(4) Infant Mortality Rate

Infant mortality rates serve as one of the best indices to the general "healthiness" of a society. It is similar to age-specific death rate for infants under 1 year of age. It is defined as;

$$\text{Infant Mortality Rate} = \frac{\text{No. of deaths under 1 yr of age during a year}}{\text{No. of live births during the same yr}} \times 1,0$$

The rate approximately measure for a given year the chances of a birth failing to survive one year of life. The rate can be calculated for for males and females separately.

The infant mortality rate varies considerably according to time and place. In countries with high standards of maternal and infant welfare it is as low as 15 to 20 per 1,000 but in some underdeveloped countries it is still well over 100 per 1,000. The male rate is appreciably high than the female rate.

The infant mortality rate is of great value of public health and its correct computation and interpretation is important.

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(5) Neo-Natal Mortality Rate: The neo-natal mortality rate, like the infant mortality rate, is similar to an age-specific rate. It is a rate used to measure the risk of death during the first month of life. This rate is defined as:

$$\text{Annual Neo-Natal Mortality Rate} = \frac{\text{Annual deaths of infants under the age of 1 month}}{\text{No. of live births during the same year}} \times 1{,}000$$

The rate measures for a given year the chance of a birth failure to survive one month of life. Most infant deaths occur within the first month of life. Of the neo-natal deaths more occur within the first week of life.

(6) Maternal Mortality Rate: The risk of dying from causes associated with child-birth is measured by the maternal mortality rate. For this purpose, the deaths used in the numerator are those arising from puerperal causes i.e deliveries and complications of pregnancy, child-birth and the puerperium.

Maternal Mortality Rate is defined as:

$$\text{Maternal Mortality Rate} = \frac{\text{No. of deaths from puerperal causes}}{\text{No. of live births during the same year}} \times 1{,}000$$

The classification and coding of deaths as puerperal deaths vary from one country to another or even within the same country.

Reproduction Rates

For measuring the rate of growth of population we calculate the reproduction rates. Reproduction rates are of two types:

(1) Gross Reproduction Rate and

(2) Net Reproduction Rate

(1) Gross Reproduction Rate (GRR):- GRR is the average no. of daughters a woman would have if she survived all of her child-bearing years which is roughly to the age 45, subject to the age-specific fertility rate and sex ratio at birth through out that period. It is the sum of age-specific fertility rates calculated from female births for each single year of age. It shows the rate at which mothers would be replaced by daughters and the old generation by the new if no mother died. If the GRR of a population is exactly 1 i.e GRR = 1, it indicates that the sex under consideration is exactly replacing itself, if it is less than 1 i.e GRR < 1, the population would decline, if it is more than 1, i.e GRR > 1, the population would increase, The GRR is computed by the following formula:

$$G.R.R = \frac{\text{No. of female birth}}{\text{Total no. of birth}} \times \text{Total fertility Rate}$$

Also

$$GRR = \frac{\text{No. of female children born to 1,000 women}}{1,000}$$

The GRR is used as a measure of the fertility in a population. It is useful for comparing fertility in different areas or in the same area in different time periods. The GRR could in theory range from 0 to about 5.

GRR has an advantage over the TFR because in its computation we take into account only the female babies who are the future mothers where as in the TFR we include both male and female babies that are born.

An important limitation of GRR is that it ignores the current mortality.

Net Reproduction Rate (NRR):-

The net reproduction rate (NRR) of the population refers to a change of a generation in to a new one. The NRR estimates the average no. of daughters that would be produced by women throughout their life time if they were exposed at each age to the fertility and mortality rates on which the calculation is based. The NRR represents the rate of replenishment of that population.

The NRR is computed by the following formula:-

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$$NRR = \frac{\Sigma (\text{No. of female births} \times \text{Survival Rate})}{100}$$

The net reproduction rate in theory can range from 0 to about 5.

NRR can not exceed GRR for the reason that in its (NRR) calculation we also take into account mortality. Both the rates will be equal when all the newly born daughters reached the child-bearing age and passed through it.

If NRR = 1, it indicates that the population will be constant. If the NRR < 1, it indicates a declining population and if it is NRR > 1, the population has a tendency to increase.