

## GLOBAL PATTERNS OF DEATH, DISEASE AND HEALTH

### Global patterns of death rates

This **Geofile** considers global patterns of health indicators. Figure 1 shows death rates across the world. The pattern is complex. It might be expected that LEDCs would have high death rates and MEDCs low ones, but this is rarely true. LEDCs, with their young populations, have surprisingly

low death rates, whilst MEDCs, with much higher average ages, show higher death rates. However, there are a few exceptions to this general rule. Figure 2 contains data on the population characteristics of selected countries; it can be seen that some LEDCs at the earlier stages of demographic development, e.g. Mexico, have quite low death rates, because they have high

percentages of people below 15 and fairly low rates of infant mortality.

Figure 3(a) shows the world distribution by population for the World Health Organisation's six main sub-regions and Figure 3(b) shows the distribution of deaths in 2002 for those regions. Africa has a disproportionately high number of deaths for its

Figure 1: Death rate (deaths/1,000 population per year) by country

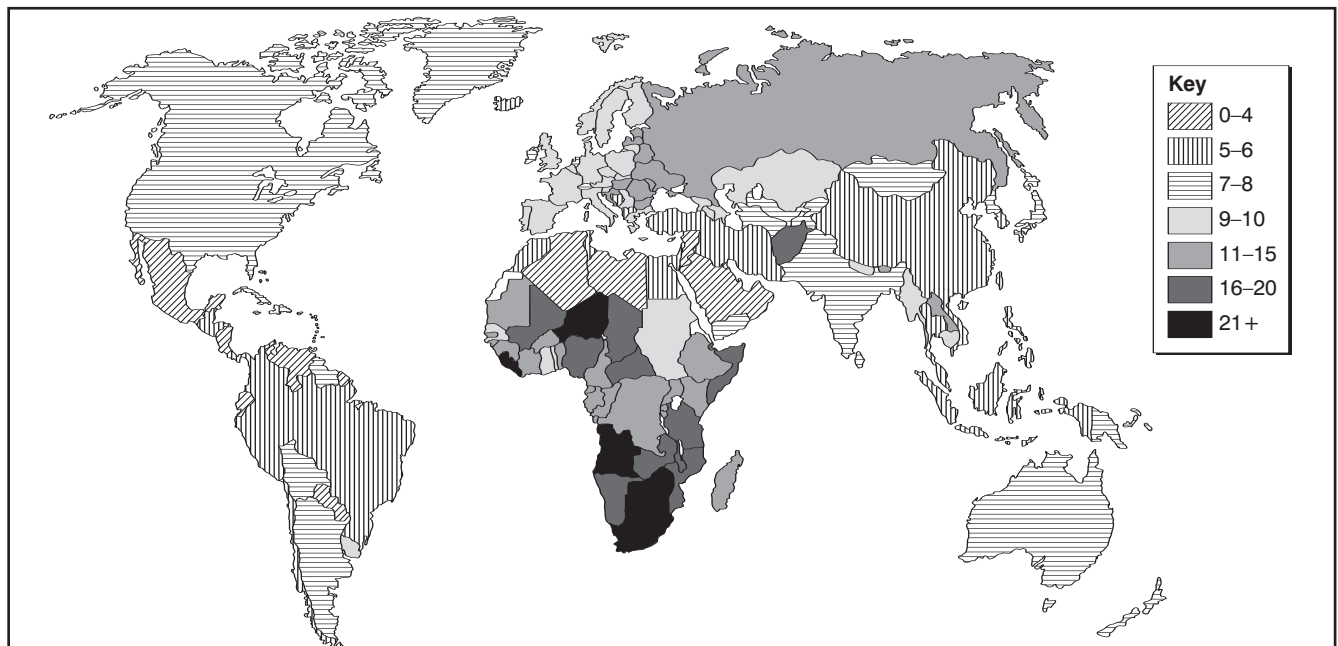
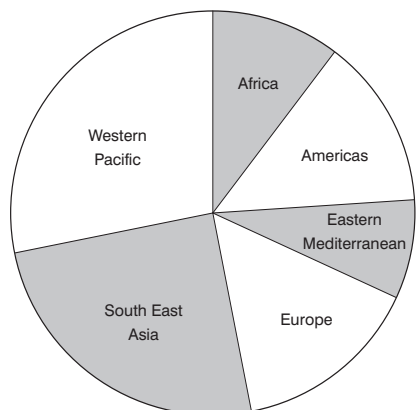


Figure 2: Summary table of characteristics of selected countries

COUNTRY	Death rate per 1000	Birth rate per 1000	GDP in \$	% aged under 15	HIV prevalence among adults	Government spending per head on health (\$)	Doctors per 1000 of population	Infant mortality per 1000	Life expectancy
Afghanistan	19.9	46	800	45	na	4	1.9	165	44
South Africa	17.0	18	13,000	30	21.5	114	7.7	60	43
Russia	16.2	10	12,100	14	1.1	98	42.5	8	63
Ethiopia	13.0	38	1,000	44	4.4	3	0.3	109	53
Kenya	11.8	40	1,200	43	6.7	8	1.4	57	55
Sweden	10.1	10	31,600	17	0.1	2,684	32.8	3	81
UK	9.9	11	31,400	18	0.2	2,981	23.0	5	79
Japan	9.0	9	33,100	14	0.05	2,158	19.8	3	81
France	8.8	12	30,100	18	0.4	2,273	33.7	4.2	80
India	8.2	22	3,700	31	0.9	7	6.0	35	69
USA	8.2	14	43,500	20	0.6	2,548	25.6	6	78
Bangladesh	7.5	30	2,200	32	na	4	2.6	59	63
China	7.1	13	7,600	21	0.1	22	10.6	22.1	73
Brazil	6.3	17	8,600	25	0.7	9	11.5	27.6	72
Mexico	4.8	21	10,600	31	0.3	172	19.8	20	76
Saudi Arabia	3.7	29	13,800	38	na	277	13.7	21	72

Figure 3(a): World population distribution by region



population size and is the continent with the highest death rates, containing 17 of the top 20 countries

### Global patterns of the cause of death

Heart and circulatory disease (heart attacks and strokes) and lung diseases (pneumonia and bronchitis) are the leading causes of death in both LEDCs and MEDCs (Figure 4). These two groups of diseases are responsible for around one-third of all deaths each year. However, the other main causes of death are quite different between the two groups of countries.

In MEDCs, apart from heart, circulatory and lung diseases, a large number of deaths are caused by:

- four major types of cancer: lung, colon and rectum, breast and stomach
- Alzheimer’s disease (senile dementia found in elderly people)
- type two diabetes, which is often linked to obesity and poor diet and tends to start in people over 40, peaking in number at between 50 and 60 years of age.

Figure 3(b): Distribution of deaths in 2002 by region



These medical conditions are:

- associated with older people, and so are more common in MEDCs, whose populations tend to have a higher life expectancy
- linked to higher standards of living and unhealthy types of diet often found in the more affluent developed countries.

In LEDCs, on the other hand, the other major causes of death are due to:

- Perinatal conditions: deaths of babies during the first week of life. They are the major cause of death among children under five, accounting for more than one in five deaths. Most of these deaths are the result of poor maternal health and nutrition, inadequate care during pregnancy and delivery, lack of essential care for the newborn baby, infections, birth injury etc.
- Infectious diseases such as diarrhoea, malaria, HIV/AIDS and TB. The distribution of these diseases within the LEDCs varies considerably. The UN HIV/AIDS report of 2004 estimated that 60% of all 40 million cases worldwide were in Sub-Saharan Africa. Over 5 million of these were in South Africa alone, whereas south and

south-east Asia, with a much larger population, had only a total of 6.5 million cases. TB, on the other hand, is more evenly spread, affecting around one-third of the population of South and East Asia and Africa.

In MEDCs, only 23% of the deaths are due to communicable (i.e. infectious) diseases such as HIV/AIDS, malaria and TB, whereas in LEDCs these account for 55%. These illnesses can be treated or prevented with medicine, immunisation schemes, etc and are controlled or have been wiped out by such measures in the MEDCs.

However, lack of finance and poor medical facilities means that they are still widespread causes of death in many LEDCs.

### Global patterns of infant mortality and child death

The infant mortality rate (IMR) is the number of deaths of infants under one year old in a given year, per 1,000 live births. The current average world infant mortality rate is 46, ranging from around 170 in certain African countries to around 3 in European countries such as Sweden and Iceland and Japan. This rate is often used as a good indicator of the level of health in a country, as it is closely linked to the health of the mother, and is dependent on diet and living conditions and the medical services and facilities that are available.

A study in 2003 showed that 10 million deaths, nearly one-fifth of the total for that year, were of children under five years old. 99% of these were in LEDCs and over 40% were in Sub-Saharan Africa. Many African countries had previously reduced levels of child mortality but the HIV/AIDS epidemic since the mid-1990s has reversed this situation.

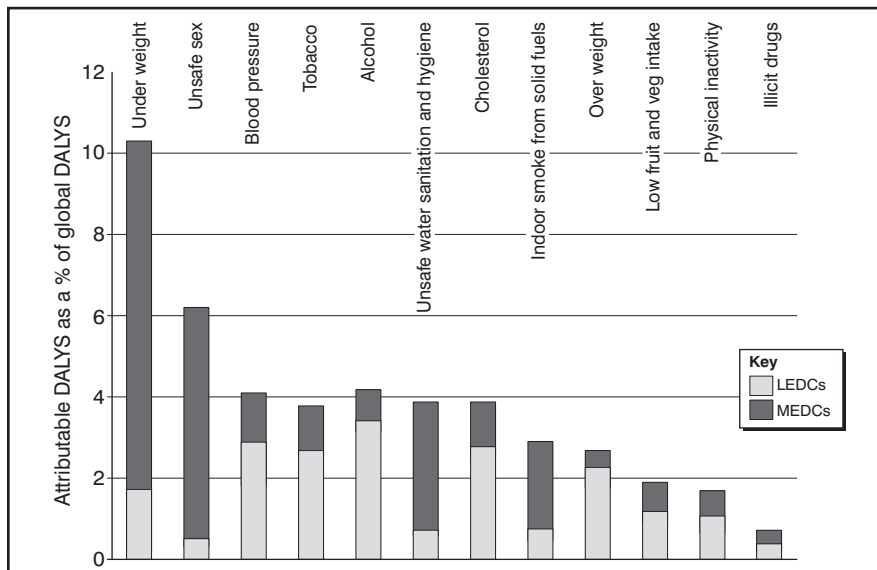
Figure 4: Leading causes of death in LEDCs and MEDCs

Medical Condition	LEDC Millions of deaths	LEDC % of deaths	Medical condition	MEDC Millions of deaths	MEDC % of deaths
Heart and circulatory disease	10.8	22	Main types of cancer	1.02	13
Respiratory diseases	6.0	12.2	Alzheimer’s disease	0.2	2.8
HIV/AIDS	3.0	6	Diabetes	0.2	2.7
Perinatal conditions	2.4	5			
Diarrhoeal diseases	1.8	3.6			
TB	1.52	3			
Malaria	0.9	1.8			

Figure 5: Medical conditions causing morbidity

Medical condition	LEDCs % of total DALYs	Medical condition	MEDCs % of total DALYs
1. Heart Disease	7.0	1. Heart Disease	11.0
2. Lung diseases	6.5	2. Lung diseases	3.5
3. Unipolar depression	4.2	3. Unipolar depression	9.0
4 Perinatal	7.0	4. Alzheimer's	3.5
5. HIV/AIDS	6.1	5. Lung Cancers	3.1
6. Diarrhoeal diseases	4.5	6. Adult onset hearing loss	3.6
7. Malaria	2.9	7. Diabetes	2.8
8. TB	2.6	8. Alcohol Use Disorders	4.6
		9. Osteoarthritis	2.5

Figure 6: Main risk factors contributing to disease and morbidity, LEDCs and MEDCs



### Morbidity

Morbidity refers to the number of illnesses or cases of disease in a population over a given period of time. The World Health Organisation measures morbidity in DALYs (daily adjusted life years), the amount of health lost due to a disease or condition. As with death rates, there is an overall difference in the levels of morbidity, as measured in DALYs, between the LEDCs and MEDCs (Figure 5). It can be seen that the areas with the highest DALYs are, as might be expected, in the LEDCs, and those with lower figures are in the MEDCs. Sub-Saharan Africa is once again by far the worst region.

There are also basic differences in the causes of morbidity between the LEDCs and MEDCs. Heart and lung diseases and depression are common to both groups (depression is often a side-effect of malaria, common in many LEDCs). However, in LEDCs, perinatal conditions and the four main communicable diseases (HIV/AIDS,

diarrhoeal diseases, malaria and TB) are important, whereas in MEDCs it is conditions of old age and affluence e.g. Alzheimer's disease, osteoarthritis, hearing loss, alcohol use and diabetes, that are important.

Figure 6 shows data from the WHO on the main risk factors contributing to the global burden of disease and morbidity. Once again, clear differences can be seen between LEDCs and MEDCs:

- In LEDCs the four main risk factors affecting morbidity are linked to nutrition (being underweight), the environment (unsafe water, sanitation and hygiene), poor living standards (indoor smoke from solid fuels – mainly wood) and the social disease of HIV/AIDS (unsafe sex).
- In MEDCs the risk factors are linked to lifestyle: blood pressure (stress), and physical inactivity, leisure activities (tobacco and alcohol and illicit drugs), diet (being overweight, high cholesterol levels, low fruit and vegetable intake).

### Health

The World Health Organisation, the major authority in the world dealing with health issues, has defined health as 'a state of complete physical, mental and social well-being'.

The state of health of the population of a country affects the levels of mortality and morbidity. Good measures of the overall health of a population are its life expectancy, i.e. the number of years a person is expected to live, and infant mortality (see above).

### Global patterns of life expectancy

Once again there is marked contrast between values in the MEDCs (as high as 82 in Japan) and the LEDCs (as low as 40 in Swaziland).

However, there are some exceptions to this generalisation.

- Some countries, like Saudi Arabia, have very high GNP per capita but don't have the highest life expectancies (75), and there are countries like China that have much lower GNPs per capita yet have high life expectancies (73).
- Women almost always have higher life expectancies than men in both groups of countries. Currently, the worldwide average life expectancy for all people is 64.3 years, but for males it is 62.7 years and for females life expectancy is 66 years. The difference between the sexes ranges from four to six years in North America and Europe, to more than 13 years in Russia.

There are also variations between groups within single countries:

- well-educated professionals working in offices have a higher life expectancy, while coal miners and manual workers have a lower one
- poverty, in particular, has a very substantial effect on life expectancy, which in the wealthiest areas in some MEDCs is 10 years longer than the poorest areas
- there are often significant differences in life expectancy between different racial and ethnic groups, even within the same country.

Historically, life expectancy has increased as the main factors affecting it have improved. Unfortunately, the recent HIV/AIDS epidemic in LEDCs has reversed this trend, and affected

countries tend to have some of the lowest values in the world. It has been estimated that life expectancy would have been 62 in Sub-Saharan Africa without this disease, whereas it is currently 47.

The factors affecting life expectancy include nutrition (diet and food supply), living standards (availability of clean water supply) and the level of health care provision etc.

**Nutrition**

One of the main features of maintaining the health of an individual is having a ‘healthy’ diet. This does not necessarily mean having sufficient food, but having enough of the correct types of foodstuffs, e.g. proteins for growth, vitamins for resistance to infection etc as part of your diet on a regular basis.

The average world calorie intake per day is 2,870k calories. In LEDCs the figure is 2,750 and in MEDCs it is 3,450 – a difference of 700k calories per day. However, a closer look at the breakdown of the diets shows that the intake of animal products is much lower in LEDCs (35 kg of meat compared to 85kg, and 80kg of milk compared to 220 kg), and that of cereals such as maize and rice is higher. So the LEDCs have a less nutritious diet.

Undernutrition and malnutrition are underlying factors in more than half of child deaths in LEDCs, as children are more likely to catch infectious diseases with a lowered resistance. More than 200 million children in the world today are malnourished, and this shortage of protein, vitamins, iron and zinc affects their physical and intellectual growth and ultimately the overall qualities of the adult population.

**Clean water supply and sanitation**

Many infectious diseases which are linked to death in LEDCs are related to a lack of clean drinking water supplies and sanitation, which in the developed world are taken very much for granted, but not so in LEDCs.

- Each year 1.8 million people die from diarrhoeal diseases including cholera; 88% of these cases are linked to unsafe water supply and inadequate hygiene. Improved drinking water supply and better sanitation reduce this figure by one-third.
- Each year 1.3 million people die of malaria. There are 396 million episodes of the disease each year,

especially in Sub-Saharan Africa. Better management of water resources reduces this problem considerably.

500 million people are at risk from trachoma and 146 million are threatened by associated blindness. Morbidity from the disease can be reduced by around 25% by improving access to safe water sources and better hygiene.

**Health services**

Health workers are unevenly distributed throughout the world, with a considerable imbalance between MEDCs and LEDCs. In the Americas the average number per thousand people is 23, whereas in SE Asia it is four and in Africa as low as two. There is also an imbalance within countries, urban areas having much higher numbers of health workers than rural areas.

A recent study clearly illustrated this imbalance. It found that the Americas have 14% of the world’s population but only 10% of the total global burden of disease, whilst Africa has 11% of the population but 25% of the disease burden. Africa has only 3% of the world’s health workers and less than 1% of global health expenditure, compared to corresponding values of 42% and 50% in the Americas.

Many LEDCs, most of them in Africa and Asia, face a severe health workforce crisis. The WHO estimates that a total of four million health workers are needed to fill the gap. There is a direct relationship between the ratio of health workers to population and survival of women during childbirth and children in early infancy.

It is not just the number of health workers in a country that affects the

health of its population. The level of government spending per capita is also important. The actual cost of treating many of the conditions from which large numbers of people die is often quite low per patient; it is often the sheer numbers of patients and an overall lack of available money that is the problem. For example:

- 2 million children, (one-fifth of all deaths) under the age of five die annually from pneumonia. It costs only about 15 pence per head to treat/prevent the illness with antibiotics
- 1.8 million people die each year from diarrhoea; oral rehydration therapy costs only 10 pence per head, but the funds are just not available.

**Conclusion**

It has been seen that higher death rates, infant mortality rates and levels of morbidity are to be found in the LEDCs than in MEDCs, although there may be some anomalies due to local factors. Overall, it can be concluded that the chronic and degenerative diseases associated with old age predominate in the MEDCs, whereas the infectious and parasitic diseases (along with childbirth-related deaths) associated with much younger ages, prevail in LEDCs. These patterns are closely related to the widely differing features of nutrition, access to clean water and sanitation and health service provision found in the two groups of countries. The gap seems to be narrowing between the two groups in some regions, but sadly the HIV/AIDS outbreak has slowed down or reversed this trend in other areas. Sub-Saharan Africa is most definitely a leading cause for concern at present and is one region on which the attention of the world needs to be focused in the next few years.

**F O C U S Q U E S T I O N S**

- 1 (a) Describe the global pattern of mortality.  
(b) What are the main differences in the causes of morbidity in the world?  
(c) Describe three main factors affecting global patterns of infant mortality.
- 2 Imagine that you are a worker for a leading charitable organisation devoted to improving world child health. Describe and explain what features you would include in a development plan for an LEDC with high levels of child mortality and morbidity.
- 3 The headline ‘Sub-Saharan Africa population is a leading cause for concern’ was recently seen in a geographical magazine. Explain what the author meant by this statement.