



University of Jordan
Faculty of Medicine



Medical Committee
The University of Jordan



Community Medicine



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- Last lecture we finished talking about the indicators (the fertility and mortality).
In this lecture we will talk about several things as population pyramids.
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Refer to slides 42, 43:

A population pyramid graphically displays a population's age and sex composition. The horizontal bars present the numbers or proportions of males and females in each age group. The sum of all the age-sex groups in the population pyramid equals 100 percent of the population. It gives an indication on how the demography or the dynamics the population change.

***Refer to slide 43:** These are two pyramids. You can see the differences between developed and developing countries. In the graph of more developed countries, the population is growing very slowly (positive growth) since births are $>$ deaths. As we mentioned all the time in the developing countries the base is always wider than the apex that's an indication for high fertility, and the life span there is less than in developed countries. In the left pyramid you can see that base and the apex are small due to low fertility and less mortality. Percentage of youth (ages under 20) in the developing world is much higher than that in the developed world.

Jordan comes in between, though its graph resembles the developing countries more (high growth rate, high youth percentages), it has high fertility but not as much as developing countries, and it has a low life span.

***Refer to slide 44:**

This graph represents the population pyramid for Japan (developed country). You can see that Japan has high life span, high fertility and low mortality so the growth of Japan is high, but they can still afford good resources. Base wider than apex, middle class population is very high.

#Refer to 45 ,46:

Populations of countries can differ markedly as a result of past and current patterns of fertility, mortality, and migration (These are the most important factors in population science). However, they all tend to fall into three general profiles of age-sex composition:

1. **Rapid growth:** is indicated by a pyramid with a large percentage of people in the younger ages. You can see this kind of growth in Jordan and developing countries where the base of the pyramid is wide due to high fertility and also because the young ages(they represent 35-40 %) are much more than older ones
2. **Slow growth:** is reflected by a pyramid with a smaller proportion of the population in the younger ages .The deference between apex and the small base is small .The Replacement level fertility which represented this kind of growth is less than 2. The growth rate in more developed countries is usually

low. Note that as the growth rate increases, recourses decrease and population conditions become worse.

3. Zero growth or decreasing populations: are shown by roughly equal numbers of people in all age ranges, tapering off gradually at the older ages. Both the birth and death rates are low so the difference is either zero or negative.

“Now we will explain some graphs to help you in understanding these kinds of growth. So please refer to 46, 47 and 48 slides”

***In slide 46:** This graph represents the age pattern of Nigeria population, in 1995. It has a very wide base and narrow apex. More than 50% are younger than 15. So the growth type here is **“Rapid growth”**. (The doctor said that you must understand the concept not memorize the numbers because she might bring a graph in the exam and ask you which kind of growth dose this graph represent??(slow, rapid or zero growth) .Or she could ask you which kind of countries this graph represent (developing or developed country))

***In slide 47:** This graph represents the age pattern of Spain’s population, in 1995. It is a developed country with a very slow growth rate and could reach zero since it has the lowest fertility rate. There is a very low % of people under the age of 15 or above the age of 75. The difference between the base and the apex is very small. The growth type here is **“Declining growth”**.

***In slide 48:** This graph represents the age pattern of US population, in 1995.The growth type here is **“ Slow growth”**.

As an example of exam question the slide 49 is very good. So here which one represents the most?? Population pyramids of three countries “I numbered them from up to down “

***developing country(3)**

***Developed country....(1)**

***Fast growing....(3)**

***slow growing....(2)**

***zero growing...(1)**

***In slide 50:** This graph represents the age pattern of Jordan’s population in 2007. Low mortality, high birth (fertility) rates. So the growth type here is **“Rapid growth”**. (you must remember the growth type of Jordan. The graph of 2012 is not represented yet but it is similar to 2007)

Now we will talk about the Population change, how is changing and how to calculate this change?? So please refer to 51, 52, 53, 54 slides:

Population change has three components: births, deaths, and migration. As people are born, die, or move, their total numbers in an area change. During most of history, world population increased very slowly, but during the 20th century, this growth has accelerated (higher fertility). You can see (in graph of slide 52) that:

- 1) The acceleration process of less developed country is >> than the developed one.
- 2) The acceleration process is rapid from 1750 to 2050.

Note: if a population needs 20 years to double then it is considered fast growing (Jordan is an example), some developed countries require 40 years or more to double (slow growing).

***In slide 53:**

A change in population size over a given period of time equals the number of people in the population at the beginning of the period plus any births that occur during the period, minus any deaths, plus net migration (which is the difference between immigration and emigration in a certain area during a specified time frame) during the period. Net migration could be positive (if I>E) or negative (if E>I) .

***In slide 54:**

We can Calculate the population change over time by this equation :

$$P1+(B-D)+(I-E)= P2$$

*P1=First population (at the beginning) *I= Immigration (in)

*B= Births during the time period *E= Emigration (exit/out)

“Please check the example in this slide: the increase in population was due to natural increase not migration since more people left the country than those that entered. “

*D= Death *P2= Second population

#Now let’s talk about the “Rate of Natural Increase” .Refer to 55 and 57 slides:

*The rate of natural increase is the rate at which a population is increasing (or decreasing) in a given year due to a surplus (or deficit) of births over deaths, expressed as a percentage of the base population. (Without considering the migration) The change in population size accounted for by more births in the population than deaths is referred to as "natural increase." .The term "natural decrease" refers to population decline resulting from more deaths than births.

***Net migration is the number of immigrants minus emigrants.**

Now we will talk about the “Growth Rate” refer to 56,58 slides:

The growth rate is the rate at which a population is increasing (or decreasing) in a given year due to natural increase and net migration (for example refugees that entered Jordan and Lebanon), expressed as a percentage of the base population. The growth rate takes into account all components of population growth: births, deaths, and migration. It should never be confused with the birth rate (which is calculated per 1000 of a population), but it sometimes is.

These data are a part of the population/demographic census, which may be done every 1, 2, 5 or 10 years depending on “Health Survey” and the “Economic situation” because it is very costly. So it is only performed each 20-30 years in developing countries, and each year in developed countries (since they can afford it). **(In Jordan they make it every 5 years, like middle class countries).**

Growth Rate = 1. $\left((\text{births} - \text{deaths}) + (\text{net migration} / \text{total population}) \right) \times K(100)$.

If the (net migration/ total population) is” +”

2. $\left((\text{births} - \text{deaths}) - (\text{net migration} / \text{total population}) \right) \times K (100)$.

If the (net migration/ total population) is” -”

***Now let’s explain some examples of growth rate in some countries:**

1) With an annual growth rate of 1.82 percent in 1996, the United Arab Emirates would require about 38 years to double its population. (Has a low growth rate, so does Kuwait). – Resembles Developed

Yemen on the other hand has a high growth rate.

2) Uganda (developing) would take 24 years, at 2.9 percent. Belgium (developed), at its present low annual growth rate of 0.5 percent, would take several centuries to double its population.

(So when the growth rate decrease the population needs more time to double)

3) Jordan: growth rate 2.2 although the fertility was dropped from “7.2 to 3.5 “from (The mid-eighties (1986) to 2007). Natural growth of Jordan is: 2.1 (2012). “2.2-2.1=0.1”(This 0.1 difference represent the net migration)

#The Demographic Transition. Refer to 59, 60, and 61:

The demographic transition refers to the change that populations undergo from high rates of births and deaths (developing) to low rates of births and deaths (developed). High levels of births and deaths kept most populations from growing rapidly throughout most of time. The decline (الانخفاض) in mortality usually precedes the decline in fertility, resulting in population growth during the transition period.

***In slide 61:** Here is an example of the transformation of developing country to developed one by several stages by decreasing the fertility and increasing the life span as a result of improving the health services. (You will see in this example when mortality decrease the fertility will decrease automatically.)

****These are the stages of transformation of Finland to developed country:**

-At stage 1: high birth rate and high death rate (least developed) - little growth

-At stage 2: high birth rate and falling in death rate (when the country becomes more developed) – high growth

Jordan lies between stages 2 and 3, it has a high growth rate as in stage 2 yet the birth and death rates are declining.

-At stage 3: declining birth rate and relatively low death rate. – slow growth

-At stage 4: low birth rate and low death rate. (Most developed. Extremely low growth rate)(you must understand the concept of” The Demographic Transition” not memorize the numbers)

She said that the Slide 62 is not that important but check it anyway. 😊 (Just know that it occurs almost every 5 years, important to compare the growth of the population to the country's resources)

The last thing we will talk about before the inductors is Population policies so refer to the last slide 63:

National population commissions “اللجان” were formed in different countries. They formulated national population policies and action plans. One major component of the action plan deals with reproductive health. Reproductive health in the context of population includes reproductive rights, sexuality, family planning, reproductive morbidity, violence against women, gender based differences, male involvement in reproductive health. Examples: Taxes must be paid if a family has more than one child

***For example:** Spain has lower fertility than Sweden because of the “Population Policy”. But in our Arab countries this is not acceptable because of religious beliefs; we can do the family planning (spacing) instead but not limit the number of children.

We finish talking about demography (it does not study the population only it also studies the resources which reflect on the population.)

Now we will discuss some indicators of Jordan for the 2012 “you should know these indicators”.

The Indicator	2012	Notes
Total population	6.388.0	Without Syrians. But if we include them it will increase by 1.5 million
Population Growth Rate (%)	2.2	In the sixties we were 600.000. that means we doubled 10 times until now
Rate of natural increase (%)	2.1	
Population Doubling time (year)	31.5	As expected in 2019
Population less than 15 years (%)	37.5	It was 45 so it is decreased because of decreasing the fertility
Population age 65- years (%)	3.2	Very low. It was 5 so Jordan now become more developed
Population age 65+ years (%)	59.5	
Dependency ratio	68.2	It's very high
Urban population (%)	82.6	Because of the condensation Of people there
Rural population (%)	17.4	In developed countries, better conditions are provided so there's a higher % of rural population
Total fertility rate (Women 15-49 year)	3.5	Differs slightly between rural and urban areas
Sex ratio	106.3	Males to females 106.3:100
Crude marriage rate (per 1000 population)	11.1	Relatively High
Crude divorce rate (per 1000 population)	2.8	Those factors indicate fertility
Singulate mean age at first marriage (year)	28.1	In 2007 it was 24.6

Male (age at 1 st marriage)	30.0	
Female (age at 1 st marriage)	25.9	
Married of total population (Jordanians 15 +years)(%)	55.2	
Male	53.9	Males < female because of Polygamy
Female	56.6	
Population median age (year)	20.3	It means that about 50% of Jordan's population is under the age of 20. As it gets lower this means there is more rapid growth of population. Important in determining if the population is young/old.
Crude birth rate (per1000 Population)	28.1	Decreasing currently
Crude death rate (per 1000 population)	7.0	Decreasing due to improving health services
Infant mortality rate (per 1000 live births)	17.0	The most sensitive indicator. More than in developed countries "the average in developed countries 12"
Under five mortality rate (per 1000 live births)	21.0	It includes the infant +(ages 1-5 years)the first year is the most risky one
Life Expectancy at birth (year)	73.0	This ratio was in 2011
Male	71.6	
Female	74.4	

Thank you and sorry for any mistake. Good luck 😊