

Basic epidemiological characteristics

The following article discusses characteristics that are **applied in epidemiological studies**. These are **characteristics of person, place, and time**.

Characteristics of the person: the question WHO?

Epidemiological characterization is primarily interested in the following epidemiological traits of the persons studied:

- age;
- sex;
- education;
- marital status;
- occupation;
- ethnic group;
- nutritional status;
- socio-economic status;
- personal history, family history.

The relationship between morbidity and age can be expressed using a **simple age curve** (capturing all residents of different age groups at 1 point in time) or a **cohort curve** (showing indicators for groups of people born at the same time and followed repeatedly in subsequent calendar periods - cohorts are important if morbidity changes over time). Some diseases are specific to certain age groups, e.g. **'newborn'** - congenital defects, perinatal infections. In **'children'** there are childhood exanthem diseases, rotavirus infections, in **'young adults'** we often encounter STD infections, drug addictions, but also Multiple Sclerosis, Crohn's Disease is also common. The **elderly** have a higher incidence of cardiovascular and cancer diseases, nosocomial infections and degenerative diseases.

For a number of diseases, we find gender differences. For example, cardiovascular disorders, lung cancer, atherosclerosis and ulcer disease have a higher **prevalence in men**. In **women**, on the other hand, cholecystitis, diabetes mellitus, thyrotoxicosis, obesity and psychoneurosis are more common. **Ethnicity** also plays a role. Blacks are more likely to suffer from sickle cell anaemia, whites from multiple sclerosis, and Eskimos from lip cancer. **Lower social classes'** have a higher incidence of STDs and cervical cancer. This is probably due to increased promiscuity and reduced awareness among these groups of people. Loneliness, or single status and widowhood, are elevatedly associated with rates of psychological disorders such as depression, and with the incidence of suicide-

Characteristics of the place: the question WHERE?

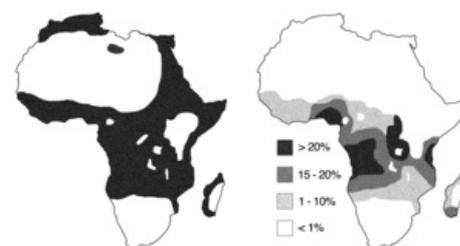
Disease prevalence will also vary by natural conditions, social, and environmental characteristics. As for **natural conditions**, epidemiology studies the so-called **geographical factor**, i.e. at what **altitude'** a given disease occurs (e.g. polyglobulosis is more common at high altitudes), in what **climate'** (temperature and humidity, which is crucial for e.g. infection carriers), and under the influence of what **chemical and physical factors**. The **social conditions** studied include lifestyle, the presence of pollutants in the lifestyle, the population density of the area, etc. *For example: cirrhosis of the liver in France, together with the French paradox of high wine consumption*, The **size of the study area** and the **characteristics of the environment** (is there a difference between urban and rural, isolation or overpopulation) also have an impact on the incidence of diseases.

The **Prevalence-of-place factor** is indicated when **all** ethnic groups living in a given place **contract the same disease'** and an ethnically mixed population of another area has both a low incidence and prevalence of the indicator.

Cartogram is a map showing the location of the disease of interest.

Characteristics of time: the question WHEN?

According to the time course and temporal evolution of the disease, we can distinguish the so called **secular evolution** (trends), where there is a long-term tendency of changes - changes occur slowly and continuously in one direction; and **ongoing changes** (curve of steady rise or steady decline, or stationary curves), **periodic changes** (daily, weekly, seasonal, annual, long-term,...) and **irregular changes**. An *explosive epidemic* is one in which an agent of high infectivity, a toxic chemical, is involved.^[1]



Incidence of malaria (left) and incidence of sickle-cell anemia (right)

References

1. TIMMRECK, Thomas C.. *An Introduction to Epidemiology*. 3. edition. Sudbury : John and Bartlett Publishers, 2002. pp. 205-210. ISBN 0763700606.
2. BENCKO, Vladimír, et al. *Epidemiologie, výukové texty pro studenty 1. LF UK, Praha*. 2. edition. Praha : Univerzita Karlova v Praze – Nakladatelství Karolinum, 2002. pp. 16-24. ISBN 80-246-0383-7.
 1. BENCKO,, et al. *Epidemiology, teaching texts for students of the 1st Faculty of Medicine, Prague*. 2. edition. Prague : Charles University in Prague - Karolinum Publishing House, 2002. pp. 16-24. ISBN 80-246-0383-7.
 2. BENCKO, Vladimír, et al. *Epidemiologie, výukové texty pro studenty 1. LF UK, Praha*. 2. edition. Univerzita Karlova v Praze – Nakladatelství Karolinum, 2002. pp. 16-24. ISBN 80-246-0383-7.