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Geography of Health

Supported by TÁMOP-4.1.2-08/1/A-2009-0038.
The objectives and contents of health geography education

1. The objectives of teaching health geography

The aim of the health geography course is to introduce the students to the special features of the development and the research areas of the science of health geography. It aims to present the indicators, values and characteristics that can be used to describe, compare and contrast the state of health of the population. It describes the health geography characteristics of the developing and the developed world. It devotes a chapter to the health of the Hungarian population.

Beyond describing the ordinary topics of the subject the course intends to familiarise the students with the current global environmental processes that influence the health of the population as well as their consequences. The preventative facilities and opportunities that are crucial in the shaping of health conscious behaviour are also introduced (medical and wellness tourism, healthy diet etc.). The importance and possibilities of cooperation and collaboration in order to improve the quality of life and life prospects are also discussed in the course material.

Completing the course the students will acquire the knowledge necessary to be able to understand the reasons, causes and consequences of the regional differences regarding the quality of life and life prospects of the population. The students’ social competence and environmental attitude are expected to improve due to the course as well. The completion of the course will contribute to the improvement of the students’ geography conscious attitude, it will help them recognise cause and effect dependencies, and will also enable them to see the health effects of economic development and social-cultural characteristics. It will make the student understand the importance of their responsibility for themselves and for their environment and that of health conscious behaviour. They will see that international collaboration is indispensable in the moderation of the health care problems of the world.
2. The topics covered during the course:

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1. What is health geography?

Objectives:

Our aim is to present the development, the main trends and research activities of this area of science. We also intend to prove the interdisciplinary nature of health geography by showing the connections between different disciplines as well as raise interest about health geography as the area of science that deals with current social and environmental issues.

Contents:

1. The definition of health geography
2. Trends in health geography
3. The development of the discipline in Hungary and our most important representatives
4. Health geography and environmental awareness

1.1 The definition of health geography and its place in the science of geography

Health geography is one of the new and exciting areas of geography though its roots date back to ancient times. It is continuously evolving, developing and is being extended with more and more research areas. The notion of health geography and its research tasks have been defined by many in various ways, some scientists emphasise its connection with medicine whilst others highlight its links to sociology.

This area of science is already present in the science of geography in Hungary and its objectives and research areas tend to be defined with increasing precision. The characteristic features of Hungarian health geography may have been best and most concisely defined by Viktor Paál who said “Health geography deals with spatial-geographical matters in connection with health and health care.” (V. Paál, 2010) As the above definition shows health geography has two major fields: one is the study of the spatial properties and spatial-temporal changes of health (i.e. diseases and epidemics etc.), the other focuses on the revelation of specific
features of the system of health care (e.g. location and accessibility), and their social-economic analysis.

Health geography belongs to the field of human geography, however it is closely related to physical geography concerning its areas and aspects of research. Its approach is both of regional and general geography. Its most important organisational principles are spatial, historical and chronological. (Figures 1. 2.)

*Figure 1*: Health geography in the system of geography and its most important connections (V. Paál and J. Tóth 2007)
Health geography is the independent inter- and multidisciplinary area and sub-discipline of geography. As we can see it in Figure 1 it is linked to other sub-disciplines of geography with particularly close connections to demography and settlement geography as well as social geography as all parts of human geography, and the development of economics and the standards of service facilities also influence the health of the population. Therefore in its research it relies on the figures of economic geography – especially of the food industries as well as the figures of catering geography. Among the areas of physical geography it is climatology and hydrology, which describe the phenomena and processes of the atmosphere and the hydrosphere that significantly determine the human living spaces, as well as pedology that are in close connection with health geography. This relationship is becoming increasingly vital due to the excessive environment changing activities of the society as healthy living space (clean air, adequate quality water etc.) is indispensable for the existence of a healthy society. Health geography increasingly relies on data provided by various geographical information systems (GIS) and this leads to stronger links to distance perception. As the examined phenomena and processes refer to one or more distinct areas of the geographical space, health geography also needs to cooperate with regional geography.
Besides having involved connections with many geographical sub-disciplines, health geography is also linked to other natural and social sciences such as biology, medicine from the area of natural sciences, information technology from engineering and history, economics and political studies from the area of social sciences. (Fig. 3.) Due to these multiple links its research area focuses on problems that are examined and observed by other sciences as well, with a different approach and aspects that of health geography.

Similarly to its multifold connections health geography has various methods of investigations ranging from natural scientific methods (observation, modelling, etc.) to research methods of economics and mathematics-statistics. Questionnaires, interviews and attitude analysis, which are common research instruments in sociology, are also typical tools in health geography.
1.2 Trends in health geography

Before introducing the different areas of health geography it is worth presenting the terminology of this scientific area.

There are three different denominations Anglo-Saxon countries have for this field reflecting its different definitions. The oldest phrase is “medical geography” which actually means that it deals with the spatial occurrence of diseases and the state of health of the population from a geographical approach. However, it can also be interpreted as the geography of health and in this case its research areas can be extended from the population’s state of health to the system of health care as well. The other denomination “the geography of health care” represents a trend that deals with the geographical aspects of health provision thus representing a new, social-sociological-economic view in its approach. The phrase “the geography of health” became common in the 1990s and covers the notions of this discipline. It is based on the need to expand our focus from ill health and its geographical analysis to the examination of the service system as well. Therefore its research includes the economic, political and cultural factors of health care. The names “Social Geography of Medicine and Health” and “Health Care Geography” are also used in English scientific literature.

In German the representatives of “Geomedizin” and the “Medizinische Geographie” promote two different approaches both in its content and attitude. Geomedizin is mainly supported by doctors and its research areas deal with the connection between the processes of the geo-spheres and the spatial occurrence of diseases and as such it is closely related to the human geography trend of natural geography. Its investigative tools are analytical. The name “Medizinische Geographie” is more popular with geographers and contrary to the other trend it is more descriptive as it is concerned with the spatial occurrence of diseases and their spreading and aims to depict them on maps. (V. Paál 2007) It is worth mentioning that both phrases are referred to as “medical geography” in Hungarian.

In Hungary three terms are used to denominate this field, which represent different ideology regarding their content and views as well: medical geography, health care geography and health geography. Unfortunately the use of these terms are often confusing as on some occasions they are used as synonyms and in other cases they are used to emphasize the different approach they stand for. In Hungary the most common name is medical geography by which we mean the relationship between the diseases and the environment and the
cartographic representation of the spatial spread of diseases. In fact it is closest to the traditional English health geography trends, which are also called medical geography (V. Paál 2007). The first Hungarian scientific pieces were written according to this approach as well. Health care geography started to flourish in the 1980s, however, unlike foreign examples it strongly maintains its independence and it has not integrated into health geography which makes the synthesis of the scientific research and results in this area as well as the development of the internationally acknowledged complex health geography difficult.

The internal structure of health geography as a science is depicted in Figure 4. We can see that medical geography, with its longer pedigree, has a wider range of areas of research. New research trends, such as the emergence of an environmental-ecological approach, may serve the revival of the contents and the views of this discipline. Medical geography is the area that is most closely related to natural sciences and to physical geography as such, and yet it is rather closer to medicine than geography. Health care geography is a relatively new area and it has a sociological and economic approach in terms of its subjects. Its internal structure and its new areas of research are not as elaborate as that of medical geography and its subjects are more interwoven as well. Health care geography is closely related to human geography and there are many geographers among its experts. However, it is apparent that these two disciplines complement each other well regarding their contents and approaches, and as both are included in health geography this phrase seems fitting for this independent area of science.
1.3. The development of the discipline in Hungary and our most important representatives

In Hungary medical geography has older traditions among the disciplines related to health geography. Its history dates back to the medical papers in the 17th-19th centuries. In fact these medical notes can be considered as the earliest case studies of scientific relevance. In these medical papers doctors noted down their own personal experiences about the health statuses of a town or a county and they also described the geographical features of the area. They revealed the health status of the population, the most common diseases, the status of the environment, informed about the poisonings, epidemics and hygiene, the quality of drinking water and spas, and gave account of the connection between the diseases and the climate. The first achievements of medical geography include the book introducing Hungarian spas by
György Werhner. He was the first to report on the thermal waters of Pöstyén in his work “Wonderful waters of Hungary” published in 1549. The demographic statistics of András Fáy in the middle of the 19th century can be related to this topic as well. The first real medical scientific pamphlets were published in the Weekly Medical Journal in 1858 with the title “Overview of the geographical distribution of people’s illnesses”. It was written by Samuel Károlyi, a well known doctor of his age, who reviewed a French scientific article in this piece. From the middle of the 19th century more and more professional articles were published with geographical approaches written by doctors. The scientists of medical geography were almost exclusively doctors who studied the geographical distribution of diseases.

Geography and medical geography connected in the 1960s. Dr Endre Réti is to be given credit for it as he had written several studies on medical history and instructive books on this matter. As a member of the Medical committee of the International Geographical Union he established the Medical Committee of the Hungarian Geographical Society which is the predecessor of the currently operating Medical Geographic Department. An acknowledged scientific journal, Geographia Medica Hungarica, was published from 1966, and it became an international journal with the title Geographica Medica in 1970. The establishment of the group of experts in Budapest was followed by the formation of provincial societies (in Nyíregyháza, Pécs). There were more and more scientific publications which indicated the upswing of research mainly in the field of environmental hygiene and environment-health studies. Thanks to the main research areas an increasing number of geographers could take part in the investigations. The medical geography trend reached its peak at the beginning of the 1990s, and the most significant scientific event, the conference on medical geography in Szeged was organised in this period in 1991. However, in 1994 the international scientific journal which had been issued for two decades ceased publication due to financial difficulties. Despite the hardships there were clearly definable trends in Hungarian medical geography. The study of the environmental factors that influence the appearance and prevalence of illnesses became the most important question. The main research areas connected to the fields of disease ecology, geographic epidemiology and health meteorology. Among the studies of effects of environmental factors the analysis of water quality, the study of the health consequences of arsenic and pesticides in water and the medical geographical analysis of spas were the most significant. There were several interesting new investigations on specific areas such as the geographical examination of herbs and traditional healing practices, nourishment-geographical concerns, and the connection between lifestyle, regions and illnesses etc. On the
other hand medical geography preserved its independence and its close relations to medicine. It did not integrate into the modern trends that deals with the geography of the system of health care.

Modern health care geography trends appeared in Hungary in the 1980s. To name the relatively new area of science we had two expressions: health care geography and the geography of health care provision. Its origins go back to the beginning of the 20th century. The first relevant piece was published in 1909 written by Jenő Barsi, who studied the relationship between the number and distribution of doctors and the health status of the population. (Jenő Barsi: The distribution of Hungarian doctors and the health of the country) Bela Johan is worth being mentioned, who examined the organisational questions of public health care. From the 1970s on geographers became involved in research and the first serious works in connection with geography were published, for instance the analysis of regions of health care institutes (István Pénzes, József Tóth, and Éva Orosz from the 80s). Thanks to this health care geography has become an independent research trend within health geography and it has also preserved its independence from medical geography, and it has woven more links to social geography. In recent years research has begun in new subjects such as the comparative analysis of the system of health care, the spatial differences of health care resources, regional investigations and the applications of GIS.

1.4. Health geography and environmental awareness

We have been describing health geography, which is a new and exciting subject of geographical education due to its current social relevance, as an independent discipline from the point of geography.

In several areas of their training geographers, for instance regional and regional development geographers, region managers, who deal with the utilisation of local resources, may find medical geographical research about the locals’ health, and health care geographical studies on the development and quality of the local health care services useful.

However, it is worth mentioning that health geography has another role. Due to its contents and problem oriented approach this discipline and its subjects have a place in geography teacher training. Studying health geography future teachers gain such knowledge that is beneficially applicable in public education and in geography lessons.
Health geography plays an important part in the realisation of prioritised innovative tasks in public education which are closely related to geography education. Consequently it is crucial for future geography teachers to learn about health geography. *Figure 5.*

*Figure 5.*: The role of health geography in the realisation of development tasks in geography education

Health geography topics that deal with the connection between the condition (quality) of the environment and health (environment-health studies) might be particularly useful. These topics might have a vital role in the fulfilment of the aims of environmental education and in shaping an environment-conscious consumer attitude. These days eating healthy food and the question of lifestyle, preventing illnesses and the understanding of the importance of prevention have become increasingly important – and health geography could have an essential role in achieving them.
Summary

Health geography deals with the spatial characteristics of the state of health, their spatial-temporal changes as well as the revelation of the features of health care systems and the analysis of their social-economic effects. Health geography is divided into two main research areas: medical geography and health care geography (the geography of health care provision). Medical geography, which has older traditions, is closer to medicine and physical geography, while health care geography studies the state of health care from a sociological and economical point of view and its research areas are closer to human geography. In Hungary medical geography has a longer past though the geography of health care has been dealt with by more and more experts since the 1970s as well. Both research areas provide results that can be well used in education in fulfilling the requirements of teaching healthy lifestyle.

Revision questions
1. What is the difference between medical geography and the geography of health care provision?
2. Place health geography in the system of sciences. Why does this area of science have a specific place in this system?
3. What are the most important trends in health geography? How can the Hungarian development of this science be described?
4. Where and how can health geography contribute to the fulfilment of development tasks in education?

Test
Group the statements and write the according numbers in the appropriate set.

1. The history of the area goes back to the medical notes in the 17th-19th centuries.
2. The first relevant piece in Hungary was written by Jenő Barsi and published in 1909.
3. It belongs to health geography.
4. Its experts are mainly doctors.
5. Its significant research area is the study of the spatial distribution of diseases.
6. It has a sociological, economic approach.
7. It might play an important part in the education of environmental awareness.

Key:
2. Health geography and demographic definitions

Objectives:

The aim of the chapter is to introduce students to the most important health geography expressions, and to present the demographic and physical geographic definitions in connection with the topic. The aim of the introduction of these expressions and definitions is to provide the students with the necessary basic knowledge in the field so that they can comprehend professional materials and information on the subject thus enabling them to expand their knowledge independently.

Contents:

1. Basic definitions and terms
2. Demographic indicators relevant to health geography
3. Expressions to depict health statuses
4. Expressions in connection with health protection and health development

2.1. Basic definitions and terms

1. The definition of health

It is difficult to define health as the extension of this word is changing all the time. Its meaning, content has changed due to the development of the society and sciences. According to the common interpretation: one is healthy if he/she is not ill, or in other words: health is the absence of illness.

Health is defined in a wider sense by WHO in its referendum: “Global strategy for health for all by the year 2000”, accepted at the 32nd World Health Care Meeting in 1979 where the notions of the 1978 Alma-Ata International Health Care Conference continued. In this document we can read the definition of health that says “health is complete physical, mental and social well-being”. This approach is rather philosophical and idealistic and cannot be applied in medical practice.

The definition given by Gyula Kincses is more practical as he says: „Health is the accordance between the biological functioning of the individual and the functioning that can
be expected or/and can be accessible according to their age and gender”. Kincses expounds the subjective features of health, as he reckons it is based on the judgement of health (abilities and disabilities), the presence of pain and the nature of pain, and it depends on the individual’s mental interpretation and perception of all this.

As we have seen, deciding who is considered to be healthy depends on the judgement of the society and the subjective perceptions of the individual. From the point of view of the society, being able to work, to behave according to social expectations and to undertake roles in the society is primarily important. What a society considers healthy is in close connection with what they know of health and illness, and with their cultural traditions as well.

In connection with the concept of health we can talk about preserved health, presumed health, and restored health.

2. The definition of illness

Being familiar with the definitions of health we can easily define the concept of illness.

From the point of view of the society illness is a divergence from the ideal image of health accepted by the society, which divergence impairs the life quality of the individual and reduces or may reduce life expectancy. In other words it causes malfunction and pain and might lead to death as well. The divergence from the usual functioning, malfunctioning, can be recognised by the individuals and perceived by those who surround them. By this we also mean the health care environment i.e. the diagnostic tools that can help the recognition, and the health care provision system itself. The intention of the individual to do something against the illness and that of the society that helps via the health care provision system also belong to the definition of illness. This health care activity may either focus on healing or prevention.

Similarly to the definition of health, the definition of illness may vary according to the knowledge and cultural traditions of a society.

3. The ill person – the patient

Ill is the person whose health status has a deficit, divergence and has symptoms of his illness while he/she experiences the change in his/her health. In other words ill is the person whose illness is known by him/her or his/her environment irrespective of the fact that he/she does or does not receive health care provision. The patient needs provision and treatment in order to restore his/her health which may either be organised, specialist medical treatment or non-professional healing such as self-therapy.
From the point of view of the health insurance and the health care provision system the legal definition is much simpler, it says “a patient is a person who requires or receives health care provision”. (CLIV Act of health care, 1997.)

4. Epidemiology

Epidemiology deals with the spreading of infectious diseases. It used to study the way, and the spreading of infection, the spatial-temporal characteristics and their changes. Nowadays epidemiology has a more complex meaning. Besides studying infectious diseases it describes and analyses the characteristics of the health status of the population and the distribution and frequency of diseases. It is concerned with finding the characteristics that influence health and ill health. It studies the risk factors that play part in the emergence and frequency of diseases. The modern determination of epidemiology is illustrated in figure 1.

Figure 1: The structure of epidemiology

5. Health Policy

The role of health policy is to provide the conditions of health (preservation, achievement) for the population and communities. With its organised activities and control devices it can contribute to the promotion of health-attitude and health consciousness. It determines the rules, regulations and activities of the health care provision system (healing-provisional-financial system). It has two major areas, health promotion policy and health care policy.
6. Essential provisions

Essential provisions are the services that everybody has a right to irrespective of whether they have insurance or not. These services are the following: life saving, emergency provision and provision in connection with epidemics. Essential provision is not the same as basic provision, as the former means a certain group of provisions, the latter is a level of the health care provision system.

7. Equity, equal opportunities

In general it means that a particular feature of the health care system is distributed fairly among the members of the society. There is always a normative distributional aim behind this fairness and equality. It is fulfilled in terms of economics if the individual is not influenced by his/her financial status in his/her access to the health care services and when the tax-payers contribute to the operation of the health care provision system in direct proportion to their abilities.

National health insurance considers equity as a fundamental value besides fairness and cost-efficiency. In general it is true that we should use our common resources to grant fairness and efficiency (the better use of our contributed forints) in a way that it should serve the most health-benefit for the community. It is a correct principle though it can only be applied with limits. Regarding cost-efficiency certain therapies could not be justified, for instance intensive therapy above a certain age (statistically fewer expected life years can be saved with the same or more input than in the case of younger people), or the disproportionately expensive treatment of some other illnesses which might not even be successful. This, however, would not be right, according to the principle of equity everyone has the right to be treated equally, which means each age period and each disease must be treated equally, even if it is not cost-effective.

As the examples show above it is extremely difficult to decide what is equitable and what is not, and for making this decision good judgement of values is crucial.

8. The principle of subsidiarity

This is an important principle of the health policy of the EU. It means that problems must primarily be solved where they occur. The possibility of higher level intervention has to be maintained though its exploitation has to be minimised.
From the point of view of health insurance it means that the individual has to take care of oneself and has to act in order to remain healthy, and this care cannot always be replaced by care taken by the community. Therefore the principle of subsidiarity means that it regards individuals as partners in the preservation of their health, and makes them concerned with their self-provision without decreasing their safety. This principle is also important in the successful education of health consciousness.

8. Health Technology

It is the collective term for the medical technical-technological environment. It includes:

- medicine used in health care provision,
- various biological products (e.g. vaccines, blood preparations),
- activities using the devices such as diagnostics, therapy, rehabilitation, prevention
- medical-technical tools and materials such as instruments used in treatments, health care appliances, implants and bandage.

According to another definition health technology is the collection of activities, instruments and materials that are used to preserve or restore health, and diagnose health statuses.

10. Health care activity

Legally health care activities include all activities that are parts of the health care provision system except those that do not require health care qualifications or the supervision of a person with these qualifications. In common sense it means the activities that serve the protection of health, the prevention of illnesses, healing and soothing pains, care taking, nursing or the rehabilitation of health.

11. Healing and preventative provision

It is the collection of all healing and preventative procedures that are done by a specialised health care staff. Its most important activities are:

- screening examinations
- lifestyle consulting, information
- diagnostic examinations
- therapy planning
• treatment, operations
• medication
• specialised nursing
• physiotherapy
• holistic medicine – examination and treatment

12. Diagnostics

Diagnostics are activities that aim to discover the reasons for the patients’ complaints, to describe the patient’s state of health and to prove the presence or the absence of the suspected illness. It is the basis of medical activity which in itself does not aim to change the patient’s state.

Diagnostics can occur as part of the healing procedures or as diagnostic specialised activities for instance picture diagnostics (e.g. X-ray, ultra sound, CT, MRI), laboratory diagnostics (e.g. blood count), or pathological examination (e.g. histology, cytology examinations).

13. Therapy

Therapy is the activity done by a specialised staff – based on the results of diagnostics - with the purpose of healing illnesses, the stabilisation of the patient’s status, and soothing the complaints e.g. pain. The aim of the therapy may be to cease the illness or the reason of the complaints (reason therapy), or to mitigate the complaints or the symptoms (symptomatic therapy). The methods and instruments of the therapy in most cases include medicinal and/or surgical (operation) interventions, as well as the application of several physical effects (mechanical, electrical, thermal effects and various radiations), dietetics, therapeutic gymnastics.
14. Etiology

Etiology (aetiology, aitiology) is the study of causation or origination. The phrase is derived from the Greek aitia (reason) and logos (-logia). In medical science etiology studies the reasons and background of illnesses.

15. Pathology

Pathology (derived from the Greek pathos = pain, logos = logia) studies the structural and functional changes of ill cells, tissues and organs. Pathology is considered to be the basis of medicine as it connects theoretical sciences with healing. It searches connections between the morphological and functional transformations that cause the symptoms of the illnesses and the patients’ complaints.

16. Chronic disease

Illnesses that cause reduced physical and mental functioning are called chronic diseases. In many cases progressive deterioration and shorter life expectancy can be predicted. These diseases require regular or constant medical supervision or treatment (e.g. diabetes, asthma, epilepsy, damage of the nervous system, locomotor impairment).

17. Acute diseases

Acute, fast illnesses that are over in a few days or weeks are acute diseases. Most fevers e.g. flu, or children’s infectious diseases belong to this category. Between the chronic and acute diseases there are sub-acute and semi-acute illnesses.

18. Degenerative diseases

Illnesses that are accompanied by tissue transformation and degeneration are called degenerative diseases. The transformation may be temporary or permanent.
2.2. Demographic indicators relevant to health geography

1. Population

Population is a particular set of living creatures that are considered to be identical according to a certain aspect of the examination. In demography it is a certain, well confinable group of people, generally who live in a country or a particular geographical unit. In statistics there is distinction between the inhabitants of a certain area – local population, and the collection of the citizens of a country. From the point of view of public health the definition of population is different. In this case all the people involved in a particular public health matter irrespective of their citizenship or even their residence are determinative.

2. Population pyramid

The population pyramid shows the distribution of a population according to gender and age, in a way that the number of women of a certain age group or year group are indicated on the right of the picture and the number of men appear on the left. It may be seen as a strip chart placed on top of each other. (Figure 1.)

*Figure 1*: The population pyramid of Hungary in 2010 (source:fogalomtar.eski.hu/)
There are three types of population pyramids. The shape of the various pyramids demonstrate the age structure of a certain population according to genders. (Figure 2.)

1. The population pyramid with the shape of a pyramid or a Christmas tree is typical of young groups that are growing in number. The wide and narrowing base refer to the high number of births and high mortality. It is typical of developing countries and nature peoples.

2. The bell or beehive shaped population pyramid is describes a population that is in balance with a stagnant number of population. There are nearly as many young ones as old ones and more and more people live until old age.

3. The urn or barrel shaped pyramid depicts an ageing and diminishing population. The narrow base shows the decreasing number of young people and the widening top means the increasing number of old people. This shape is typical of many economically developed countries. Hungary’s pyramid is like this as well.

Figure 2: Types of population pyramids (1. pyramid, 2. bell, 3. urn)

3. Population predictions/estimations

It is the estimation of the number of the population, its composition of people according to age and gender for future dates. The number of the future population and composition of a country is calculated considering the suspected ratio of births, deaths and migrations. These estimates are made considering the probabilities of various future demographic processes and thus many variations are made. The version that is regarded as the most probable one is called the basic version. These predictions are used in many areas such as in forming health care and education policies and for planning economic strategies. Predictions foretelling the demographic data of a country or the whole world are the most common ones, but estimations
could be done for any other unit of area i.e. county, shire. The estimates can be the following according to the time-span:

- short term predictions: predicted period of time is maximum 5 years
- long term predictions: the predicted period of time is minimum 25 years

4. Live births

It is the birth of a child that shows signs of life (e.g. breathing or heart functioning), irrespective of the time it spent in the womb or the period of time it lived. (KSH – Central Statistical Office). The crude live births ratio shows the proportion of live births to one inhabitant. The clear live births ratio shows the ratio of the live births in proportion to women of childbearing age (aged 15-49).

5. Mortality rate

The definition of mortality rate applied by the KSH (Central Statistic Office) is the following: mortality rate is the indicator of death as an event. Death is the ultimate ceasing of any signs of life after any period of time after the live birth. Briefly, it is the irreversible ceasing of life signs after being born live. In this sense embryonic death is not included in the statistics of deaths, it is indicated in another category. In practical terms death is an event that is verified in a death certificate according to the particular country’s legal procedures.

Mortality statistics consider the number of deaths in a population (generally in a country), in a certain period of time (generally a year). They group the data according to the description of the deceased (gender, age) and the circumstances of death (reason, scene etc.) and the point of investigation. The statistics based on death rates are reliable due to the regulations therefore they mean a firm basis for further health care studies.

The most important statistical mortality rate indicators:

Mortality rates

- Crude mortality rate: The number of deaths divided by the average population in the given year (generally for 1000 people, in %)
- Specific mortality rate: It is a gender and age specific rate. It shows the distribution of the deaths according to gender and age in the given year divided by 1000 members of the population of the same gender or age.
- Standardised mortality rate (SHH): It is the indicator that can be used to compare and contrast the mortality rates of several population groups (countries). In this case the mortality measures of a population group are calculated according to a chosen common standard population and its distribution of ages. The KSH and the WHO weighs the Hungarian mortality rates published in the statistical year books with the standard distribution of the European population.

- Standardised mortality rate quotient: This indicator compares the expected and the actual number of deaths based on a given population group. The expected number of deaths is calculated based on the actual deaths of the chosen population group. For instance the standardised mortality quotients regarding Hungarian counties are calculated with the number of deaths in the country and this is how the expected mortality rate of the counties can be estimated. If this indicator in a population group is higher than 100, the mortality rate is higher and the health status is worse in that certain population group than in the chosen standard one.

- Infant mortality: It is the death that happens within one year after live birth. The infant mortality ratio shows the number of infants divided by a thousand live births expressed in thousandths. The data of infant mortality are in close connection with the social-economic development of the particular countries thus they are regarded as crucial and reliable indicators of the state of development. It influences two other indicators as well which are the life expectancy at the moment of birth and the potentially lost life years. In Hungary the data of infant mortality is decreasing. It shows an improving tendency in the state of development but it is still far behind the average of the 15 most developed European countries.

- Embryonic loss: The sum of the number of embryonic deaths and abortions. In other words it is each pregnancy that does not end in live birth.

6. Embryonic death

It is the death of the foetus before its birth, regardless of the gestation. According to the number of complete pre-natal weeks or the development of the foetus the embrynic death can be

- Early or mid-term embryonic death: abortion in the first 22 weeks (early), abortion between 22-24 weeks (mid-term).
Late term embryonic death: The foetus did not show any sign of life after its separation from the mother and more than 24 weeks have passed since the conception. If the age of the foetus cannot be determined, the fact of late embryonic death is determined based on the length and the weight of the embryo (minimum length 30cm, minimum weight 500 grams).

7. Perinatal death

It is the sum of the late term embryonic deaths and the infant deaths (in the first 0-6 days). This is the indicator number of perinatal deaths regarding the last trimester of the pregnancy and the first period of infancy.

8. Maternal death

It studies death in connection with pregnancy and childbirth from the mother’s point of view. It shows the number of maternal deaths at the time of pregnancy, delivery and the post-natal period. It is an important indicator which refers to the quality health care provision system especially the quality of the prenatal and matenity care. It also shows the connection between practices of the prohibiton and the permission of induced abortions.

9. Induced abortion

It is the deliberate artificial termination of pregnancy. It may have two reasons:

- Health reasons:
  - The mother's life, health is seriously endangered by the pregnancy,
  - severe damage to the foetus can be detected by appropriate tests
- Non-medical reasons: the abortion is typically carried out at the request of the mother

Induced abortion is regulated by law in Hungary.

3 Derived indicators

1. Natural increase and natural decrease

It is the difference between the number of live births and deaths. It is given divided by a thousand members of population and is expressed in thousandths. It shows whether the population has grown or decreased within a year in a certain area (normally a country) in terms
2.3. Definitions and terms that describe health status

1. Morbidity

It is an indicator that can help describe the health state of the population, which indicates the frequency in the occurrence of non- or not necessarily fatal diseases. It can be defined regarding the whole population or a confinable group of the population. We can distinguish registered, latent and real (registered and latent together) morbidity. The sources of registered morbidity are the compulsory disease reports, disease registers, the data of the National Health Insurance Office and the statistical reports of health care institutes. We can define latent morbidity numerically with the help of epidemiological trace examinations or the results of screening examinations.

2.3.1. Indicators derived from mortality rates

1. Life expectancy at the moment of birth

It is the number of years that those born in that certain year can live, provided that the circumstances influencing death rates remain the same, considering the age-specific mortality rates. Therefore, life expectancy at the moment of birth is the average number of years that infants can hope to live supposing the circumstances will not change and that the age-specific mortality rates of that particular year are valid for them. This average life expectancy, however, is not identical with the life prospects of those born in that particular year as this indicator describes the prospects and mortal circumstances of the given population. The two values would be the same only if no conditions changed, e.g. medicine did not develop, lifestyle did not change or if environmental or social conditions did not change. As it never happens in reality, those born in a particular year have much better prospects than the calculated value.

Average life expectancy at the moment of birth is the most important indicator from the point of view of mortality rates of a population. At the beginning of the 20th century its value increased rapidly in developing countries. Initially it was due to the decrease in the number of epidemic deaths or infant and child mortality. Nowadays the increase of life
expectancy has slowed down due to demographic-social processes, and the growth can be explained by other reasons. In the ageing societies of the developed world people live longer lives, lifespan increases due to the decrease of old age deaths.

2. Average life expectancy at a certain age

It expresses how many years can people of various age groups expect to live regarding the mortality rates of the given year. This is the average number of years that they may expect to live supposing the circumstances will not change and the age-specific mortality indicators of the given year are valid for them.

The average life expectancy at a certain age is not the same as the difference between the life expectancy at birth and the given age. In the calculations the number of deaths at that age in that certain year are taken in consideration. Deaths before that age (e.g. infant deaths) are not included.

3. Avoidable mortality

Avoidable mortality is the death that could have been avoided or prevented based on the current knowledge and application of medicine. Early deaths can be divided into two groups:

- Death that could be avoided with proper medication.
- Death that could be avoided with prevention.

It is worth mentioning that there are different indicators that show which of the various reasons are considered to be avoidable at certain ages (regarding the differences between genders). There may be various geographical, social-economic features in the background of these differences.

In all developed countries it is more and more important to reveal and decrease these avoidable deaths. To achieve this, strategies, action programmes, instructive campaigns are worked out. The health care provision system is studied in order to make it more efficient in the reduction of avoidable deaths. Deaths before the age of 65 are considered to be avoidable.

4. Potential Years of Life Lost - PYLL

It belongs to the indicators that deal with avoidable mortality. It shows the number of lost years due to avoidable deaths in the given population in comparison to the average life
expectancy (now it is 70 years according to agreements). In other words it is the number of years deducted from the generally expected 70 years. The difference in social-economic development and geographical conditions may also be responsible for the differences in the indicators.

The potential years of life lost cannot only be calculated referring to areas or gender but also referring to certain illnesses or groups of illnesses. This way the various reasons responsible for the avoidable deaths can be revealed. This information can aid the planning of the appropriate and efficient prevention and treatment.

2.3.2. Indicators calculated based on the measured or estimated quality of life, and others

1. Quality of life

In general it expresses the level of the well-being of the individual or the population according to various important physical, social and emotional aspects. There might be significant differences in its definition due to different approaches.

The improvement of the quality of life is a highly important aim of our present day societies. Many areas of science deal with the study of the quality of life and the factors that influence it. One of the most well-known instruments of the research is the EQ-5D self-completing questionnaire which is designed to assess the general quality of life in connection with health (health-related quality of life). There are five dimensions of questions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression) and three levels of answers (1: the least, 3: the most). Based on the answers a certain image of the health status of the interviewee can be described.

2. Quality-Adjusted Life Years - QALYs

The QALYs (Quality-Adjusted Life Years) is the generally accepted measuring instrument of health-gain, which makes it possible to compare and contrast different illnesses, health care procedures and technologies. It can denote the changes in life time and quality of life using only one indicator. In its calculations years of life-gain are adjusted by quality weights where 1 means complete health and 0 means death. (The quality weights on the 0-1 scale reflect the preferences of the individuals that belong to this health group.)

The QALYs are used to compare and contrast the efficiency and usefulness of different healing procedures. The subject of the analysis is how many years (and of what
quality) can certain procedures add to life. It is also suitable for cost-efficiency analysis which shows the costs of one unit of health improvement when applying a given procedure.

3. Disability-Adjusted Life Years - DALYs

The DALYs (Disability-Adjusted Life Years) is an indicator similar to QUALYs which denotes the years of lost life due to early death (YLL - Years of Life Lost) (mortality) and the years lived with disability (YLD – Years Lived with Disability) (morbidity) based on only one indicator. This indicator was created to measure and quantify the burden of disease.

A DALY unit equals to a year of life lost that could have been lived in complete health.

4. Health adjusted life expectancy (DALE, HALE)

The average life expectancy without any disability that can be expected at the moment of birth (Disability-Adjusted Life Expectancy (DALE), in its new name Health-Adjusted Life Expectancy (HALE) means the number of years an infant can expect to live in complete health, free from disabilities. (Supposing their health circumstances will not change.) Its calculations are based on the average life expectancy indicator, however not only mortality but illnesses are taken into consideration, too.

This indicator was introduced by WHO in 2000 in its World Health Report, in order to depict the health and the years spent healthily of the population in the survey.

5. Functional disabilities (restriction)

It shows how much an individual is able to execute various activities. In this respect there are three distinguished levels which also express functional disabilities. The previously mentioned EQ-5D questionnaire is used to measure it.

- Impairment: anatomic or functional problem that can be compensated by adaptation or adopting a certain behavioural pattern.
- Activity restriction: it hinders the execution of a certain physical or mental activity. The individual cannot compensate the restriction.
- Participation restriction: participation in social life and following certain roles is problematic. It is more severe if the individual needs the help of others.

6. Supposed health (personally experienced health)
It is a particular indicator that is based on the individual’s own opinions and feelings in connection with his or her health. Besides the functional disabilities indicator it is one of the most common tools to describe health. It is suitable to express the quality of life as well. However, we should acknowledge that it does not always coincide with the health status diagnosed by doctors. Self-assessment is influenced by factors such as the individual’s social, financial and cultural status, home and dwelling circumstances and education level etc. Surveys show that people who belong to socially disadvantaged groups judge their health worse than those who are in more advantageous positions. Supposed health is measured by questionnaires where the interviewees have to indicate their level of satisfaction with their health on a multi-level scale.

7. Health Impact Assessment – HIA

Health impact assessments (estimations) are complex analytical methods that can be used to examine, evaluate and assess the prospective effects of various economic, health care measures, regulations and improvements on the population’s health. Health Impact Assessment is a modern dynamically developing research area that emerged at the end of the 20th century. It has a separate branch that deals with the impacts of health care technologies.

8. BMI

The Body Mass Index (BMI) describes the degree of obesity. The BMI is calculated by dividing the body mass in kilograms by the square of the height in metres (BMI=kg/m2). According to the value of the index a person can be
- underweight: if the value of the index is less than 20
- of normal weight: if the value is above 20 but not more than 25
- overweight: if the value is between 25 and 30
- obese: if the value is above 30.
2.4. Definitions and terms in connection with health protection and health promotion

1. Prevention

Prevention means the medical and non-medical health care procedures, lifestyle suggestions, motivating tools, methods that aim to prevent illnesses, to recognise illnesses in time as well as to avoid further complications. Primer prevention aims to prevent the occurrence of the illness. In most cases it does not involve medical instruments, but lifestyle consulting and the elimination of effects that are harmful for the health of the individual. Primer prevention can also be based on medical activity, e.g. administering vaccines. Secondary prevention aims to recognise illnesses at a very early hidden stage, before the individual might have complaints. Due to this illnesses can be healed faster and with more probability at lower costs. Secondary prevention generally involves medical tools and its most common form is screening. Self-examination, e.g. home blood sugar testing, belongs to this category. Tertiary prevention aims to prevent impairment, functional disabilities, pain and other health deficit statuses that occur as consequences of illnesses. To achieve this, efficient, up-to-date complication-free healing procedures as well as early rehabilitation are applied. Owing to these, irreversible damages can be prevented.

2. Health promotion

According to the Ottawa Charter “health promotion is the process of enabling people to increase control over, and to improve, their health. Health promotion is the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to well-being.” (Ottawa, 17th -21st November 1986.)

According to the Charter health promotion should be present in the following areas:
• Health promotion demands coordinated action by policy makers and all the areas of politics. Decision makers should be made aware of the possible consequences of their decisions on the health of the population. Decisions that favourably affect health status either directly or indirectly should be facilitated.

• Environmental factors are to be changed for the better in a way that they should serve the good health of the individual.

• Health promotion should be present in social activities so that communities could take an active part in making decisions that affect their health and they could control their realisations.

• Health promotion is a personal interest as well, and the ability to protect one’s health should be improved. Providing the individuals with adequate information and enabling life-long learning is crucial so that the individuals can make the best decisions concerning their health.

• Health promotion should be taken in consideration in the reorganisation of health care provision systems in a way that they serve the preservation of health the best way.

3. Health education

Health education is a special interdisciplinary area which connects medicine to pedagogy, psychology and sociology. Its role, beyond helping the preservation of physical health, is to motivate health preservation, and to facilitate the realisation of the principles of social coexistence. Its aim is to raise health awareness and improve health culture thus enabling healthy lifestyle to spread, to shape attitudes in order to preserve health, prevent illnesses and aspire to heal quickly. Its role in education has increased due to recent curricular reforms.

4. Quality of life improvement

The improvement of the quality of life can be put down to two factors:

• Real, objective improvement: the pain ceases or decreases and health functions and activities improve (e.g. self-care, movement, communication, working ability).

• Subjective, psychological factor: the ability to live together with the status, to accept and become reconciled with it.
5. Health protection

Health protection is the process that enables individuals and communities to use their power responsibly in order to preserve their health. (Ottawa Charter 1986) The aim is to achieve better health and wealth but according to other concepts it may be the maintenance of good health as well.

6. Screening and check-up

It is the regular examination of healthy individuals or of those who consider themselves healthy. Its purpose is to reveal hidden illnesses, changes that have not caused symptoms yet. It is the essential tool of secondary prevention. Participation is generally on voluntary basis. However, it may be made compulsory in the case of contagious illnesses, and when the individual may endanger the health of the community. The participation is initiated by the organiser. The advantage of screenings is that in the case of a “positive” result the illness can be diagnosed earlier therefore the necessary treatment can start in time.

7. Health conscious behavior

Health conscious behaviour is the attitude and lifestyle in order to preserve, protect and improve health when the individuals:
• make decisions concerning themselves and their environment considering the aspects of health
• control their habits, activities consciously and actively participate in the protection and improvement of their health (e.g. proper nourishment, exercise, no harmful addictions)
• acquire the skills of self-help and non-professional help
• learn and apply the well-informed, conscious consumer behaviour in connection with health care and the health care provision system, e.g. know the nature and outcome of illnesses, the facilities of the health care provision system, are aware of the rights of patients, and has knowledge about consumer protection.

8. Health monitoring system

It is the regular collection, analysis, interpretation and information of data about the population’s health status and their determining factors. It has an important role in evaluating health care provision services, in planning and establishing health care policies.
**Summary**

There are basic definitions among the essential technical terms concerning studies and research in health geography. These are the definitions of demographic indicators, definitions to describe health statuses and definitions in connection with health protection and health promotion.

**Revision questions**

1. Give the definition of health.
2. List the health geography related demographic indicators.
3. What is the difference between chronic and acute illnesses? Give examples for both types of diseases.
4. List some indicators derived from mortality.

**Test**

Match the abbreviations with their definitions and write the numbers of the abbreviations on the dotted lines. There are extra ones you will not need.

1. PYLL
2. DALYs
3. BMI
4. QALYs
5. HALE
6. HIA

……. It is an index number that can describe the degree of obesity.

……. It is the generally accepted measuring tool to express health-gain which makes the comparison of different diseases, health-care procedures, and technologies possible.

……. It shows the number of years of life lost in the case of early death in comparison to the average life expectancy (it is 70 years according to mutual agreements) in a given population.

……. They are complex analytical methods that help the examination and assessment of the prospective impacts of different economic and health care policies, regulations, improvements on the population’s health status.
……. It is the average life expectancy without disability at the moment of birth, i.e. the possible number of years that an infant can expect to live in whole health free from any health damages.

**Answers:**

3. It is an index number that can describe the degree of obesity.

4. It is the generally accepted measuring tool to express health-gain which makes the comparison of different diseases, health-care procedures, and technologies possible.

1. It shows the number of years of life lost in the case of early death in comparison to the average life expectancy (it is 70 years according to mutual agreements) in a given population.

6. They are complex analytical methods that help the examination and assessment of the prospective impacts of different economic and health care policies, regulations, improvements on the population’s health status.

5. It is the average life expectancy without disability at the moment of birth, i.e. the possible number of years that an infant can expect to live in whole health free from any health damages.
3. The specific health geographic characteristics of the developing world

Objectives:

The aim of the chapter is to introduce the students to the health characteristics of the population in the developing world and to show their difficulties in accessing health care provision as well as the factors that impede the development of health care services.

Contents:

- Demographic and social-economic features
- Health and life prospects
- Environmental challenges

3.1. Demographic and social-economic features

The population of the world increased slowly until the 18th century. Epidemics, famines, wars and natural disasters decimated the populations of huge areas from time to time and so many infants died that even the high number of births could hardly compensate it. Due to the emergence of the industrial revolution this situation radically changed in Europe in the 18th century, where thanks to the improvement of life prospects the number of the population began to increase rapidly. Then, at the beginning of the 20th century the increase gradually began to slow down as there were fewer and fewer births, and nowadays we can witness the natural gradual decrease in the number of the population in many countries of the continent.

On the other hand, the situation of the countries in the developing world was similar to the one typical of the 18th century Europe until the middle of the 20th century. The change in the developing world happened extremely fast. The phases of the demographic changes that took centuries in Europe to evolve happened only within 50-70 years in the developing world. While the conditions of the population growth in Europe and North America were established as a result of a long internal social, medical, economic and infrastructural development, the medical, scientific achievements that changed the demographic processes reached the developing countries suddenly and from the outside. However, the population boom of the third world was not followed by social-economic and infrastructural development and in many countries the social-cultural restrictions that do not allow birth control are still in effect.
Development is impeded by the low level of education and the slow spread of health information.

Although there are different estimates about the world’s population, these predictions have one thing in common: population growth is increasingly typical in the less developed areas. According to the American researchers David Bloom and Clarence James Gamble the countries of the developing world will contribute to the global population growth with 97%, Africa itself giving 49% in the next 40 years. The population of the developed countries will mainly remain the same but its age structure will grow older. (Figure 1)

**Figure 1:** The probable growth of the population between 2009 and 2050

The previously stated facts are supported by the birth rate data from another aspect. (Table 1) We can see that the first ten countries contain 9 African – Tropic-African- ones, which are considered to be the poorest countries on their continent. The only non-African country is the West-Asian Afghanistan, which is also one of the most undeveloped countries in the world. (Though this chapter does not intend to cover the developed world, we need to note here that the lowest birth rate belongs to developed countries, where this figure is 8-9 %.)
Table 1: The countries with the highest birth rate in 2010

<table>
<thead>
<tr>
<th>Country</th>
<th>Birth rate</th>
<th>Country</th>
<th>Birth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Niger</td>
<td>49.5%</td>
<td>6. Democratic Republic of Congo</td>
<td>44.9%</td>
</tr>
<tr>
<td>2. Mali</td>
<td>47.6%</td>
<td>7. Zambia</td>
<td>44.5%</td>
</tr>
<tr>
<td>3. Uganda</td>
<td>46.3%</td>
<td>8. Somalia</td>
<td>44.2%</td>
</tr>
<tr>
<td>4. Chad</td>
<td>45.9%</td>
<td>9. Malawi</td>
<td>44.0%</td>
</tr>
<tr>
<td>5. Afghanistan</td>
<td>45.1%</td>
<td>10. Burkina Faso</td>
<td>43.9%</td>
</tr>
</tbody>
</table>

Source: UN Data

Link: [http://www.factfish.com/statistic/population%2C%20total](http://www.factfish.com/statistic/population%2C%20total)

We should also mention that in the past decades the dissemination of the methods of birth control and family planning has been started – thanks to UN and WHO information campaigns – yet it seems to be a slow process. Owing to this many developing countries see the decrease of natural increase. It is also undoubtedly true that the higher the average income per person and the level of education, the higher the average life expectancy at the moment of birth and it means a decrease in the number of births. Some governments (e.g. China) – being afraid of a threatening famine – try to control and hinder the demographic boom with strict population policy, and thus try to prevent catering problems and famine. This is partly responsible for the decrease in the population growth, which by now has decreased to its half, to 1.1% since the top rate of the 1960s. Now there are 7 billion people to be fed on the Earth and in 2050 there will be more than 9 billion people our planet will have to cater for.

We can also predict the future number of a population based on the fertility rate, which is a number that shows how many children a woman has on average in her lifetime. The highest rates can be found in African and South-Asian countries in this respect as well. (Table 2) (Note that in order to maintain the number of the population this rate should reach or near the 2.1 level.)
Table 2: Countries with the highest fertility rates (2010)

<table>
<thead>
<tr>
<th>Country</th>
<th>Woman/child</th>
<th>Country</th>
<th>Woman/child</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Niger</td>
<td>7.2</td>
<td>6. Uganda</td>
<td>6.4</td>
</tr>
<tr>
<td>3. East-Timor</td>
<td>6.5</td>
<td>8. Chad</td>
<td>6.2</td>
</tr>
<tr>
<td>5. Somalia</td>
<td>6.4</td>
<td>10. Malawi</td>
<td>6.0</td>
</tr>
</tbody>
</table>

Rapid population growth does not necessarily cause health crisis. (For instance the population of small rich oil countries e.g. Singapore, grows rapidly, basically because of the immigrating workers.) However in the cases of most developing countries the rapid growth of the population is not followed by economic growth. In these countries catering for the population and providing basic health care, coping with epidemics and fresh water supplies mean almost insoluble problems for the country. The extremely undeveloped agriculture cannot provide the people with basic rations, and there are more and more signs predicting a global nourishment crisis.

The sixth of the population in developing countries is starving: one billion people cannot get the necessary minimal (energy) nourishment. More people suffer from malnutrition, they eat one-sidedly and their food does not give adequate nourishment. Starvation and malnutrition (lack of vitamin and protein) weakens the body which cannot resist illnesses, and besides poor hygiene that is also the cause of the epidemics of contagious diseases. Starving, underfed mothers give birth to small babies often with malformations who are even more exposed to diseases and infections. In many economically undeveloped countries the infant and child mortality is alarmingly high for which the lack of nourishment and the basic hygiene necessary for safe childbirth are to be blamed. Millions leave the famine struck areas for more developed areas in the hope of a better life, but there is less and less tendency to accept poor and unskilled economic refugees.

It proves the absurdity of our world that while there is enough food on the world market, the poorest countries cannot afford to buy rations for their people. Food aid arriving
from abroad does not reach the ones in need but in most cases they serve the prosperity of the local ruling class.

The urban population grows even faster than the demographic boom, and they are in not an advantageous situation either. By the beginning of the 2000s half of the population was living in cities, and the fast swelling cities with population over 5 million can be found in the developing world – mainly in Asia and Latin-America. Cities cannot provide secure living to the mass of people migrating from overpopulated rural regions. 40% of the urban population of developing countries live in slums where most of them lack basic conveniences – electricity, drinking water. The appalling hygienic conditions, the crowd, the use of drugs and crime lead to the deterioration of life prospects.

3.2. Health- and life prospects

The mortality rate and the life expectancy figures demonstrate the health and life prospects of the developing world. (Figures 2 and 3)

![Figure 2: Countries with the highest mortality rate (In ‰, 2010, source: UN)](Central-African Republic, Bissau Guinea, DR Congo, Chad, Sierra Leone, Afghanistan, Lesotho, Zambia, Ukraine, Mali)
Africa’s most undeveloped countries have the highest mortality rates. We should note however, that the mortality rate is influenced by the age structure as well. Ukraine for instance has a high mortality rate because it is an ageing country and produces negative natural increase, and that is the same reason why Hungary is in the 30th place. Life prospects can be much better predicted by the average life expectancy at the time of birth. (Figure 3)

![Figure 3: The 11 countries where the average life expectancy at the time of birth is the lowest](Years of life expected 2010, source: UN) (Mozambique, Chad, DR Congo, Swaziland, Afghanistan, Zambia, Bissau Guinea, Zimbabwe, Sierra Leone, Lesotho, Central-African Republic)

It is apparent that Tropical-African countries are in the worst situation in this respect as well. The only non-African country in the list is Afghanistan. The figures seem more shocking if we compare them to the countries with the highest values as their population can expect to live twice as many years as black-African ones, as there the average life expectancy is more than 80 (Japan 82.7, Switzerland 81.8).

A country’s development of the health care provision system can be revealed by the data of infant mortality and maternal mortality. WHO includes the decreasing of infant mortality in many of its programs as one of its most important objectives. The 1990-2015
campaign aims to reduce the number of child mortality under the age of 5 to its third. The beneficial effects of the campaign can already be seen as in comparison to the 1990 world average this number had decreased from 100 deaths per 1000 children to 72\textsuperscript{1} by the year 2011. However we are still far from achieving our aims. There are enormous differences between developed and developing countries regarding infant and child (under the age of 5) mortality. (Figure 4)

Comparing the graphs to the figures in developed countries we can see that these numbers are significantly different: it is 2.4 in Singapore, 2.7 in Iceland, and 4.1 in Italy which is in the 10\textsuperscript{th} place on that list. There are similarly vast differences in infant mortality rates. (Figure 5) The best data are fifty times better than the worst, and among the worst we can find most of the previously mentioned African countries. It has been established with reference to the UN (WHO) 2015 Millennium Development Goals campaign that though there has been 10\% improvement since 1990, only 63\% of childbirths take place in secure

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure4.png}
\caption{The 10 countries that have the highest below 5 years of age mortality (Mortality among1000 children between ages 1-5, in 2010 source: UN)}
\end{figure}

\textit{Chad, Afghanistan, Bissau Guinea, Mali, The Democratic Republic of Congo, Somalia, Sierra Leone, Central-African Republic, Angola, Equatorial Guinea}

\textsuperscript{1} Based on András Németh’s article, HVG 2010 September 25\textsuperscript{th}
conditions. The appallingly bad conditions and the lack of basic hygiene and expert medical staff jeopardise both the mother’s and the baby’s life. The figures of pregnancy and childbirth related mortality are illustrated by Figure 6.

Figure 5: The 10 countries with the highest infant mortality rate
(Number of deaths per 1000 infants 2011, source: UN)
(Somalia, Sierra Leone, Mali, DR Congo, Central-African Republic, Bissau Guinea, Angola, Burundi, Chad, Ivory Coast)
Figure 6: The 10 countries with the highest maternal mortality rate
(Mortality per 100 000 births, 2010, source: World Bank)
(Chad, Somalia, Sierra Leone, Central-African Republic, Burundi, Bissau Guinea, Liberia, the Sudan, Cameroon, Niger)

There is a significant difference in the most common causes of death between developed and developing countries. The main causes of death in countries with low income are indicated in Table 3. (Source: WHO)

Table 3: the main causes of death in low income countries (In the % of deaths) (yellow marks the infectious diseases)
In the developing world infections cause the most deaths, but also many deaths occur in connection with childbirth. Cancer and diabetes, which are typical of developed countries, are not among the causes of death in developing countries, and there are significantly fewer heart and circulatory conditions too. There are no traffic accidents among the causes either. According to the latest WHO reports the number of new HIV infections has decreased worldwide, however there are more and more malaria and TBC infections and TBC is a problem in developed countries too. Yet, HIV infections are still among the most serious problems in the southern countries of Africa. In many of these countries a quarter of the adult population is HIV infected and the number of the infected children in Niger and South-Africa (previously SAR) exceeds the number 300 000. (Figure 7)

<table>
<thead>
<tr>
<th>Low Income Countries</th>
<th>In the per cent of deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaria</td>
<td>5.2%</td>
</tr>
<tr>
<td>Stroke and other cerebral circulatory disorder</td>
<td>4.9%</td>
</tr>
<tr>
<td>TBC</td>
<td>4.3%</td>
</tr>
<tr>
<td>Premature birth, small weight at birth</td>
<td>3.2%</td>
</tr>
<tr>
<td>Natal trauma</td>
<td>2.9%</td>
</tr>
<tr>
<td>Neonatal infection</td>
<td>2.6%</td>
</tr>
</tbody>
</table>
In the countries of the developing world the low GDP does not make the infrastructure and maintenance of the health care provision system possible. There is 0.1 hospital bed for 1000 people in Mali, for instance. There are no local professional staffs either. (See: the vicious circle of poverty) Among the causes besides the low GDP, we find the low level of education and the fact that those who were educated - mainly abroad – do not intend to return home to the harsh circumstances. Several countries can only provide the basic provision with the help of foreign aid, and the donations of aid organisations or individuals, who send doctors, nurses, medicine and vaccines as well as organise information campaigns.

There is a huge gap in the sums that can be spent on health between developed and developing countries. While the USA could afford to spend more than 8000 USD per person in 2010, this amount was below 20 USD in the poorest countries (e.g. Eritrea, Ethiopia, and DR Congo). There are huge discrepancies between developing countries but they are even bigger within the countries concerning the services available according to location and social status. Inhabitants of capitals, cities and tourist visited beaches can get better provisions. There are also large social differences in the access to health care provisions. A thin upper
class can acquire the most modern treatment in private hospitals or hospitals abroad when at the same time the basic services are inaccessible for the poor starving crowds. The developing world will have to rely on foreign help for a long time.

Link: http://www.who.int/gho/child_health/child_health_001.jpg

3.3. Environmental challenges

We all know that the countries of the world utilise their natural energy resources in different ways and extent and in accordance with their level of development. For the developing countries exploitable mineral resources and industrialised agriculture that uses cheap manpower and focuses on specific products may mean the only source of income. The increasing lack of money encourages these countries to enhance production and to exploit nature more and more. Consequently there will be disorders in the connections of nature and the society which are already indicated by the signs of the environmental crisis. We are going to focus on the ones that cause environmental-health problems mainly in developing countries.

a) Food production related global problems

Food production has to keep up with the increase of the population. To achieve this more and more arable land, irrigation water, fertilisers, seeds are needed. At present 30% of the continents are forested areas, however only parts of them are the original natural flora. The rapid deforestation in South-America, Africa and South-East Asia is especially worrying, where the once forested areas are replaced by plantations and pastures. Due to this biodiversity is gradually diminishing and the number of endangered species is growing. More animals are kept on the pastures of the dry savannah and steppes than could be fed on the long run. Overgrazing leads to the thinning of the flora and opens the door to desertification.

The case is incredibly severe in the Sahel zone in Africa, where famine caused deaths are frequent. Salinisation, which occurs due to inadequate irrigation, may cause starvation problems too, as the saline lands cannot be used for certain periods of time. The areas with nutrition problems form an unbroken zone on the Earth. The poorest countries can be found mainly in the hot zones and the worst situation strikes Africa near the Equator. (Figure 8)
b) Waste, industrial pollution

During production and consumption more and more waste and polluting materials are emitted into the environment (to the soil, air, water). Environmental pollution caused by industrial production has escalated in many countries in the developing world. The reason for this is that in these countries there are no environmental protection regulations or they are not strict enough and they are not kept at all or no one actually enforces them. Local companies use less eco-friendly and therefore cheaper technologies, and foreign companies that escape here from the strict regulations of their countries do the same in the hope of bigger profit. Environmental dangers are also enhanced by the unskilled workers who do not pay enough attention to the proper production technologies. It is not surprising that the amount of water polluting harmful organic matter emission is the highest per worker here. Industrial dust causes significant pollution (mining, construction industry etc.) as well, and this value constantly exceeds the health threshold limit value in several countries.

c) Water, healthy drinking water
70% of the water used by people goes to agriculture as in many regions cultivation is impossible without irrigation. However, more and more countries have to face the lack of water. By the year 2020 probably 75-250 million African people will suffer from water shortage. In the desert and semi-desert zones water literally means life and its distribution may lead to international conflicts in several areas. Egypt’s water supplies mainly depend on the Sudan and Ethiopia. The river Zambezi is to be shared by South Africa, Botswana, Namibia and Angola. According to pessimistic forecasts soon there will be absolute water shortage in 17 near-East-Asian countries, in South Africa, Pakistan, in the western and southern parts of India and in north-China. In the Indian capital there may not be any drinking water left by the year 2015.

Not only the quantity but also the quality of water may be a huge problem. Due to the appallingly bad hygiene most of the water is contaminated and thus not suitable for human consumption. To this day the water of common wells is a serious source of infections. While the use of covered, closed (no contact with the surface, water or living creatures) lavatories and their drainage are natural in developed countries, in Niger, Eritrea or Togo less than 5% of the rural population use such facilities and this number is below 25% in urban areas. This reveals much about public health care conditions.

**Summary**

Global demographic processes are fundamentally determined by the population features of the developing world. In countries with low income natural increase is high and life prospects are bad, there is high infant and child mortality and low life expectancy. The main causes of deaths are still contagious diseases and problems that occur in connection with childbirth. The provision of basic health care services and the necessary hygienic conditions mean almost insoluble problems too.
**Revision questions**

1. How could developing countries have become the determining factors of global demographic processes?

2. What factors impede the development of health care provision?

3. What are the health care consequences of the global environmental problems relevant to developing countries as well?

4. How can you support the statement that tropic-African countries are in the most severe situation?

**Test**

Decide whether the following statements are true or false. Write ‘T’ if the statement is true and ‘F’ if it is false on the dotted line.

….. 1. Due to globalisation the main cause of death in developing countries has become heart and vascular diseases.

….. 2. The poor African countries in the hot zone form the famine zone.

…..3. Among Asian countries the worst life prospects can be expected by the population of Afghanistan.

….. 4. The lowest life expectancy at the moment of birth is still below 50 years in developing countries.

….. 5. In developing countries the increase of the number of the urban population was followed by the improvement of life circumstances and the decrease of diseases.

4. Health care challenges in the developed world

Objectives:

The aim of the chapter is to introduce the students to the health characteristics of the population of the developed world, to show the health related consequences of population ageing and the change in lifestyles as well as to present the characteristics of the access to health care provision.

Contents:

1. Demographic and social-economic characteristics
2. Health- and life prospects
3. Health care challenges

4.1. Demographic and social-economic characteristics

Until the last third of the 19th century factors that determined mortality and morbidity were similar in the different countries of the world and only at the beginning of the 20th century did those significant changes happen that made the differences between countries apparent. There was significant improvement in developed countries which could only be slowed down temporarily by wars or local (endemic) epidemics. These changes were possible due to the development of medicine (vaccines, the elimination of TBC, prevention from contagious diseases, decreasing maternal and infant mortality) and the gradual increase in living standards. The long undisturbed period of economic and social advancement lead to an epidemiologic transition in the second half of the 20th century.

The rising living standards and the continuous improvement of life quality created the essential conditions of good health. Owing to healing-preventative measures and the development of public health care and epidemiology, infectious diseases were repressed and young age mortality decreased significantly. The number of births decreased as well, and the average life expectancy gradually increased. The changes in the lifestyle and the age construction called for new illnesses and causes of death as well. There were more and more chronic, non-infectious, degenerative illnesses and damages associated with civilisation and urbanisation. These illnesses took longer to heal and their treatment cost more too, therefore they meant a bigger burden for the state as well. Consequently health care systems in
developed countries had to face up to new challenges in the 1950s-60s. The appearance of new typical diseases and new causes of death is closely related to the social-economic development. That is why WHO has deliberately handled the health and health care problems of developed and developing countries separately since the 1980s.

It is worth examining the health care issues of the developed world from another aspect as well. It is common knowledge that health and the state of health have direct and indirect influence on economic performance. Healthy people (in physical, biological, and mental terms) who feel good are better employees – they are stronger, more active, creative, can produce more, and they are open to new knowledge and self-education. A good employee can contribute to the increase of the GDP, which may lead to the rise of living standards and the quality of life, and that is rewarding. The higher the GDP the better the conditions of living and health care which can improve the quality of work even more.

The other important factor is education and qualifications. According to research results the higher somebody is qualified the more attention they pay to preserving their and other’s health and tends to be more health conscious. Health conscious behaviour has beneficial macro-economic effects, as healthy workers cost less for health care. Higher qualifications generally mean higher salary too, and this wealth and their health conscious behaviour help the improvement of the quality of health care services and preventative facilities. (Figure 1)

*Figure 1: Factors that influence health, and the connection between health and economy (V. Pál- A. Uzoni, 2008)*
**Inputs:** \textit{Environmental factors}: living environment, quality of home, working environment; \textit{Social factors}: demographic situation, educational level, social situation, living conditions; \textit{Economic factors}: employment, income level, living standards, health care provision, health care industry; \textit{Individual factors}: genetic characteristics, lifestyle, health behaviour.

**HEALTH, Outputs:** \textbf{Labour supply} (healthier, more efficient employees) – \textbf{Productivity} (better work morale) – \textbf{Capital} (population savings) – \textbf{Economic growth}.

In connection with demographic features we should bear in mind that the population of developed countries hardly grows and this natural increase is extremely slow - there is even natural decrease in Central-European countries. The societies of developed countries have more and more elderly people so there is an aging tendency. It is well reflected by the aging index, which is the ratio of the number of people over 60 and under 14. It is an average 112 in the European Union, 153 in Germany, 128 in Portugal, and it is 177 in the extremely ageing society of Japan. (In comparison this number is 12 in Egypt and 16 in South Africa.)

Aging raises social and economic problems. The diminishing of the active generation questions the affordability of the health care provision and pension system.

4.2. Health and life prospects

Parallel with the social-economic development health and life prospects have improved significantly in developed countries. This is also proved by the high life expectancy there. (Figure 2) Comparing the data of the two worlds, people in developed countries may expect to live 35-40 years longer than those who live in developing ones. (Compare: chapter 3.2)
Figure 2: Countries with the highest life expectancy at birth
(2010, source: UN)
(Japan, Switzerland, Hong Kong, Australia, Italy, Iceland, France, Sweden, Israel, Singapore)

Not only has the average life expectancy increased but also the life expectancy that is free from any disorders.

Life prospects are also well reflected in the mortality of different age groups. (Figure 3)
We can see that in developed countries the rate of early deaths is low. Death at an old age is due to two processes. One is the aging of the population of the particular society; the other is the improvement of the quality of life and health care provision.

In developed countries infant and child mortality is low, as a result of developed health care provision systems and appropriate hygienic conditions. In the most developed countries child mortality under the age of 5 is below 5‰, the index of infant mortality remains below 2‰ and the European average is 5.6‰. (Source: UN 2011) At the same time maternal death connected to pregnancy and childbirth is low too, there are fewer than 5 cases in 100 000 infants. (Compare: chapter 3.2)
There are significant differences in the causes of death between developed and developing countries. These causes in developed countries are illustrated by Figure 4.

**Figure 4**: The main causes of death in countries with high income (in the per cent of death).

(Source: WHO)

(Ischemic heart disease, stroke and other cerebral circulatory diseases, cancerous diseases of the respiratory system, Alzheimer diseases and other dementia, Lower respiratory infection, COPD, intestine and rectum cancer, diabetes, high blood pressure, breast cancer)

Based on the figures we can see that the main causes of death in these countries are related to cardio-, vascular and circulatory illnesses, as more than 25% of the deaths are caused by these illnesses. Deaths due to cancer are in the second place. COPD (chronic obstructive pulmonary disease) has its victims mainly among smokers who are over 40. According to the WHO there are almost 600 million cases and 3 million of them die of it. Lower respiratory diseases, lung cancer and COPD are mainly caused by smoking or highly polluted air. It is also visible that lifestyle is reflected in the causes of death such as permanent and constant stress, lack of physical exercise, unhealthy and excessive eating.

Link: [http://www.factfish.com/statistic](http://www.factfish.com/statistic)
4.3. Health care challenges

In the most developed countries 9-10% of the GDP is spent on health care. (The most, 16%, is spent by the USA.) (Source: OECD, Health Data 2010) 15-25% of these expenses cover the costs of pharmaceuticals. In this respect Northern-European countries are exceptions as the prescription of pharmaceuticals is significantly lower here. (7.6% in Norway, 8.6% in Denmark) It may be owing to the efficient preventative measures and the fact that the population of these countries have set excellent examples of environment- and health conscious behaviour for a long time.

There are two problems developed countries have to tackle. On the one hand financing the health care of the aging population and maintaining the high quality of the health care provision system as well as adjusting it to new illness structures is difficult. What is more, this should be achieved despite the fact that there are fewer active people, thus fewer insurance payers who can contribute to the financial background of health care services. On the other hand, social differences in the access to health care services should be mitigated and the conditions to equal access should be established. It means moderating the regional and infrastructural differences and creating equal rights and opportunities to the access of health care services for disadvantaged social groups as well.

In developed countries health has become an important value therefore the need for health preservation and healthy lifestyle is becoming a part of the consumer culture among young, wealthy social groups. Another important phenomenon is the increasing consumption of pharmaceutical products, which - in many cases inspired by advertisements - is how the population finds a quick solution for the problems caused by their lifestyle. Finding remedy for the psychosomatic illnesses (depression, panic disorder, addictions) caused by the effects of urbanisation and globalisation and for allergies that can be associated with environmental pollution is also a challenge for health care.

Summary

Economic and social development led to an epidemiologic transition in the second half of the 20th century. The number of births gradually decreased and the average life expectancy increased. The causes of death changed too, heart and cardiovascular diseases, circulatory problems, cancer and the diseases of civilisation and urbanisation became the most significant causes. The biggest challenges for health care are to solve the problems of population aging and to create equal rights and opportunities in the access of health care services.
Revision questions
1. What is the epidemiological transition?
2. What consequences do developed countries have to cope with due to population aging in terms of health care?
3. Why and how are the causes of death different in developing and developed countries?
4. What challenges do the health care providers of developed countries have to cope with?

Test
Match the indexes and the data. Write the data in the appropriate places in the table. There are extra ones.

<table>
<thead>
<tr>
<th>Index</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old-age index</td>
<td></td>
</tr>
<tr>
<td>Infant mortality</td>
<td>%</td>
</tr>
<tr>
<td>Maternal mortality for 100 000 births</td>
<td>person(s)</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>years</td>
</tr>
<tr>
<td>Health care expenditures (in per cent of GDP)</td>
<td>%</td>
</tr>
<tr>
<td>The rate of circulatory illnesses as causes of death</td>
<td>%</td>
</tr>
</tbody>
</table>

Answers:

<table>
<thead>
<tr>
<th>Index</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old-age index</td>
<td>118</td>
</tr>
<tr>
<td>Infant mortality</td>
<td>2,5‰</td>
</tr>
<tr>
<td>Maternal mortality for 100 000 births</td>
<td>4 persons</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>80 years</td>
</tr>
<tr>
<td>Health care expenditures (in per cent of GDP)</td>
<td>9 %</td>
</tr>
<tr>
<td>The rate of circulatory illnesses as causes of death</td>
<td>25 %</td>
</tr>
</tbody>
</table>

5. Changes in health and its characteristics in Hungary
Objectives

The aim of the chapter is to show the students what demographic processes influence the health of the Hungarian population and what are their consequences. It is to present the characteristics of health and their consequences.

Contents:

1. Demographic characteristics and processes
2. Health and life prospects, causes of death
3. The relationships of health

5.1. Demographic characteristics and processes

In Hungary there was a sharp fall in the number of births at the end of the 1950s, which was followed by a fluctuating birth rate at the beginning of the 1960s due to the effects of certain family policy measures (the introduction of maternity leave, child care benefit etc.). The increase however was followed by a sharp decline in the 70s. At the same time, mortality rates rose steadily from the beginning of the 60s. These processes brought about a natural increase and then a natural decrease at the beginning of the 80s, which could only be slightly mitigated by the steady positive migration. The figures of the natural population changes are summarised in Table 1.

Table 1: The main figures of the natural population changes in the past 40 years

(Source: KSH, Central Statistical Office)
We can also see that the apparently improving number of population in the past decades is due to the smaller decrease in the number of deaths. This, however, can still not change the disadvantageous effects of the low number of births.

We should also study the regional differences in natural decrease. It is apparent, that there is a decrease in all our counties. The decrease is the smallest in Pest County, and it is the highest in Békés County. (Figure 1) The situation in Transdanubian counties that have more developed economy is more favourable than in little villages and in those counties that are struggling economically in the South-Transdanubian region and in the north of Hungary.

*Figure 1*: Spatial differences in the natural decrease in Hungary (‰, 2010) (Source: KSH)

As a result of demographic processes, Hungary is one of the countries with aging population. It is justified by the ratio of the various age groups. (Figure 2)
We can see that the decrease of those who are younger than 14 years has tended to accelerate in the past decades and it adumbrates the steady fall in this age category. At the same time the number and the ratio of the elderly population is gradually rising in the society. Its effects on the pension and health insurance system and on the health care provision system put bigger and bigger financial burden on the state. Another interesting fact is that the old age index (the ratio of the people over 65 and below 14) exceeded 100 in 2006, and since then there have been more people over 65 than below 14 in Hungary. This value has been continuously growing since then, it is 114.7 today.

Hungary with its 1.31 fertility rate belongs to the low fertility rate EU countries. This value is far behind the 2.1 fertility rate necessary to keep up the population level of a country. It also explains the previously described negative changes. The primary reasons of low fertility rates are in the changes in life cycles as people get married and have children later, and families are reluctant to have children due to the uncertain financial prospects, too. (Figure 3)
2. Health and life prospects, causes of death

Let us examine infant mortality rates that fundamentally influence life expectancy indicators. Infant mortality has decreased significantly in the past decades. The change in the second half of the 20th century was especially spectacular: the rate in 1949 was 91‰, it was almost its half, 47‰ in 1960, and it was 4.9‰ in 2011, however this value is still higher than in other European countries where it is 3-3.5‰. Sweden has the best rate, 2.75‰. Infant mortality in time is illustrated by Figure 4. The regional differences compared to the national average are presented in Figure 5.
Figure 4: Infant mortality from 1970 until today (‰) (Source: KSH)

Figure 5: Regional differences in infant mortality (‰, 2011) (Source: KSH)
According to the regional data Zala, Fejér, Heves counties and the capital have the best values. The mortality rate is much higher than the average in Jász–Nagykun–Szolnok, Szabolcs–Szatmár–Bereg and Vas counties.

The average life expectancy compared to the 1970 values has increased from 66.3 to 70.5 in the case of men, and from 72.1 to 78.1 in the case of women. We are at the bottom of the list in the EU and only precede Rumania and Bulgaria. The situation does not seem better if we examine the years 65 year olds may expect to live, on this list only Rumania follows us. There are also regional differences in the life expectancy at birth. Men who live in Budapest may expect to live the longest (72.4 years), those who live in Borsod-Abaúj-Zemplén County the shortest (68.06). There are less significant spatial differences in female life expectancy; women who live in Veszprém County have the best life prospects (78.89), those who live in Borsod-Abaúj-Zemplén the worst (76.66).

The causes of death are mainly similar to the ones in other developed countries. The most common causes are cardio- and other vascular diseases, and though there has been a 1-2% fluctuation in its ratio in the past 30 years, there have not been any significant changes. In this period the causes in connection with malignant tumours (cancer) has increased by 4%, and there have been 8% more respiratory cancers. While there have been fewer deaths caused by the diseases of the digestive system there is still a rising number of liver diseases causing death. (Figure 6)

![Figure 6: Causes of death (2010) (Source: KSH). The details are included in the table at the end of the unit. Key: malignant tumours (cancer), circulatory diseases, respiratory diseases, illnesses of the digestive system, external factors.](Image)
5.3. The relationships of health

Results of studies carried out in the past few years shed light on the problems that are typical of our lives today and influence the health of the population.

According to the studies there is a close relationship between economic activity, the level of education and health. Whether a family considers itself poor depends on their demographic characteristics and their economic activity. There is evidence that the level of education more and more determines the level of income. Based on this, researchers concluded that the differences in health are in connection with differences in the economic activity and the education level, and are also in accordance with the factors that create the social stratification and reflect the changes in the structure of the Hungarian society. (K. Kovács 2011)². Researchers raise the question how much the changes in employment opportunities (dangers of unemployment, getting to lower positions etc.) of certain social groups can be responsible for the emergence of ill health.

Other researchers also emphasize the relationship between education and work (Z. Vokó, É. Havasi, G. Horváth). The subjective health of the population is closely related to age and gender. As time passes fewer people tend to consider themselves healthy, 61% of 15-17 year old men and 45% of women consider themselves very healthy. In this age group there were no men who thought they had bad health, though 2.5% of women thought so. 68% of men and 73% of women over 65 felt they had bad or very bad health. 18.4% of men and 24.2% of women suffer from a chronic disease that influences their everyday activities, and in the case of people over 65 this ratio is 89.5% and 91.3% (Z. Vokó 2011)³. There are significant differences among the sufferers from chronic diseases according to the nature of their employment. Mainly agricultural-, and forestry workers and basic manual workers have chronic diseases (72-73%). People who are expected to apply their college or university studies in an independent way in their jobs seem to suffer the least from these diseases (55-56%). (Z.Vokó 2011) In terms of subjective health more people with degrees feel they are in


good or very good health than among those who only have intermediate or basic qualifications.

Concerning the state of health there are significant spatial differences as well. More people from the Central and Western Transdanubian region and in the middle of the country tend to feel healthy than in the regions of the Great Plain. The number of people who feel unhealthy is the highest in the northern part of the country. However, there are no such significant differences in the actual occurrence of diseases. The case is similar when we ask people from rural or urban areas. Those who live in cities feel healthier than their rural compatriots. (Z. Vokó 2011)

According to the findings of researchers claim that both in objective and subjective health age is a determining factor. There are strong correlations in terms of the level of income, though it is still less determining than age. Regarding mental health age and income are equally influential. Older people are certainly less healthy than younger ones but this significant role of age would not have to be so necessary. Studies show that one’s financial situation is especially closely related to their status of health which means that poorer people of the same age tend to be more ill than their better-of peers and it is even more valid concerning mental health and vitality (É. Havasi, G. Horváth 2011)

These factors undoubtedly all contribute to the fact that average life expectancy at the moment of birth and the healthy years of life are all behind the values typical of developed countries.

Links: [http://mindentudas.hu/eloadasok/partnerek/item/3106-a-magyar-lakoss%C3%A1g-%C3%A1g-eg%C3%A9szs%C3%A1gi-%C3%A1llapot.html](http://mindentudas.hu/eloadasok/partnerek/item/3106-a-magyar-lakoss%C3%A1g-%C3%A1g-eg%C3%A9szs%C3%A1gi-%C3%A1llapot.html);


Summary

The demographic processes in Hungary are disadvantageous. The aging population structure has become the source of severe social, economic and health problems. Life prospects in Hungary fall behind the prospects typical of developed countries. Cardio and other vascular

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diseases and malignant tumours are the most frequent causes of death. In terms of subjective and objective health age and the financial situation are the most determining factors.

Revision questions

1. How would you describe the demographic processes in Hungary?
2. Which are the most common causes of death in Hungary?
3. What differences can be found in the judgement of health?

Test

Circle the clauses that can finish the sentences so that they are true for Hungary. There is always one correct answer.

1. Concerning subjective health,
   a) there are no spatial differences in Hungary.
   b) it is the best in the regions of the Great Hungarian Plain.
   c) it is the worst in the northern parts of Hungary.
   d) it is worse in the Transdanubian region than in the plain regions of the country.

3. In Hungary infant mortality
   a) is the lowest in the capital.
   b) did not decrease significantly between 1970-2000.
   c) is one of the lowest in the European Union.
   d) was below 5‰ in 2011.

2. The main causes of death in Hungary are
   a) diseases of the digestive system.
   b) cardio and other vascular diseases.
   c) malignant tumours.
   d) diseases of the respiratory system.

4. In Hungary life expectancy at the time of birth
   a) has increased more than 10 years since the 1970s.
   b) is similar to the life expectancy in developed countries.
   c) is lower than could be expected based on the development of the country.
   d) is 75 in the case of men.

KEY: 1. c, 2. b, 3. d, 4. c
<table>
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<th>Year</th>
<th>Tumours(C00-D48)</th>
<th>Out of this:</th>
<th>Circulatory system(K00-I99)</th>
<th>Respiratory system (J00-J99)</th>
<th>Digestive system (K00-K93)</th>
<th>Liver(K70-K76)</th>
<th>External causes of mortality and morbidity (V01-Y98)</th>
<th>Total</th>
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<tr>
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<td>Malignant tumour of the trachea, the bronchial tubes and the lungs(C33, C34)</td>
<td>Malignant tumour of the female breast(C50)</td>
<td>Malignant tumour of the cervix(C53)</td>
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<td>54.8</td>
<td>x</td>
<td>x</td>
<td>614.4</td>
<td>69.5</td>
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<td>108.7</td>
<td>x</td>
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Source: Health care statistical yearbook 2010 KSH
6. The health care provision system in Hungary

Objectives:

The aim of the chapter is to familiarise the students with the structure and characteristics of the Hungarian health care provision system. They should also be able to recognise the regional differences of the provision system and their consequences.

Contents:

1. The structure of the provision system
2. The regional differences of the health care provision system

6.1 The structure and characteristics of the health care provision system

In Hungary the most important characteristic of the health care provision system is the shared responsibility and tasks between the state, the local authorities and the National Health Insurance system. The provision system is maintained by the independent financial basis of the national insurance, which manages the relevant charges collected by the National Tax Institution. This provision covers the whole population and provides full ranges of supply. The role of supplementary insurance is insignificant in Hungary.

Our provision system is a two-level system that is practically based on general practitioners. It is mainly owned by the state or the local governments, private or church properties are rare. Health care is financed dualistically: costs of investments and maintenance are covered by the owner, the costs of the functioning are ensured by the Health Insurance Fund. Hungary spends 5% of their GDP on health care expenditure (World Bank 2010) which is less than developed EU countries spend (8-9%).

Let us list the elements that play a part in the structure and the running of the health care provision system.

**Basic provision:** It is the service that provides the population with the general, basic care (not specialised care). Everyone can access and use it in their place of residence or near it. Basic provision is based on the long-term personal relationship of the doctor and the patient. Its goals and tasks are to protect and improve the good health of a given community, monitor the health of the individuals, inform and educate them in terms of health care, give treatment to them, rehabilitate them, attend to them in their homes if necessary, and refer them to specialists if necessary. Basic provision is
traditionally established on practices, but in recent decades community and cooperative forms have emerged as well. Basic provision is not identical with the care of the GP, as a patient can have (according to specialisation) more than one basic provider. The areas of basic provision in Hungary are the following:

- GP, GP paediatrician provision,
- dental provision,
- basic duty provision,
- district nurse provision,
- school health care provision.

GP provision is an essential form of basic provision, which is organised regionally. There may be regional practices for children (under 14), adults, and mixed practices for children and adults. GPs perform basic healing-preventative activities and collect and register all the health care data of their patients. GP practices are fundamentally financed by the health insurance, but GPs also accomplish professional tasks that are not funded by the health insurance for instance they may issue diagnostic results or expert opinion. Individuals have the fundamental right to choose their GP – considering the given regional and accessibility factors.

**Specialty care:** Specialty care is the health care provision given by a specialist specialised on a certain group of diseases that can be availed via a referral. The physician in order to solve a particular problem does diagnostic or/and therapeutic activity for a certain period of time. There is outpatient (ambulatory) and inpatient specialty care.

Ambulatory specialty care is one-off or occasional health care, or continuous care in the case of chronic diseases that do not require inpatient care. Ambulatory specialty care includes day surgery, which can replace hospital care, day care in hospitals and home specialty care. Ambulatory specialty care generally happens in ambulatory clinics. Ambulatory clinics provide at least four types of specialty care and there is radiological service and clinical laboratory service on the premises.

There are specialised provisions that are not confined to one place but operate in the form of On-the-Move Specialty Care, which means the patients of the region are visited in circulation. It is typically applied in maternal and infant health care.

Inpatient care means the health care provision supplied in inpatient health care institutes. According to the type of the care it may be active and chronic inpatient care.
Active inpatient care is the provision when the service is short-termed and can be planned. The aim of the care is to restore health as fast as possible or, if it is not aviable, to stabilise the status and prevent the occurrence of complications. In the case of chronic diseases the care takes longer and the completion of the activity cannot be planned in general.

**Hospital**: it is the health care provision institute that is at the top of the health care provision system and is acknowledged by a professional supervisory board and as such provides inpatient care under constant medical control and professional supervision. According to law it has at least an internal medical division, a surgery division and another specialty according to progressivity, and also has ECG, US, radiology and a laboratory to supply the patients and has at least 80 beds.

Hospitals can be grouped according to their tasks and the services they provide. The high rank hospital classification means that the hospital has national ranges of duties. It is at the top of progressivity and in certain highly important areas of provision it provides for the whole of the country. Focal hospitals are high in the scale of progressivity and they provide significant inpatient care in a region (within the range of 50 km), and provide emergency care as well. There have been 39 such institutes in Hungary, but according to the new Semmelweis plan they will be replaced by 8 regional health care institutions. There will be 3 such institutes in Budapest. (Figure 1)
Figure 1: So-called focal hospitals in Hungary (There used to be 9 such institutes in Budapest) (source: http://www.logsped.hu/sulypontikorhaz.htm) (hospital within 50 minutes, hospital within 50-70 minutes)

District hospital provides general hospital care for a given region. They cooperate with other health care institutes in the region, the high rank hospitals, the ambulatory clinics and the GPs.

Specialised hospitals provide a full range of high level health care (2nd level progressive care) within one specialisation and in its related areas and have all the necessary diagnostic facilities. Universities of Medicine have joint clinical centres which besides performing healing activity provide the venues for medical practice.

The National Institutes and the National Health Care Institutes are national institutes that are maintained and financed by the Ministry or other governmental organisations. There are professional, methodical institutes and national health care institutes for instance ORFI, OORI, OKI.

It is necessary to highlight the Emergency Care Department which is the department of an institute – mainly hospital – that provides special care and is not organised according to a certain disease category but deals with cases when the status needs immediate intervention. Generally it is organised to deal with emergencies that endanger circulatory, breathing, brain, liver and kidney functions.
Nursing department or institute is a special inpatient care unit. It gives nursing services to those who need constant monitoring and nursing but do not require regular medical care. Home nursing is prescribed by a physician but is performed by a professional nurse. The aim is to provide the patients with personalised professional and humane nursing care in their own home environment.

Hospice (palliative) care aims to cease or soothe the pain or other excruciating symptoms of final phase patients suffering mainly from tumours. It is complex care that beyond improving the quality of life of the patients helps the family and supports the mourners.

The aim of the medical service out of consultation hours is to deal with the patients whose complaints need immediate care. Medical care is available after consultation hours thus making continuous health care provision possible. Basic non-stop care involves GP, GP paediatrician and dental services.

Rehabilitation is the collection of health care services that aim to restore or replace the functions (physical disability, speech disorder, reduced heart functions, infertility) that were lost to illnesses. It may also focus on the development of new compensational abilities (habilitation). Active rehabilitation can be built in the process of healing, delayed rehabilitation happens after dismissal. Medical rehabilitation includes physiotherapy, sport therapy, speech therapy, psychological care, employment therapy and teaching the use of medical appliances.

There are some useful terms to be mentioned in connection with patient care, the quality of services and accessibility as well.

The principle of progressivity means the hierarchical pyramid organisation of the health care provision system that is based on the distribution of tasks and has an obligatory system of connections and rules.

Scheduled patient care means that the patients make an appointment in advance for their health care service. Scheduled patient care is only compulsory in the GP practices. GPs devote a certain amount of time of their consultation hours to taking care of scheduled patients; however, they certainly attend to the urgent cases in this time as well. Many experts say that scheduled care would be beneficial in the case of diagnostics and specialised care as well.

Waiting lists tend to be the necessary evil of health care provision. There is a general waiting list for the patients who require high cost provision; the transplant waiting list is one of these. Institutional waiting lists determine the order of patient care within a given hospital. Reducing the time patients have to wait is among the objectives of all health care reforms. Patients can find information in connection with the waiting list of an institute or a service on the internet as well.

The patient path is the method how care is organised. It is determined by the financer or owner that map out the chain of service providers a patient has to follow according to the particular illness that
has to be treated. The general patient paths are the following: GP → ambulatory specialty care → health centre or GP → district hospital.

http://www.oep.hu/portal/page?_pageid=35,34868&_dad=portal&_schema=PORTAL


https://hirkozpont.magyarorszag.hu/hatteranyagok/semmelweisterv.pdf

6.2. Regional differences in the health care provision system

After summarising the characteristics of the health care provision system it is worth examining the infrastructure and the local features of the system. Table 1 demonstrates the most important data of the human and institutional conditions of the provision system as well as their changes.

Table 1: Changes in the characteristics of health care provision 1990-2010

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Source: KSH

According to the data we can conclude that after an initial rise in the number of GPs there was a slow decline. Nowadays filling vacant practices in rural areas that are far from towns or cities, especially in disadvantageous areas, means a severe problem. The other difficulty in the matter is that the average age of doctors is rising. The reduction in the number of hospital beds is an apparent consequence of the health care reforms of the past 20 years. In the past 20 years the number of available hospital beds has decreased by 30% which on the other hand was not followed by the solution of the financial problems of health care or the emergence of a more efficient operation in the system. The number of pharmacies has significantly grown however, by 70%, since the changing of the political regime.

It is worth examining the regional differences in the provision and in the system of provision. The number of inhabitants per GP and per GP paediatrician is the lowest in the capital and in Baranya County. (Figure 2) The details of the differences are revealed by the data referring to the sub-regions,
as they show that more than 2000 people belong to the practices of the North-Pest regions. The highest number, 2344 inhabitants per GP, can be found in the North-Hungarian Abaúj region, which is 2.5 times more than the lowest number 920, which is typical of the Őriszentpéter region.

**Figure 2**: Number of inhabitants per GP or GP paediatrician in the different counties (2010) (source: KSH)

**Figure 3**: Patient turnover per GPs in the different counties (2010) (source: KSH)
We get an entirely different picture if we look at the patient turnover rate. (Figure 3) In this respect the capital stands out as doctors treat more than 7.5 million patients (7,826,708) per a year. This may be due to the high number of inhabitants in this area as well as the aging population of the capital. From this point of view there is six times more turnover in some sub-regions than in others.

Hospital treatment is an essential element of health care provision, and it is indicated by the number of beds per a unit of population. This is demonstrated by Figure 4.

*Figure 4: Available hospital beds per 10,000 inhabitants in the different counties (2010) (Source KSH)*
Figure 5: The utilisation of hospital beds in the different counties in per cent (2010) (Source: KSH)

Regarding the number of hospital beds there are two intriguing facts. One shows the relationship of the capital and Pest county and studying the detailed data it is apparent that the capital is the determining service provider in its region. The other intriguing fact is revealed by the sub-region statistics. In the independent Hévíz region there are 265 beds for 10 000 inhabitants, but if we look at the data of the Keszthely-Hévíz sub-region this number is 69. If we compare the utilisation of the beds we can see that Hévíz has an above average utilisation, 96%, while the other has 74% utilisation. This data supports the fact that Hévíz is an important health care provision centre. In connection with the utilisation of hospital beds we can claim that smaller provincial hospitals have more utilised beds than the ones in central locations. We can even detect a lack of capacity in some regions e.g. near Szarvas and Tiszafűred. The utilisation of hospital beds is demonstrated by Figure 5.
The standard of the provision system is also reflected by the network of pharmacies. The number of inhabitants per pharmacies is indicated in Figure 6.

*Figure 6: The number of inhabitants per pharmacy in the different counties (2010) (Source: KSH)*

Concerning the provision of pharmacies we find that there is even regional coverage and the differences are rather due to local features. The best degree of supply can be found in the Balatonfüred region, the worst in the Vasvár region. As for the number of inhabitants per pharmacy there are two regions where this number is outstandingly high: in the sub-regions around the capital and in the region of Debrecen.

**Summary**

In Hungary the state, the local authorities and the Health Insurance Institute are mutually responsible for the health care provision system. Our two-level provision system is based on GPs. Health care provision is mainly owned by the state or local authorities. Health care provision is financed dualistically: costs of investments and maintenance are covered by the owner, professional costs are covered by the Health Insurance Institute.
Revision questions

1. How can you prove the dualistic nature of the Hungarian health care provision system?
2. How would you describe basic care?
3. What are the characteristics of specialty and hospital care?
4. What regional features can be found in the system of provision?

Test

Match the sentence halves in A and B so that the sentences will be true for the Hungarian health care provision system. Write the letters of the endings on the dotted lines. There is an extra beginning.

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<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The regional supply of pharmacies ……</td>
<td>a)  the capital has the highest figures.</td>
</tr>
<tr>
<td>2. The utilisation of district hospital beds</td>
<td>b)  has decreased.</td>
</tr>
<tr>
<td>….</td>
<td>c)  is relatively even.</td>
</tr>
<tr>
<td>3. In the GP’s patient turnover ….</td>
<td>d)  is higher than the average.</td>
</tr>
<tr>
<td>4. The number of pharmacies in the past 20</td>
<td></td>
</tr>
<tr>
<td>years……</td>
<td></td>
</tr>
<tr>
<td>5. The number of hospital beds available in</td>
<td></td>
</tr>
<tr>
<td>the past 20 years ……</td>
<td></td>
</tr>
</tbody>
</table>

**KEY:** 1. c, 2. d, 3. a, 4 - , 5. b
7. Environmental health

Objectives:

The aim of the chapter is to describe the most important environmental health indicators, and to expound the relationship between environment and health. We also aim to show that environmental pollution has become a health factor and it is threatening the future of societies. We intend to raise awareness of the responsibilities of the society and individuals in the conservation and restoration of the environment.

Contents:

1. Environmental health indicators
2. Environmental health in Hungary

7.1. Environmental health indicators

1. Emission thresholds

Emission thresholds refer to the pollution load on the population and the environment. The extent of the pollution is monitored and measured at measuring stations that occupy locations far from the source of the emission. The aim of the measurements is to protect the population from danger. According to the scale of the pollution there are health, information and alert thresholds. Threshold values are regulated by the 14/2001(V.9.) and PM10 amendment of the 25/2008 (X.17.) Köm-EüM-FVM orders.

2. Health threshold

It is the maximum concentration of a given pollutant that does not have a harmful or unpleasant effect on health either on the short, or on the long run. It is determined based on medical research.

In Hungarian laws health thresholds are differentiated in time and space. In Hungary the regulated threshold limits are differentiated spatially and temporally. The human body can tolerate much pollution for a short period of time but not for a longer period of time that is why the annual health threshold limit is lower than the 24 hour one. The spatial differentiation is justified by the fact that people spend more time at home than at work in industrial areas. Thus living areas have stricter threshold limits (protection I. area) than workplaces (protection
II. area). The lowest threshold limits refer to highly protected areas e.g. hospitals, nature reserves.

3. Information and alert thresholds

These are primarily legal terms describing concentration when adequate protective measures must be taken. When the information threshold is reached the public must be informed and warned via the media. This threshold limit is determined according to the direct health hazard of the concentration on the most sensitive groups of people (children, elderly people, pregnant women or young mothers, and those who suffer from respiratory and circulatory conditions). When the alert threshold limit is reached immediate restrictive actions must be carried out in order to decrease the level air pollution. This concentration means direct health hazard for the whole of the population of the area.

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5 Dr. Attila Kerényi: Environmental studies – Nature and society – from a global point of view (Mezőgazda 2003)
7.2 Environmental health in Hungary

Research findings have proved that the quality of the environment has an influence on health. We can easily recognise this if we examine the determining factors that are responsible for the occurrence of certain diseases. (Figure 1)

![Pie chart showing the distribution of health determining factors](image)

*Figure 1: The distribution of health determining factors (Source: M. Kökény – Gy. Dura 2002) (Health care system 11%, environment 19%, genetic factors 27%, lifestyle 45%)*

The diagram shows that environmental factors have an important role in the state of health. The physical quality of the environment (quality of the air, water, and soil, and the relating quality of food) is essential in this matter considering that besides the factors determining health there are background factors that play part in the emergence of a certain illness in certain circumstances. One of these is the quality of environment, as in the 1952 smog in London that led to many respiratory and asthmatic problems. Risk factors that make people more susceptible for certain illnesses or indirect secondary factors that maintain the illness may include environmental factors, for instance more people living in polluted city centres tend to suffer from respiratory diseases.

At the Second Ministerial Conference on Environment and Health in 1994 the European ministers of WHO accepted the Declaration on Action for Environment and Health in Europe which meant every country had to prepare their own environmental health action
plan. Therefore the preparation of the National Environmental Health Action Plan (NEKAP) started in Hungary in 1996. The aim of the program is to facilitate the development of health supportive environments, to overview the main environmental health problems and to improve international compliance. As a part of the program the health status of Hungarians had to be assessed and the grade of the pollution was measured and revealed. The air pollutant concentration (emitted and absorbed pollution in the air) is registered by the Environmental Protection Agency (KTVF) with the help of the formerly established National Emission Measuring Network. These measuring stations measure the sulphur-dioxide, carbon-monoxide, nitrogen-oxides, ozone and dust concentration in the air. There are three qualitative categories for describing the quality of air: polluted region, moderately polluted region and region with adequate air quality.

Concerning the quality of air, the capital, the major provincial towns and the industrialised areas are at a disadvantage. Until 1990 there used to be a huge continuous polluted area connected to the industrial axis at the foot of the mountains but it has broken up by now and there are many polluted regions: Miskolc, Kazincbarcika, Sajószentpéter, Tiszaújváros and the towns in the foreground of the Transdanubian Mountains. (Figure 2)

*Fig. 58: AIR POLLUTION (2007)*

*Figure 2: The regional differences of air pollution in Hungary in 2007 (Source: K. Kocsis– F. Schweitzer editors: Hungary in Maps MTA-FKI 2009)*
The emission of sulphur-dioxide has been decreasing in Hungary since 1964, though it is still 1.6 times higher than in other OECD countries. The reduction is due to the decline in coal burning and the sharp decline in heavy industry after the political transformation. The health effects of sulphur dioxide are the following: it irritates the mycoderm and the breathing passages, and might lead to inflammation in these areas. It also irritates nerve endings and according to research findings it may induce caries as well.

On the other hand the emission of nitrogen oxides has been on the increase since the 1990s. Its source is undoubtedly the increasing level of motorisation. Nitrogen oxides are aggressive health factors. They link themselves to the mycoderm of the respiratory system and change into saltpetre and nitric acid. They severely damage the breathing passages and hinder the movement of the ciliated epithelial cells and the functioning of the macrophages. They damage the lung tissues and may even cause pulmonary haemorrhage. It may lead to oedematous and acute inflammatory symptoms.

The load of carbon monoxide has been steadily decreasing since 1990 owing to the modernisation of the heating systems and the development of vehicle technology. Its health effects are dangerous, as it inhibits the blood’s ability to carry oxygen (haemoglobin) to the vital organs. The typical symptoms of acute intoxication are vomiting, headache and shortness of breath. Sustained small dose explosion may cause the dysfunction of the nervous system, the acceleration of the metabolism and the increase of the blood sugar level. The symptoms of chronic intoxication may be vomiting, headache, insomnia, Parkinsonism and psychosis.

Methane emission hardly changed between 1990 and 1996, but is has shown a slight decrease in the past decade. The main polluting sources are agricultural activities and water and sewage management. Methane gas contributes to the rise in the greenhouse effect.

Toxic metal emission has significantly decreased due to the use of unleaded fuel. However 70% of the lead in the air still comes from traffic. Paint that contains lead, lead polluted dust, water, toys, cosmetics and soil are also sources of lead pollution. Children under the age of 6 are especially sensitive to lead poisoning as in their bodies it can cause severe mental and developmental damages as well as severe disorders in ossification. So-called lead edge may formulate on the gums. Lead pollution damages the kidneys and may lead to brain damage. In adult bodies it changes the blood count and causes haemolytic anaemia. It may also severely damage the digestive and nervous systems.
The amount of subsiding or suspending dust in the air is significantly different in various regions. Air dust pollutants in Hungary compared to other European countries are demonstrated in Figure 3.

![Figure 3: Expected years of life lost due to dust pollution (in months from 0 to 36) in Europe in 2000. (Source: Impact Assessment of the Thematic Strategy on Air Pollution, SEC Report 1133, 2005.)](image)

In Hungary the most polluted areas are the Budapest, Győr and Pécs agglomerations, and the region of Beremend, Lábatlan and Vác. Air pollution plays an important role in the emergence and maintenance of various respiratory illnesses (chronic bronchitis and asthma) and it is a significant risk factor in the appearance of malignant tumours.

The thinning of the ozone layer (the decrease of the concentration of the ozone) was noticed in the 1970s. The ozone layer is essential for life on the Earth and it is threatened by chlorofluorocarbons (CFC gases). They are emitted into the atmosphere from spray bottles, coolants and from industrial activity. The molecules break up in upper air due to the UV radiation, chlorine and fluorine atoms are released and they decompose ozone molecules thus disturbing the balance of the ozone layer. Though harmful emission has decreased owing to international cooperation and the hole on the ozone layer has stopped growing, its size was 11.4 million square miles in 2000.

As a result of the thinning of the ozone layer people are exposed to more and more harmful UVB radiation, which weakens the immune system and the number of skin cancer patients is growing. Skin cancer especially threatens elderly and light-skinned people.
According to the UNEP data the steady 1% reduction of the stratospheric ozone content leads to 2% increase in the occurrence of skin cancer. Moreover, the dangers of eye damage and the risk of cataract are growing too.

While at big heights the diminishing of the ozone means danger, near the ground the increasing ozone content in the atmosphere causes problems. For this principally vehicle traffic can be blamed. Apart from the pollution emission certain weather conditions contribute to the rising ozone concentration. One of these is the anticyclone effect that forms the weather of the Carpathian Basin and it brings constant hot and dry, sunny and windless weather in the summer. The combination of these effects leads to the development of the so-called photochemical smog. The extreme ozone concentration and the components of the smog may lead to severe eye and mucosal irritation, inflammation, asthma and severe lung damages.

Besides air pollution we should also mention the consequences of water pollution too, as unfortunately the quality of the water is steadily deteriorating. It may be due to the fact that 95% of Hungarian waters arrive from abroad where contaminations are rather frequent. Economic activity (industry, agriculture, communal factors) also contributes to the pollution of surface waters. Our surface waters are mainly contaminated with toxic metal, fertilisers and pesticides. There are five categories to distinguish the scales of water pollution in Hungary. Our most polluted water is the River Hernád, the River Sajó and the River Által-ér. The River Danube and Tisza are medium polluted.

Research has revealed the health effects of hard water. The beneficial effects of hard water have been proved by doctors and scientists. The hardness of the water is caused by the high calcium content that is essential in the preservation of the good condition of bones and teeth and indispensable for normal blood coagulation. The other component of hard water is magnesium that plays a crucial role in the operation of the nervous system and the functioning of the muscles. If we have lack magnesium we tend to be more tired and our performance declines. Apart from all this the lack of magnesium also leads to aortic narrowing, and thus causes heart attack. It is not a coincidence that where people drink hard water the occurrence of vascular illnesses and heart attacks are less frequent.

As a result of softening water the chances of high blood pressure and coronary artery diseases rise and so does the occurrence of neural tube closing disorders. The fluorine content of the water is important too. We know that the lack of fluorine leads to caries and the patchy lesion of the enamel. In Hungary 98% of the population drinks low-fluorine water which explains why there are so many people in Hungary with bad teeth. The arsenic content of the water seems to rise all over the world, which can be seen in the USA and Germany and in
Hungary too. (Figure 4) Arsenic is extremely harmful for our body, as it can cause skin cancer, and absorbed in the digestive system it may lead to cancer in these organs as well as in the lungs. It increases the hazard of dead births too.

![Figure 4: The arsenic contamination of Hungarian waters. Source: http://www.muszakiforum.hu/cikk/53283/ arzenes-ivoviz-kapcsolat-a-cukorbetegseggel?wa=egri0818h](image)

Soil is the fertile, loose top layer of the earth. Its condition, contamination has an indirect effect on public health via agriculture, food and water. In spite of its indirect effects it is a significant factor in health. Hungarian waters and the soil are not rich in iodine due to their geological conditions therefore the plants that are grown here have low iodine content. In fact with the exception of two counties – Szolnok and Békés – all our regions have iodine deficiency. Low iodine intake may lead to dysfunctions of the thyroid gland and that may cause goitre as well.

Proper solid waste disposal and hazardous waste disposal are essential from the point of view of health. Contamination that seeps into the soil from the waste and there it accumulates (mercury, cadmium) can get into the food chain and thus can jeopardise human health. The contamination of the soil threatens groundwater too, which damages the drinking water supplies.

Regarding health geography nuclear power plant accidents must be mentioned too. Fortunately serious accidents are rare, but radioactive contamination has significant short-term and long-term seriously damaging effects on health. The symptoms of radiation disease depend on the amount of the dose of the contamination; the most common short term effect is
nausea and vomiting. In the case of minor contamination (1-2 Gray dose) the symptoms appear in 1 or 2 days. These may be headache, dizziness and weakness. In the case of medium dose (2-3.5 Gray) the symptoms can occur within half a day. These are fever, hair loss, blood vomiting and decreased blood coagulation ability. In severe cases there may be shivering and extremely high fever. In the most serious cases (5-5.8 Gray) the symptoms appear within half an hour completed with disorientation and low blood pressure. The chances of survival are less than 50% in this case. Those who are exposed to the harmful effects of radiation on the long run may develop cancerous diseases (leukaemia, thyroid gland cancer) as well as genetic disorders. Among the most serious radiation accidents the Chernobyl accident on 26th April in 1986 must be mentioned because of its significant environmental consequences. In the explosion 8 tons of radioactive fuel scattered around the plant. Apart from the damages near the plant, radioactive contamination got into the air and reached even remote places in Europe, what is more, its effects were felt on the whole hemisphere. In Hungary above the Szombathely-Debrecen line the radioactive load significantly rose, but according to most examinations it did not have harmful health effects. There are, however, other data that support the claim that the increase in the number of haematological diseases 6 years after the accident can be blamed on the accident.

We should definitely mention the possible health consequences of climate change. Due to the global climate change extreme weather conditions are more and more frequent. According to research findings on extremely hot days the number of deaths increase, which may be caused by vascular and respiratory diseases. On very cold days the rise in the number of deaths is because of freezing or hypothermia.

The reason why more people die on hot days when the heat comes rapidly and unexpectedly is that the body needs more time to accommodate physiologically to the rise in temperature. Our body needs a couple of days to adjust to a common hot front. This explains why there are so many deaths at the time of the first hot fronts in spring.

In the continental climate of our country our body can keep the salt-water balance until 5 litres of perspiration. If we sweat more we become dehydrated, which means that the amount of circulating blood decreases and it leads to hypovolaemic shock and the circulation collapses. However drinking much electrolyte rich water also causes a problem because it has

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6 The dose refers to 1J/kg which is 1 Gray. 1 Gray is the dose that gives 1J energy to 1kg mass.
the danger water intoxication. Its symptoms are vision problems, muscle cramps and the change in the breathing as the so-called Kussmaul-breathing occurs – it is a sequence of quick inhalations and exhalations.

Low temperature may cause damages as well. The most frequent consequence is the previously mentioned frostbite, but some people may have allergic reactions such as rash for instance. Rheumatic damages, bronchitis, endocardiosis, and nephritis, fever, vomiting and shivering may be caused by the cold. If the body temperature goes below 25 Celsius it leads to loss of consciousness and death due to ventricle fibrillation or respiratory paralysis.

As a result of climate change the spreading of certain diseases may change (malaria, Dengue fever, and tick-encephalitis). For instance diseases that are only typical of southern countries may emerge in Hungary. Forests may become drier because of the climate change therefore the infected tick population may leave for wetter northern forests and consequently the encephalitis caused by ticks may decrease in Hungary.

Links:
http://www.matud.iif.hu/2010/03/06.htm
http://phd.lib.uni-corvinus.hu/261/1/puskas_aron.pdf
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1247192/

Summary
Environmental health indicators inform us about the pollution of the environment, the health threshold, the information threshold and the alert threshold are some of them. Due to economic activity the air, the water and the soil have become extremely polluted and the deterioration of the environment has become a health factor. Although the environment in Hungary is in satisfactory condition in general, the health consequences of environment pollution can be seen. Our body can hardly adjust to the extreme weather conditions which are the consequences of global climate change. We should take these health effects in consideration, too.
### Revision questions

1. What is the health threshold?
2. What is the difference between the information and the alert thresholds?
3. How can we prove that the quality of the environment has an effect on health?

### Test

In the first column you can see environmental issues, and in the second their consequences. Match the causes and the consequences writing the numbers of the health effects on the lines next to the issues that cause them. There is an extra consequence.

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) The increase of the ozone content near the ground</td>
<td>1. Linked to the respiratory mycoderm it may form irritating nitric or nitrous acid.</td>
</tr>
<tr>
<td>B) More frequent unexpected or sudden heat wave</td>
<td>2. Cancer diseases increase (leukaemia, thyroid cancer), and genetic mutation might develop.</td>
</tr>
<tr>
<td>C) The increase of the dust in the air</td>
<td>3. It leads to severe eye and mycoderm irritation, inflammation and asthma, or serious lung damage.</td>
</tr>
<tr>
<td>D) Low dose steady radioactive contamination</td>
<td>4. The dysfunction of the thyroid gland which leads to goitre.</td>
</tr>
<tr>
<td></td>
<td>6. Diseases of the respiratory system e.g. chronic bronchitis, asthma, cancer appear.</td>
</tr>
</tbody>
</table>

Key: A: 3., B: 5., C: 6., D: 2., E: 1.
8. The connections between nutrition and health geography

Objectives:

The aim of the chapter is to demonstrate the connections between nutrition and the quality of life. We intend to reveal the consequences of the regional differences on the Earth concerning malnutrition in one place and overconsumption in another at the same time.

Contents:

1. Nutrition and the quality of life
2. Healthy diets
3. Nutrition and life prospects in the developed world
4. Challenges in the developing world

8.1. Nutrition and the quality of life

Nutrition is one of the essential criteria of life and a basic phenomenon of life which ensures the adequate functioning of the body. It is a type of activity in which living creatures acquire the energy necessary for their life and the materials necessary to build their organisation and to function healthily. Nutrition means the acquisition of food and making it suitable for use. During the metabolism the food is broken down to its elements and transformed chemically which is indispensable so that it can be used, and the unnecessary materials are removed.

So without nutrition and eating we would not exist. However it is also important what we eat, and how much nourishment we take in. As long ago as ancient times the Romans and the Greeks had concepts about eating healthily. Quintilian said: “I do not live in order to eat but I eat in order to live”.

The amount of nourishment is determined by the demands of the body and the nutritional value of the food taken in. Nutritional value is the energy that is released in the breakdown of a given type of nourishment, for instance when burning 1 gram of fat 9.3kilocalories are released, carbohydrates provide 4.1kcal per gram, and protein provides 5.6kcal (physiological value 4.1) per gram. Calories or kilocalories are the measurement for energy; one calorie is needed to raise the temperature of 1 gram of water by 1 Celsius. When the SI measurement system was introduced Joules replaced calories, but to describe the
energy food provides calories are still commonly used. One calorie equals approximately 4.2 Joules. Energy content is given per 100 grams of food.

The ratio of the nutrients we eat day by day matters as well. On average humans need 70 grams of protein, 50 grams of fat, 500 grams of carbohydrates which we acquire by eating food. They are the main nutrients humans need. The amount of energy we need depends on many factors such as physical activity; the human body needs more energy when there is more physical stress, and we need more energy in cold weather than in hot weather. Our food, however, must always contain the necessary amount and quality of protein. Other important nutrients do not provide energy but they are needed for other reasons, these are vitamins, minerals and fibre. Generally we do not need much of these but their lack may lead to serious functional disorders and illnesses. The importance of a healthy diet was recognised long ago. The ancient saying expresses it this way: “Your food should be your medicine and your medicine should be your food.”

The body uses the obtained nourishment for various purposes. Some is used to provide energy for certain life activities and some is used to supply and increase the materials of the organism e.g. for growing.

The principle purpose of nutrition is to provide the materials directly necessary to support the healthy functioning of the organism. If we take in more materials than the body needs the surplus materials are stored in the body in forms of glycogen and fat. That is why our body can bare longer or shorter periods of starving as in these cases it uses up its stored materials. However when starving takes longer not only the stored fat and glycogen is used up but other crucially important materials as well that are necessary in the construction of the body which leads to the weakening of the organism.

We have seen that nutrition is a biological need. We can also claim however that eating and nutrition is closely connected to the quality of life. To have an adequate quality of life (to be able to live an active, healthy life, to be able to work and to feel contentment and to experience basic welfare) the provision and consumption of the sufficient amount and quality of food is indispensable. While it does not mean a problem for the majority of the inhabitants of developed countries, it is more and more difficult to fulfil this need in developing countries where the majority of the Earth’s population live. In developing countries permanently providing the basic nourishment essential for the normal functioning of the body is difficult therefore quantity starving is frequent that is accompanied by quality starvation as well due to unbalanced nutrition.
In developed countries the unhealthy diet and the excess food consumption cause problems. Consequently, strange as it may seem, the population of developed countries are endangered by quality starvation. (Table 1)

Table 1: The quantity and quality indicators of daily food intake in differently developed countries

<table>
<thead>
<tr>
<th>Country type</th>
<th>Amount of food (Kcal/person/day)</th>
<th>Protein intake (g/person/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries with low level of nourishment</td>
<td>below 2500</td>
<td>below 50</td>
</tr>
<tr>
<td>Countries with satisfactory nourishment</td>
<td>2500-3000</td>
<td>50-80</td>
</tr>
<tr>
<td>Countries with high level nourishment</td>
<td>above 3000</td>
<td>above 80</td>
</tr>
</tbody>
</table>

Note: An average adult male organism needs 2500kcal per day if he does sedentary work.

The Confederation of the Food and Drink Industries of the EU (it is abbreviated CIAA from its French name Confédération des Industries Agro-Alimentaires de l'UE) worked out its recommendations concerning the daily nutrient intake, the GDAs: Guideline Daily Amounts. According to the recommendations of the CIAA women need to obtain 1800-2200kcal energy, children need 1500-2000kcal and men need 2200-2700kcal per day. The table (Table 2) below shows the detailed GDAs for an average adult organism for 2000 Calories.

Table 2: Guideline Daily Amount for adults (for 2000 Calories)

<table>
<thead>
<tr>
<th>Nutrients</th>
<th>GDAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat</td>
<td>Not more than 70g</td>
</tr>
<tr>
<td>Saturated fat</td>
<td>Not more than 20g</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>270g</td>
</tr>
<tr>
<td>Total sugar</td>
<td>Not more than 90g</td>
</tr>
<tr>
<td>Protein</td>
<td>50g</td>
</tr>
<tr>
<td>Fibre</td>
<td>Minimum 25g</td>
</tr>
<tr>
<td>Sodium (salt)</td>
<td>Not more than 2.4g (6g)</td>
</tr>
</tbody>
</table>

Besides the provision of energy and nutrients, nutrition has to provide the vitamins and minerals indispensable for the healthy functioning of the human organism. Therefore, similarly to GDAs, the recommended daily intake of minerals and vitamins has been
determined. It is the Recommended Dietary Allowance (RDA). (Table 3) Nevertheless, the amount of salt or vitamins we need – like the consumption of other nutrients – depends on various factors such as age, gender, physical activity, eating habits, the biochemical functions of the body and the individual ability to utilise food.

Table 3: The Recommended Dietary Allowance of vitamins and minerals for adults per day according to the No.1-1-90/496 recommendation in the Hungarian Book of Provisions

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>vitamin A</td>
<td>µg</td>
<td>800</td>
</tr>
<tr>
<td>vitamin D</td>
<td>µg</td>
<td>5</td>
</tr>
<tr>
<td>vitamin E</td>
<td>mg</td>
<td>12</td>
</tr>
<tr>
<td>vitamin K</td>
<td>µg</td>
<td>75</td>
</tr>
<tr>
<td>vitamin C</td>
<td>mg</td>
<td>80</td>
</tr>
<tr>
<td>Thiamine</td>
<td>mg</td>
<td>1,1</td>
</tr>
<tr>
<td>Riboflavin</td>
<td>mg</td>
<td>1,4</td>
</tr>
<tr>
<td>Niacin</td>
<td>mg</td>
<td>16</td>
</tr>
<tr>
<td>vitamin B6</td>
<td>mg</td>
<td>1,4</td>
</tr>
<tr>
<td>Folic acid</td>
<td>µg</td>
<td>200</td>
</tr>
<tr>
<td>vitamin B12</td>
<td>µg</td>
<td>2,5</td>
</tr>
<tr>
<td>Biotin</td>
<td>µg</td>
<td>50</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>mg</td>
<td>6</td>
</tr>
<tr>
<td>Potassium</td>
<td>mg</td>
<td>2000</td>
</tr>
<tr>
<td>Chloride</td>
<td>mg</td>
<td>800</td>
</tr>
<tr>
<td>Calcium</td>
<td>mg</td>
<td>800</td>
</tr>
<tr>
<td>Phosphoric</td>
<td>mg</td>
<td>700</td>
</tr>
<tr>
<td>Magnesium</td>
<td>mg</td>
<td>375</td>
</tr>
<tr>
<td>Iron</td>
<td>mg</td>
<td>14</td>
</tr>
<tr>
<td>Zink</td>
<td>mg</td>
<td>10</td>
</tr>
<tr>
<td>Copper</td>
<td>mg</td>
<td>1</td>
</tr>
<tr>
<td>Manganese</td>
<td>mg</td>
<td>2</td>
</tr>
<tr>
<td>Fluoride</td>
<td>mg</td>
<td>3,5</td>
</tr>
<tr>
<td>Selenium</td>
<td>µg</td>
<td>55</td>
</tr>
<tr>
<td>Nutrient</td>
<td>µg</td>
<td>Amount</td>
</tr>
<tr>
<td>---------------</td>
<td>----</td>
<td>--------</td>
</tr>
<tr>
<td>Chrome</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Molybdenum</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Iodine</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Source: OETI


The determination of the GDAs and the RDA has important impacts on food industry and catering. Today food producers must indicate the nutrient content on the food packages. Food producers must also show how many per cents of the recommended dietary allowance the food contains. The aim of these measures is to facilitate the spreading of healthy diets and nutrient conscious attitude which may contribute to the prevention of eating disorders (vitamin deficiency, unbalanced eating, quality starvation etc.) and should encourage food industries to produce healthier foods.

### 8.2. Healthy diets

Dr. Ted Morter says that if we consume food that our body can utilize with the least possible effort health will come automatically and inevitably. We have known there is a close connection between nutrition and health for a long time. The question of a healthy diet has come into the focus of attention because of the rise in the standard of living and the development of nutrition and medical sciences. It is an especially important question in countries where the basic provision of food is not a problem so instead of the question of quantity, quality could become the new concern. For the people in developed countries overconsumption and excessive eating causes health problems.

Since the beginning of the 1990s numerous nutrition models have been worked out in order to raise public awareness to the importance of nourishment and a healthy diet. These models informed people about balanced diets, and the proper ratio of nutrients that should be consumed. One of the first models was the food guide pyramid created in 1993 in the United States of America, which recommended how much and in what proportion we should consume of the different nutrients. The grains are at the bottom of the pyramid meaning we should consume the biggest amount of these nutrients. On the second level we can see fruit and vegetables. At higher levels we can find meat and dairy products as we should eat fewer amounts of them. We need the least amounts of fats, oil and sweets that appear at the top of the pyramid.
Based on the basic food model it was followed by several enhancements and variations, such as the Canadian food rainbow. The colours of the rainbow represented various food types. On the outer layer we find grains, on the next we see fruit and vegetables. Moving to the centre there are dairy products and meat. Fats and sweets can be found on the smallest arch. This model determines the daily recommended nutrient intake in practical, comparable units, for instance 1 roll, 1 apple, 2dl yoghurt, 10 decagram chicken legs, 2 slices of cheese are all one unit each. According to the recommendation we should eat 5-9 units of grain, 5-8 units of fruit and vegetables, 3-4 units of dairy products and 2-3 units of meat every day.

The healthy eating plate model spread at the end of the 1990s. The division of the plate gives recommendations for the daily intake for different groups, e.g. for children. According to the model a third of children’s food must be meat, another third must be carbohydrates like rice and potatoes, and the last third must be vegetables. A variation of the healthy eating plate is demonstrated by Figure 2.
The latest food guide model is the Greek column food guide which appeared in the USA at the beginnings of the 2000s. The bases of the model are the principles of moderation, variety, proportionality and that energy intake should equal energy expenditure and it takes genetic individuality into consideration. The guide gives the proportions of food in the form of a column, which is divided into seven vertical segments that give the highly recommended 2 types of food that should be in majority for each day of the week. It suggests that we consume lean meat and pasta on Sunday, vegetables, legumes and fish on Monday, poultry and legumes on Tuesday, fish and legumes on Wednesday, eggs and legumes on Thursday, fish and legumes on Friday, poultry and legumes on Saturday. Besides all these we should consume olive oil, lemon, brown bread, cheese, yoghurt, fruits, vegetables, herbs, spices, nuts, garlic, onions, pasta, rice, water and wine.

The previous models have all evolved taking the changes in consuming habits and latest research findings in consideration. The food guide pyramid was completed with the necessity of exercise and the intake of adequate amount of liquid. (Figure 3)
In Hungary more and more people deal with the question of a healthy diet. This may be due to the fact that the average life expectancy at the time of birth is lower than in other European countries and that the proportion of obese and overweight people in the country is extremely high. This is a risk factor in itself. The members of the Nutrition Forum have compiled the 12 points of healthy eating and lifestyle. For further information see: 

http://www.taplalkozasinfo.hu/index.php

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<tbody>
<tr>
<td>1.</td>
<td>We should eat with a variety. Use different ingredients and prepare the food in different ways. Forget about prejudices and be willing to try new things. Versatile diets themselves guarantee that our body gets all the necessary nutrients.</td>
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<tr>
<td>2</td>
<td>Avoid fatty foods, use margarine and oil when cooking. Prefer fat free cooking procedures such as steaming, jugging, and using the microwave oven. Thicken the dishes with little flour and starch and avoid using oil.</td>
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<td>3</td>
<td>Avoid using too much salt and when choosing readymade foods, opt for the low salt content ones. It is essential for children to eat less salty food as the taste they develop at an early age affects the rest of their lives. Salt should be replaced by various spices and herbs.</td>
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<td>4.</td>
<td>Sweets and cakes can be consumed maximum once or twice a week, and only after meals. Avoid using sugar for sweetening, use honey instead. Drink natural fruit and vegetable juices instead of syrup.</td>
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<td>5.</td>
<td>Consume half a litre of milk or dairy products a day such as cheese, cottage cheese, kefir, curds and yoghurt. Always opt for the low fat versions.</td>
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<td>6.</td>
<td>Eat raw fruit and vegetables or steamed vegetables on a regular basis several times a day.</td>
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<td>7.</td>
<td>Consume wholemeal bread. Choose potatoes and steamed vegetables instead of rice or pasta.</td>
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<td>8.</td>
<td>Distribute the food intake as uniformly as possible throughout the day. Have four or five meals a day, each should be consumed in a relaxed way and in pleasant circumstances. Have a regular schedule for eating.</td>
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<td>9.</td>
<td>When thirsty we should drink water (mineral water). Avoid consuming alcohol as it also contains superfluous energy.</td>
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<tr>
<td>10.</td>
<td>Proper nutrition does not mean eliminating any food from our diet; however it is advisable to prefer certain types of food over others. There are no prohibited dishes but there are recommended measures. More fruit, vegetables, fish, wholemeal bread and potatoes should be consumed than lean meat, meat dishes, milk and dairy products, fat (oil over fat, margarine over butter), eggs, pasta, legumes. Sweets and sugary food and drinks, fat meat, cream, sugar, salt, spirits, beer and wine should be rarely consumed and in small proportions. We should choose our food with care and consciousness and taking these guidelines in consideration.</td>
</tr>
<tr>
<td>11.</td>
<td>The benefits of a healthy diet should be effectively complemented with regular exercise and avoiding smoking completely.</td>
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<tr>
<td>12.</td>
<td>Proper nutrition covers the energy and food demands of the body. The aim is to form an ideal bodyweight with the help of healthy eating.</td>
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8.3. Nutrition and life prospects in the developed world

In the developed world of Western-Europe life conditions have apparently and significantly improved since the end of the 18th century. The improvement was due to the facts that there was a progress in health care and medicine, medical discoveries were made, the hygienic conditions improved, people were more educated, food provision improved as a consequence of economic development and malnourishment decreased. As a result the number of the population began to grow rapidly and the average life expectancy started to soar up. There were gradually fewer and fewer epidemics that could take their tolls in large numbers. This process, apart from war times, resulted in the gradual improvement of life prospects until the second half of the 20th century.

In OECD countries there was a turning point in the 1980s. The rise in living standards was accompanied by the alteration of eating habits and lifestyle. Apart from the traditional eating habits and sometimes instead of them fashionable fast food restaurants and buffets gained ground. There was more and more need for sugary drinks and sweets and strongly spiced processed food that contained artificial flavouring. Their consumption increased significantly and especially among young people. Certainly advertisements were hugely responsible for this change.

The spreading of the new eating habits was a sign of material wealth. Fast food restaurants became community places especially for young people. The most spectacular sign of the transformation of eating habits is the rapidly increasing proportion of overweight and obese people in the society. Since the 1980s the rate of overweight people has increased from 10% to 50% and the rate of clinically obese people is almost 20%.

Obesity is not only caused by the change in eating habits but also by the change in the lifestyle. There have been fewer and fewer jobs where people have to do physical work and the number of physical activities has decreased as well. Due to the accelerated pace of work and life people have less and less time to eat and they just tend to grab something quickly. Many people try to escape the stresses of fast life by eating comfort food. More and more alcohol is consumed as stress relief, which is also responsible for weight gain. Obviously there are significant differences between countries regarding the rate of people struggling with weight problems which derive from the local cultural and attitudinal differences. 68% of the American and 24% of the Japanese population is overweight. (Figure 4)
Obesity has severe health hazards as well. Circulatory, cardio and other vascular problems, diabetes, kidney dysfunction and locomotors disorders are more frequent among obese people. According to statistics obese people can expect to live 8-10 years shorter lives than their normal weight peers. The health insurance institutes of developed countries are already in a difficult situation because of the consequences of population aging and dealing with the health consequences of the so-called welfare disease, obesity, has placed additional burden on insurance. The social and health results of the problem and the increase in the rate of diseases that obesity can be blamed for have encouraged developed countries to try to solve or at least mitigate the epidemiological crisis in different ways and with different methods.

One of these methods is prevention. Raising awareness of the importance of conscious and healthy nutrition and forming the right attitude must begin from a very young age. Informative and educational campaigns must be organised where experts reveal and draw attention to the dangers of consuming added sugar, saturated fat, excessive amounts of refined grain and salt. Programs and events are organised where participants can learn about the modern cooking techniques and if required, can receive personalised advice from nutritionists.

In some countries – in Hungary as well - additional taxes are imposed on producers who produce food which contain big amounts of added sugar and salt. However it must be
mentioned that in many countries healthy food – low fat or organic food for instance – is much more expensive than ordinary food. Therefore they are out of the reach of less well-off people. Research findings have proved that the consumption of processed food is higher among financially challenged families as poor people tend to opt for cheap and fast dishes over healthy and expensive ones. In the 27 states of the European Union 43 million people do not eat healthily as they consume too little protein (meat, fish).

The promotion of healthy diets is also aided by the regulations controlling commercials and advertisements. Moreover school buffets are to reduce the amount of sugary drinks, sweets and white flour bakery products available and increase the amount of fruit and wholemeal bakery products on offer instead.

Mediterranean people have been considered to be healthy eaters for a long time owing to the big amount of fruit, vegetables and olive oil they consume and that the sea fish they eat is rich in Omega3 oils. However globalisation and the economic decline which began in 2008 changed eating habits in this region as well. A researcher at the Bologna University Mario Mazzochi found that every third child in Mediterranean countries will be pathologically obese by the time they grow up. He holds the spread of quick and easy to prepare fast food and ready-made or pre-prepared convenience food responsible for the change. According to the findings of an internet survey eating habits have changed in Mediterranean countries because of the economic crisis. There used to be parties where friends cooked together and they were extremely popular, however nowadays hosts tend to offer cheap snacks to their guests when friends get together. Today it is cheaper to buy ready-to-serve food than to cook dishes from fresh ingredients so if families need to economise they will pick the former. Traditional family meals used to be more frequent but by now they have become rarer and are almost limited to Sundays.

Recommended link: [http://www.hazipatika.com/taplalkozas/kalorialeadasi_kalkulator](http://www.hazipatika.com/taplalkozas/kalorialeadasi_kalkulator)

### 8.4. Challenges in the developing world

Providing basic food and nourishment for the people in the countries of the developing world is a huge problem. For this partly the dualistic nature of their agriculture can be blamed as it has modernised plantations for cash crops (coffee, bananas) to be exported as well as traditional underdeveloped methods that is supposed to cater for the inhabitants of the country. The latter however is not capable of supplying the rapidly growing population with
food and the states do not have the financial resources to cover the costs of imported food. In some parts of Africa droughts impede the situation and so do the monsoon floods in South-Asia. The socio-economic problems, corruption and the frequent civil wars are all to be blamed for the problem. Though there are numerous international aids they can only mitigate the famine in these areas.

In the developing world especially in regions south of the Sahara Desert and in South-East Asia quantitative starvation means the most severe problem, which means the nutrients in the food they take in fail to cover the energy (heat and work) demands of their body. (Figure 5) One million people of the total seven million in the world are starving and what is more shocking, there are 200 thousand children under 5 among them. Their majority lives in the countries of the developing world. Every third person is undernourished in Black Africa and thousands of people starve to death every day. The situation is similar in Bangladesh where 8 million seriously undernourished children live. John Aylieff, the Director of the World Food Programme of the UN said that in a child’s life the time from the conception and during the first two years of life is determinant, and if nourishment is insufficient neither the body nor the brain can develop and irrespective of what we do later, they can never recover.

![Figure 5: The rate of the undernourished population in different countries (Source: WHO)](image)

Permanent quantitative starvation by itself endangers life. If the glycogen and fat stores of the body have been all used up the organism starts to decompose protein. Starving ends with death if a third or half of the stored protein has been decomposed. Even if long-
lasting starvation does not end in death the undernourished organism cannot resist illnesses and infections.

Undernourished mothers give birth to backward babies with small weight and exposed to diseases. Apart from the disadvantageous hygienic conditions and the underdeveloped health care provision system this circumstance also contributes to the low life expectancy at the time of birth and the high mortality rate in the developing world. Besides quantitative starvation there is qualitative starvation as well which is caused by their one-sided diet, the protein and vitamin deficiency. This also leads to the weakening of the body and the immune system which inevitably results in worse life prospects.

Due to globalisation eating habits are changing in developing countries as well. Fast food restaurant chains which are popular in developed countries keep springing up and more and more food products of the globalised world market are appearing. It is worth mentioning that while poorer people tend to use fast food restaurants in developed countries, it is the privilege of better-off people in the developing world where convenience food products have become the symbols of wealth.

Summary

Nutrition and eating habits fundamentally influence the quality of life and life prospects. A healthy diet satisfies the demands of the human organism and provides qualitative and quantitative nourishment. Overconsumption and malnutrition are both present in the world at the same time. People in developed countries endanger their health by consuming too much food, sugar and salt and suffer from qualitative starvation. In the countries of the developing world quantitative starvation is the biggest problem.
Revision questions

1. What is the difference between qualitative and quantitative starvation?
2. What is a healthy diet like?
3. What problems derived from nutrition do developed and developing countries have to deal with?
4. Why do we call Africa the starving continent?

Test

Decide whether the following statements are true or false. Write T for True and F for False on the line next to the statement.

- 1 Nutritional value is the energy that can be gained from a nutrient during the process of its decomposition.
- 2 Proteins have the highest nutritional value.
- 3 In countries where there is satisfactory nourishment the daily food intake is 2500-3000kcal and the protein intake is more than 100grams a day.
- 4 The daily recommended vitamin and mineral intake is given by the RDAs.
- 5 Protein and carbohydrates are at the top of the food guide pyramid.
- 6 There are no nourishment problems in the countries of the developed world.
- 7 Quantitative starvation strikes Black-Africa and South-East Asia the most.

Key: 1T, 2F, 3F 4T, 5F, 6F, 7T
9. The health effects of globalisation

Objectives:

The aim of the chapter is to introduce the effects of globalisation as the determining social-economic process of the 21st century on the health status of the population of the world. We intend to show the challenges that people in the 21st century have to solve.

Contents:

1. Changing life, changing dangers
2. The health effects of the accelerated lifestyle
3. Urban challenges

9.1. Changing life, changing dangers

Globalisation is the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa’

Anthony Giddens

The first roots of globalisation could already be detected in the prosperity of medieval commercial towns but its real expansion took place at the end of the 20th century. Globalisation which affects the whole of our planet was made possible by the development of transport, telecommunication, communication, and mainly the enhancement of the internet. This phenomenon that has shortened distances and has brought remote places closer, has transformed health care challenges as well.

The development of tourism, the long distance travels and the expansion of the trade and transport of goods brought about the acceleration of the spread of diseases worldwide. Now an infected vector can cover huge distances within a couple of hours and especially in the case of diseases with long incubation period numerous people can be infected by the time the disease appears. A typical example for this was the 2009 flu-pandemic which appeared on each continent within a short time but fortunately caused fewer cases than had been expected. (Figure 1)
The health care provision system of a remote country cannot prepare for the occurrence of a tropical disease and the recognition and diagnosis of the disease means a problem too. It may be dangerous as the population is not protected against the infection. If pathogens appear in unusual conditions they may mutate which might cause the ineffectiveness of the usual treatment protocol.

The threat of bioterrorism causes growing concern, as within a couple of hours a dangerously infectious agent or a toxic material can reach distant and vast places. For instance, smallpox is thought to be a possible tool of such a biological attack. The anthrax infected posted letters after the 11th of September 2001 raised awareness to the fact that it is an actual danger.

It is globalisation, the worldwide organisation of production and commerce, which has drawn our attention to the hazards of chemical and food safety. Recent incidents in Hungary include the case when red pepper was contaminated with aflatoxin in 2004, in 2011 pork and poultry contaminated with dioxin got to the shops from Germany, and there was a serious E. coli bacteria epidemic causing diarrhoea in connection with a cucumber scandal in 2011. Via international food chains contaminated and dangerous food can get to remote countries as well.
The increasing levels of global environmental pollution also have severe health effects such as the significant rise in the number of allergic complaints and diseases caused by contaminated water.

The standardising effect of the globalisation lead to a large-scale change in eating habits which brought with it relating health problems, for example the consequences of the excessive consumption of carbohydrates and fats.

Link: http://ec.europa.eu/health-eu/my_environment/bio_terrorism/index_hu.htm

9.2. The health effects of the accelerated lifestyle

In the 21st century people, especially urban residents, have to cope with many challenges that are harmful for their health and were caused by the change in the lifestyle and the hectic pace of life. One of the most common problems is stress. The term “stress” came to the public’s attention due to János Selye’s studies in the 1930s. The events and unexpected situations of everyday life affect the human organism and influence its functions. Stress is the non-specific response of the body to any demand placed upon it. It is the way our body reacts to a situation or an event we encounter by changing our behaviour which results in a fly-or-fight response. The central nervous system plays an important part in these responses. Selye considered stress a natural part of life and regarded it as an important defending and adapting function, without which we could neither cope with challenges nor could develop.

If stress is originally a beneficial thing where is the problem? Our body actually needs short-term occasional stress. Frequent and continuous challenges however are different. Selye found that prolonged stress causes changes in the heart and the vascular system, in the immune system, in the kidneys and the digestive system and on the skin. These alterations lead to illnesses and physical and mental problems. Challenges that seem to be insoluble can cause constant fear and anxiety.

In the past decades we have been exposed to effects which may lead to constant stress. These are some of them:

- overcrowded cities,
- traffic jams and congested roads,
- lack of time, rush,
- unsolved housing problems,
- lack of parks, playgrounds, green patches for relaxing,
- performance oriented attitude, trying to meet the demands too hard at work,
- lack of human relationships,
- the transformation of roles in the family, compromising family and work,
- unemployment and the danger of unemployment,
- social insecurity,
- financial problems,
- plethora of news,
- compulsive consumption, the vicious circle of more needs and more work.

The way our body reacts to challenges depends on the individual’s (physiological and psychological) reactions to them. For some people reactions mean emotional responses, others produce vegetative complaints e.g. headaches, stomach cramps when they are anxious. The consequences of prolonged stress can be insomnia, digestive problems, cardio and other vascular diseases, problems of the nervous system, migraine and according to new research findings it can accelerate the process of aging as well. Stress can be blamed for the increasing number of allergic and asthmatic complaints. It is a common problem that the occurrence of the symptoms generates more stress which leads to more complaints thus making the whole process a vicious circle.

If stress and tension become permanent, emotional and mental problems may lead to depression. Depression is not a temporary bad mood or weakness that could be overcome by will-power but a more and more common mental illness which disturbs the individuals’ emotional balance and permanently and significantly deteriorates their quality of life (ability to work and personal relationships). The symptoms of depression are constant fatigue, strong anxiety, restlessness, feeling of emptiness, hopelessness, overrating one’s defects, the lack of interest in external circumstances, indecisiveness, and all may be accompanied by mental and somatic symptoms. The family and friends have an immense role in recognising the symptoms and helping in the recovery. Depression can be cured most successfully compared to other mental diseases. 80% of the patients who are treated properly (with antidepressants) recover completely. Besides primary treatment – medication – psychotherapy can help too, but the support and encouragement of friends and family is indispensable.

Stress and nervous strain contributes to the emergence of panic disorder which is another new common illness. It is an anxious, nervous state that is manifested in physical symptoms. According to the latest surveys 5% of women and 3-4% of men suffer from it. The panic attacks with somatic and mental signs appear suddenly accompanied by strong anxiety, terror and sometimes fear of death and they pass spontaneously within a relatively short time
The treatment includes medication and psychotherapy (relaxation, cognitive breathing control, family therapy).

Handling difficult conflicts, dealing with situations and moderating stress are not easy and may be the source of self-assessment problems. Many people choose to soothe these difficulties with stimulants, drugs or developing particular behaviour patterns that may lead to addictions.

There are several types of addictions such as alcoholism or drug addiction, but the challenges of our era drive people to develop other several behavioural dependencies for instance bulimia, anorexia nervosa, gambling, searching threats, compulsive and conspicuous consumption, workaholism, co-dependency, internet dependency and so on.

The addict goes to all lengths to acquire the desired drug or object or activity, which leads to a special mental status, the transformation and narrowing of the personality. Therefore the addict’s social contacts and lifestyle transform too. Acquiring the desired drug and being obsessed with some addiction cost a lot and in many cases the necessary amount of money can only be obtained illegally. In other cases the addicts spend their money on their addictions instead of vital things such as food, clothes, home, or there may be no money left for fending for the children. Financial problems caused by addictions may be the sources of conflicts in the family and among friends. (Figure 2)

![Figure 2: The role of alcohol in the DALYs in the different WHO sub-regions (%, 2004)](Source: WHO)
The burnout syndrome is also worth being mentioned. It is typically used for people who have jobs in a helping profession and to conduct their supportive activities they need to have more than average empathy (doctors, nurses, social workers, teachers etc.). This phrase is now used in the case of managers as well, who are in responsible positions and in charge of many employees. There are many reasons that lead to the burnout syndrome: continuous stressful situations, pressure to make decisions, intense mental strain, diminishing work motivation, the lack of appreciation at work and the deterioration of relationships at work. Unreal self-image and extremely high expectations set for ourselves may cause a burnout if we cannot live up to our own expectations.

Nowadays work and school problems have a peculiar consequence: the phenomenon of mobbing. Mobbing means the bullying of an individual by a group in any context. When it occurs members of a community gang up and direct their accumulated frustration to another member of the community with harassment through rumour, intimidation, innuendo, humiliation and isolation. They stop talking when the person appears, they do not offer him or her food and they mock his or her clothes.

Link: http://www.webbeteg.hu/cikkek/psziches/2758/a-munkahelyi-stressz-es-a-mobbing

9.3. Urban challenges

The 20th century saw the development of cities and the forming of agglomerations. Fast urbanisation is continuing in the developing countries of the world. Though urban life has many advantages it has numerous drawbacks as well. These are mainly manifested in the shrinking of the natural healthy environment, hectic lifestyle, transforming eating habits and lifestyle and are accompanied by several harmful environmental health consequences. According to WHO data cities are responsible for 60% of the greenhouse gases emission and for 75% of the energy consumption and waste disposal. 92% of the urban population live in an environment where the level of air pollution exceeds the health threshold limit determined by the WHO. People in cosmopolitan cities are exposed to the major stress source that is noise pollution.

Another stress factor cities can be blamed for is overcrowding, the diminishing of personal spaces and privacy. The continuous flow of information and advertisements that is overwhelming people also has negative health effects. Motorisation and the typical working conditions and methods (office, computer) lead to a sedentary lifestyle which alongside the
change in eating habits carries serious health hazards as well. Rush and the constant pressure for time alters human relationships as well. We have less time for caring about others, keeping in touch with family and friends which would be indispensable for mental and emotional health. There are a lot of elderly people who feel lonely and redundant. As the increase in the number of city dwellers is a worldwide phenomenon, the proportion of city inhabitants will probably have reached 70% by 2050 according to predictions, and the disadvantageous effects of city life will cause social and health care problems. (Figures 3–4)

Figure 3: The development of agglomerations 1950-2050
Source: http://hu.wikipedia.org/w/index.php?title=F%C3%A1jl:
The realisation of the problems of urban life encouraged the launch of some special movements. One of these is the WHO European Healthy Cities Network. Their primary goal is to moderate the negative health effects of urban life and promote health and its preservation and focus on sustainability. Among the precise tasks they want to increase green areas that people can use for physical activities and to develop an environmentally friendly transport and traffic system. Pécs was the first Hungarian city that joined the network and was followed by 22 Hungarian towns that all take part in the program.

Cities find it increasingly challenging to improve the health and quality of life of city dwellers. In a health conscious city
- the needs and the expectations of the inhabitants of the city are taken in consideration in policy and decision making,
- the needs of immigrants and the question of social exclusion are dealt with,
- inhabitants are provided with adequate health care and social services and the health conscious attitude and health education are encouraged,
- the conditions of a healthy lifestyle are ensured, healthy non-smoking community places are created, alcohol and drug problems are handled with strict and appropriate measures, healthy diets are promoted and the necessary conditions are supplied, facilities for active
lifestyles are provided, the number of violent incidents and accidents are reduced so that the dwellers feel better in their hometown,
- built areas are constructed in a way that they can facilitate recreation and the forming of social contacts and services are available for everyone,
- inhabitants are encouraged to preserve their own special cultural values and to take active part in the shaping of their more liveable environment.

Link: http://www.hahc.hu/az_egeszseges_varosokrol_otodik_ciklus.php

The Rome based new Slow Movement has an interesting approach to defeat the damages of rush and globalisation. The movement affects several areas of life ranging from eating, fashion to travel. The members protest against the accelerated lifestyle and the excessive globalisation by changing their lifestyle. The movement includes creating Slow Cities. The goal of the towns joining the movement is to create a quality living space in the cities in harmony with the natural environment. Cities with population less than 50 thousand can join the movement if they undertake the responsibility of creating and developing an environmentally friendly traffic system and the increasing of local green areas and the promotion of local production. The structure of slow cities will copy the pattern of the renaissance Italian town structure, where urban life is organised around the central main square of the town (la piazza). 120 towns have deserved the Slow City title in the world so far.

Summary

Globalisation has significantly altered the life of people in the 21st century and that has brought new health challenges as well. The accelerated life and the change in our lifestyles have contributed to the occurrence of permanent stressful situations that are so typical of our age. Prolonged stress is responsible for the spreading of many illnesses such as depression and addictions. Urbanisation and the increasing hectic city lifestyle also intensified this process. There are more and more concerns about healthy city life and that encouraged many movements that try to create liveable cities.
Revision questions

1. What are the health effects of globalisation?
2. What factors generate harmful stressful situation?
3. What illnesses can be caused by stress?
4. What health problems did the acceleration of the urbanisation brought to the surface?

Test

Decide whether the following statements are true or false. Put a T for True and F for False statements next to the number of the statement.

… 1 The standardising effect of globalisation can be blamed for the significant change in eating habits.
… 2 Due to the expansion of city lifestyle the quality of urban environments has improved a lot.
… 3 Burnout is a special occupational disease.
… 4 Permanent stress can lead to panic disorder.
… 5 The globalising food production has a beneficial effect on food safety.

Key: 1T, 2 F, 3 T, 4 T, 5 F
10. Epidemics at the beginning of the 21st century

Objectives:

The aim of the chapter is to introduce the most important terms of epidemiology, to show the causes of epidemics and the conditions of their prevention and to show the most common contagious diseases.

Contents:

1. Epidemiological terms, definitions and indexes
2. Contagious diseases at the beginning of the 21st century

10.1. Epidemiological terms, definitions and indexes

Epidemiology studies illnesses in their geographical, economic and social environment and in their context. This is essential in the disclosure of the factors that cause illnesses. The history of epidemiology is mainly associated with Dr John Snow, an English doctor who investigated the spreading of the 1854 cholera epidemic in London Soho. He made a map of the occurrences of the disease and concluded that the source of the infection was in the water pipe system of the town. The infected wells were closed and consequently the spreading of the cholera stopped.

10.1.1. Epidemic

Epidemic is an outbreak of a contagious disease that spreads quickly and affects many individuals at the same time at a high rate. It is called endemic if the infectious disease is confined to a smaller place and it is called pandemic if it affects several countries and illnesses occur in a large part of the world.

The most important factors that play part in the emergence of epidemics are the following:

1. Changes in the agricultural practice in the way food crops are grown and in livestock breeding
2. Changes in the society and in the people (for instance change in cultural and eating habits, the effects of globalisation)
3. The deficiency of the health care provision system, lack of hospitals and medical intervention
4. Malnutrition, bad life conditions, immune system weakening diseases
5. The evolution of pathogens (resistance, mutation etc.)
6. The pollution of the environment (water, air, soil, food pollution, contamination etc.), environmental damages
7. The fast and long-distance international journeys
8. Failure of health care programs and information campaigns
9. International commerce
10. Climate change – the spreading of pathogens modifies.

10.1.2. Epidemiological indexes

These indexes help epidemiologists see the characteristics of a particular epidemic and the health of the public and based on this knowledge they can make the right decisions and measures.

Risk: It is the probability of a population group getting sick or dying within a given period of time. It is normally determined for 1000 people. A special variation of the index is the lifelong risk which determines the chances of someone getting the disease in his or her lifetime. When determining the risk it has to be considered whether a person can get the disease more than once in his or her lifetime. (e.g. influenza)

Prevalence: The prevalence of disease shows the number of people suffering from it in the examined population. It may refer to an exact date (point prevalence) or a given period of time (an epidemic season).

Incidence: The frequency of new occurrences within a given period of time (a week, a month, etc.), that is the ratio of the identified cases in a given period of time in comparison with the healthy people from the beginning of the examined time all referred to the population. Incidence may help define risk groups, for instance it can be detected whether an illness tends to attack a child or an elderly person, but regional differences might be identified with it. Thus it may help reveal the causes of an infection.

The value of prevalence depends on the incidence and the length of time the process of the examined disease takes. Prevalence, however, is slow to follow the changes of incidence. It happens in cases for instance when an efficient method is worked out to prevent a certain disease so the incidence suddenly drops while the prevalence remains high for a long time.

Reproduction rate: It means how many more cases an infection may cause in an unprotected population. When determining the net reproduction rate the protection of the population must be taken
in consideration too. In the case of containing an endemic the value of the net production rate must be decreased to 1. For the elimination of an epidemic the rate should decrease below 1. The lower this value is the sooner the disease can be eradicated. The reproduction rate of some infectious diseases: malaria: more than 1000, measles: 15-18, polio: 6-8. The calculation of the reproduction rate (\(N_0\)) is done according to the formula: \(N_0 = R_0 \times (100\% - n\%)\)

\(R_0\): reproduction rate, \(n\%\): the ratio of the vaccinated (immunized) population

**Prevention:** These are the measures and activities done in order to prevent epidemics from occurring e.g. vaccination and other preventative treatments, epidemiological screenings, executing general epidemiological tasks, informing the public about individual protection, establishing a health culture and providing information.

**Vaccination:** This is the most common method with which people can be made immune to infectious diseases. Vaccine contains weakened or dead pathogens or it may contain the complete antibody which when injected in the body gives protection against that particular disease. It is called immunisation. In active immunisation weakened pathogens are injected in the body thus making the organism produce the antibody for the disease. In passive immunisation the complete antibody is injected in the organism. It is mainly used when the patient has already caught the illness or in the case of people with weak immune system, or when there is no time to follow the whole vaccination procedure and the protection must be created within short time, for instance when travelling abroad. Passive immune protection, however, lasts only as long as the injected antibody is in the organism therefore its effects last shorter time, a couple of weeks or months.

Prevention of contagious diseases is crucial all over the world so each country works out their own vaccination system in which they define the order of the vaccination (who, at what age and against which disease must be vaccinated), and they work out the rules and regulations and recommendations regarding the compulsory and recommended vaccines.
10. 2. Contagious diseases at the beginning of the 21st century

In this passage we intend to focus on some contagious diseases that are present on the Earth these days and are greatly responsible for the high mortality in many countries of the world.

10.2.1. AIDS (Acquired Immune Deficiency Syndrome)

The disease is caused by HIV (Human Immunodeficiency Virus) and its lethality is practically 100%. Though the spreading of the virus can be traced down to 1959, it was only identified in 1981. According to most scientists it evolved in Black-Africa at the beginning of the 20th century. By now it has extended into a pandemic present on each continent. The virus attacks the immune system and primarily destroys the T-lymphocytes. The infection gradually destroys the immune system thus the organism will have no protection against diseases and it opens the way to other infections and tumours which eventually cause death. The symptoms occur 5 years of clinical latency on average, but the infected person can pass the virus to others within this time as well. The disease spreads via blood and some bodily fluids. HIV is transmitted primarily via unprotected sexual intercourse, contaminated blood transfusions, infected hypodermic needles, and from mother to child during pregnancy, delivery, or breastfeeding. Some bodily fluids, such as saliva and tears, do not transmit HIV. There is no cure or vaccine; however, antiretroviral treatment can slow the course of the disease and may lead to a near-normal life expectancy. It makes the treatment difficult that the virus mutates very quickly and easily thus it becomes resistant to medication. The dangers of this can be reduced by the combined therapy. The spreading of AIDS and other relevant facts are illustrated in Figures 1-3.
### Global summary of the AIDS epidemic | 2011

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>[31.4–35.9 million]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of people</td>
<td>34.0 million</td>
<td></td>
</tr>
<tr>
<td>living with HIV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>30.7 million</td>
<td>[28.2–32.3 million]</td>
</tr>
<tr>
<td>Women</td>
<td>16.7 million</td>
<td>[15.4–17.6 million]</td>
</tr>
<tr>
<td>Children (&lt;15 years)</td>
<td>3.3 million</td>
<td>[3.1–3.8 million]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>[2.2–2.8 million]</th>
</tr>
</thead>
<tbody>
<tr>
<td>People newly infected</td>
<td>2.5 million</td>
<td></td>
</tr>
<tr>
<td>with HIV in 2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>2.2 million</td>
<td>[1.9–2.4 million]</td>
</tr>
<tr>
<td>Children (&lt;15 years)</td>
<td>330 000</td>
<td>[280 000–390 000]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>[1.5–1.9 million]</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS deaths in 2011</td>
<td>1.7 million</td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>1.5 million</td>
<td>[1.3–1.7 million]</td>
</tr>
<tr>
<td>Children (&lt;15 years)</td>
<td>230 000</td>
<td>[200 000–270 000]</td>
</tr>
</tbody>
</table>

*Figure 1*: AIDS in 2011 – the most important facts (Source: WHO)

*Figure 2*: The regional characteristics of the infections 2011 (Sources: WHO and http://www.magyar-hirlap.ro)
10.2.2. Hepatitis

Among the types of the inflammation of the liver Hepatitis A and B are the most widespread. Their prevention is a vital epidemiological task regarding the increasing rate of tourism and travel nowadays. Hepatitis A, which has a relatively moderate course, is responsible for 75% of the inflammations. Its incubation time is 28-30 days. The disease begins suddenly with high fever, malaise, anorexia and jaundice. It is infectious from the second half of the incubation time until a couple of days after the appearance of jaundice. The long latency time makes it possible for the illness to reach distant places. The disease can be prevented by applying the basic hygienic measures such as washing hands frequently and following the rules of careful food and water consumption. (In dangers of infection only boiled or bottled water must be consumed, fruit and vegetables must be washed in them and must be peeled. This kind of water must be used for brushing teeth as well. If somebody has caught the disease his or her toiletries must be isolated.) It is especially important to abide by these precautions in the Mediterranean, in Asia and in Africa as these places are more infected with
Hepatitis A (Figure 4). When planning a longer stay – some months – in these regions vaccination against Hepatitis A and B is highly recommended.

Figure 4: The rate of Hepatitis A infections (Source: WHO, CDC) (high, medium, low, very low)

Hepatitis B is a highly infectious virus, it spreads via blood and bodily fluids and its virulence is 10 times higher than HIV’s. The infection attacks the liver and it can cause acute and chronic diseases as well.

It is most often transmitted via sexual intercourse, infected blood transfusions, and via minor injuries with an infected pair of scissors or razor, moreover the source of the infection can be tattooing, piercing, pedicure, manicure with non-sterile, not disinfected tools. In many cases an infected pregnant mother passes the pathogen to her baby during birth.

Its clinical latency is long, 60-90 days, but it can be as long as 180 days as well. It is already infectious during latency time, in most cases several weeks before the symptoms occur and it remains infectious until the acute symptoms are over. Symptomless vectors and chronic patients may remain infectious until the end of their lives.

The typical symptoms of the disease are yellow skin and sclera, dark urine, strong fatigue and malaise, abdominal pains, joint pains and anorexia. The symptoms may last for months or even years. Hepatitis B can become chronic in 10% of the cases, which later can cause serious and lethal illnesses like cirrhosis or liver cancer. Hepatitis B is widespread all
over the world and at present 2 billion people are affected, 360 million of whom suffer from chronic infection. 500-700 people die every year due to Hepatitis B infection, though there is an effective vaccine to prevent the illness. In Europe 1 million people become infected each year and there are approximately 14 million chronic patients. In the case of chronic hepatitis it is crucially important to recognise and diagnose the disease because long, sometimes even life-long medical treatment is needed. In Hungary it has been obligatory for every 14 year-old child to be vaccinated since 1999.

Hepatitis B infections are extremely frequent in China and in other Asian countries. The majority of the people get the disease in their childhood and 8-10% of the population of Asian countries suffer from chronic hepatitis B. Therefore the major causes of death in the region for women and the third cause for men are cirrhosis and liver cancer that are the consequences of the hepatitis infection. The region of the River Amazon is also highly infected just like some countries in the Near-East. Eastern Europe is more infected than other parts of the continent. In Western-, Northern- and Central Europe and in North-America less than 1% of the population is affected by hepatitis B, but due to the increasing rate of migration more and more infected immigrants may arrive in these countries. (Figure 5)

![Figure 5: Hepatitis B infections and the probability of getting the disease: red=high, orange=medium, yellow=low (Source: WHO, image: Wikipedia)](image)

Recommended links:

http://www.youtube.com/watch?v=YLB6ELr72PY&feature=autoplay&list=UL2FzkCUfhAo&playnext=1 WHO-hepatitis day 2011

http://www.cdc.gov/hepatitis/index.htm
10.2.3. Influenza (grippe)

The influenza is an infectious disease caused by a virus which is transmitted via droplet infections or via direct contact. Its main symptoms are sudden fever, muscle pain and fatigue which are followed by dry cough. Most people recover without medication but they are advised to get plenty of rest, drink plenty of liquids and relieve fever. Though the illness is generally not dangerous, some people – especially the elderly - might develop life threatening complications (lower and upper respiratory inflammation, myocarditis and pneumonia). Influenza thus may be deadly, especially for the old and for people with a weak immune system. The H1N1 pandemic in 2009 caused pneumonic complications in especially pregnant women and lead to death in several cases.

There are several different types of influenza viruses. Influenza A does not only attack humans but other mammals and birds as well. This virus is responsible for the most devastating outbreaks, pandemics and the most severe diseases. The reason for the high virulence is that influenza virus evolves rapidly and new strains quickly replace older ones, against which people have not developed protection yet. The most common human pathogens are the H1N1 and H3N2. Influenza B causes moderate outbreaks and type C causes mild diseases and spreads mainly among children.

People can be vaccinated to prevent the infection. It is recommended for those who might develop complications and their risk is high, therefore older people, people who suffer from chronic illnesses and those who have immune deficiency should be vaccinated. Pregnant women are recommended to be vaccinated against the H1N1 strain. The biggest pandemics of recent times are the following:
- 1889: Russian Flu (H2N2)
- 1918: Spanish Flu (H1N1)
- 1957: Asian Flu (H2N2)
- 1968: Hong Kong Flu (H3N2)
- 2009-es Swine Flu pandemic (H1N1)

Recommended links:
http://apps.who.int/ithmap/ International Travel and Health Interactive map
http://www.who.int/ith/en/index.html
Summary

Epidemic occurs when an infectious disease causes significantly more than average number of cases in a relatively short period of time. Epidemics may be endemic or pandemic. Many factors play part in the outbreaks of epidemics, and many of them can be prevented by the improvement of hygienic conditions and the development of the health care provision system as well as the application of the compulsory vaccinations. The epidemiological situation of developed countries is much more advantageous; however, the great scale of migration might increase the risk of the epidemic outbreaks.

Revision questions

1. What factors contribute to the outbreaks of epidemics these days?
2. What instruments can be applied to prevent epidemics?
3. Why could have AIDS become the biggest source of danger for our health?
4. Why can Influenza pandemic occur so easily?

Test

Which diseases do the statements describe? Write the letter of the illness on the lines before the relevant statements. You can write more than one letter in some places.

A) AIDS
B) Hepatitis A
C) Hepatitis B
D) Influenza

.... 1. The virus attacks the immune system.
.... 2. It is a liver inflammation with a relatively moderate course and it spreads with contaminated food and water.
.... 3. There is vaccination to prevent it.
.... 4. It forms or may form into a chronic disease.
.... 5. There was a minor pandemic in 2009.

11. Health tourism

Objectives:

The aim of the chapter is to present the characteristics of health tourism. We intend to show the importance of its role and significance in the preservation and restoration of health. We also intend to introduce the high potentials of Hungary in the area of health tourism.

Contents:

1. The definition of health tourism and its characteristics
2. The most important types of health tourism
3. The role of thermal baths in the Hungarian health tourism

11.1. The definition of health tourism and its characteristics

Health tourism is a relatively new term, though even doctors in ancient times suggested that their patients should rest on the seaside when they suffered from certain illnesses and the citizens of the ancient Roman Empire liked visiting distant spas and thermal waters as well. Health tourism eventually became significant in other parts of the world due to the spectacular rise in the living standards in the developed countries of the world at the end of the 20th century. Its novelty may be the reason why there has been no agreement on its definition, which is a subject of debates even today. There is a consensus that health tourism is a collection of services and products though there are different opinions about the determination of the kinds of services and products. There is no agreement about the extent to which health tourism connects to other types of services and products for instance sports and medicine. The problem is that it is difficult to determine the boundary between services, as an activity or a program (product from an economic point of view) may belong to a classic touristic activity and to health care provision at the same time. Some people can use a particular health care service in their place of residence while somebody else has to travel there to be able to use it. In the former case it is a simple health care treatment in the latter it is health tourism. A spa treatment may be prescribed for a person or it might be chosen by one. The range of services provided by health tourism is continuously expanding.

It is however certain, that health tourism is a complex collective term that includes every travel activity in connection with health. Travel may be encouraged by the aim to
improve (healing, rehabilitation) or preserve (health protection, prevention) the health of the participants. It can realise within the country (domestic) or on an international scale.

The wide range of services that belong to health tourism may be divided into two groups. One is the group of medical tourism where the products and services are all in connection with health protection, prevention and rehabilitation. The other group contains the services and products of wellness tourism. These activities may be active or passive according to the level of activity of the participants (consumers). (Figure 1) Though the services available appear in both types – medical and wellness – of tourism, they can be distinguished by the motivation of the consumers. From this point of view the separation of medical and rehabilitative tourism still remains difficult.

<table>
<thead>
<tr>
<th>Demand: the aims and motivation of the consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply: services, instruments</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health tourism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wellness-tourism</td>
</tr>
<tr>
<td>Passive</td>
</tr>
</tbody>
</table>

*Figure 1: The structure of health tourism*
Experts dealing with health tourism consider the motivation of the consumers crucially important. Research based on motivation analysis has found that people require safety which does not only mean the physical aspect of security but also the biological one that is the presence of health. When health problems occur, people’s feeling of safety significantly decreases. Generally speaking if a particular treatment or health care factor may help solve their problems, people are willing to spend time, energy and money on it. Therefore the establishment of medical tourism is rather firm and almost anyone can become a potential customer. The number of customers, however, is strongly narrowed down by the fact that the specialised health care services are expensive and that many people are not aware of or cannot accept natural healing procedures.

Wellness tourism is slightly different. Wellness treatments and services are more complex and flexible and in many cases they are of higher quality as well. They provide for the customers who are willing and able to act for the sake of preserving their health. The consumers of wellness services are generally among healthy people who live in financial and physical safety, belong to or would like to belong to some family and some social community. It is them who regard the preservation of mental and physical abilities vital, and are able and willing to deal with the preservation of their health; moreover they are open to using natural preventative (wellness) services. Of course if they are ill they may be the customers of the services of medical tourism.

The sedentary lifestyle caused by motorisation, the ills of civilisation with all their side effects and the stress have raised more and more people’s awareness of the health conscious lifestyle. It is well indicated by the increase in the demands for services (e.g. health tourism) that aim to restore our physical, mental and biological balance. The decrease of the national engagement in giving social support greatly contributed to the fact that people realised their own individual responsibility in the preservation of their health. Due to the spreading of the health conscious lifestyle and attitude the income of health tourism within the tourism industry is continuously increasing. It is normally accompanied by the rapid growth of investments and the sharpening of the supply part of the market. In the first decade of the 21st century guests spent 6 nights on an international average in health touristic places while this number was only 3.6 nights in the case of medical places and 2.5 in wellness hotels in Hungary.

Hungary has enormous natural potentials that could be beneficially exploited by health tourism. We have extraordinary and unique thermal water reserves, the amount of which places us among the first 5 countries with the greatest thermal water supplies. (Japan, Iceland, Italy, France, Hungary are the first five countries.) Beyond the quantitative figures it is important to mention that the thermal water Japan and Iceland have is low in mineral content. The waters in Italy and France are rich
in minerals but their temperature is generally much lower than the thermal water resources of the
Carpathian Basin. Therefore our hot and mineral rich thermal waters provide a remarkable foundation
for medical and wellness tourism. (National Health Tourism Strategy, 2007)

Recommended link: Magyar Egészségturizmus Marketing Egyesület http://www.meme.hu/
(Hungarian Marketing Association for Health Tourism)

11.2. The most important types of health tourism

1. Medical tourism

Medical tourism is the service used in order to heal a certain illness. The customers
generally regard themselves rather as patients than tourists during their stay at the medical
centre or hotel. The length of the stay depends on the nature of the disease and the treatment
protocol. The emphasis of the services, which are based on a precise health factor (medicinal
cave, microclimate, spa and thermal water, and special mud and so on), is rather on the health
care services, while touristic services are only of complementary nature. (Figure 2) Medical
centres can be established without natural medical factors as well, for instance an easily
accessible rehabilitation centre equipped with modern technological devices in a healthy
environment.

Figure 2: Using medicinal mud in the mud treatment (www.jokrtv.hu)

Generally but not necessarily the guests (the patients) arrive with a referral from a
specialist (rheumatologist, physiotherapist, orthopaedic, motor rehabilitation specialist). In
this case they can avail themselves of treatments with the financial support of the National
Health Insurance Institute (OEP). These are generally medical rehabilitative services that are applied in connection with chronic rheumatologic, orthopaedic, neurologic and vascular treatments. The financially supported thermal water and spa treatments are the following: the use of thermal water medical pools, spa baths, mud pack, medical weight bath, carbonic and salted bath treatment, medical massage, underwater jet-massage, underwater gymnastics and physiotherapy, complex spa treatment and under the age of 18 therapeutic swimming in groups.

Though the treatments might take a longer time, the hotel services do not belong to the services covered by the National Health Insurance. In recent years 7-8000 spa treatments have been supported by the OEP. It is still a problem that according to estimations, the amount of the financial aid does not even cover half of the costs of the treatments. Therefore spas complement their offers with services that attract solvent demands such as the establishment of a wellness section with medical supervision and consultation, and lifestyle and dietary counselling. The services of the Hungarian health tourism are enjoyed by foreigners as well, their country paying a part of the costs of their treatment while the rest is covered by them. The thermal water spas (Hévíz, Balf, Zalakaros, Sárvár) in the western part of the country and the medical hotels of the capital are extremely popular and attract many foreign people wishing to heal. The new regulation that people in the European Union can use medical services in other EU countries and their country pays as much for their treatment as it would have paid for the same treatment in their country might have a beneficial effect on the Hungarian medical tourism as the relatively cheaper Hungarian treatments make it possible for the foreign patients to spend the redundant resources on supplementary treatments and services.

Regarding medical tourism we should bear in mind that the population of Europe, thus the population of Hungary too, is growing old. This might become the most important factor health tourism and especially medical tourism can take an advantage of in the future. As there will be more and more elderly people there will be more demand for healing and recreation, which might predict a long term development and boom in this branch of tourism industry.

The most important services of medical tourism are in Table 1.
<table>
<thead>
<tr>
<th>Therapy</th>
<th>Type (well known examples)</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balneotherapy</td>
<td>Salted waters (Sárvár, Gyula)</td>
<td>Colder waters, which strengthen the immune system and have local enhancing effect on the metabolism. Anti-inflammatory effect: dermatological, urological and gynaecological.</td>
</tr>
<tr>
<td></td>
<td>Iodized, bromine waters (Győr, Hajdúszoboszló)</td>
<td>Anti-inflammatory effect, decreases the blood sugar, treatment after operations. For the treatment of motor, gynaecological, urological problems.</td>
</tr>
<tr>
<td></td>
<td>Earthy, calcareous waters (Budapest)</td>
<td>Anti-inflammatory effect, to treat locomotor and urological (kidney) problems</td>
</tr>
<tr>
<td></td>
<td>Sulphurous waters that contain sulphide (Harkány, Balf, Mezőkövesd)</td>
<td>Affects through the skin and via inhalation. It is excellent to treat limb joint abrasion, cardio-, vascular and dermatological problems.</td>
</tr>
<tr>
<td></td>
<td>Carbonic acid waters (Kapuvár, Mátraderecske)</td>
<td>Treatments to improve the metabolism. To treat cardio- and vascular and lung diseases, against osteoporosis.</td>
</tr>
<tr>
<td></td>
<td>Radon waters (Hévíz, Eger)</td>
<td>Rare type of water, it affects through the skin and via inhalation. Vasodilatory, painkilling effect.</td>
</tr>
<tr>
<td>Drinking cure</td>
<td>Budapest (Lukács, Széchenyi Bath drinking chamber)</td>
<td>Mineral waters that have a 500-1000mg/l dissolved solid mineral content. Important materials for the cure: calcium, fluoride, iodine, magnesium.</td>
</tr>
<tr>
<td>Mud pack</td>
<td>(Hévíz, Makó, Hajdúszoboszló)</td>
<td>Organic and inorganic mud placed on parts of the body. The treatment is based on the heat storing effects of the mud. Application at approx. 42°C. Effects: roborating, anti-inflammatory, relaxing, tranquillising, metabolism boosting</td>
</tr>
<tr>
<td>Hydrotherapy</td>
<td>Balneotherapeutic pool</td>
<td>36°C, 90 cm, medicinal water</td>
</tr>
<tr>
<td></td>
<td>Weight therapy pool</td>
<td>36°C, 120/150 cm, medicinal water</td>
</tr>
<tr>
<td></td>
<td>Gymnastics pool</td>
<td>32-33°C, 120 cm, heated tap water</td>
</tr>
<tr>
<td></td>
<td>Swimming pool</td>
<td>24-28°C, 110/180 cm, heated tap water</td>
</tr>
</tbody>
</table>
### Kneipp-treatment
- Application of hot and cold tap water alternatively.
- Active and passive kinesitherapy.
- Medicinal herbs.
- Healthy eating.

### Climate therapy
- **Medicinal caves** (Abaliget, Jósvafő, Budapest, Miskolc, Tapolca)
- Inhalation therapy in caves. To treat respiratory problems, allergic, asthmatic symptoms
- **Climatic medicinal place** (Miskolc-Lillafüred, Kékestető, Sopron-Lővérek, Kőszeg)

### Diet therapy
- **Fasting cures**
- Primarily they enrich the wellness supply.
- **Gastroenterological cure**
- With a referral from a specialist, diet cure with medical supervision.

### Physical therapy
- **Mechanotherapy**
- Physiotherapy, massage, ultrasound
- **Electrotherapy**
- Small and big frequency treatment
- **Light therapy**
- Ultraviolet, infrared, visible light, laser
- **Thermosterapy**
- Thermo therapeutic chamber, steam chamber, sauna

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### National Health Tourism Strategy 2007

#### 2. Wellness-tourism

The word wellness started its conquest at the end of the 1950s in America. It is derived from the contraction of two words: well-being and wholeness. The aim of wellness is to create and preserve mental, physical and biological health. Its holistic health image is more in connection with healthy lifestyle, and an attitude that puts a wider interpretation of health in the focus, than with actual healing and medical treatment. Wellness is usually connected to health conscious lifestyle and behaviour, which includes healthy diets and regular physical exercise. Wellness tourism tries to meet these demands with its complex range of services which aim to improve fitness and to preserve intellectual freshness. Among the wide range of services we can find traditional medicinal services, and spiritual, mental or sports programs as well. Its philosophy assumes that the guests will seek health conservation themselves, and they actively contribute to it, in this they do not only rely on the medicinal products.
According to the marketing conception\(^7\) (2002) of health tourism wellness is built on four principles:

1. regular but not strenuous physical exercise
2. healthy diet that is composed based on scientific results
3. the improvement of the psychic status (Figure 3)
4. environmental awareness which deals with the use of substances which are harmful for the environment and our health and the questions of leading a healthy lifestyle.

*Figure 3: Healing, relaxing massages are regular wellness services*

Due to its holistic interpretation of health wellness provides an extraordinarily wide range of services. There are active (gymnastics, water gymnastics) and passive (beauty treatments) programs among them. We must mention fitness tourism which relies on doing sports actively but its consumers – due to similar motivation – often avail themselves of wellness services as well.

Nowadays several institutes advertise themselves as wellness hotels and it interesting that many of them offer special programs, facilities and wellness related products (Unique Selling Product) that make the establishment unique and attractive. These may be the following:

- Turkish or Roman bath
- natural healing

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\(^7\) The marketing concept of health tourism. (2002) Tourism Bulletin VII. year. 2. issue
- diet centre: digestive treatments, dietary counselling, reform food, drinking cure, fasting cures
- beauty treatment based on thermal water
- fitness, sport, adventure tours
- eco-tourism, exploiting the facilities of the natural environment
- manager cures: circulatory, digestive, cancer screening, stress management
- connecting wellness and conference facilities
- family holiday, aqua park, spa, programs for children
- oriental healing methods and forms of exercise (meditation, yoga, sound therapy)

Unlike medical tourism, health tourism is only very rarely supported by the national insurance or by private insurance companies as it is extremely difficult to distinguish the direct and indirect health preventative services from the facilities that serve relaxation and recreation. The aid (travellers cheque and its substitute the SZÉP card) provided by the employers has greatly contributed to the boom of the wellness industry and to the increasing demands for wellness hotels.

Recently new trends have appeared in connection with wellness services. These are not really established on the present wellness and recreational services (massage, spa, sport), but rather emphasize the psychological factors of wellness. The most important ones are the following:

Selfness

Selfness is actually a new concept and attitude to life that focuses on our self-recognition. Its disciples strive to create the most perfect balance of the mind and the body and have a healthy and realistic self-image. Learning about ourselves is always accompanied by the need to change and to improve. The people in the program intend to create the balance (balance between work and life) and to create a positive feeling and outlook on life.

Soulness

It aspires to create the mental-spiritual harmony via learning the necessary set of skills. The program was elaborated and is recommended to managers and those leaders who are permanently exposed to stressful situations as the program is for successful people who are capable of taking responsibilities for themselves and for others and who have to bear the burden of success.

Medical wellness
This type of service connects medical activity and wellness. Typically medical supervision and scheduled health preventative services are provided in connection with the wellness services. Its characteristics are the following:

- It is based on medical examination and control and aims to preserve health.
- The application wellness services goes according to medical planning.
- It is a high quality service, which expands to mental, emotional, social and physical areas as well. To complement all this there is a personalised especially customer centred provision.
- It gives advice and helps with life planning in order to create a permanently healthy, contented and well-off lifestyle.

3. The Spa concept

The concept of spa is complex and of collective nature and is as versatile as the services it refers to. Every establishment that provides services that make the guests relaxed and calm, energized, cured, healthier and more balanced is called spa. In the Hungarian language we mean a health-providing centre by the concept of spa, however, there might be significant differences in the precise meaning of the word in different countries.

- In northern Europe (for instance in Finland and in Iceland) it means thermal water fun bath.
- In Central Europe it is generally used to refer to thermal baths that mainly offer medical services.
- In the USA and in Asia any service provider might call themselves spa who offer services for physical or mental recreation and refreshment even if there is no thermal water on the premises.
- German speaking countries use the expression “Therme” to denote services based on water.
- In Hungary spa is only used to refer to the health prevention providers and services that are based on thermal/medicinal water though recently many experts have recommended the expansion of the meaning of the expression.

4. Beauty and dental tourism

Beauty and dental tourism do not belong to medical tourism in the traditional sense. They started to flourish after the political transformation and due to the economic crisis they have become even more sought after. Numerous foreign patients have been visiting Hungary in order to use our health and medical services since then. It is worth mentioning that along the western border of the country doctors and service providers based their practices on
Austrian patients even before the political transformation and by now a complete medical industry has developed in the region.

Nowadays the most popular services foreign people take advantage of are dental treatments. The services are 50-80% cheaper than in their countries moreover the quality of the service is much higher here than that they can get at home for the same amount of money. Most patients come from Austria, Germany, and Great-Britain but there is an increasing interest in Hungarian dental services in Scandinavian countries and in France as well. The western European client base have attracted several experts to the Austrian border of the country especially close to the frontier towns of Sopron, Mosonmagyaróvár, Szentgotthárd where plenty of dental surgeries have opened to exploit the demands. More and more foreigners visit dentists in Budapest as well, and the holiday resorts at Lake Balaton popular with tourists have seen the rise in the number of dental centres. Patients generally come by budget flights and stay for a couple of days. According to estimations tourism based on dental services employs 12-15 thousand touristic and medical workers. Dental tourists spend 10% of the total nights spent in Budapest hotels. There are several tourist and travel agencies that have specialised in dealing with the organisation, arrangements, travelling and treatments and programs of the patients.

Besides dental tourism there in an increasing demand for other beauty treatments. People arrive to acquire beauty treatments with pulsed light, wrinkle filling, Botox treatment and liposuction that take several days. The quality of the service and the 50% lower price is the major part of the appeal.
11.3. The role of thermal baths in the Hungarian health tourism

Due to the fact that Hungary is extraordinarily rich in thermal and medicinal waters and that the traditions of our bath culture go back to 2000 years ago, we must expound on the touristic role of our thermal waters. (Figure 4)

![Figure 4: Thermal and medicinal baths in Hungary Source: VITUKI – MÁFI – AQUAPROFIT](image)

In Hungary medicinal waters are the type of mineral waters that have healing effects due to their physical or chemical properties and they have been given the permission to be called medicinal or thermal water. Hungarian thermal waters are inspected by the National Health Resort and Spa Directorate General (OGYFI) and regular examinations must prove that a given type of thermal water is really suitable for treating a certain illness. According to experts, medicinal waters are really useful if they are applied as a cure with medical monitoring and if several various methods are applied during one treatment. Certain spa treatment procedures – especially the ones that focus on locomotor diseases - can even replace medication.

At the moment there are 75 registered spas in Hungary, their spatial distribution is illustrated in Figure 5.
Most spas can be found in the middle of the country, 9 of them are in Budapest. Four of them are considered to have international significance. Western Transdanubia is on the lead concerning internationally significant spas, as the 17 thermal and medicinal baths of the region five has this privilege.

11.3.1. Regional characteristics

Budapest

The capital was awarded the City of Baths title in 1934. Budapest is the only capital in the world that has thermal and medicinal baths. There are 18 wells and natural springs which give 21-78 °C water and the daily water output is 70 million litres. The plain thermal waters that contain few dissolved solid minerals are mainly suitable to treat rheumatic illnesses. There are several medicinal and thermal water springs that are excellent for treating heart and digestive problems, dermatological, metabolic, motor and gynaecological complaints. The best known spas of Budapest are the Lukács, the Gellért, the Rudas, the Rácz and the Király Bath. What is more there are numerous other remarkable baths that are not registered but use the water of medicinal and thermal springs.

South-Alföld Plain
The most frequently visited place in the region is the city of Szeged. At the beginning of the 20th century during some deep boring alkali bicarbonate water with high iodine content was found. The water of the Anna Bath, which was renovated in 2005, is suitable to treat respiratory illnesses, motor, gynaecological and dermatological complaints.

The other health touristic centre of the region is Gyula. There is a bath that receives its water from six wells. The water is alkali-hydrogen-carbonate-chloride thermal water and its temperature is 72°C. It is excellent for the treatment of topical nervous disorders, locomotor disorders and inflammatory gynaecological conditions and in the case of rehabilitation treatments after accidents. The bath and its surroundings were declared a health resort in 1985.

**South-Transdanubia**

South Transdanubia has relatively little medicinal and thermal water and few baths. Its most popular bath is in Harkány. Only in Israel and in Mexico can we find water similar to this one. The water here is used to treat rheumatic illnesses, gynaecological complaints and infertility. It can be successfully applied to treat psoriasis. The bath complex was renovated in 2008.

**Western-Transdanubia**

It is a region with old bath traditions and wealth in medicinal waters. The medicinal baths near the western border are extremely popular with the tourist from Austria and Germany. The Mosonmagyaróvár bath is a relatively new spa in the region. The bath is supplied by the 74°C thermal water rising from a depth of 2000 meters. The water is among the five most beneficial types of water in Europe. The bath was founded in 1966 and it has been functioning as a medical centre since 1999. The water of the other popular bath in Bükfürdő springs from two wells from 1282 meter deep. The water is excellent to treat locomotor disorders, gynaecological problems, rheumatic, joint and spinal problems. Besides the bath services there is a Physical Therapy Institute that makes medical service and health care provision possible. Among the Western-Transdanubian spas we must mention Sárvár, which is popular with Austrian guests and Balf, which is the perfect place to have rehabilitation treatment after locomotor operations. The most well known spa in the region is Hévíz, which was built on a spring-lake and represents a unique natural value as well. The
44.4 hectare lake with its slightly radioactive 38°C water is perfect to treat locomotor illnesses. The mud in the riverbed has remarkable healing properties too.

Northern-Hungary

One of the most well-known places is Miskolctapolca where thermal, cave, and lake baths can be found in one location. The 29°C water that contains hydrogen-carbonate, iodine and bromide is particularly beneficial for the treatment of circulatory disorders and has a nerve sedative effect as well. The other popular spas in the region can be found in Eger and Mezőkövesd. Some of the most recently opened baths are in Demjén, and Egerszalók, which is known for the salt hill that precipitated from the thermal lake. The Mátraderecske Carbon Dioxide Medicinal Gas Bath is unique in the country.

North-Alföld Plain

The most well known bath in the region is Hajdúszoboszló, the Mecca for rheumatic patients, which has gained international reputation. The water of the spring rises from 1090 metres deep and it was revealed in 1925. The alkali hydrogen-carbonate thermal water contains a significant amount of salt, sodium, iodine and bromide. According to research it soothes the symptoms of arthritis, spine problems, muscle pain and is suitable for post-treatments after fractures.

Summary

The two main branches of health tourism are medical tourism and wellness tourism. The former has medical purposes, provides medical supervision and serves the healing of illnesses; the latter relies on the motivation of the individuals and aims to help preserve physical and mental health. Their role due to the rise in the standards of living and the population aging is continuously increasing. Hungary has extraordinary potentials in the area of health tourism.
**Revision questions**

1. Why is it difficult to define health tourism?
2. Describe medical tourism.
3. What are the particular characteristics of wellness tourism?
4. Why has medical tourism gained high importance in Hungary?

**Test**

On the left there are sentence beginnings, on the right their endings. Match the sentence halves and write the letter of the second half on the relevant dotted line. There is an extra beginning.

1. It is difficult to distinguish medical and wellness tourism because… a) the guests’ motivation is similar.

2. The concept of spa is complex because … b) the rich thermal water reserves make a lot of various services possible.

3. We can divide health tourism into two branches because c) the guests mainly use the services that are supported by their insurance.

4. There is a significant overlap among the guests of fitness and wellness tourism because….. d) medical tourists may use wellness facilities.

5. Hungary has extraordinary potentials in the area of health tourism because …. e) it includes a wide variety of services.

6. Medical tourism is closer to healing because ….

**Key:** 1. d), 2. e), 3. -, 4. a), 5. b), 6. c)
12. Unions for health

Objectives:

The aim of the chapter is to familiarize the students with the most important national and international health care organisations and their work and tasks. Moreover we would like to raise awareness of the importance of the activity of humanitarian organisations.

Contents:

1. The WHO and its aspirations
2. The International and the Hungarian Committee of the Red Cross
3. Other health care related organisations

12.1- The World Health Organisation (WHO)

![Figure 1: The flag of the UN](image1) ![The flag of WHO](image2)

The flag of WHO resembles the flag of the UN. The flag of WHO was created from the flag of the UN by completing it with the traditional symbols of healing, the stick and the snake of Asclepius, the Greek god of medicine.

The World Health Organisation (WHO) was established on the 7th of April in 1948 as the successor of the UN Health Organisation, HO. It is headquartered in Geneva in Switzerland. The date, when WHO’s constitution came into force, is the date we now celebrate every year as the World Health Day.
WHO is the directing and coordinating authority for health and international health care activities within the United Nations system.

The World Health Assembly is the supreme decision-making body for WHO. It generally meets every year and is attended by the delegations from all 194 Member States. The decisions and policies are executed by the Executive Board. The Board meets twice a year and its members are health care experts appointed by the governments of the UN countries. WHO has 3500 employees.

The main tasks of WHO are:

- to provide leadership on global health matters for the countries of the world;
- to cooperate with governments in planning, directing and assessing their national health programs;
- to develop efficient and modern health care technologies and standards, to provide information;
- to give aid, do research and direct activities in connection with health protection. To coordinate the activities of research, healing and prevention concerning infectious diseases, epidemics, children’s diseases, cardio-vascular disorders, cancer and AIDS.

Some important programs and projects directed by the organisation.

- Onchocerciasis (Robles-disease – a disease caused by parasites that leads to blindness)
  African health care prevention program
- Yellow Card or Carte Jaune (International Certificate of Vaccination (ICV)) program
- Global Burden of Disease project;
- International malaria program;
- Prequalification Medicines Programme;
- International program for chemical safety;
- International radon project;
- Programs related to the World Health Day.

Other projects: http://www.who.int/entity/en/

Some important agreements bound in collaboration with the organisation:

Regional centres play an important part in the international activity of WHO. These centres coordinate the tasks in connection with the health of the region. Their roles are extremely important in the cases of natural and environmental disasters, social crisis or in times of epidemics. The regions decide about the decreeing of higher alert levels of pandemics, and the organisation of the necessary arrangements. The regional centres are the following (the name of the office is in brackets):

- Africa (Brazzaville, DR Congo);
- America (Washington, United States of America);
- South-East Asia (New-Deli, India);
- Europe (Copenhagen, Denmark);
- East-Mediterranean (Cairo, Egypt);
- East-Pacific (Manila, the Philippines).

Link: [http://www.who.int/en/](http://www.who.int/en/)

12.2. The International and the Hungarian Committee of the Red Cross

12.2.1. The International Red Cross

![ICRC](https://example.com/icrc.png)

*Figure 2: The official emblem of the International Committee of the Red Cross, (ICRC)*

The **International Committee of the Red Cross** (ICRC) is the oldest international humanitarian organisation. Its centre is in Geneva. The work of the ICRC is based on the Geneva Conventions, and according to its Mission Statement it is impartial, neutral, independent, humanitarian, universal and voluntary.
The history of the establishment of the committee goes back to the 1859 battle at Solferino. Jean Henry Dunant the Swiss businessman seeing the ten thousands of dead and injured people left on the battlefield abandoned the original intent of his trip devoted himself to helping the wounded with the assistance of local women. This was when he had a vision that each country should establish a humanitarian aid organisation with the help of volunteers which can take care of all wounded soldiers in the times of war. He said there was a need for an international treaty that would grant neutrality for the injured and their nurses on the battlefield and would guarantee their protection and safety. Based on this Durant founded the Committee of the Five which in 1880 formed into the International Committee for Relief to the Wounded. It was the International Committee of the Red Cross that we know today. The committee worked independently from parties and governments and had the slogan: Inter arma caritas. (Mercy among arms) The inverse of the Swiss flag – the Red Cross - was chosen to be the emblem of the organisation which was accepted at the 1864 international conference.

The most important data in connection with the work of the committee:

- 1864 - The acceptance of the Geneva Convention about the impartial protection of war victims. (Figure 3)
- 1889 - Agreement on the treatment of wounded, sick, shipwrecked soldiers on the sea.
- 1929 - Agreement on the treatment of prisoners of war
- 1949 - The agreement for the protection of civilians. This is the so-called IV Geneva Agreement and it forms the foundations of the International Humanitarian Law.

*Figure 3: The text of the Geneva Convention (1864)* source: http://hu.wikipedia.org/wiki/Nemzetközi_Vöröskeresz
Though the foundation of the Red Cross was encouraged by a war, its work and activities are extremely vital in peace as well. In peace it gives organised health and financial aid to victims of large-scale natural and environmental disasters, and it helps the victims of social crisis.

It is important to mention that the committee originally approved of the use of one emblem in 1864. It was the Red Cross. Responding to the requests of the joining Muslim states the Red Crescent was officially adopted in 1929. On the 8th of December 2005 the third emblem, known as the Red Crystal, was adopted by an international amendment. It was first used by Israel and Eritrea.

There are, however, other emblems as well, such as the Red Lion and Sun which was recommended by Iran in the Convention in 1864. The reason of the suggestion was that Iran raised objections to the approval of the emblems preferred by its two rivals the Russian and the Ottoman Empire. As the emblem was associated with the Shah, Iran switched to the use of the Red Crescent in 1980. Iran, however, still maintains its right to use their original symbol, so even today the Red Lion and Sun is their official emblem. In Israel the organisation (Magen David Adom) uses the Red Star of David, though the international committee has not recognised it officially. The standpoint of the international organisation is that the original aim of the Red Cross that there should be one simple emblem that is known by everyone and protects humanitarian movements must not be associated with religious affiliation. At present 196 countries use the Red Cross and 30 use the Red Crescent.

According to the Geneva Convention the Red Cross emblem can only be used in definite cases:

- It may appear on the institutes taking care of wounded and ill soldiers;
- It can be used by the medical staff of armies and the army chaplains;
- It may be used by Red Cross organisations like the International Committee of the Red Cross, and the International Federation of the Red Cross and Red Crescent Societies (previously the League of Red Cross Societies) and National Red Cross and Red Crescent Societies.

The emblem is often used to mark health care institutes, first aid and medical equipment which according to the Geneva Convention are unauthorised and illegal applications.

The International Federation of Red Cross and Red Crescent Societies, IFRC, is worth being mentioned. The Federation was formed in 1919 and it is also based in Geneva. The
organisation is made up of 185 National Societies and their vision is: “To inspire, encourage, facilitate and promote at all times all forms of humanitarian activities by National Societies, with a view to preventing and alleviating human suffering, and thereby contributing to the maintenance and promotion of human dignity and peace in the world.” Its emblem is illustrated by Figure 4.

![Figure 4: The emblem of the International Federation of Red Cross and Red Crescent Societies, IFRC](image)

**12.2.2. The Hungarian Red Cross**

The Austrian-Hungarian Monarchy formed in 1867 joined the Geneva Conventions and the Vienna based voluntary humanitarian aid society started its establishments. The Hungarian government approved of the movement but insisted that the voluntary health service should be organised independently in Hungary. In 1878 there was an agreement concerning the rules of procedure of the independent Red Cross Societies in Austria and
Hungary. Franz Joseph I commissioned Count Gyula Károlyi to organise the Hungarian humanitarian relief society on 5 December in 1880. There have been several women’s associations working in Hungary at the time. The associations united and decided to start a movement to help soldiers fighting in Bosnia-Herzegovina and their families and a collection in support of these people were organised under the name of the Central Women’s Relief Society. Encouraged by the success of the movement the leaders of the women’s society decided to expand their actions in the country and conduct regular activities. Their rules of procedure were organised according to the regulations of the Geneva Conventions. Afterwards the Hungarian National Women’s Relief Association was established at the assembly on 27 March in 1879. The organisation played an important part in the spreading of the mission and notions of the Red Cross. Due to its initiation the official and voluntary nurse training could begin in Hungary. Its leaders participated in the foundation of the Hungarian Red Cross. Thanks to the organisational work of Gyula Károlyi the Red Cross Association of the countries of the Hungarian Holy Crown was announced on 16 of May in 1881. The two societies united at their statutory session held at the Hungarian Academy on 17 May in 1881, and the first leader of the society was Gyula Károlyi and Nándorné Zichy became the co-leader.

The central committee informed the International Committee of the Red Cross about the foundation of the Red Cross Association of the countries of the Hungarian Holy Crown and applied for recognition in the international committee. The recognition of the Hungarian Association was announced by the international Committee on 20 January 1882. The Hungarian Red Cross has been functioning continuously since then. It has been the member of the International Federation of Red Cross and Red Crescent Societies since its establishment in 1919. Since 1992 the current President of the Republic is also the main patron of the Hungarian Red Cross. It has been a high rank non-profit company since 1 January 1998.

The Hungarian Red Cross is a democratic organisation that is independent from politically and religious affiliation, and via its activities it contributes to the improvement of the health culture of the public and spreads the notions that put health in the focus. Moreover it contributes to the improvement of the health care conditions in Hungary and encourages the involvement of the public in the execution of the tasks in connection with health care. It does significant preventative, informative and charitable work. In the international scale it facilitates the cooperation between countries concerning questions of health care and participates in their solution as well as takes part in international humanitarian actions.
The main areas of the activities of the Hungarian Red Cross:

- organising and executing health informative work for the public,
- cooperation and facilitation in the national health care movements: vaccinations, screenings, in the organisation, direction and assessment of national hygienic movements,
- encourage blood donations,
- cooperation and disaster management in case of natural and environmental disasters,
- active participation in First Aid and in the education of First aid (e.g. concerning the acquisition of the first driving license),
- training voluntary nurses,
- giving elementary First Aid courses for the public and at schools,
- Tracing Service.

The operation of the Hungarian Red Cross is regulated by the 1993 Act. The most important notions of the act regarding the work of the Hungarian Red cross are cited below:

“The Parliament passes the following act of the Hungarian Red Cross and its activities in the spirit of the Geneva Conventions relating to the protection of victims of war of 12 August 1949, its Additional Protocols (I, II) of 8 June 1977 as well as the Statutes of the International Red Cross and Red Crescent Movement adopted in 1986”:

The Act determines the roles of the Hungarian Red Cross as well:

“2. § (1) The Red Cross – in the sphere of its basic activities – performs the following tasks:

a) in case of war it participates in the rescue of the victims of war, it keeps record of the prisoners of war, it provides information, temporary financial or material aid for the vulnerable and their relatives;
b) in case of a natural or other disaster situation it traces those in need, provides them with temporary aid and legal aid; operates rescue teams for the rescue of victims;
c) operates a Tracing Service for the search of missing persons;
d) through establishing and maintaining temporary shelters and by other means it participates in the relief efforts for assisting refugees and asylum seekers, it facilitates the creation of conditions for their earliest possible return home;
e) through the organisation of health promotion programmes, the creation of a home care service, training for giving first aid and through other available means it contributes to life
and health protection;
f) organises the participation of voluntary blood donors in blood donation and participates in the development of the blood supply system;
g) according to demand – in accordance with the Statutes – provides social aid to the vulnerable.”

Link: http://www.voroskereszt.hu/in-english/57-act-on-the-hungarian-red-cross.html

The Hungarian Red Cross today operates according to the fundamental principles of the 2010 Act of the Strategy accepted at the 10th Congress of the Hungarian Red Cross.

12.3. Other health care related organizations

12.3.1. Food and Agriculture Organisation of the United Nations (FAO)

Figure 6: The emblem of the FAO

The Food and Agriculture Organization of the United Nations, FAO is the specialised organisation of the United Nations and its role is to ensure that the population of the Earth is provided with the adequate quality of food and to defeat hunger with his efforts. The Rome based organisation was founded on 16 October 1945. Its Latin motto (Fiat panis) means “Let there be bread”. In June 2011 it had 192 member countries and 2 associate members (Feröer-Islands, Tokelau).

The FAO provides a neutral forum where all nations meet as equals to negotiate agreements and debate policy concerning food and agricultural matters. With the help of its programs the FAO contributes to the development of the agriculture, fishing and forestry, and
ensures good nutrition and food security to the member states with special focus on developing countries. It plays an important role in the modernisation and the improvement of the environmentally friendly production technologies and in their promotion.

12.3.2. The United Nation Children’s Fund (UNICEF)

![UNICEF Emblem](image)

*Figure 7: The emblem of the UNICEF*

The United Nations International Children's Emergency Fund was established at the UN General Assembly on 11 December 1946. Its name was shortened in 1953 to United Nations Children's Fund that is used today, though the acronym of the first name is used worldwide.

“I need 100 million dollars to give 6 million children a glass of milk and a slice of bread.”

(The letter of Maurice Pate, the first Director-General of the UNICEF to the Foreign Secretary of the USA, 1947)

This was the sentence the story of the UNICEF began with. The aim of its foundation was to provide emergency food and healthcare to children in European countries that had been devastated by World War II. Originally the UN General Assembly created the Fund on a temporary basis but recognising its importance and role in the rescuing of the starving children of the world UNICEF was made a permanent part of the United Nations System on 6 October 1953 and its name was shortened.

UNICEF is a unit of the UN that does not benefit from the budget of the UN but relies only on the contributions of governments and private donors. The organisation has 8 million donors and at least 100 thousand volunteers all over the world. National committees in developed countries play a significant part in obtaining the necessary financial contributions. There were 35 functioning national committees in 2009, with the UNICEF Hungarian Committee Fund
among them. As donations are vital for the continuous operation of the programs they have worked out many scenarios and possibilities. Apart from direct contributions (one-off or regular) UNICEF souvenirs and presents can be bought. In many countries, in Hungary as well, there are relief-lines that people can call or text to donate a given amount of money to the Fund.

The Fund basically relies on the donations, the cooperation of volunteers and the activity of the Eminent Advocates for children. As an Eminent Advocate for Children several famous people have promoted the activities of the organisation. Some of them are: Audrey Hepburn, Peter Ustinov, Roger Federer, Serena Williams, Claudia Schiffer, Roger Moore, Whoopi Goldberg, Susan Sarandon, Mia Farrow, David Beckham, Lionel Messi and the musicians of the Berlin Philharmonic Orchestra, and the UNICEF logo has appeared on the shirts of the FC Barcelona footballers. The Fund was awarded the Nobel Peace Prize in 1965.

The annual budget of the fund is more than 2.5 billion dollars and only a tiny fraction of this amount is spent on administration. 80% of its income is spent on children’s programs and aids directly. At the moment there are several child protection programs financed by the UNICEF in more than 150 countries of the world. The UNICEF took part in 290 humanitarian activities concerning children (troubles caused by wars and natural disasters) in 98 countries of the world in 2010. At the beginning of the 21st century more than half of the expenditures of the organisation was spent on child health care, 22% was spent on education, 10% on child protection and 10% on children’s rights programmes. The UNICEF places special emphasis on programs that are related to the fight against AIDS (6.5% of the budget). UNICEF has saved more lives since its establishment than any other humanitarian organisation in the world.

The most important aim of UNICEF is to improve the situation of children and the young regarding health care, nutrition, social care, education and vocational training. They place an emphasis on the education of girls. They encourage and improve the life of local communities as they are aware of their importance. The programs of the organisation help the poorest children in the poorest countries, but in each case they can only help with the approval of the governments of the countries in question. UNICEF takes the lead in protecting the rights of children and takes part in the monitoring of the execution of the 1989 UN agreement on Children’s Rights (e.g. the Justice for Children campaign). It cooperates with other UN organisations in the development of the national development scheme of developing countries and assists them in their realisation.

Link: http://www.unicef.org/
12.3.3. European Commission Directorate General for Health and Consumers (DG SANCO)

The Directorate General is responsible for the health and welfare activities directly concerning the everyday lives of the people in the EU. It is in charge of controlling the quality and safety of the food and consumer products, goods and services on the market. For the sake of the protection of the consumers it monitors the inside market of the EU and performs consumer protection tasks. It facilitates the EU in supporting health protecting and improving projects for its citizens. It intends to protect and improve the general health of the people and to ensure safe food consumption. Moreover it aims to present the animal and plant health regulations and requirements in accordance with the aims of the European Commission and to help the consumers enforce their interests.

Link: [http://ec.europa.eu/dgs/health_consumer/index_en.htm](http://ec.europa.eu/dgs/health_consumer/index_en.htm)

12.3.4. Commission's European Community Humanitarian Office (ECHO) European Commission Humanitarian Aid and Civil Protection

The role of the ECHO European Commission Humanitarian Aid and Civil Protection is to provide aid to victims of environmental or civil crisis and disasters within the EU and outside too. In several cases it cooperates with other humanitarian organisations such as the specialised agencies of the UN, the Committee of the Red Cross and the Red Crescent. It is responsible for the harmonisation and coordination of national measures regarding the community. It supports and protects the population, it provides food aid and help for refugees, people who were forced to leave their homes and it helps prepare for natural catastrophes and helps restoration after the crisis.


Summary

There are several dangers threatening the population of the world, especially in developing countries. The natural and environmental disasters, social crisis situations and their consequences can be handled and prevented only with international cooperation in many cases. WHO, the International Committee of the Red Cross and the Red Crescent, the FAO and the UNICEF, which mainly focuses on solving problems concerning children, play an outstanding part in solving these problems.

Revision Questions
1. What role does WHO play in the improvement of the health care situation of the world?
2. What was the reason the International Committee of the Red Cross was established? How has its work changed in time?
3. What health related problems do FAO have an important role in?
4. Why is the activity of the UNICEF special?

Test
Which international organisations are represented by the emblems below? Write the name of the organisation on the line under the logo or the acronym.

1. ............................................. 2. .............................................

3. ................................................ 4. ................................................

Mock Exam

1. Determine the place of health geography in the system of sciences. Why does this area of science have a specific place in this system?
2. What are the most important trends in health geography? How can the Hungarian development of this science be described?
3. Give the definition of health.
4. List some health geography related demographic indicators.
5. How could developing countries become the determinants of the demographic processes in the world?
6. What factors hinder the development of healthcare provision in the developing world?
7. What does epidemiologic transition mean?
8. What consequences do developed countries have to cope with due to population aging in terms of health care?
9. Why and how are the causes of death different in developing and developed countries?
10. What are the characteristics of the demographic processes in Hungary today?
11. What are the main causes of death in Hungary today?
12. What verifies the duality of the Hungarian healthcare system?
13. What kind of regional and structural tendencies can be observed in the Hungarian health care system?
14. Define the following terms: health, information and alert threshold.
15. How can you prove that the quality of the environment affects health?
16. What are the typical problems that arise from nutrition in developing and developed countries?
17. What are the effects of globalization on health care?
18. What factors contribute to the outbreaks of epidemics today?
19. Why is it difficult to define the term of health tourism?
20. What is the role of WHO in improving global health care?
Final Examination

A

1. What are the most important trends in health geography?
2. What are the most important trends in the Hungarian health geography? What are the characteristics of the Hungarian development of this area of science?
3. Define the term of health. List some demographic indicators related to health geography.
4. What factors impede the improvement of the health care provision in the developing world?
5. What facts can justify that the countries in Black Africa are in the most difficult situation?
6. What is the epidemiologic transition? Support the phenomenon with precise examples.
7. What health care consequences does the particular age structure of developed countries entail?
8. What challenges does the health care provision system of developed countries have to face up to?
9. What are the characteristics of the demographic processes in Hungary today? What are the health care consequences of them?
10. What are the main causes of death in Hungary? How can they be explained?
11. Describe the Hungarian basic, specialised and hospital provision system.
12. What facts can prove that the quality of the environment has an effect on health?
13. What are the health effects of air and water pollution?
14. What is the difference between qualitative and quantitative starvation? Show the health effects of both.
15. What is a healthy diet like?
16. What are the health effects of globalisation?
17. What health care problems has the acceleration of urbanisation brought to the surface?

18. What factors contribute to the outbreak of epidemics today? How can the outbreaks of epidemics be prevented?

19. What is the difference between endemic and pandemic? What are the characteristics of influenza epidemic outbreaks?

20. Why is it difficult to define health tourism?

21. What are the characteristics of medical tourism?

22. What role does WHO play in the improvement of the health care situations in the world?

B

1. Place health geography in the system of sciences. Why has this science got a special place in the system?

2. Where and how can health geography join public education in order to help realise development tasks?

3. What is the difference between chronic and acute diseases? Give examples for both types of illnesses.

4. What are the most important terms that describe health?

5. What are the health effects of global environmental problems that affect developing countries as well?

6. Why and how are the causes of death different in developing and developed countries?

7. What regional characteristics does the Hungarian health care provision system have?

8. Describe the assessment of health in Hungary. What are its characteristics?

9. Introduce the health effects of a supposed nuclear accident.

10. What health effects may the global climate change implicate?
11. What are the typical nourishment problems in developed and in developing countries?

12. Why can we call Africa the starving continent?

13. What factors result in harmful stressful situations and what diseases might be caused by stress?

14. How could AIDS become the biggest health hazard of our age?

15. What are the typical characteristics of wellness tourism?

16. Why can medical tourism be of such high significance in Hungary?

17. What are the most important types of health tourism? What are the most important therapeutic services of medical tourism?

18. What reason called forth the establishment of the Red Cross? How have its functions changed in the course of time?

19. What health geography related role does the FAO have? Why is the work of the UNICEF special?

20. Introduce the activity of the International committee of the Red Cross and the Hungarian one as well and expound their role in health development.
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