

DEMOGRAPHY -

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DEMOGRAPHIC TRANSITION

- Some countries have passed through high fertility and high mortality conditions to a low fertility and low mortality conditions, both aiming at low growth of population.
- These two conditions have been referred to as the “**old and new balance**” with an in between period of imbalance.

DEMOGRAPHIC TRANSITION

- a- Old balance (high fertility and high mortality)
- b- New Balance (Low fertility and low mortality)
- c- Imbalance (High fertility and low mortality)

Theory of Demographic Transition

DEMOGRAPHIC TRANSITION

a- Old balance (high fertility and high mortality)

- A large supply of births was necessary to compensate for the large number of deaths, specially maternal and child deaths.
- Maternal mortality was extremely high.
- In addition a large proportion of child born died within a year after birth and about the same proportion within 1 to 5 years of age, and still more before reaching maturity.

DEMOGRAPHIC TRANSITION

- **b- New Balance (Low fertility and low mortality)**: Represents an improved condition of human efficiency and health, with fewer deaths.
- Considerably less effort is required to bring a generation to maturity.
- **c- Imbalance (High fertility and low mortality)**: In between the old and new balance is the period of rapid natural increase.
- The growth is helpful for under populated nations which needed more manpower and greater military potentials. However eventually it results in too fast growth of population leading to economic, political and social chaos. **Pakistan is in this phase.**

DEMOGRAPHIC TRANSITION

- **Theory of Demographic Transition:** Those countries (mostly in Europe) which have passed from old to new balance, have gone through a transition, referred as the “**demographic transition**”.
- Countries such as USA, Japan and in Europe which are currently experiencing “low fertility and low mortality” have gone through five phases in the demographic transition.
- Whereas those countries such as Pakistan which are yet undergoing their demographic transition are in the “high fertility and low mortality” phase

POPULATION DYNAMICS

- The dynamics or changes in a population can be understood by the help of the basic demographic equation which is expressed as:

$$P_{t_1} = P_{t_0} + (B - D) + (IM - OM)$$

- In other words there are four ways in which the population of people in an area can change during two time periods (t_0 and t_1)

Formula

$$P_{t1} = P_{t0} + (B - D) + (IM - OM)$$

- Number of live births to mothers living in the area (B)
- Number of residents died (D)
- Number of persons moving into the area for permanent residence (In migration, IM)
- Number of persons moving out of the area to live elsewhere (out-migration, OM)
- Thus the population of an area may change due to **natural reasons (B-D)** known as natural increase or due to migration (IM-OM) as **net migration** subsequently.

POPULATION GROWTH

Population Growth = Natural Increase + Net Migration

- The equation can also be expressed in terms of **rates**. (by dividing each element by the mid year population expressed per 1000).
- Population Growth rate however is usually expressed in **percentage** which helps us calculate the rate at which the population of a country or community is growing.
- The principle of compound growth rate is applied to calculate the effects of population growth rate on future population .

POPULATION GROWTH

- **A population growing at the rate of 01 % per year** : will double in about 70 years. Therefore quick way to figure out how long it will take a population to double in size is to divide 70 by growth rate.
- **A population growing at the rate of 2 % per year** : will double in 35 years (70 divided by 2)
in 23.3 years if it is growing at the rate of 3 % annually (70 divide by 3).

MORTALITY

- Mortality data serve as an important indicators socio economic and health progress made in o of the of most universal concern :
 - ❖ the lengthening of life
 - ❖ avoidance of pre mature death.
- Besides they help to identify target groups need special attention and are useful in evaluating th existing health programs.

Reasons for High Mortality the Past

1. **Acute and chronic food shortages causing famine and malnutrition:** According to United Nations in Western Europe alone 450 famines were recorded between year 1000-1855
2. **Epidemic diseases:** Epidemics of plague, cholera, small pox, typhus and other contagious diseases were until recently quite common through out the world.
3. **Poor public health conditions:** Sanitary conditions have been poor throughout most of the recorded human history. Many cities until recently lacked proper water supply and sewerage system which caused many epidemics

Causes of Rapid Mortality Decline

Thomlinson lists several factors which have contributed to mortality decline:

1. Increase Agriculture Production
2. Industrialization
3. Improved transportation
4. Special reforms
5. Control of temperature and humidity
6. Public sanitation
7. Improved personal hygiene
8. Immunology

Mortality Measures

Basic measures:

1. Crude Death rate
2. Life expectancy at birth

Other measures:

1. Infant Mortality Rate
2. Neonatal Mortality Rate
3. Perinatal mortality Rate
4. Maternal Mortality Ratio

Mortality In Pakistan

- Like many European countries overall crude death rate in Pakistan has declined substantially. Here the decline occurred during the second half of 20th century.
- The crude death rate in Pakistan which continued above 45 per 1000 till the beginning of the 20th century has now reached about 8 per 1000 population, thus now it is almost one fourth what was only 60 years ago.

Mortality differentials

- Mortality varies quite substantially with various characteristics of the population. Two such major characteristics are
- **Age**: A person has the highest risk of dying during the first year of life, declines gradually and again increases during the older ages. Thus the age-specific mortality follows a **U shaped curve**.
- **Gender** : Male and female show similar age-specific curves, however females show lower mortality rates than males.
- **These differences** are generally attributed to inherent biological superiorities of females and occupational hazards faced by men.

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THANKS