

Economics of Health and Healthcare
Prof. Deep Mukherjee
Department of Economic Sciences
Indian Institute of Technology - Kanpur
Prof. Angan Sengupta
Department of Management, Amirtha Vishwa Vidyapeetham, Bangalore

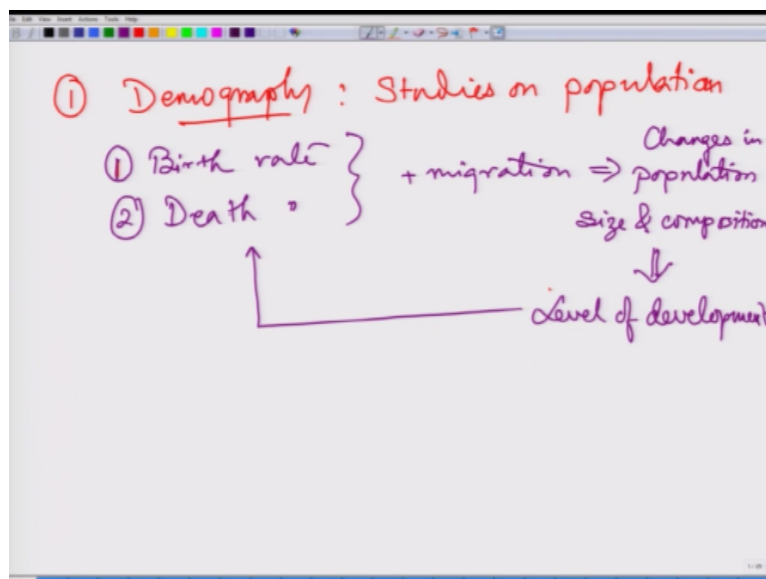
Lecture - 48
Fundamental Concepts and Theories Related to Population, Health & Development

Hello everyone. I hope you are keeping well. This is our last session basically, so in this session we are going to discuss the health, population and development or population, then health and development. Several aspects of how health or you know several health indicators are important in terms of making a development in terms of say health is good, lower the mortality rate, higher the expectancy.

And health is good in the one term also means that if lower the child mortality or infant mortality lower will be the birth and you know the number of population or the population growth rate is also lower and then it has an implication towards the countries or societies development. So we will try to understand you know the population size, the variations in terms of population composition and how it is connected with health.

And then further other way you know how these population variations or compositions have an effect on the development as such.

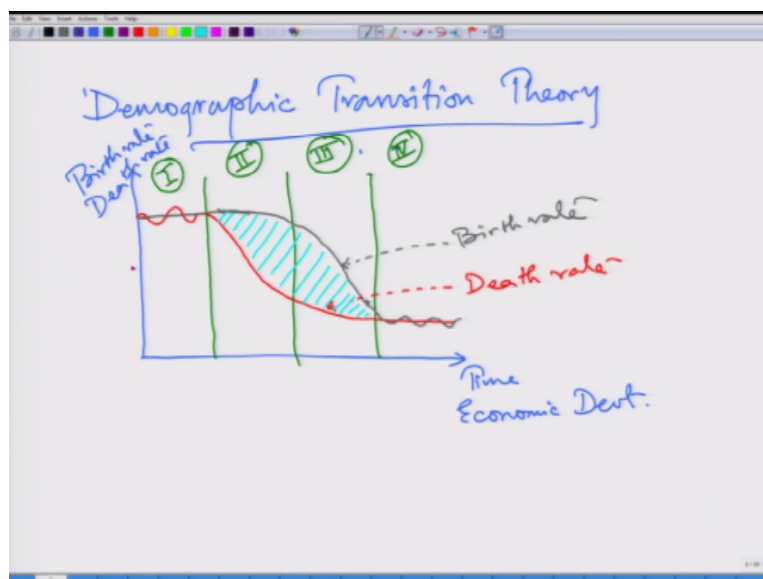
(Refer Slide Time: 01:38)



So I will try to start my lecture with the subject called demography. In demography, we talked demo is population, graphy is science, so it is basically the population sciences or the studies on population or human population yeah. So that is demography and as you know the development is for the population, therefore development is directly associated with population.

Population causes development, development brings changes to the population or to the people. The most prominent theory is related to demography and you know and economic development is associated with the birth rate and death rate yes. Birth rate and death rate along with migration causes changes in population size and composition and this change determine the level of development. Again this level of development brings changes to the birth rate and death rate.

(Refer Slide Time: 03:23)



So the theory we are talking about is known as demographic transition theory or the demographic transition or the theories of demographic transition. Demographic transition theory, so what it says, it basically has 4 stages yeah. This demographic transition has 4 stages. So on the x axis we measure time and with time of course economic development. Yes, with time we are developing right.

With time we will miss the economic development and over here we will estimate birth rate and death rate yes. So what happens in the first stage of development? So I will just you know break it into 4 compartments yes. So this is my stage 1, stage 2, stage 3 and stage 4. In

the first stage, you know the development is very, very poor, high level of infectious disease, high mortality rate, very low life expectancy right.

And in that you know as people have uncertainty about how many will live and then also in that you know in that level of development, society is strong if they have number in their favor you know the larger the society they are more strong. Therefore, you know one is to ensure the you know the number of family size against a high death rate. So they will you know give birth to a large number of children.

So that is what and no idea about you know no idea about contraception, no idea about you know better health or better education. So naturally the birth rate you know the birth rate will be high because there is no investment basically against the children and then the death rate is of course high with that you know famine, war, natural calamities and all. So at this condition both of this if this is my death rate, death rate is high and I will see that what happens you know in the second stage.

So in the second stage with the scientific development you know slowly the death rate starts falling which has you know it has different time period for different countries. In Western Countries maybe it has started taking place post 1850s or all you know the Industrial Revolution in Britain and all other Western European Countries or USA. At the same time, in India probably it has only taken place in 1950s yeah so the death rate has started falling down in the second stage of development or with the time.

In the third stage, we see the death rate is again falling but the rate of decline has you know reduced. That is primarily because it is already reaching a minimum level and in the last stage it has reached a minimum level you know that the death rate as far as it was possible to avoid by the sciences it has done, so and people has to die, so the death rate will be positive but it will be low.

On the contrary, what happens with the birth rate? What happens with the birth rate? You know it will be little up and down, you know I can eventually show the death rate as up and down, so whichever way you like. Yeah so and I will keep the birth rate as same, so straight line and then what happens is with this you know at a first stage where there is a high birth rate because of the high death rate.

But it takes time to realize that the death rate is falling down. You know the people's life expectancy is increasing, it takes time to realize that, so birth is a you know behavioral process, so just understanding oh my god, you know, I am living more or my children are living more so let us not reproduce anymore child. So it really does not make sense and you know it makes sense when it is given time.

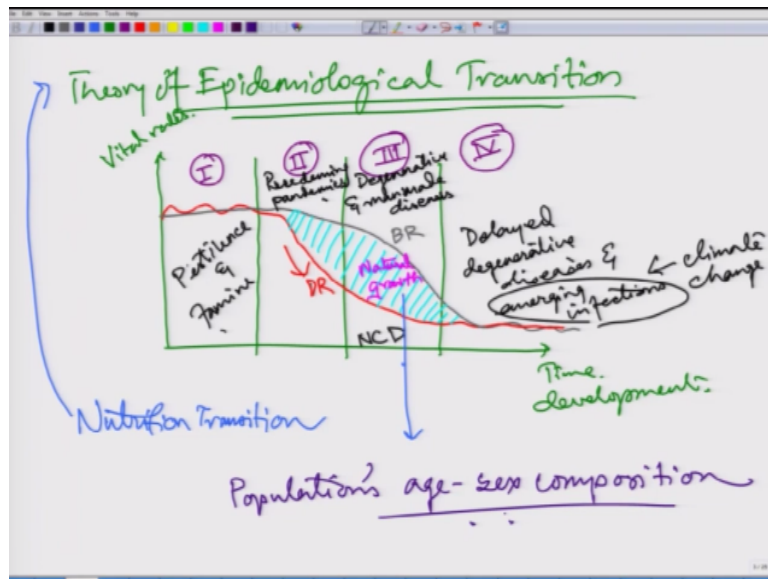
You know so that people start realizing, people start realizing the impact of a higher population size. So what happens in the second stage when the birth rate starts falling the death rate does not really fall, so and death rate starts you know being high. In the third stage, it falls. In the third stage, it falls like this you know rapidly yeah whereas in the fourth stage again either way it can be something like this.

And hence this one is my birth rate, this one is my death rate and this period this area is known as natural increased or natural growth because the birth rate is high and then the death rate is low. What we have seen in say maybe post 1970s or around you know 1970s or 1950, maybe 1940 to 1980 something like that and slowly the birth rate is coming down. We are in the third stage now as a country in India; we are in the third stage.

Sub-Saharan African countries maybe they are still in the second stage you know. All developing countries they are they are in the fourth stage where both the birth rate and death rate is low. Eventually, it can be you know birth rate is lower than the death rate in countries like Japan so where the growth rate is negative basically, you know so more people are dying as compared to the rate of birth.

So this is all about demographic transition. In tandem with this demographic transition, the disease pattern also changes. So how this disease pattern changes?

(Refer Slide Time: 09:53)



That is explained by the theory of epidemiological transition given by Omran. Theory of epidemiological transition. Now what this theory says? This theory says again they follow the same you know 4 stages. Over here you can keep time and level of development and over here maybe the vital rates, prevalence rates and all this and what we see that in this stage 1. Now I will change the color, stage 2, stage 3 and stage 4 yes.

So when there is this high death rate and high birth rate and then death rate falls and then you know and then birth rate is something like this continues, continues, falls and then yeah. So when there is high death rate, so this is my birth date, this is my death rate. At the first stage, this is the pestilence and famine.

This is a stage of pestilence and famine. In this stage, where there is high birth rate and high death rate, it has also been seen that there is a high prevalence of famines, infectious disease you know pestilence and all these. People are once they are affected by some infectious diseases, there is no immunization, nothing awareness and people do not really leave after they are affected by the disease you know.

So what happens is in the first stage naturally because of this pestilence and famine, this is natural growth. I will change some so because of this pestilence and famine, the number of death is high. Eventually in the second stage, this is visiting receding pandemics. With these you know evolution or medical sciences with betterment of medical system with more learning.

So in the second stage, the pandemic starts declining and you can see this has eventually been reflected by the declining death rate is not it? So receding pandemics and then the third stage is degenerative and man-made diseases. This is degenerative and manmade diseases. Now what does this means? This means degenerative people do not die, they live with these diseases you know.

And man-made is because of my lifestyles, you know the cardiovascular disease, the type 2 diabetes, you know cancer. Because of the nutrition and smoking, the pollution, the stress, that kind of work we do, no physical exercise, the kind of food you know the fat based food and all this. So we slowly have started evolving, started being affected by these man-made diseases which are also known as NCD or non-communicable diseases right.

So after this receding pandemics, when this infectious diseases, malnutrition are passed then this new kind of problems arrive which is happening in India right now right and then the fourth stage is you know delayed degenerative diseases and emerging infections and scientists have seen that in the fourth stage new kind of infections may arrive and say nowadays we are being affected by the swine flu or lot of this Dengue cases, different types of HIV/AIDS were still there in some countries, are still there in some countries.

Forget about HIV/AIDS, you know Ebola virus was there, so different kinds of new infections are arriving and these new infections are arriving also because of the climate change. Say malaria, malaria is you know prevalent now in Europe. It is unimaginable, so and this is the epidemiological transition and these are the 4 stages of epidemiological transition.

With you know course of development we see another change, another kind of you know transition that is known as nutrition transition, so which is associated with epidemiological transition. This nutrition transition says with the development, the first one was you know high physical exercise, only hunted gathered food, no cultivation. In the second stage, the cultivation prevails.

The agriculture starts getting improved or starts prevailing and people have started taking a more of you know cereal based food, home cooked cereal based food, lot of mandatory exercises it has not really come down. On the other hand, in the third stage, you know it is

like more of fat based food, sedentary lifestyle, technical lifestyle, westernization, urbanization, ready-made you know salt-sugar based food, soft drinks and all this and which causes these non-communicable diseases right.

And then the fourth stage is behavioral change, then people realize that you know we have been taken up a lot of bad healthy behavior, so which is basically unhealthy and then we took a lot of junk foods which are not nutritious, we never did exercise for a long time. So there is that self-induced exercise and self-motivated diet practices or diet regime says people take more of a salad, pure juice, fruits and all these things yeah.

So this is the behavioral change, so these are the 4 stages yeah, so which this nutrition transition says along with this theory of epidemiological transition and now having said that when we talk this you know talk about this natural growth, so it certainly changes age-sex composition of the population. It changes the population's age-sex composition. Why it changes the population's age-sex composition?

That is primarily because when there is a high you know birth rate and low death rate, so lot of young people will be there right. A lot of young people and then a lot of birth rate has come down especially rate at the child mortality rate, infant mortality rate has come down along with improvement in maybe the life expectancy but more than that life expectancy at elder ages but more than that average life expectancy at birth has increased by a lot of margin.

So but then the number of birth has not come down, so this area contributes towards the natural growth and which changes the population's age-sex composition. If there is any sex preference, then there is a different story all together. Thank you.