Community 432 Medicine

5 Health Indicators

Objectives

1. Understand the concept of health indicators.
2. Understand uses of health indicators.
3. Classify types of indicators and give examples.
4. Define some important indicators relevant to development and research in public health.

Note: Please don't forget to go through the main lecture.

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What is health indicator?

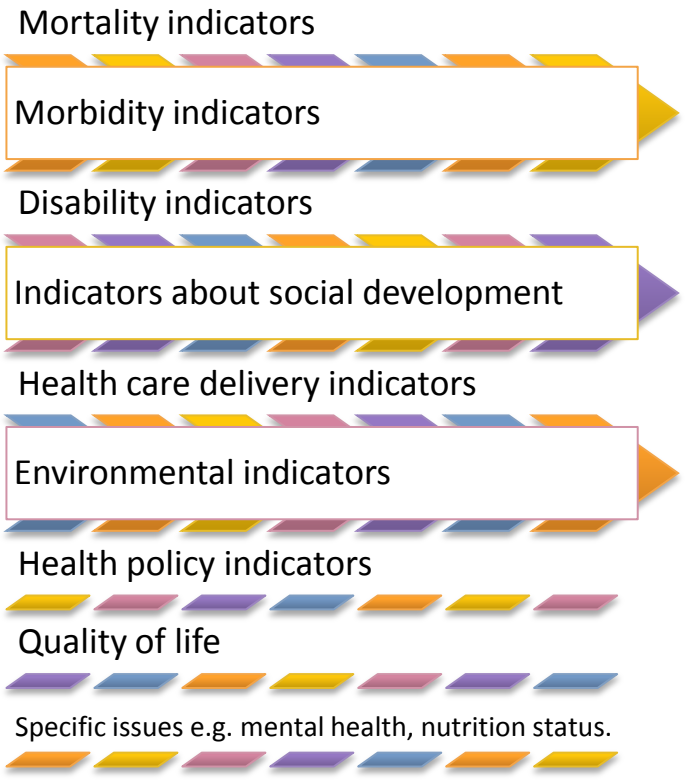
Definition: Health indicators are variables that reflect **the state of health** of persons in a community. (Oxford Dictionary of Epidemiology)

They inform about **the quality of health care,** and **access of health care,** and they are considered as **quantitative measures.**

Health indicators could be used to:

1. Assess the health care needs.
2. Compare health status of different areas or groups of people over time, one country with other countries or worldwide.
3. Contribute towards planning proper allocation of human and non-human resources by identifying the needs.
4. Monitoring and evaluation of health services, activities and programs-access, quality, effectiveness and equality.

Types of health indicators:



Types of health indicators

1. Mortality rates

Mortality rate is a measure to the frequency of occurrence of death in a defined population during a specified period of time.

$$Mortality\ rate = \frac{deaths\ occurring\ during\ a\ given\ time\ period}{size\ of\ the\ population\ among\ which\ the\ deaths\ occurred} \times 10^{n}$$

2. Crude Death Rate (CDR)

It is the mortality rate from **all causes of death** for an entire population.

$$Crude\ Death\ Rate = \frac{Total\ number\ of\ deaths\ in\ a\ certain\ year\ and\ locality}{Estimated\ mid-year\ population\ (Same\ year\ and\ locality)} X\ 1000$$

Mid-year population: The use of the population size at the **midpoint** of the time interval is as an estimate of the average population is important especially if a dominator population is **growing or shrinking** during the period of time for which a rate is to be computed. **(1st of July)**

3. Age-Specific Mortality Rates

A mortality rate limited to a particular age group.

Examples: Neonatal, infant and under 5-years mortality rates.

$$\text{Age specific death rate} = \frac{\text{Number of persons dying in a certain age and a certain year and area}}{\text{Total number in the same age group in the same year and same area}} x 1000$$

A. Infant Mortality Rate (per 1000 live births)

It is the probability of child born in a specific year or period dying before reaching the age of one.

$$\text{Infant mortality rate} = \frac{\text{Total number of deaths from zero up to less than one year during a year and in a given locality}}{\text{Total number of live births in the same year and locality}} x\,1000$$

B. Neonatal Mortality Rate (per 1000 live births)

The number of deaths of neonates **(infants < 28 days of age)** in a calendar year, divided by number of live births in that year, multiplied by 1000.

$$\text{Neonatal mortality rate} = \frac{\text{Total number of deaths from zero up to less than 28 days during a year and in a given locality}}{\text{Total number of live births in the same year and locality}} x\,1000$$

C. Post-Neonatal Mortality Rate (per 1000 live births)

The number of deaths among infants from **28 days up to 1 year of age** during a given time period by the number of live births during the same time period multiplied by 1000.

$$\text{Post - Neonatal mortality rate} = \frac{\text{Total number of deaths from 28 days up to less than one year during a year and in a given locality}}{\text{Total number of live births in the same year and locality}} x\,1000$$

D. Stillbirth Rate (per 1000 **total** births)

Stillbirths are defined as **third trimester fetal deaths (more than or equal to 1000 grams or more than or equal to 28 weeks).**

Total births: the sum of live births and stillbirths.

$$\text{Still birth rate} = \frac{\text{Number of still births during a year and in a given locality}}{\text{Total births (live births + still births) in the same year and locality}} x\,1000$$

E. Stillbirth ratio (per 1000 live births)

It is the number of fetal deaths of **28 weeks of gestation or more** in certain year and locality per 1000 live births.

$$\text{Still birth ratio} = \frac{\text{Number of fetal deaths of 28 weeks of gestation or more in a year and in a given locality}}{\text{Number of live births in the same year and locality}} x\,1000$$

F. Perinatal Mortality Rate (per 1000 **total** births)

It is the sum number of **stillbirths and early neonatal deaths (less than 7 days of life)** per 1000 total births (stillbirths + live births).

It is the best indicator of maternal and child health services.

$$\text{Perinatal M.R.} = \frac{\text{No.of stillbirths} + \text{No.of early neonatal deaths in certain year and locality}}{\text{Total births (Still and livebirths) in the same year and locality}} X1000$$

G. Under-5 Mortality Rate (per 1000 live births)

It is the probability of a child **born in a specific year or period dying before reaching the age of five.**

$$\text{The under 5-years mortality rate} = \frac{\text{Total number of deaths among children under 5-years of age during a year and in a given locality}}{\text{Total number of live births in the same year and locality}} x\ 1000$$

4. Adult Mortality Rate (per 1000 population)

It is the probability that a **15-year-old person** will die before reaching **his/her 60th birthday.**

$$\text{Adult mortality rate} = \frac{\text{Number of persons dying between 15-60 in a certain year and area}}{\text{Total number of population between 15-60 in the same year and same area}} x\ 1000$$

5. Maternal Mortality Ratio (per 100,000 live births)

It is the number of maternal deaths per 100,000 live births during a specified time period usually 1 year.

$$\text{Maternal mortality ratio} = \frac{\text{Number of Maternal deaths asigned to causes related to pregnancy in a given year and locality}}{\text{Number of live births in the same year and locality}} X\ 100{,}000$$

Maternal death: is the death of a woman while pregnant or within **42 days** after termination of pregnancy, **irrespective of the duration and site of the pregnancy**, from any cause related to or aggravated by the pregnancy or its management, but **not from accidental or incidental causes.**

6. Cause-Specific Mortality Rate

It is the number of deaths attributed to **a specific cause** divided by the population at the midpoint of the time period **multiplied by 100,000.**

$$= \frac{Deaths\ of\ a\ specific\ cause\ in\ a\ given\ year\ and\ locality}{Estimated\ mid-year\ population\ in\ same\ year\ and\ locality} X\ 100{,}000$$

7. Proportionate Mortality Ratio

It is the number of deaths assigned to a specific cause in a calendar year, divided by total number of deaths in that year, the quotient **multiplied by 100.**

$$Proportionate\ mortality = \frac{Deaths\ due\ to\ a\ particular\ cause}{Deaths\ from\ all\ causes} \times 100$$

8. Case Fatality Rate (death to case ratio)

Reflects the severity and virulence of diseases.

$$\text{Case fatality rate} = \frac{\text{Total number of deaths from a certain disease in a year and in a given locality}}{\text{Total number of cases having the same disease in the same year and locality}} x100$$

Quality of Life Indicators

These indicators measure how long the individual will live and the high quality of life during this period.

Scales measure the health related quality of life of the individual:

- ✓ Looking after physical health.
- ✓ Eating a balanced diet.
- ✓ Freedom from anxiety.
- ✓ Access to community places.
- ✓ Percent of people with self perceived good health.
- ✓ Percent of people with access to leisure.
- ✓ Frequency of meeting socially with friends, relatives and work colleagues.

Examples of Other health related Indicators

Disability indicators	• Overall disability prevalence. • Prevalence of specific disabilities i.e. vision, hearing or mental.
Indicators about socio-demographic	• Precent of people in poverty. • Percent of people with primary, secondary or tertiary level of education. • Indicators about employment, housing, population growth rate, etc.
Healthcare delivery indicators	• Pregnant women receiving ANC. • The percentage of children ages 12-23 months who received vaccinations. • Births attended by skilled bith attendants.
Enviromnemtal indicatiors	• Outdoor air pollutants such as CO. • Lead SO2 concentration in the ambient air. • Access to basic sanitation, safe and reliable supply of drinking water.
Health policy	• Public health spending by the government. • Social health insurance. • Out of pocket health expenses.
Reproductive health	• Contraceptive prevalence rate as precentage of couples who practicing ant form of contraception. • Measured for married women ages 15-49.
Nutrition	• Prevalence of child malnutrition (weight for age) as precentage of children under age 5 whose weight for age is more than two standard deviations below the median for the international reference population.