



University of Jordan
Faculty of Medicine



Medical Committee
The University of Jordan




Community Medicine



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Community sheet #10

In this lecture we will talk about the important indicators that reflect the population which include the fertility rate and the mortality rate and we will learn how to calculate them "I hope that I could simplify them as much as possible ☺ "

In the previous lecture we talked about the major determinants of the population which are
1- birth "fertility" 2- death "mortality" 3- migration .

The important indicators that reflect the population :-

1- Fertility measurement "Birth rate " : It is

also called " **Crude birth rate**" , it indicates the number of live births per 1,000 population in a given year .

*For example : In Kuwait(which is one of the developing countries that have the lowest birth rates because of controlling the fertility) in 1994 there were 24 births per 1,000 population , How we calculate this number ?? " You don't have to memorize the numbers you should only know how to calculate the birth rate "

~Ans: Number of births (38,868) divided by the total population (1,620,086) * k(1,000)= 24.0

****In Jordan** the birth rate was 26.79 (est 2011) but it has varied to 28.1 (according to the last study , DHS,2012).

**Crude birth rate is the most easily obtained and most common reported Definition It gives the average annual number of births during a year per 1,000 persons in the population at midyear.

**The birth rate is usually the dominant factor in determining the rate of population growth. It depends on both the level of fertility and the age structure of the population.

**The less developed countries have the higher crude birth rate while the more developed countries have the lower crude birth rate.

**Notice that the birth rates are vary widely around the world , for example : In Western Sahara's , a very high birth rate 47 per 1,000 in 1996 , while in Italy it was very low , 9 per 1,000 also in 1996 .

2- The general fertility rate (GFR):- It is also called the fertility rate . It indicates the number of live births per 1,000 women ages 15-49 (the age of women's reproduction) in a given year .

** It is more refined and specific than the crude birth rate because it is per 1,000 women ages 15-49 not per population , so the crude birth rate is more general and it is easier to be calculated because it stands on the population not on a certain category .

** The GFR sums up, in a single number, the fertility of all women at a given point in time.

**Example : Yemen's general fertility rate in early 1990's was 238 live births per 1,000 women ages 15-49 (34 years) which is one of the highest in the world (Total fertility rate =7) while in the Czech Republic's, it was very low at a rate of 34 per 1,000 women aged 15-49 in 1996 (TFR=1).

**The apex of fertility rate is at the woman age 25-30 as expected .

**The fertility rate differs from one country to another depending on the age of marriage in each country... In developed countries the age of marriage is older and the age of the first baby is also older "less fertility rate" while the developing countries have earlier age of marriage "usually between 15-20" and younger first baby age "higher fertility rate".

3- Total fertility rate :- (TFR) is the average number of children that would be born to a woman by the time she ended childbearing if she was to pass through all her childbearing years conforming to the age specific fertility rates of a given year .

Notes :1- It is the average number of children in a family

2-It is Used to compare fertility among countries

3- It tracks changes in fertility over time

**TFR in Jordan 3.6 (JPFHS report, 2007) while it was 3.7 according to DHS report 2002

**Fertility has been declining in Jordan since the mid-1970s. Surveys have found that the total fertility rate declined from 7.4 children per woman in 1976 to 5.6 in 1990,4.4 in 1997 , 3.7 in 2002 and to 3.6 in 2007, to become 3.5 in 2012. This indicates how the fertility decreased by the improvement of health services and health education ...

***TFR in France has decreased in the last 100 years from 2.9 in 1901 to 1.3 in 2015.(you can see the picture in slides 😊)

**If you draw a similar picture for the TFR in Jordan there will be no dramatic change and it will be more linear (especially between 2002 and 2012 which changed from 3.7 to 3.5) this indicates the effects of cultural and social factors.

4- Replacement level fertility :-the level of fertility at which a couple has only enough children to replace themselves or about two children per couple (in this state the growth is zero And the population will eventually stop growing).

**If the fertility in a country is less than 2 children for each couple we will have negative growth , while if it is more than 2 children we will have a higher rapid growth . In Jordan it is 3.6 ,so we have fast growing population ." they expect that it will be doubled at 2019".

** It needs a TFR slightly higher than population to grow." It is approximate because the death rate mustn't equal the birth "

**Example : in United states it is 2.1 because death rate is not too high .

** Replacement fertility depend's on : 1- birth rate 2- death rate . so if the death rate was high we will have a negative replacement .

5- The death rate (also called crude death rate) is the number of deaths per 1,000 population in a given year .

** Example : in early 1990's the death rate in Turkey which is one of the highest population was 6.6 per 1,000 population . How we calculate ??

Number of deaths (405,000)/total population (61,644,000) *k(1,000)=6.6 (it is expected to be less in future) .

-In early 1990s ,Guinea had a death rate =20 per 1,000.

** less developed countries have the higher death rate.

** Death rate also can be calculated by:**1- the age specific death rate** which means to calculate the death rate in specific ages such as the death rate between 5-10 years or the death rate between 20-30 and so on.

** In developed countries the age of death is above 65-70 so the scale will extent to 85 (the base" reflects the birth" of the scale will be narrow and it will increase in width to return narrow above" reflects the death" but the difference is too low, while in developing countries the base of the scale will be large "because of high birth rate" and it will be narrower above " the deference between the birth rate and the death rate is too high ,so the growth population is high".

2- Cause-specific death rate:

** the population pyramid of Jordan is more developing "according to the age specific death rate it is closer to the developing world, while according to the cause specific death rate or birth rate it is close to the developed world " .

** In developed countries "and in Jordan" diseases of the circulatory system form the major cause of death then cancer , while in less developed countries the main cause is the infectious diseases then the circulatory system diseases.

3-sex specific death rate: sometimes the death rate in males is higher than females" often males death rate is high " .

6) Infant mortality rate(IMR):the number of deaths of infant under age 1 per 1,000 live births in a given year.

** the infant mortality rate is considered a good indicator of the death status of population.

** latest figure about IMR in Jordan is 17 per 1,000 live births (DHS 2012)"this number is required ☺" .How to calculate it ??

Number of deaths of infants under age 1 in a given year(10,016)/total live birth in that year (595,816)*k (1,000)=16.8.

The most sensitive indicator of death in Jordan.

7- Maternal mortality ratio : the number of women who die as a result of complications of pregnancy or childbearing in a given year per 100,000 live births in that year.

** deaths due to complications of pregnancy including spontaneous or induced abortions, diabetes, hypertension, anemia, cardiac problems ,renal dysfunction... . but if a pregnant woman died because of car accident or breast cancer she would not be included because this cause is not related to the complications of pregnancy .

** a maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

**Example: Russia which has a good infant mortality it was 13 in 1994. How to calculate it??

The number of maternal deaths (185)/total live births(1,408,159)* k(100,000)=13.

Maternal Death rate might reach as low as zero!

In Jordan, it was 40 in mid 1990s and dropped to 19.1 in 2007/2008.

8- Life expectancy: is an estimate of the average number of additional years a person could expect to live if the age specific death rate for a given year prevailed for the rest of his or her life.

If the age specific death rates in 1996 remain unchanged , males in Barazil born in 1998 can expect to live 64.1 years on average , while females was 70.6 years .

*life expectancy for Jordanian is 73 years.

9-population composition (age and sex composition) : age and sex are the most basic characteristics of population ,so each population has a different age and sex .

** more males in the country cause higher income for that country ,and more youth who are able to work cause more developing in the country .ex : in Africa and Jordan less than 4% are older groups . in developing countries about 40% are less than 15 years .

**more developed countries more than 10% over 65 year such as Europe and less than 25% of population are less than 15 years " you have to memorize these numbers ☺ "

**young and old population have markedly different age compositions .

***** Median age in population composition :** a population age structure has a great deal to do with how that populations live .the median age is the age at which exactly half of the population is older and half is younger.

**ex: the median age of the Costa Rican population in 1995 was 23 years . in Jordan it was 18 in 1995 but it decreased to 20.3 in 2012.

While that in Sweden was 38, signifying an older population.

Please don't forget to check the pictures in the slides they are important.

Thanks for studying my sheet ☺ , I am sorry for any mistake ..

"لا تيأس إذا تعثرت أقدامك وسقطت في حفرة واسعة فسوف تخرج منها بإذن الله و أنت أكثر تماسكا وقوة وإياك أن تتعب أو تمل من المسير، فالله مع الصابرين"