbas Mirmalek

Tel: 88787561

E-mail: amirmalek@iautmu.ac.ir
mirmalek34@gmail.com

However, it is imperative to account for confounding variables and biases in this calculation. For instance, when comparing the prevalence of HIV infection between a developed and a developing nation, the figures may appear similar. Nonetheless, one cannot conclude that the disease burden is equivalent in both countries. The observed discrepancy likely arises not from identical incidence rates but rather from differences in life expectancy. In the developed country, even the limited number of HIV cases tend to have a life expectancy comparable to that of healthy individuals, attributable to advanced public health measures, resulting in a higher estimated prevalence. Conversely, in the developing country, the elevated prevalence is less influenced by disease duration, as many patients may succumb at an earlier stage; here, the increase in prevalence is predominantly a consequence of new cases.¹⁻⁸

The computation of prevalence is essential for elucidating the overall burden of a disease within a population, assessing public health needs, and determining the resources required for effective disease management across diverse communities or over time.^{3,6,9}

Distinguishing Between Incidence and Prevalence

Prevalence refers to the total number of existing cases of a disease at a specific point in time, whereas incidence indicates the rate at which new cases occur.

Prevalence is significantly influenced by the duration of a disease; for instance, if a disease is chronic, its prevalence may increase even when incidence is low.

Conversely, incidence is critical for examining risk factors and the underlying causes of diseases, as it provides insight into how many individuals are at risk and under what conditions.

For example, a chronic disease with an extended duration, such as hypertension, may demonstrate a high prevalence despite a low incidence rate.

In contrast, an acute disease characterized by a short duration and high incidence, such as acute coronary ischemia, may have a low prevalence, often due to the high mortality rates associated with the condition.^{3,4,6,9}

References:

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