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An overview of genetic epidemiology and its historical phenomena

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DESCRIPTION

Genetic Epidemiology

The study of underlying genetic factors that determine health and illness in community members and populations, as well as the interaction of such genetic factors with environmental factors is known as genetic epidemiology. The main objective of genetic epidemiology is to develop a statistical and quantitative analysis of how genetics work in large groups. The study of how genetic factors and environmental factors influence human attributes, as well as human health and disease is known as genetic epidemiology. Genetic epidemiology began from genetic studies, especially human quantitative genetics of epidemiological data contributing conceptual and methodological achievements.

Historical Developments

Historically, the field of genetic epidemiology has its own roots in areas of medicine concerned with illness causes and hereditary factors. Prior to the 1950's, before the field was formally established, scientists who might be referred to as each epidemiologist were attempting to decode the relationship between nature (genetics) and nurture (environment) in human disease. These activities characterized with those of the effect on students of medical genetics and genetic counseling. The founder decided to focus on clinical and descriptive aspects of illness with potential genetic involvement, whereas the latter provided genetic counseling based on what available at the time about a certain disease's genetic characteristics. Initial therapists of genetic epidemiology, on the other hand, appearing for associations between chronic conditions, such as stomach ulcers and blood group genetic traits.

Newton Morton is one of the field's founding members, described genetic epidemiology as "a science dealing with the etiology, transmission, and control of illness in groups of families also with inherited causes of disease in populations". It is closely related to both molecular epidemiology and statistical genetics, but these interconnected fields each have distinct emphases, and social systems. Genetic research investigates the roles of genetic information or groups of genes in health and disease. Identifying genetic factors and genetic disorders is essential for learning about more health promoting and preventing disease.

Approaches in Genetic Epidemiology

In genetic epidemiology various approaches are used, such as population-based techniques, case-control studies, and prevalence studies. For example, population-based approaches can be used to collect data on clinical characteristics and outcomes in patients with specific illnesses and disorders.

Contributions to Public Health

The field of genetic epidemiology has made major contributions to medicine and public health. The use of newborn screening to detect inherited disorders in children is another example. In the United States, a clinical intervention study on sickle cell disease conducted in the 1980's made it possible for the expansion of screening programs to include the disease in the strategies of more states.

Example of Genetic Epidemiology

Genetic epidemiology can be used to identify risk factors for germ-line and somatic cell mutations. Various epidemiologic studies of risk factors for trisomy 21 (Down syndrome), the most common form of aneuploidy present at childhood, are prominent examples.