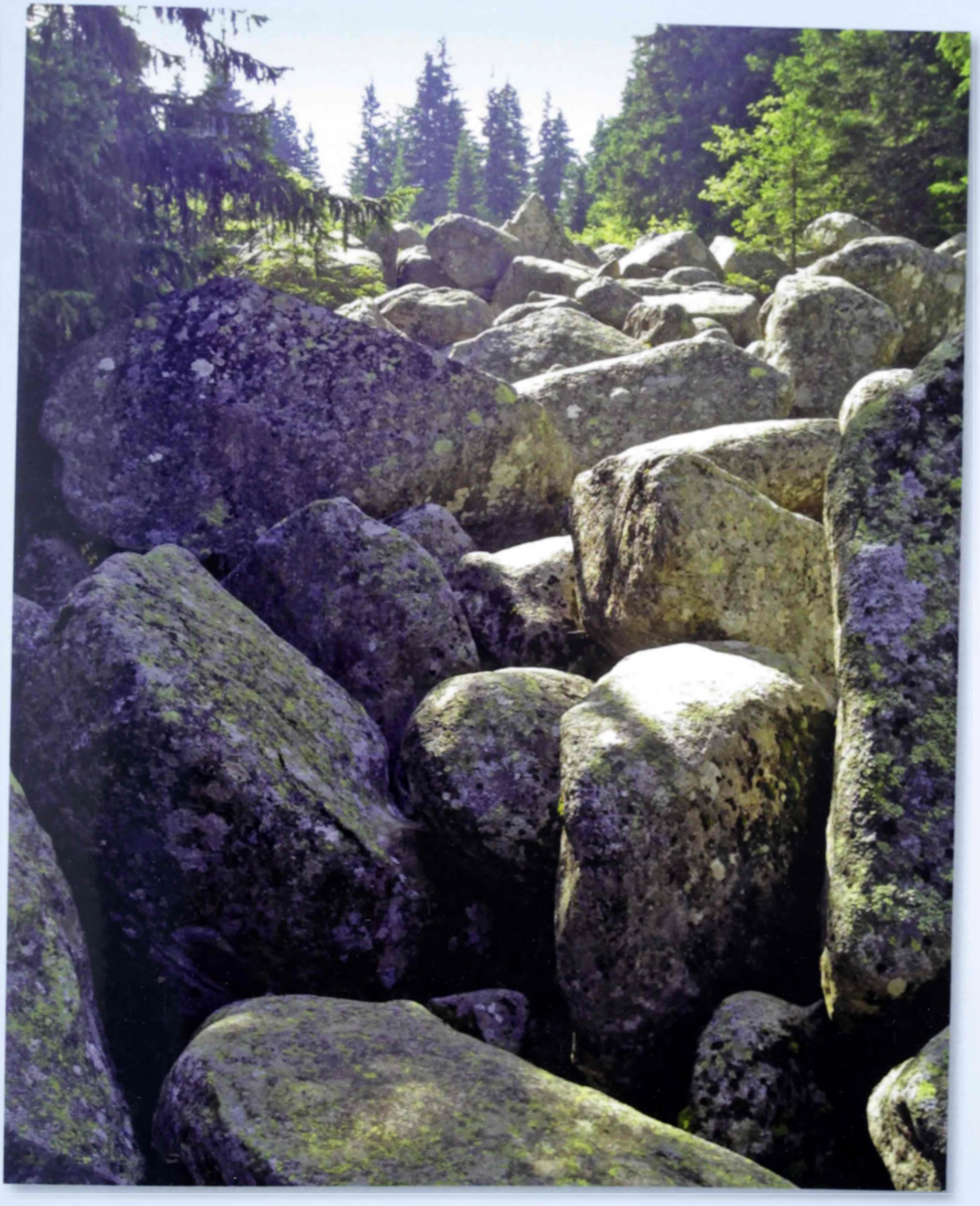
Lydia G. P. Katrova



ESSENTIALS OF SOCIAL MEDICINE AND MEDICAL ETHICS

Sofia, 2017

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Sofia, 2017

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Essentials of social medicine and medical ethics

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Lydia G. P. Katrova

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PREFACE

THE INTEGRATING ROLE OF SOCIAL MEDICINE FOR THE PROFESSIONALIZATION OF DENTISTS

The freedom of movement and settlement of professionals and entrepreneurs is a fundamental value of the European Union. However, the dental profession, as an autonomous social group, is aware of the risk of loose of control on its members in regards of the standard of dental care delivered to the citizens of the EU. These preconditions raised the necessity to elaborate and agree upon acceptable criteria for preparedness of all dentists, in particular, for those who plan to practice in a state of the EU, different from their country of previous citizenship and/or professional education.

In 1999 the Governments of the European economic area member states, agreed upon the basic criteria for comparability of academic education, including: admission, equivalence of awarded degrees, curricula structure and length of training, credit systems and mobility of students and faculties (Appendix 1). As a result of this basic framework, European universities started the process of revising and harmonizing their education following the scheme 3-5-8 (3 years of education before obtaining a Bachelor degree, 5 years of education for a Master degree and 8 years of education for a PhD degree).

Dental education, in general, is part of the higher education system. In addition, it has some particularities relevant to the "regulated professions" features. Therefore, the Association for Dental Education in Europe (ADEE) started a three stages thematic network project[2], with the purpose to organize a peer evaluation of dental curricula through mutual visiting process, using standardized self- assessment and peer assessment protocols. The most important findings from the network project include: better knowledge of strengths and weaknesses of curricula in different countries, scholastic and technical environment qualities in different dental schools. Further benefits from the visiting process for the dental schools are extended (but not limited) to: exchange of good practices, harmonization of dental curricula, consensus on the basic requirements and recommendations for the organization and the process of teaching dentistry at an acceptable comparative quality standard level (Appendix 2). The key elements of the recommended curriculum are based on competences rather than a set of disciplines. The seventeen major competences, the graduating dentist of EU is expected to acquire during his/her studies, are grouped in seven main domains:

1. Professionalism
2. Interpersonal communication and social skills
3. Knowledge base, information gathering
4. Clinical information and information literacy
5. Diagnosis and treatment planning
6. Therapy: establishing and maintaining oral health
7. Prevention and health promotion

The teaching of the topics included in the courses "Social Medicine and Medical Ethics," and "Public Dental Health", is expected to develop all relevant competences, so that graduating dentists in Bulgaria (and not only), be able to start a successful independent dental practice in any European country.

The purpose of this textbook is to provide the students with knowledge and skills to help build the following basic competences:

-**understanding of social and public health phenomena** and processes, which take place at individual, group and community levels;

-**analyzing health status determinants and health indicators** relevant to public health;

-**taking decisions** based on a critical evaluation of the facts and circumstances;

-**solving problems** of technological, medical, legal and ethical concerns upraising in the course of professional activities.

The course of "Social Medicine and Medical Ethics" was developed in accordance with the general educational goals of the program agreed by the department of Public dental health of the Faculty of dental medicine of the Medical university of Sofia, Bulgaria. The chapters are organized to strengthen the links with the rest of the academic curriculum and to establish a sound basis for the subsequent teaching of the course of "Public dental health". The interdisciplinary approach, applied in this work, promotes further individual professional development after graduation.

This work includes facts, trends, and relationships' issues from different areas of the professionalization of dental practitioners while keeping optimal volume and structure. The content and the structure of this work correspond to the general educational purpose of the harmonized with EU competences undergraduate dental curriculum.

Its main educational objective is to provide the Doctor of Dental Medicine with appropriate knowledge, skills and attitude important for the formation of his/her socio-professional role as a liberal practitioner, while integrated in a public health system. With this work, we hope to help students from second year in their efforts to prepare for the term final examination in the discipline «Social medicine and Medical ethics», as well as postgraduate residents and dental practitioners in their search for professional excellence.

Good luck and success!
The Author

INTRODUCTION TO SOCIAL MEDICINE

1. Definition of terms
2. A brief history of the discipline
3. Subject and purposes of social medicine
4. Globalization and its effects on the public health and the professionalization of health professionals in "societies in transition"

The emergence of social medicine as a science is associated with the age of capitalism, the development of cities and the modern state organization of social governance. Social medicine studies the processes of health and disease at individual, community group, and population level and the interaction of biological and social factors shaping these processes. Social medicine today is taught to physicians, dentists and pharmacists all over the world. This chapter presents the definitions of used terms, basic historical facts and the major contributions of scientists for the establishment of social medicine as a field of scientific research, an academic discipline, and a tool for solving social problems, in particular, medico-social problems.

1. Definition of terms

"Social medicine", as defined by J. Guérin, includes human factors and the factors generated from the social structure that affect individual human health and the life of social groups, as well as all organized, targeted efforts to improve the health of individuals and groups. According to J. Guérin socio-medical research must be oriented to medical control, environmental hygiene, and forensic medicine issues.

Community *is a* group of individuals living together in some form of social organization with cohesion in planning and operation and/or manifesting some unifying trait or common interest and values. Community in healthcare organizations refers to the local level of the health system. The form of services provided to a locality will vary accordingly to each country's political, economic, social, cultural, and epidemiological patterns. ***Community diagnosis*** is the assessment of the health status of a community in general or limited to specific health conditions, determinants, or subgroups.

Community medicine (Social Medicine) is the specialty that deals with the health and disease of a population or a specified community. The goal is to identify health problems and needs, to identify the means by which these problems and needs may be met, and to evaluate the extent to which health services manage to do so. Community medicine is concerned with populations rather than individuals.

Health: In accordance with the Constitution of the World Health Organization (1948), health is "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". Health is defined here as a positive concept, emphasizing social and personal resources as well as physical capabilities.

Public health is "the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, public and private organizations, communities and individuals" (1920, C.E.A. Winslow)

Public Health is also defined as: "Organized efforts of society to protect, promote, and restore people's health. It is the combination of science, skills, and beliefs directed to the maintenance and improvement of the health of all the people through collective or social actions. The programs, services, and involved institutions emphasize the prevention of disease and the health needs of the population as a whole. Public health activities change with variations in technology and social values but the goals remain the same: to reduce the amount of disease, premature deaths, and disease-produced discomfort and disability in the population. Public health is thus a social institution, a discipline, and a practice.

Dental public health is a form of dental practice that treats the community rather than the individual patient.

2. A brief history of the discipline

2.1. Origin and name of the scientific discipline

Social medicine has a relatively short history (about 150 years). Accordingly to its interdisciplinary nature, the foundation of social medicine stemmed from the process of structuring of knowledge from established sciences and the *differentiation* of its particular domain of research, research methodologies, and field of application. On one hand, social medicine is a separate field of human medicine on the other hand it integrates methods and scientific achievements of different bio-medical sciences (hygiene, epidemiology), life sciences (sociology, anthropology, social psychology), political science, economics, demographics, statistics and more in an integrated manner.

Table 1 Names of the discipline

Social medicine	JULES GUERIN
Social hygiene	PETER FRANCK
Organization of public health	SEMASHKO
Medical sociology	MACKINTOWER
SOCIAL MEDICINE	NOW

The change in the name of this discipline over time reflects its development. The names, in turn, were implemented in accordance with the societal development and emerging concept and research methods, formulated and applied by leading philosophers and scholars from various periods they studied these social processes.

2.2. Historic periods and leading scholars in social medicine

2.2.1. From Enlightenment till mid–nineteenth century (about 1750-1850)

The Enlightenment consisted of unprecedented industrial, social, and political developments. It produced an immense complex societal impact, culminating in the industrial revolution. The first major scientific work in social medicine was published in Germany by the German medical doctor and philosopher **Johann Peter Frank (1745–1821)**. Johann Peter Frank studied in Strasbourg and Heidelberg, became professor in Pavia and Gotingen and later worked at Tzar Alexander the First's court in Russia. He was also professor in Vienna and director of Health Insurance Fund (Kranken Kassse). The first volume of his work "A Complete System of Medical Policy System" ("Einer Vollständigen Medicinischen Polizey") was published in 1779. The last of the series of 9 volumes was published six years after his death. His methodology for public health dealt with subjects such as public sanitation, water supply, sexual hygiene, maternal and child welfare, food safety, conjugal hygiene, women (engaged in manual labor) protection, education of children, and proper hygiene in schools.

The same period in England was characterized by the emergence of "Social ethics" wave. This approach was associated with Jeremy Bentham (1748–1832) and Edwin Chadwick (1800-1890). The concept of Social ethics was based on **utilitarianism**. In 1789, Jeremy Bentham enunciated this humanitarian social philosophy directed to consequent political reforms in the **"Introduction to the Principles of Morals and Legislation"**. Bentham argued, among other ideas, that society should be organized "for the greatest benefit for the greatest number of its members". In his work "Constitutional Code" (1830), Bentham proposed radical new legislation dealing with such issues as prison reform, the establishment of a ministry of health, birth control, and a variety of sanitary measures.

Edwin Chadwick, Secretary of England's Poor Law Commission, established in 1834 to effectuate the New Poor law, demonstrated awareness of the interaction of disease and poverty. Thus, when the Commission undertook in 1839 a special study of the prevalence and causation of preventable diseases, particularly of the working poor, Chadwick took the lead. The publication "General Report on the Sanitary Condition of the Laboring Population of Great Britain" (1842) is considered one of the most important documents of modern public health. Based on these ideas, in 1948 the NHS of the UK was established.

Table 2 Historic periods and social agenda

1. From the Enlightenment (about 1750) until the Mid–19th Century:	***Social ethics***
2. Mid–19th Century:	***Social determinants of health***
3. Early 20th Century:	***Social hygiene***
4. The Interwar Years of the 20th Century:	***Social reform programs***
5. Late 20th Century:	***Aging and behavioral factors***
6. The 21st Century:	***A century of partnerships***

2.2.2. Mid–nineteenth century: Social determinants of health

The modern study of the social determinants of health began with the writings of Rudolf

Virchow and the foundation of social medicine during the mid-19th century. Virchow (1821-1902) articulated the need to ***develop a sociological method of inquiry of the living conditions and thus maximize the chances to improve community health and to prevent disease***.

Virchow not only made the explicit link between living conditions and health but also explored the ***political and economic structures that create inequalities in the living conditions, which lead to health inequalities at individual level.*** "The education with its daughters the freedom and the wealth are the pillars of the health in the society". Virchow put the stress on the ***social mission of medicine***, he pleaded for concentration of efforts in the ***disclosure of social determinants*** of health and disease and the ***mobilization of public resources in improving public health rather than to focus on the individuals' health***.

2.2.3. *Early twentieth century: Social hygiene*

Social hygiene as a discipline grew alongside social work and other public health movements of this period. Social hygienists emphasized sexual continence and strict ***self-discipline as a solution*** to societal illnesses, tracing prostitution, drug abuse, and illegitimacy to ***rapid urbanization***.

This professional movement gave start to family planning. The American Social Hygiene Association, established in 1913, and later renamed the American Social Health Association, focused its activities on the organization of ***health education in schools with priority to sexual education and hygiene***: avoiding promiscuous behavior, drug abuse, using condoms and washing hand teaching. These preventive programs quickly became popular globally however the proportion of the population which benefitted from these activities differed considerably from country to country.

2.2.4. The Interwar years of the twentieth century: Programs of social reform

During the period between the two world wars, a second, radically different system of social control, based on the concept of egalitarianism, was established. Egalitarian society concepts facilitated the trend to ***integrate medicine's social role into the training of physicians*** through the introduction of a new academic discipline of social medicine. Inspired by the experiments in social medicine and social hygiene in revolutionary Soviet society in the 1920s, interwar socio-medical reformers in Europe and the Americas believed that ***the socio-political role of medicine could be achieved by turning it into a social science.*** The interwar years witnessed a wide variety of ***international developments in social medicine as an academic discipline as well.***

The Institute of Human Relations, established at Yale University in 1931, stated its mission "To ***integrate medicine into research on social inequalities, which would impact the training of physicians to become "clinical sociologists".*** In ***"An Introduction to Social Medicine", McKeon and Lowe*** presented their reflections on the assessment of improvements in health. They found that improvement of health is due to the overall improvement of life conditions rather than to the achievements of medicine and public health. Most of their ideas became the foundation for our ***current thinking about the determinants of health.*** They reviewed the measurement of health in the first part.

The second part of their book dealt with the control of inheritance, the individual preventive measures, including immunization, screening, and modification of personal behavior,

the control of environment, including nutrition, food-borne disease, water-borne disease, animal-borne disease, the atmospheric pollution, the home, and the workplace organization. The final section focused on health and social services, specifically those of the United Kingdom, providing guidelines to public health practice.

2.2.5. Late Twentieth century: Aging and behavioral factors

In the last decades of the twentieth century, public health continued to expand its established roles. In addition, it broadened its scope on public health issues pertaining to the ***aging of the populations in industrialized regions, recognition of the importance of behavioral factors in determining the health of populations, exacerbation of social inequalities in health, increasing violence (at the domestic level as well as at the civil and international level) and alienation.*** Epidemiological research identified differences in health status between gender, ethnic, and occupational groups. Domestic violence, gang warfare, ethnic conflicts, genocide, civil wars, and wars between nations have resulted in substantial mortality and a vast disruption of societies. In some countries, including the United States, homicide has become a major cause of death among those less than twenty years of age. Around the world, ***many millions of displaced people live in huge refugee camps without minimum medical and public health facilities***.

Table 3 Leading scholars in Social medicine and their contributions

1.	**Johann Peter Frank**	(1745–1821)	A Complete System of Medical Policy, 9 volumes;
2.	**Jeremy Bentham**	*(1748–1832* (1789),(1830)	"Introduction to the Principles of Morals and Legislation" "Constitutional Code"
3.	**Edwin Chadwick**	(1800-1890)	"General Report on the Sanitary Condition of the Laboring Population of Great Britain"(1842);
4.	**Rudolf Virchow**	(1821-1902)	Medicine and Politics, Social determinants of Health;
5.	**Jules Guerin**	(about 1884)	Introduced the terms: social medicine, social pathology, "social etiology", and "social therapy";
6.	**Alfred Grotjahn**	(1869-1931)	Established the first department of social hygiene and published the first manual in social hygiene, Berlin (1902);
7.	**Semashko**	(1874-1949)	Social hygiene, Socialist state health policy;
8.	**J. Rile**	(1889-1950)	Established the first Department of Social Medicine in Great Britain;
9.	**M. Cherkasky**		"Social Medicine as a Collaborative Effort";
10	**Mc Keon** and Lowe	1975	An interpretation of the decline in mortality in England: "An Introduction to Social Medicine".
11.	**Sir M.G. Marmot** **R.G. Wilkinson**	2006	Social determinants of health. 2nd ed. 2006, Oxford; New York:

While public health demonstrated social aspects of health at the community level, medicine kept its focus on the study of the biological factors of health and the development and

application of biomedical interventions, rather than the disclosure of social determinants and their impacts on the social environment. This controversy resulted in a hidden form of inequity. Medical professionals, with the purpose of meeting all people needs, had their professional responsibilities actually restricted to those, who were insured and/or could afford to pay medical fees. As a result, the tremendous achievements in science and art were available only to wealthier people. Access to care for the entire population remained only a social ideal.

2.2.6. Twenty first century: Partnership

The approach to social medicine today consists of ***collaboration/partnership*** with many other professions, organizations, and institutions. However, physicians are rewarded mostly for focusing on the biological determinants of health (actually for lack of health) rather than prevention, making most healthcare system disease management focused. ***The understanding of the multi-facial nature of medico-social problem leads to a new philosophy and new action strategy implementation.***

Most modern healthcare systems and healthcare services are designed to ***deal with the environmental, social, economic, and behavioral determinants of health, through partnership work.*** It is expected that physicians must be part of a collaborating team drawn from a broad range of health professionals and community focused groups. There are a growing number of good practices, resulting from common efforts in communities for healthier nutrition in schools, friendly behaviors to disable people, public infrastructure, and many more.

Health promotion is the expression of this new vision. It encompasses a complex of approaches to integrate the public and individual efforts in detecting problems, communicating information about good practices and establishing a relevant institutional control.

2.3. Social medicine in Bulgaria

Social Medicine in Bulgaria became a topic of interest for physicians in 1912 through the socio-medical research of Dr. D. Mollov (1845-1914). He was the founder of the Health Service in Bulgaria in 1900. The name of Prof. Asen Zlatarov (1885-1936) is associated with proposed measures to improve the life and working conditions of the poor population, as well as the hygiene of nutrition. The development of Social Medicine in Bulgaria is associated also with the names of: P. Orahovatz, M. Roussev, T. Petrov, K. Kussitasev, A. Panev, A. Gargov, M. Popov, V. Borissov, Tz. Vodenicharov, and many others who are actively involved in contemporary public health policy design.

The Medical faculty of the University of Sofia was opened in 1917. One of its 24 departments was the "Department of "Hygiene and Social Medicine". The founder and first chairman of this department was Prof Toshko Petrov. He published the first textbook entitled "The Organization of healthcare".

In 1947 the Medical University became an autonomous structure. Prof. Petrov organized the department of "Organization of Healthcare" within the new medical faculty.

In 2001 the Medical University opened the Faculty of Public Health with first dean Prof. T. Vodenitcharov. Today there are four medical universities in Bulgaria with faculties of Public Health

within their faculty structure, and a dental faculty within the University of Sofia with its Department of Social Medicine and Public Dental Health[1].

Table 4 Names of the discipline in Bulgaria

1	1917	"Hygiene and social medicine"
2	1947	"Organization of healthcare"
3	1964	"Social hygiene"
4	1984	"Social medicine"
5	Now	"Social medicine and health management"

Table 5 Eminent Bulgarian scholars and their contributions

1.	D-r D. Mollov(1845-1914):	Foundation of the National Health System (1900) Program of the Bulgarian Medical Union (1912)
2.	Prof. P. Orahovatz: (1917)	Departments of the Medical Faculty of the University of Sofia "Hygiene and Social Medicine" 1917
3.	Prof. A. Zlatarov (1885-1936):	Scientific research in the domain of chemistry and nutrition
4.	Prof. T. Petrov	"Organization of Public Health" (1947)
5.	Prof. H. Gargov	"Social hygiene", (1964) "Social medicine" (1984)
6.	Prof. M. Popov	"Health reforms in Bulgaria" 2000
7.	Prof. V. Borissov	"The New Public Health" 2005

The Department of Social Medicine and Public Dental Health of the Faculty of dental medicine in Sofia was established in 1991 (10.10.1991) 5. The course was designed for 5th year dental students. The program was complemented by two independent courses in "Social Medicine and Medical Ethics" and "Public Dental Health" for 2nd and 3rd year dental students.

3. Subject and purposes of social medicine

3.1. Social medicine as a science

The roots of Social medicine are as long as those of medicine itself. The discipline was defined first in mid 19th century by Jules Guérin. He was the first who used the terms "social medicine", "social pathology", "social etiology", "social therapy" in an article, published in 1848 in the "Gazette Médicale" de Paris: ***"The social medicine must include the medical police, environmental hygiene and forensic medicine".*** The purpose of Social Medicine based on its 150 years of history and the rapidly evolving current social context is defined by **two different views:**

The first view based on the opinions of Guerin and, particularly, Virchow 150 years ago, states that the purpose of social medicine is the ***poor people's protection***: ***"Doctors are the natural advocates of the poor, and social problems are largely within their jurisdiction."*** The New York Academy of Social Medicine's Institute, 50 years later,

[1] The author is one of the founders of the Department of Public Dental Health at the Faculty of Dental Medicine of Sofia and had the privilege to be delegated the task to compose the draft program.

evolved in a broader view such as ***public health protection of vulnerable populations***: "Social Medicine involves the human factors that influence living in social groups, and also factors in societal structure that influence people's health".

***The second* view** on social medicine defined by *McKeon and Lowe, is as follows: "Social medicine is concerned with a body of knowledge and methods comprising epidemiology, and study of the medical needs of society. Social medicine identifies not only what needs to be met, but also how to do it".* The acceptance of the biomedical paradigm and the advances in knowledge through biomedical research changed this perspective, thanks to the rapidly advancing knowledge about the social, behavioral, and environmental determinants of health.

3.2. Social medicine as an academic discipline

Social medicine, as an academic discipline, was founded in 1902, when Alfred Grotjahn (1869-1931) established the first chair of Social hygiene in Berlin and wrote the first textbook (1904). He was the first professor in the field. Grotjahn studied relationships established between humans and their surroundings during the life cycle. He analyzed the hygiene of nutrition, morbidity associated with poverty in the workers' suburbs (tuberculosis), prostitution (syphilis) and others. He said: "The hygiene needs to examine in details the influences of the public relations and the social environment in which people are borne, live, work, enjoy and die.

This way, "***social hygiene became the complement to physical-biological hygiene"*** and became part of the medical curriculum. In Sweden, a decision of the Committee of Medical Education in 1948, founded a Department of Social medicine. The subject became compulsory for medical faculties in the country. Over the next decade, departments and institutes of Social medicine were established in a number of European countries, including Austria, Russia, and UK.

The international movement for social medicine before World war II was intended to create a new social role of medicine to enable doctors to successfully adapt to the epidemiological ***transition (from communicable to non-communicable diseases***), as a result of the economic and social development in the 20th century. The research and teaching of social medicine evolved rapidly after 1960. Health policy and teaching of social medicine, based on the development of scientific research went along with the introduction of the "***evidence based medicine***" approach.

International socio-medical research today focuses on the problems of socio-economic inequalities and the way of removing them, as well as the comparative assessment of quality of life. Recent activities of W H O, entitled "Review of health and social problems" increased the interest in social determinants of health.

Interdisciplinary programs between medicine and social sciences were designed, akin to the interdisciplinary programs between medicine and the laboratory. We can say the interdisciplinary approach provides Social Medicine with analysis of the social causes of health and illness in the same way that laboratory studies have helped clinicians identify the etiology of disease.

3.3. Purposes and tasks of Social medicine

The subject of Social medicine is ***the health of the population*** as a whole, or of groups of the population defined by similarity in lifestyle and living conditions. Social medicine ***integrated the border areas and differentiated into separate distinct branches***: medical demography,

medical sociology, and epidemiology. Multidisciplinary research methodology provides appropriate tools to study the overall picture of public health, with a view to practical healthcare.

The main task of Social medicine is to assess the health status of the population, with a view to the overall organization of healthcare. In addition, the theoretical knowledge and research methods of social medicine are applied in different domains, including: the education of professional staff, the definition of the rationale for reforming the health care legislation, the development of models and the introduction of preventive programs.

3.4. Methods, applied in medico-social investigations and fields of application

Most of methods applied in medico-social research come from the "border" scientific disciplines. These methods are applied for scientific and practical purposes (Table 6).

Table 6 Methods of research application of the socio-medical research findings

#	METHODS:	Field of application
1	*HISTORY*	Retrospective documentary analysis Comparative study of the impact of social determinants; Public health measures and efficiency's assessment
2	*STATISTICS*	Studying phenomena occurring in great number of subjects; Quantification of observed processes; Risk assessment and probability evaluation; Standardization of samples and comparability of results; Confirmation of hypotheses
3	*EPIDEMIOLOGY*	Health status evaluation and assessment; Epidemiology of non-contagious diseases and risk factors; Interventional studies; Programs evaluation
4	*BIOETHICS*	Research ethics; Ethical considerations in planning and carrying out research; Equal opportunities and protection
5	*SOCIOLOGY*	Social group attitudes and values orientation; Social participation, activities and cooperation; Feedback, evaluation of social efforts for service provision

The study of public health includes different levels of generalization and aspects: individual, group, communal health. Conventionally, the various disciplines, relevant to Social medicine, are grouped as follows:

-general social medicine: theory and methodology of the study of public health phenomena;

-border disciplines: history of medicine and public health, medical sociology, medical statistics, epidemiology, medical demography, health economics, health education, and more;

-specialized fields' disciplines: social epidemiology, social hygiene, social pediatrics, social cardiology, health informatics, etc;

-applied complex disciplines: public health, social care, management and organization of healthcare, health policy, health law, health promotion, international cooperation in the field of health.

4. Globalization and its effects on the public health and the professionalization of healthcare professions in societies in transition

4.1. Definition of the term

After the end of the "cold war" (the 90es), the growth of the industrial and financial markets acquired a global character. The acceleration of the process of mutual penetration and integration of the economies in the world became possible due to the widespread introduction of information technology. **The term of "Globalization"** defined a total and universal process of economic, technological, political, social, and cultural changes occurring simultaneously in all parts of the world. The main features of globalization were the liberalization of markets and democratization of societies, fundamental for the "free movement of goods, services, capital, people and information". According to data of the United Nations Research Institute, information technologies have caused a revolution in the consumption of goods and services, but at the same time they are favoring slowly but steadily the boost of liberal democratic societies in transition. Global processes of allocation of markets, including the market of healthcare services and supplies, created new centers of power and influence with new players in the field of social and health policy. Globally, such players are the international and intergovernmental organizations and coalitions.

4.2. Impact of globalization on health policies

Within countries, apart from government, such new players come from nongovernmental organizations, professional societies, local community management and other individual and collective centers of decision making. ***This new situation is implying a partnership approach rather than a pyramidal structure of National Health Service organization.*** The processes of globalization created opportunities but also challenged the public health, as part of the social organization, in particular, in countries in transition in Eastern and Central Europe. Reformation of healthcare systems in those countries generated major problems pertaining to the transformation of ownership on healthcare entities, legalization of new socio-professional statuses, and education of the public and professional communities in terms of democracy and free market. Along this process the populations and the states in these counties faced severe economic constraints and resources shortage.

How does globalization affect the determinants of health and the spread of diseases from one country to another or the formation of the health services market and how do these factors remodel public health practices in a country? This is the great challenge, governments, professional communities and populations in all countries, including ours, face now. ***The new task of public health, developing under the conditions of global marketplace and liberal governance,*** seems to relate to the definition of health risks in a broader socio-economic context. Finding proper socio-medical responses to the dramatic inequalities consists of provision the population with access to adequate health care.

A major emphasis has to be put on health policy, considering the criteria of freedom of movement and the establishment of new partnerships and new alliances. Most common "global issues" consist of spread of diseases as a result of the displacement of large groups of people, social and economic inequalities and ethno -cultural differences in attitudes, which causes professional, legal and ethical concerns. Such problems occur usually when citizens of the EU live and work in a specific city of a member state but consume social and healthcare services at

different places in or outside the state of citizenship. Other problems are generated by the uneven distribution of resources and the dictate the world monopolies of medical products and medical equipment exercise on the local healthcare markets. For many years epidemiological studies were the only instrument of the medico -social research. The growing complexity of health issues and the evolving "personalized care" enhanced the need for the implementation of the interdisciplinary approach and the international cooperation.

4.3. The health professions and their development under the global influences

In post-industrial societies, along with material and positional inequalities and the growing complexity of division of labor, the absolute importance of financial power decreased, raising the importance of human achievements in the context of shared values in society: professionalism, solidarity, justice, and tolerance. The role of medical professions is very important in these processes. On one hand, professional social groups constitute the "backbone" of the upper middle class by virtue of income and social prestige. On the other hand, the healthcare professions have the mission to provide the population with care and education. Typically, professional organizations supervise the legitimacy of practicing. They are responsible for the respect of professional and ethical standards by their members, the control over the access to professional practice. They also plead for the good material rewards to members. In many cases, professional organizations, leading the autonomous professional groups, have the right to participate in the monitoring of professional and paraprofessional schools and the intake number determination (Numerus clausus). In countries of Eastern and Central Europe before 1990, gradually, somewhere dramatically, the principles of professional autonomy were violated and professional groups were prevented from the right to private liberal practice for a large part of twentieth century. ***Today, in these countries, steps are being taken towards the restoration of the attributes of autonomous professional occupation: professional organizations, representing and protecting the rights of members, standardization of education, together with recognition of autonomy and authority of the professions by public and state institutions.***

In the new conditions, professionals and professions are facing two trends regarding their autonomy. One is going toward limitation of the individual practitioner decision making competence, due to the growing importance of team work and third party payment models implemented in healthcare. The individual professional may lose his/her autonomy as well if he/she gets employed in a larger organization. Professional communities must accept the limitation of their authority in respect of consumers of services, who are no longer content being passive shoppers but assume the role of partners in the process of the elaboration and the follow up of their treatment plans. The intervention of financial "intermediaries" between professionals and their customers and attempts at professionalization of allied quasi-professions threatens the social position of the professions. And vice versa - the constant development of new knowledge and technologies, and the rapid development of services provide amplification of the position and the role of professional groups in the society. A major challenge medical/dental practitioners face now consists of the restriction of social resources and, as a result, the restriction of the access to healthcare services for part of the population. This problem is going beyond the humanistic approach and/or the professional competence of the individual dentist and the dental organization.

PART ONE: HEALTH AS A BIO-SOCIAL PHENOMENON

Chapter 1 **Biological and social aspects of health**

1. Definition of terms
2. Biological and social interactions of health
3. Studying health: concepts, factors, determinants and indicators

This part presents the bio-psycho-social characteristics of health and the tools for the assessment of social environment relevant to health and health status - health determinants and health indicators.

Educational objective: The purpose of this chapter is to provide students with knowledge and skills to develop competencies for:

1. Understanding the biological and social aspects of processes relevant to health;
2. Appreciating the differences in observing the preconditions and determinants impacting on the health status of individuals, community groups and the entire population;
3. Enabling them to assess public health status using the system of indicators;
4. Enabling them to understand and use health statistics in research and decision making process.

1. Definition of terms[2]

Society: "Society" is the most general category used to study facts, events, processes, attitudes, and relationships among individuals in communities, organization of communities and individuals, in their systematic unity and functioning. Society, as a body of social actors and relationships, is characterized by its specific structure, leading forces and uniting system of shared values which give the traits of a concrete society living in a defined geographic area, under a specific system of state organization for a given historic period. Actors in this system are individuals and communities, grouped upon their social positions and social roles.

Healthcare system is an example of a subsystem of society. Actors in this subsystem are doctors and staff (individuals and professional organizations), patients (individual patients or groups differing by age, social and economic activities, lifestyle and/or social positions). Experiencing a medical condition is, at some extent, a social experience, both for the individuals, their close milieu and the communities.

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[2] The definitions of categories "health", "public health", "community", "community medicine", community diagnosis" are introduced in the previous chapter

Individual personality as a social phenomenon: Each individual has his/her own biological characteristics, encoded in their DNA. In addition to biological nature, human beings possess the ability to perceive critically the surrounding environment, to evaluate processes and to establish adequate mechanisms to adapt to natural and social conditions. They also can actively change the environment via purposeful individual and/or collective efforts. Thus, an individual as a member of a community reflects the entire complex of social relationship, in particular in the healthcare domain. However, the individual is not equal to a "reduced-size version" of the society, neither a child is a "reduced version of an adult". They are holders of the essential health characteristics grouped as physical, psychological and social. These characteristics are present apart individual level at group, and population levels (Fig.1)

Health status is a general term to define the state of the health of an individual, group of individuals, or a population. It reflects the degree to which a person is able to function physically, emotionally, and socially, with or without aid from the healthcare and social support systems.

Health indicator: A variable that helps to measure changes directly or indirectly and permits one to assess the extent to which objectives and targets of a program are being attained. In medicine, indicators help to measure changes in the health situation of a population.

Health determinant: Any factor, event, characteristic, or other definable entity that brings predisposition for change in a health condition or other defined characteristic.

Health factor: Apart the determinants of health, as fundamental conditions from the natural and social environment, there are a group of more concrete factors relevant to physical, economic, and social conditions of life, including the social milieu of the individuals.

Risk factor: An aspect of personal behavior or lifestyle, environmental exposure, or congenital or inherited characteristic, based on epidemiological evidence, known to be associated with an unfavorable health-related condition and considered important to prevent, if possible. It is used as an indication of increased probability of a specified health outcome such as the occurrence of a disease ***but is not necessarily a causal factor.*** The term risk factor is further used to mean a determinant that can be modified by intervention, thereby reducing the probability of occurrence of disease or other specified outcomes.

Health risks appraisal: A method of describing an individual's probability of becoming ill or dying from selected causes. Starting from the average risk of death for that individual's age and sex, various lifestyle and physical factors are considered, and it is determined whether the individual is at greater or lesser than average risk from the commonest causes of death for their age and sex. Health risk appraisal also indicates the reduction in risk which could be achieved by the individual's altering any of the causal factors (such as cessation of cigarette smoking).

Healthy behavior: The combination of knowledge, practices and attitudes that together contribute to motivate actions taken regarding one's individual health. Healthy behavior may promote and preserve good health. On the other hand, behaviors harmful to health such as tobacco smoking, alcohol drinking, drug abuse, junk food eating and lack of physical exercise, may result in an increase of disease rate in the population.

Lifestyle: A general manner of living based on the interplay between living conditions in the broad sense and individual patterns of behavior as determined by socio-cultural factors and personal characteristics. The range of behavior patterns open to individuals may be limited, or complemented by social environmental factors. For this reason, lifestyles are usually

considered in the context of both collective and individual experiences and general conditions of life. A change of lifestyle may include such activities as stopping cigarette smoking, changing the pattern of nutrition or engaging in regular physical exercise.

Quality of life: The degree to which individuals consider themselves able to function physically, emotionally, and socially. In a general sense, it is that which makes life worth living. In more "quantitative" sense it refers to a person's time remaining alive, free of impairment, disability, or handicap.

2. Biological and social interactions of health

2.1. Bio-psycho-social model of health and disease

Simply looking at biological factors alone is not sufficient to explain health and illness. The purpose of the bio-psycho-social model (Engel, 1977) is to take a broader view. According to Engel's model, bio-psycho-social factors are involved in the causes, manifestation, course, and outcome of health and disease, including mental disorders. The model certainly fits with common experience. Few people with a condition such as heart disease or diabetes, for instance, would dispute the role of stress in aggravating their condition. Research accepts this out and reveals many other relationships between stress and disease (Cohen & Herbert, 1996; Baum & Posluszny, 1999).

One single factor in isolation— biological, psychological, or social—may weigh up heavily or hardly at all, depending on the behavioral trait or mental disorder. That is, the relative importance or role of any one factor in causation often varies. For example, a personality trait, such as extroversion, is linked strongly to genetic factors, according to identical twin studies (Plomin et al., 1994). Similarly, schizophrenia is linked strongly to genetic factors, also according to twin studies. But this does not mean that genetic factors completely predetermine or fix the nature of the disorder and that psychological and social factors are unimportant. These ***social factors modify expression and outcome of disorders***. Likewise, some mental disorders, such as post- traumatic stress disorder (PTSD), are clearly caused by exposure to an extremely stressful event, such as rape, combat, natural disaster, or time spent in a concentration camp (Yehuda, 1999). The likelihood of developing PTSD is related to pre-trauma vulnerability (in the form of ***genetic, biological, and personality factors***), ***magnitude of the stressful event, preparedness for the event, and the quality of care after the event*** (Shalev, 1996).

The relative roles of biological, psychological, or social factors also may vary across individuals and across stages of the life span. In some people, for example, depression arises primarily as a result of exposure to stressful life events, whereas in others the foremost cause of depression is a genetic predisposition.

2.2. Health as a bio-social phenomenon

Health, as the subject of social medicine, represents a complex phenomenon. On one hand, "health" is an abstract category different from the health of one individual or individuals in a group, on the other hand, it may not be defined without measuring the real parameters by which the individual's and the group of individuals' health is described. Therefore, health might be

observed as a complex category with ***different levels of generalization and aspects: individual, group, communal health.*** Its definition and evaluation includes social and biological approaches (Fig.1).

Fig.1. Levels of generalization and social context of the category "health"

2.3. Understanding the complex nature of health

To understand the complex nature of the term "health" we have to take into consideration that it is ***the result of biological and social interactions, with specific individual, group and population expression.*** This implies generating ***knowledge derived from various medical fields and elaboration of an integral concept.*** Health is expressed by the concept of integrity (bio-psycho-social model). Health, according to the definition of the WHO, with its ***three aspects - physical, mental and social, has three degrees of generalization - individual, community groups and population***. **Individual health** is expressing the level and direction of the reproduction and development of vital functions of the individual measured by real, unique figures describing the aspects and moment physical, mental and social state of the individual member of a community, while the public health impacts rather on abstract statistical figures known as indicators of health. **The health of a given group**, usually with some socio-demographic homogeneity, and prospective definition of certain priority aspects, is susceptible to factors affecting both individual and population degree of health. It is measured, similar to public health by statistical parameters - "health indicators". **Public health is observed as health status and dynamic trends of health indicators in a given population.**

2.4. Health status and social environment

The health status of the population (degree of health and loss of health, respectively) and the real conditions of life are influencing each other in interdependence. A ***positive trend of health indicators,*** including demography growth, usually correlates with sustainable economic growth, which allows the society to set aside resources and to improve healthcare systems, the educational and cultural level of the population, and thus, to ***predispose long- term reproduction of favorable health conditions.*** This improvement of health, on its turn, results in improvement of workforce reproduction and a **sustainable trend of economic growth.**

Conversely, the ***unfavorable health indicators' rates,*** including prevalence of older groups (aging society), or low nativity rate, ***correlate with unsatisfactory quantity and quality of labor force***. In such a society the restricted amount of resources ensure

access to healthcare only for limited number of the population and a short list of prepaid services for limited groups of the population. This situation influences economic growth in a negative way, which would predispose a further cut of social resources and **deterioration of the social mechanisms of inclusion** (Fig.2).

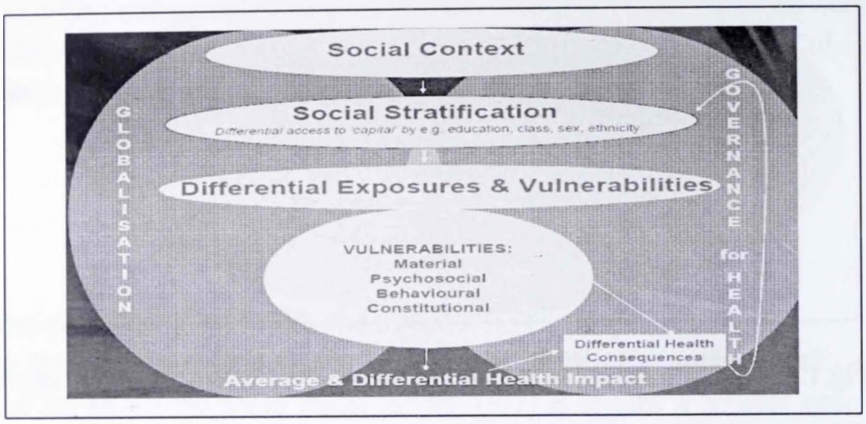

Fig.2. Local and global social impacts on health

Health status reflects the influence of social conditions at individual, group and societal level. On the other hand, the state of health is influencing the individual and societal development, expressed as follows:

-***The morbidity rate*** is challenging the healthcare system;

-***The family milieu*** is shaping the course of disease;

-***The occupational environment*** is also influencing the course of disease;

-***The needs and demand for health care*** are related to access to care;

-***Diseases' incidence rate*** is related to socio-demographic particularities of the population.

3. Studying health: Concepts, factors, determinants and indicators

3.1. Conceptual approaches to understand health determinants

The Ottawa Charter for Health promotion identifies ***the prerequisites for health*** as follows: peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice, and equity. ***A variety of approaches*** to the social determinants of health interpretation exists and all of these approaches are concerned with the organization and distribution of economic and social resources among the populations. ***The main conceptual approaches to healthcare allowance are defined as follows:***

1. Cultural and structuralist approach
2. Neo-materialist approach
3. Social comparison approach
4. Life-course perspective approach
5. Public policy focused approach
6. Politics and political ideology
7. Globalization and health

3.1.1. Cultural and structuralist approach

A considerable body of published research evidences the correlation between the individuals' behavioral choices (e.g., tobacco and alcohol use, diet, physical activity, etc.) and the development of most socially significant diseases, even ending in death (Fig. 3).

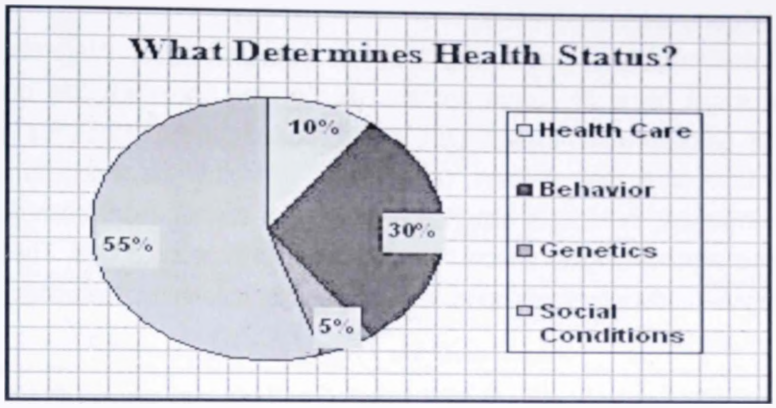

Fig. 3. Importance of behavioral and social factors (30%versus 50%)

Further, more analytical research indicated that ***behavioral choices are heavily structured by one's material conditions of life (30% of impact rate).*** The materialist/structuralist explanation emphasizes the material conditions under which people live their lives. These conditions include availability of resources to access the amenities of life, working conditions, and quality of available food and housing among others (55% of impact rate). Genetic factors alone account for a relatively small variation in morbidity from various diseases (5% impact rate), while the presence of defect in the social mechanisms of access and inclusion predispose unhealthy behaviors at highly extent. The impact rate of the Healthcare service was estimated at 10%.

3.1.2. Neo-materialist approach

The neo-materialist approach is concerned with how nations, regions, and cities differ in the way they distribute economic and other resources among the population. Some jurisdictions have variations in exposure of the population to the social determinants of health (Fig. 4).

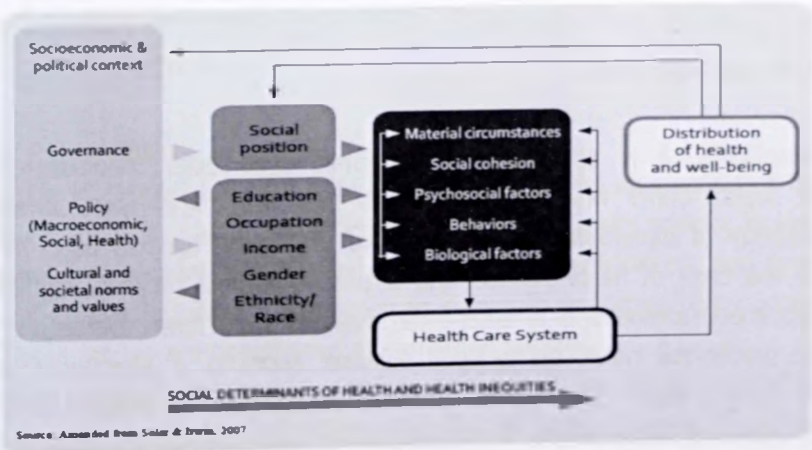

Fig. 4. Material circumstances and health inequities

The neo-materialist view directs attention to both the effects of living conditions on individuals' health and the societal factors that determine the quality of the distribution of the resources predisposing the conditions of life.

3.1.3. Social comparison approach

The social determinants of health play their role through citizens' interpretations of their standings in the social hierarchy. There are two mechanisms by which this occurs: At the individual level, the perception and experience of one's status in unequal societies lead to stress and poor health. Comparing their statuses, possessions, and other life circumstances to those better-off than themselves, individuals experience feelings of shame, worthlessness, and envy. These feelings have psychobiological effects upon the health of those individuals. These processes involve direct disease- producing effects upon neuro-endocrine, autonomic, metabolic, and immune systems.

3.1.4. Lifespan approach

Poor growth and development are associated with adverse early life environmental conditions correlate with an increased risk of a chronic disease manifestation during adulthood (Fig.5).

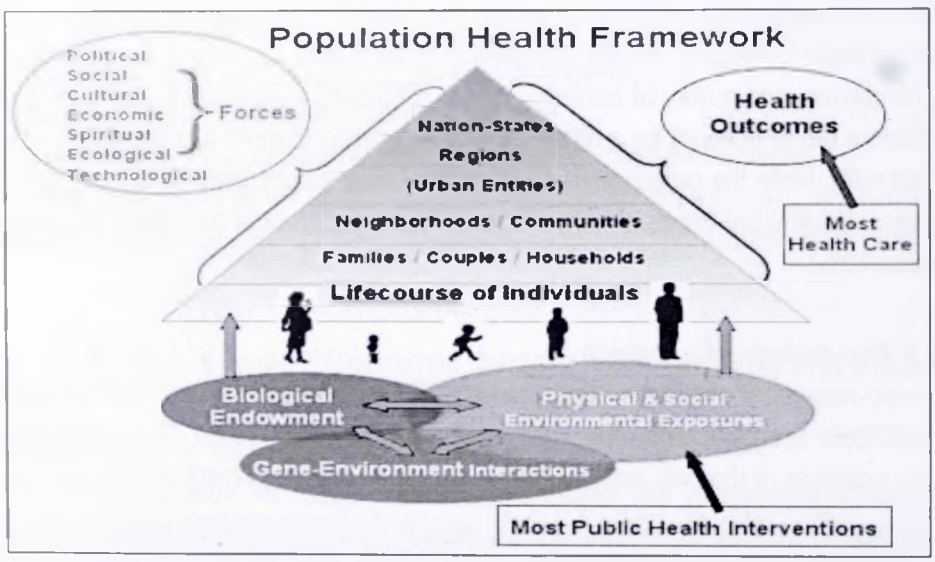

Fig. 5. Life span approach

More specifically, it is apparent that economic and social conditions—the social determinants of health—under which individuals live their lives have a ***cumulative effect upon the probability of developing any number of diseases.*** This has been most clearly demonstrated in the case of heart disease and stroke. And most recently, studies into the childhood and adulthood antecedents of adult-onset diabetes show how adverse economic and social conditions predispose individuals to such disease. Adopting a life-course perspective directs attention to how social determinants of health operate at every level of development—early childhood, childhood, adolescence, and adulthood—to both immediately influence health as well as provide the basis for health or illness during later stages of the life (Fig.6).

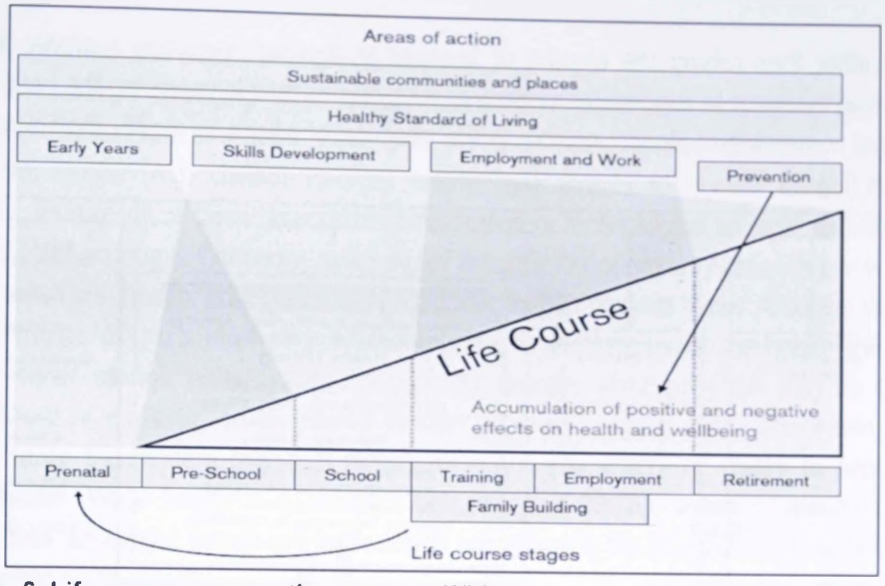

Fig. 6. Life course perspective concept. With the permission of Sir Prof. M. Marmot

The Life-course perspective approach outlines three groups health effects: **latent effects, pathway effects and cumulative effects.**

Latent effects are biological or developmental ***early life experiences that influence health later in life.*** Low birth weight, for example, is a reliable predictor of incidence of cardiovascular disease and adult-onset of diabetes in later life. ***Experience of nutritional deprivation during childhood has lasting health effects.***

Pathway effects are experiences that set individuals onto trajectories that influence health, well-being, and competence over the life course. For example, it was established that children who enter school with a reduced vocabulary set, demonstrate a delayed path of development that leads to lower educational expectations, poor employment prospects, and greater likelihood of illness and disease throughout of life. ***Deprivations associated with poor-quality neighborhoods, schools, and housing sets children off on paths that are not contributing to health and well-being, but the opposite – to risks for chronic diseases and depraved quality of life.***

Cumulative effects represent an accumulation over time of advantage or disadvantage of individual life that manifests itself in poor health. ***These situations involve the combination of latent and pathways effects.***

3.1.5. Public policy

Early life is shaped by availability of sufficient material resources that assure adequate educational opportunities, food and housing among other health relevant factors. Much of the effect is due to employment, security and quality of working conditions, and family income. The availability of quality, regulated childcare is an especially important policy option in support of early life. ***These issues are usually out of individual control.***

A policy-oriented approach places such findings within a broader policy context. Governments may choose to understand early life as being primarily resulting from parental behaviors towards their children. They focus ***upon promoting better parenting***, assist in having parents ready to grow up and educate their children, or urge schools to foster exercise among

children rather than raising the amount of financial or housing resources available to families. There is little evidence to suggest the efficacy of such approaches in improving the health status of those most vulnerable to illness, notably in the absence of efforts to modify their adverse living conditions (Fig. 7).

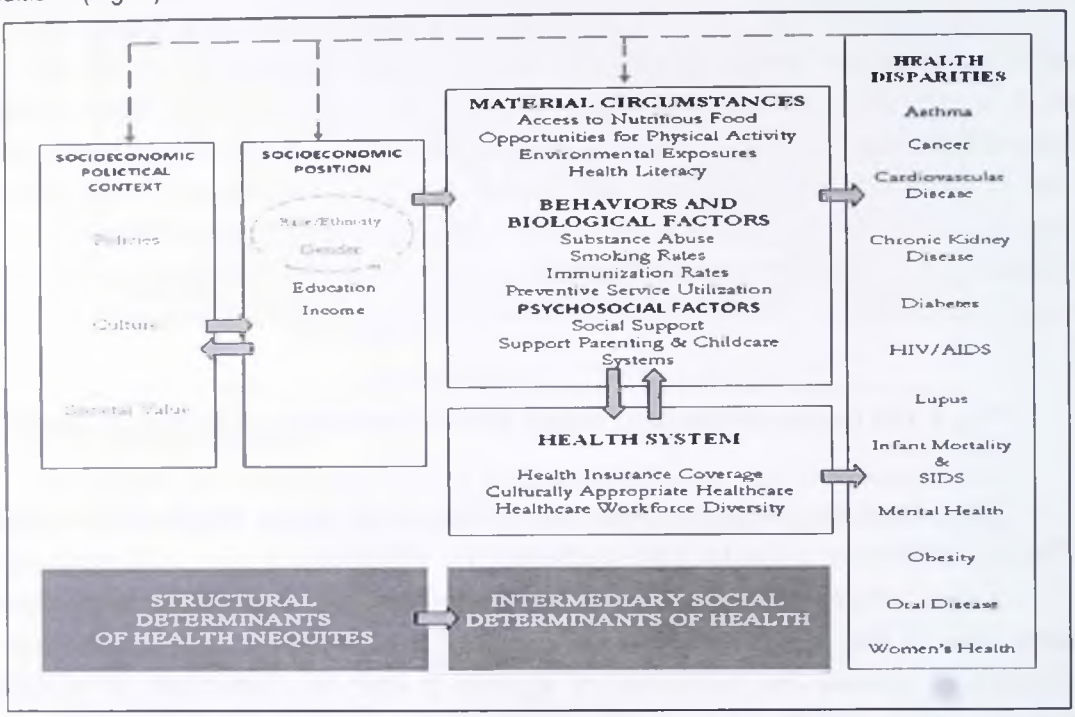

Fig. 7. The public policy mechanism to face health disparity in the population

3.1.6. Politics and political ideology

Three distinct clusters of welfare regimes may be identified among wealthy developed nations: ***social-democratic:*** Sweden, Norway, Denmark, and Finland***; liberal:*** USA, UK, Canada, Ireland ***and conservative:*** France, Germany, Netherlands, and Belgium among others. Usually, the healthcare systems, established in social democratic countries, are characterized with high government intervention and strong welfare orientation. In the liberal countries the role of the state and the regulations are much weaker favoring the private initiative and individual responsibility. Conservative nations are ranged midway between the two others regarding health services provision and social support for their citizens. ***Social democratic nations*** have very well developed welfare states that provide a wide range of universal social and health benefits. They expend more national wealth to supports and services. They are proactive in developing labor, family-friendly, and gender equity supporting policies. ***Liberal nations*** spend rather less on supports and services. They offer modest universal transfers and modest social-insurance plans. Benefits are provided primarily through means-tested assistance whereby these benefits are only provided to the least well-off. Navarro and al. provide empirical support for the hypotheses that the social determinants of health and health status outcomes are of higher quality in the social democratic rather than the liberal nations.

Conservative nations have a health and social system based on the principles of shared responsibility, pluralism and solidarity. They aim the balance between the free market of services and the guaranteed access to public provisions for the citizens.

3.1.7. International health and globalization

Public health is emerging as a critical international issue with economic, security and development dimensions. Increased trade and personal travel spread diseases. Large scale environmental trends (e.g. climate change) create new threats to human health. Economic restructuring, as a result of closer international integration or technological change, can lead to job losses or greater economic insecurity, a key social determinant of health. Globalization is one of the key challenges health policy-makers and public health workers face. Although there is a growing number of publications on the importance of globalization for health there is no consensus either on the pathways or mechanisms through which progress may be made on this face. There is, however, an increasing tension between the new rules, actors and markets that characterize the modern phase of globalization and ***the ability of states to protect and promote health.*** While health is a complex outcome and the processes of globalization are complex as well, an explicit framework for research can advance the formulation of the next decade agenda in public health (Fig.8).

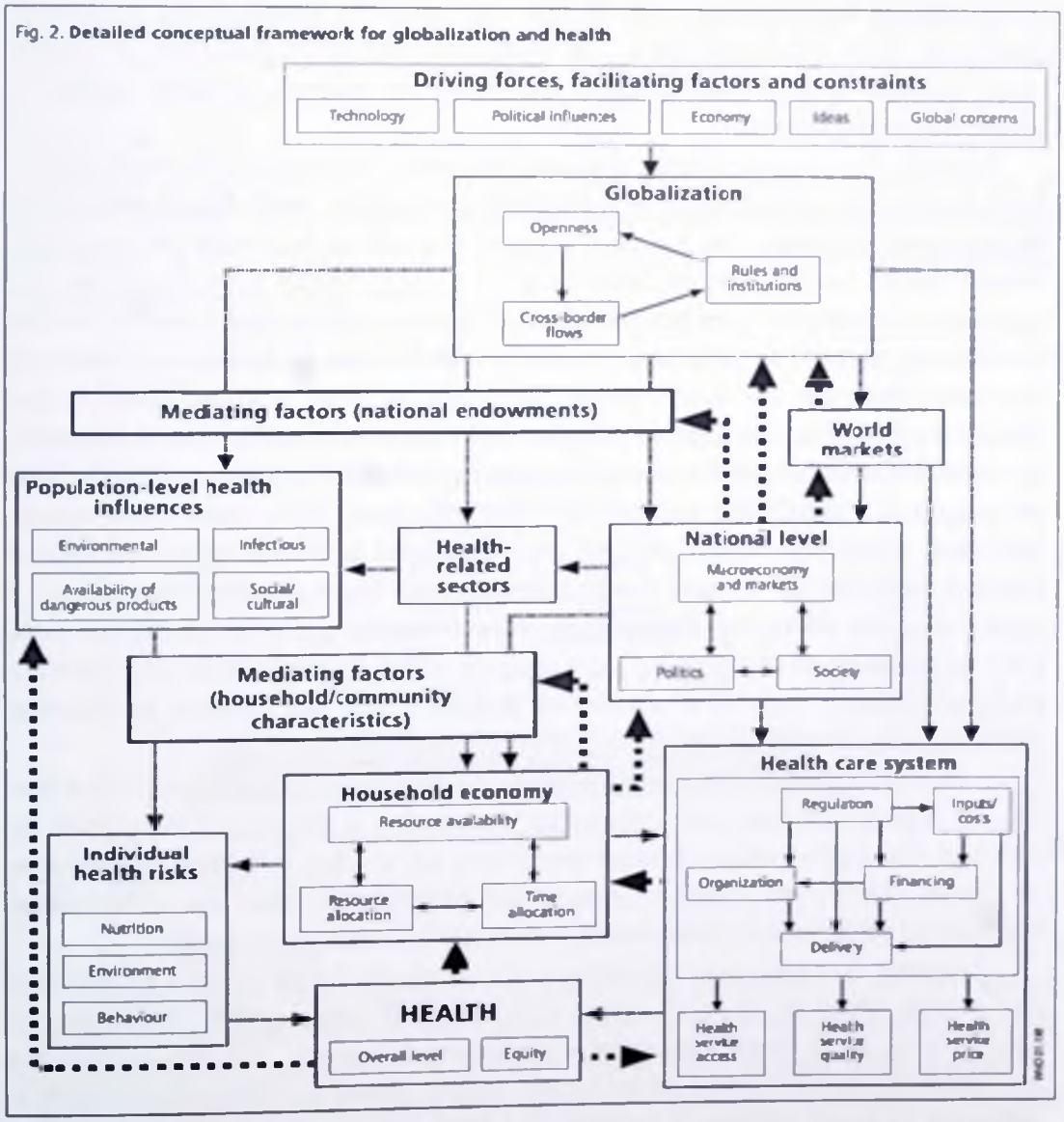

Fig. 8. Globalization and health

First, it is essential that the economic benefits of globalization extend to all countries, including low-income countries (***the link from globalization to the national economy).*** This means that changes in international rules and institutional arrangements fully reflect the needs of all countries, including developing countries while removing major obstacles to development in the international economy. These obstacles include the remaining debt problems of low-income countries, the chronic weakness and instability of commodity markets, restrictions on access to developed country markets, and the role of volatile international financial flows (generating financial crises). A greater volume of investments, better allocation, and higher quality of financial and technical assistance are also required to create national conditions, necessary for successful integration into the global economy–notably adequate and reliable infrastructure, human development, and effective political and administrative institutions.

Extending the benefits of globalization geographically also means that countries need to manage the process of integration with the international economy in ways that maximize the economic opportunities and minimize the economic risks and social costs. Social principles and objectives must be fully and effectively integrated into policies on international trade and financial flows. This means that governments must retain the "policy space" necessary to fulfill these conditions, and receive the technical assistance needed to develop the capacity to do so.

Secondly, the economic benefits of globalization need to be translated into health benefits ***(the links from the national economy to the health care system, health-related sectors, and the household economy).*** This requires that economic growth be sustainable and consciously directed towards the poor, through better design of pro-poor national economic policies, and more explicit consideration of distributional effects in decisions at global level. It also requires that the resources generated by globalization process be more favorable for developing countries and help them to strengthen their health systems. Such measures ensure ***universal access to cost effective interventions, and improve other services essential to health, such as education, tap water and sanitation, environmental protection and effective nutrition and health safety net programs.*** If globalization has adverse economic effects on a country (e.g. through dislocations arising from changes in export and import prices or financial crises), the negative impact on health must be minimized through protecting health-related spending from reductions in public expenditure, limiting the adverse effects of low or negative growth on the incomes of the poor, and increasing aid and improving policy design to achieve these objectives. More generally, ***policy coherence is required to ensure that policies in non-health sectors contribute to health objectives and vice versa.***

Thirdly, potentially adverse effects of globalization on population-level health influences (e.g. on tobacco marketing and cross-border transmission of infectious disease) must be minimized. This requires action at the international level, e.g. an effective "Framework convention on tobacco control", and ***efforts to ensure that governments retain the ability within international agreements to take measures necessary to protect public health.***

Fourthly, the design and implementation of international rules need to *take full account of their potential effects on the health care system and health-related sectors. This implies the need for a full health impact assessment of international agreements and measures that may have significant effects on health- related* sectors, whether ***directly (e.g. through constraints or influences on sector policies) or indirectly (e.g. through the availability of resources and***

input costs), before they are implemented. In addition to each of the individual relationship, the interaction between different linkages is also important. There are a number of trade-offs inherent in the globalization process that need to be resolved, taking full account of their health dimensions. Examples include the ***trade-off*** between food safety regulations in developed countries and the export prospects of low-income countries; and the conflict in the international ***regulation of intellectual property rights between the incentives to develop health technologies, the need to prioritize research in line with health needs rather than ability to pay, and the affordability of medical technologies to low- income populations and developing countries.*** These trade-offs require the development of effective international mechanisms to resolve such problems in the interest of health.

3.2. Health factors

3.2.1. Physical factors

Physical factors comprise climate change, elements in the natural environment and human-built environment. The air we breathe, the water we drink, the food we eat generate key influences on health/public health. Ultimately, human populations are dependent on the integrity of the ecosystems that support them. This is why there is growing concern that human activity is impairing the Earth's life-support systems by altering global biochemical and geochemical cycles, depleting renewable resources and increasing the rate of species extinction, linking climate change and public health. Factors in the human-built environment such as housing, workplace safety, and community and road design, are also important influences on human health (Fig.9).

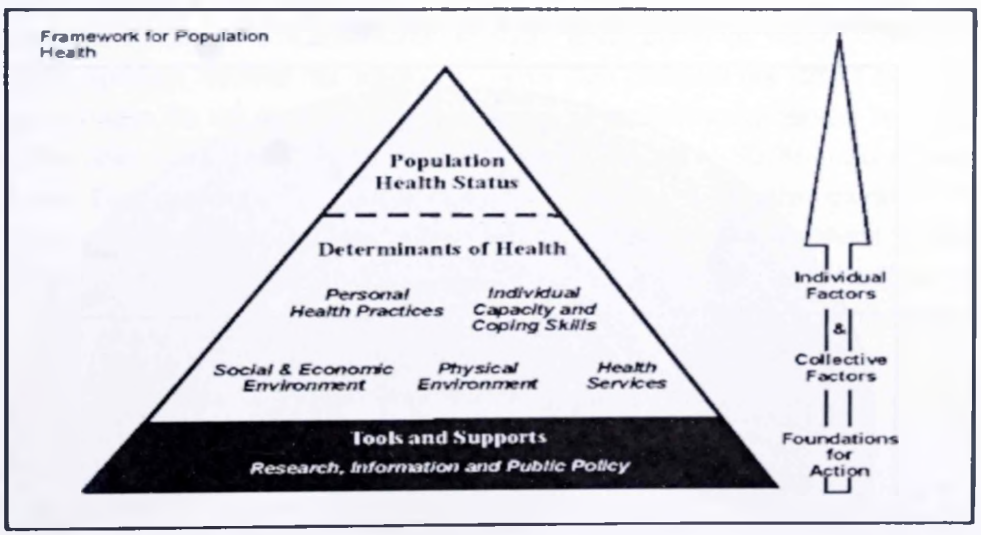

Fig. 9. Health factors

3.2.2. Social factors

Social factors include, first of all, the support from families, friends and communities, resulting in better health. The caring and respect arising from and in social relationships, coupled with a stable sense of satisfaction, acts as a buffer against health problems. Social or community responses can foster health by ***adding to an individual's repertory of strategies to cope with changes*** (Public Health service as well). And this is especially important for those people who

are chronically ill and have to rely on the compassion and devotion of their relatives and friends for physical assistance, financial support and emotional encouragement. Social factors comprise also such factors as ***education and social support networks*** (which enable and support healthy choices and lifestyles), as well as people's knowledge, intentions, behaviors and coping skills. ***Education and health literacy*** contribute to the health by providing people with the knowledge and skills for problem solving and decision making.

3.3. Health determinants

The term ***"social determinants of health"*** grew out of research of the specific mechanisms by which members of different socio-economic groups come to experience varying degrees of health and illness. It was found that everywhere individuals of different socio-economic status show profoundly different levels of health and incidence of disease. ***Social determinants of health are the conditions in which people are born, grow, live, work and age, including the system of health care.*** These circumstances are being formed under the ***influence of finances, power and resources at global, national, and local level, and finally depend on political decisions.***

Social determinants of health are the economic and social conditions that shape the health of individuals, communities, and jurisdictions as a whole. Social determinants of health are the primary determinants of whether individuals stay healthy or become ill (***a narrow definition of health). Social determinants of health also determine the extent*** to which a person possesses the physical, social, and personal resources to identify and achieve personal aspirations, satisfy needs, and cope with the environment (***a broader definition of health).***

Social determinants of health are about the quantity and quality of a variety of resources that a society makes available to its members (Fig.10).

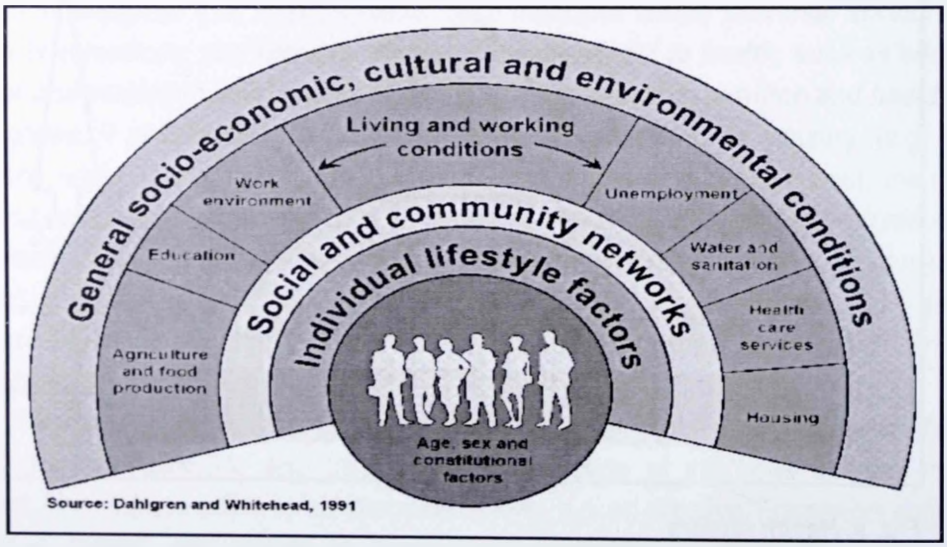

Fig.10. Social determinants of health and health status ("Raphael, 2008)

Income levels and employment status are important determinants of health. Low- income people are more prone to illness than people with higher income. Unemployment, underemployment and stressful or unsafe work are associated with poorer health. People who have more control over their work circumstances and fewer stress- related

job demands are healthier and often live longer than those in more stressful or riskier work and activities. Unemployed people have a shorter life expectancy and suffer significantly more health problems than people who have a job. Workplace environment and job satisfaction influence also the health and life expectancy through quality of life. While medical care can prolong survival and improve prognosis after some serious diseases, more important for the health of the population as a whole are the social and economic conditions that make people ill and in need of medical care. Therefore, ***universal access to medical care*** is clearly one of the social determinants of health.

Social determinants of health (SDOH) have been recognized by several health organizations such as the Public Health Agency of Canada and the World Health Organization to greatly influence collective and personal well-being. ***A list of determinants of health*** — only some of which are social determinants — includes: ***income and social status, race, social support networks, education and literacy, i.e. health literacy, employment/working conditions, social environments, physical environments, life skills, personal health practices and coping skills, healthy child development, biology and genetics endowment, health services, gender, culture.*** All these formulations share a concern with factors beyond those of biomedical and behavioral risk. The SDOH list is unique because it specifically ***focuses on the public policy environment*** (e.g., income and its distribution) rather than characteristics associated with individuals (e.g. income and social status). The original list have now been expanded and improved: ***ethnic status; early life; disability status; education; employment and working conditions; food security; gender; healthcare services; housing; income and its distribution, racism, social safety net, social exclusion.***

With responsibility for persisting and growing inequalities, in 2005, the World Health Organization (WHO) formed a "Commission on social determinants of health". The social determinants represent "societal risk conditions", rather than individual risk factors that either increase or decrease the risk for a disease, for example for cardiovascular disease and type II diabetes (The Solid Facts WHO, 2003). The "Solid Facts" relevant to SDOH in EU reviewed evidence from Europe, aimed mainly at reducing inequalities in health within countries. The purpose evolved in reviewing evidence on the social determinants of health relevant to global health. Social determinants of health inequalities determine differences within countries and between countries. In August 2008, the Commission made the following main recommendations:

Ten messages based on the social determinants of health traits and influences:

1. **Social gradient**: classes and social stratification
2. **Stress**: competition, overloading circumstances
3. **Early life**: nutrition, house, vaccinations, schools
4. **Social exclusion**: social security, emigration, alienation
5. **Work**: environment, satisfaction
6. **Unemployment**: education
7. **Social support**: family, community, society
8. **Addiction**: drug abuse
9. **Food**: nutrition, available amenity
10. **Transport**: access to health care, to school, to workplace, etc.

These recommendations, transformed into personal advice to individuals, comprise the following:

"The traditional 10 tips for better health":

1. **Don't smoke**. If you can, stop. If you can't, cut down.

2. **Follow a balanced diet** with plenty of fruit and vegetables.
3. **Keep physically active.**
4. **Manage stress** by, for example, talking things through and taking time to relax.
5. **If you drink alcohol, do so in moderation.**
6. **Cover up in the sun**, and protect children from sunburn.
7. **Practice safer sex.**
8. **Take up cancer-screening** opportunities.
9. **Be safe on the roads**: follow the Highway Code.
10. **Learn the first aid** ABCs: airways, breathing, and blood circulation.

Social determinants of health are the economic and social conditions under which people live, but also individual behaviors. ***Both groups of factors could be beneficial or risky***. The illustration bellow demonstrates the contradiction between the public efforts to improve health situation (blood pressure monitoring) and the persistence of risky behaviors at individual level (smoking). It is evident that it is difficult to obtain good results with public measures without the awareness and the support of the individuals themselves (Fig.11).

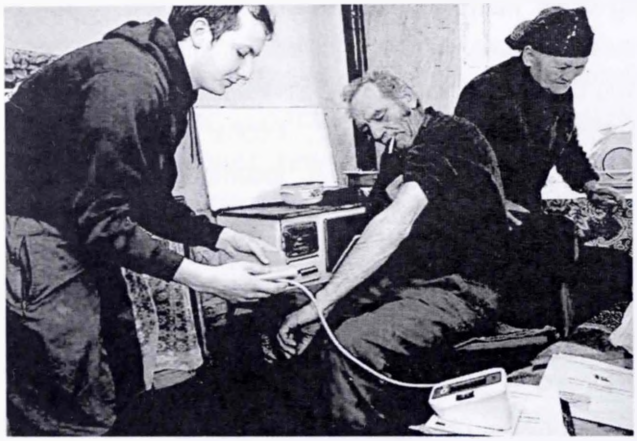

Fig. 11. "NO COMMENT" ***Source***: *Ljiljana Lukić:* Leading the Change in Croatia,

3.4. Health indicators

Health indicators represent complex numerical measuring tools, constructed and applied to assess the results of the impact of a social factor or the simultaneous action of a group of social factors on health status of the population. ***Health indicators are also used to evaluate specific aspects*** or parameters of the health of the population or groups of the population, as well as the effect of applied health programs. There are three main groups of public health indicators: **Indicators of physical status and development, demographic indicators, indicators of morbidity.**

A new index (Population Health Index (PHI), was developed to evaluate population health at different geographical levels. Its construction considers the ***multiple dimensions of population health - socioeconomic, physical and built environment, demographic change, lifestyles, healthcare services and health outcomes.*** The index structure of the PHI is based on a multi-criteria model that captures how different factors contribute to the health of the European population. A socio-technical approach, integrating the technical elements of a ***multi-criteria value model and the social elements of interdisciplinary and participatory processes*** to collect the views from stakeholders and experts is implemented. Multi-criteria resource allocation models, conflict analyses, analysis of policy feasibility, and scenario analyses are applied.

1. Popular principles and methods of physical development records
2. Basic indicators for physical development assessment
3. Acceleration of physical development
4. Hypotheses and predictions relevant to acceleration

1. Popular principles and methods of physical development records

1.1. Parameters of physical development

Physical development, as stated before, is at high extent influenced by the social determinants of health. Therefore, the knowledge of the early life conditions and the parameters evidencing the appropriate development of children would facilitate the elaboration of adequate strategy for healthcare. There are a huge number of items reflecting the process of physical development and maturation of younger generations. The following groups include some of most important features – somatometric, somatoscopic, physiometric, social and emotional maturity parameters.

Somatometric parameters include the length and mass of body, the circle of the thorax and the head, the length of extremities - of the new born and the growing child.

Somatoscopic parameters include the form of the thorax, the form of the spinal column, the state of muscles' structure, the development of secondary sexual characteristics.

Physiometric parameters include the lung vital capacity, the force of muscles of the palm, the functional state of cardiovascular system, the motion capacity development.

Social and emotional maturity parameters include the levels and the stages of moral and psychological integrity, according to Kohlberg and Piaget.

1.2. Methods of assessment of physical development and maturation

The ***methods of estimation*** of physical development are based on comparison of factual and expected anthropometric parameters.

The ***method of raw counts*** is based on the use of empirical formulas. With this method it is possible to receive only approximate information about the physical development of children.

The ***method of anthropometric standards*** improved since individual anthropometric parameters compared with age, sexual and regional anthropometric tables of standards were introduced.

The ***method of Kohlberg is assessing the*** moral and psychological development according to a six stages system of continuing psycho-social maturation.

2. Assessment of physical development by a method of raw counts

There are empirical formulas used by pediatricians to assess the development of the child based on anthropometric (somatometric) parameters.

2.1. Body mass

The mass of the body is measured, even before delivery, using some calculations. By definition, the body mass of a fetus, between 25th and 41 th weeks of pregnancy, is calculated as follows: If ***the average mass of body of a fetus*** of 30 weeks of pregnancy is about 1300 g, 200 g must be added for any more week or 100 g to be taken away for every less week. At the moment of a delivery, the body mass is of 3000 – 4000 g. The average body mass of a boy reaches between 3200 and 3600 g. while the body mass of a girl is usually between 3100 and 3400 g. Within the first 3-4 days of life, the newborn baby loses up to 6-8% from the initial body mass. The maximal decrease of mass is observed by the third day of life.

The algorithm of the increase of body mass during the first year shows the following changes: During the first month of life, the child gains 600 g, during the second and the third 800g each month, during the fourth –750g, and each month after that - 50 g less than the previous month. Within the first half-year of life the monthly average increase of body mass is about 800 g, and during the second half-year of life – 400 g. The mass of newborn child body **doubles within 4.5 months**, for the first half year reaches 8000 - 8200 g, **in one year - the body mass triples**. During the second year of life, the child gains 3–3.5 kg, and since the third year of life the annual increase of mass is 2 kg. ***The 5 years old child weights usually 19 kg.*** On each missing year, up to 5 years of age it is necessary to subtract 2 kg, and on each subsequent year - to add 3 kg (3 year old -.15 kg, 7 year old – 25 kg).

2.2. Length of body

The length of body of the newborn is 50-52 cm. Boys have up to 2 cm more than girls. Within the first 3 months of the child life, the length enlarges by 3 cm monthly, in the second quarter –by 2,5 cm, in the third –by 2 cm and in the fourth quarter (10th -12th months) – 1-1,5 cm monthly. Thus, for **the first year** of life, the length of the child body enlarges by 25-27cm and by the end of first year the child is 75-77 cm tall. **An increase of 50% from the initial length is added**. ***The height usually doubles in 4 years (up to 100 cm), triples (up to 150 cm) in 11 years.***

2.3. Circle of the head

In newborn, the circle of the head is 34-36 cm. During the first 3 months, the circle of the head enlarges by 2 cm monthly. The enlargement between 4th and 6th months is by 1 cm monthly, and during the second half-year –by 0.5 cm monthly. The circle of the head of a 6-month child is 43 cm. To calculate the probable circle of the head length for a concrete age, 1.5 cm is subtracted on each less month and 0.5 cm is added on each next month, corresponding to 6th month length figure. One year old child has the circle of head of 46-47 cm, 5 year old child – 50 cm.

The head is the part of the body which changes the least during the life course.

2.4. Circle of the chest

At the moment of delivery the circle of the chest is 2 cm shorter, than the circle of the head to be exact it is 32-34 cm. Further, the circle of the chest enlarges more intensively, than the circle of the head. **By the age of 4 months head and chest have equal dimensions.**

3. Anthropometrics assessment

3.1. Development assessment by using indices

Erisman's index compares the degree of development of the thorax (circle of the chest Increase/fatness) and the child height.

Tour's index – characterizes correlation between the circle of the head and the thorax. During the age between 1 and 7 year of age the circle of the chest exceeds the circle of the head by as so many cm, as so many years the child has.

Mass-and-length (weight-height) parameter is calculated only in newborn: (mass of body at birth/length of body at birth). In norm, the parameter is 60-70%, equivalent to average values of a weight of 2.9 to 3.5 kg and a height of 48-52 cm.

3.2. Development assessment by using percentile tables

Stuart Scale consists of 3, 10, 25, 50, 75, 90, 97 percentile corridors. Figures, obtained by measuring the individual parameters and compared to parameters corresponding to "percentile corridors" show that the given parameters put the child in a group of less than 3%, 10%, 25%, 75%, 90% or 97% of the total healthy children of that age. **The region 25-75 percentile comprises the average parameters.** The region above the average parameters comprises 75-90 percentiles. Below the average parameters are ranged between 10 and 25 percentiles. High parameters correspond to 90-97, low –to 3-10 percentiles. Very high parameters are higher than 97 percentile, very low – are lower than 3 percentile.

If the percentile parameters for the three main measurements – ***body mass, length of body, and circle of the chest of the individual or the group does not differ more than 1 unity***, the physical development of this individual or this group is considered harmonious. If the difference is 2 and more units (sigma), the development could be disharmonious. The region of 1st, 2nd, and 3rd corridors (under 25%) shows slowed physical development leading to lower parameters (**microsome**). The region 6, 7, 8 corridors (between 90 and 97%) shows accelerated physical development, leading to increased parameters (**macrosome**), region of 4th and 5th corridors (between 25 and 75%) evidences normal rate of physical development (**mesosome**).

3.3. Growth disorders

The group of growth disorders comprises nanism, gigantism, hypotrophy (exhaustion), paratrophy (obesity).

Hypotrophy is a state of insufficient nutrition in children before the age of 1.5 years, leading to a state of exhaustion. The stage of hypotrophy corresponds to a certain loss of body mass: 1st degree - 10-20%, 2nd degree -20-30%, 3rd degree - more than 30% loss of fat.

The tissue turgor and elasticity of skin are damaged, immune response and tolerance to food as well. These conditions could be the result of one or more of the following causes: nutritional deficiency, diseases experienced by the mother during the pregnancy, infringement of feeding and care, somatopathies and infectious diseases, anomalies of the digestive system (pylorostenosis), and malabsorption syndrome.

Paratrophy is the state of overweight in young children <1.5 years of age. After that age the condition of overweight is termed obesity.

Paratrophy	1st degree–11-20 %;
	2nd degree –21-30 %
	3rd degree –31 and more % excess of body mass.
Obesity	1st degree –11-29 %
	2nd degree – 30-49 %
	3rd degree – 50-99%
	4th degree - 100 and more % excess of body mass.

3.4. Social and emotional maturity[3]

Judgments about the child's social and emotional maturity should include input from the child's parents and the guidance officer or psychologist. It is important that teachers do not confuse the absence of close peer relationships with social immaturity. Gifted students are sometimes rejected by their classmates just because of their social prematurity. The Kohlberg's and Piaget's works explain these discrepancies as a result of moral maturation process, including growing up of ***critical perception, social influences, and self-determination***. The Kohlberg system of moral maturity consists of three levels and six stages reflecting the individual achievement of psychological maturity and moral integration predisposing the socialization of the individual.

Level I. Pre-conventional morality

Stage 1 Obedience and punishment

Kohlberg's stage 1 is similar to Piaget's first stage of moral thought. The child assumes that powerful authorities hand down a fixed set of rules which he or she must ***unquestioningly obey***.

Stage 2 Individualism and exchange

At this stage children recognize that there is not just one right view that is handed down by the authorities. ***Different individuals have different viewpoints***. They sometimes try to t***ake profit*** from such situations.

Level II. Conventional morality

Stage 3 Good interpersonal relationships

At this stage, children, who are by now usually entering their teens, see morality as more than simple deals. They believe that people should live up to the expectations of family and community and ***behave in "good" ways***. Good behavior actually means having good motives and interpersonal feelings such as: ***love, empathy, trust, and concern for others not only obey to superiors.***

Stage 4 Social order and respect of laws

[3] More details in the course of medical psychology

At stage 4th, in contrast, the individual becomes more broadly concerned with society as a whole. Now the emphasis is on ***obeying laws, respecting authority, and performing one's duties,*** so that the social order is maintained. At stage 4th people want to keep society functioning. However, a smoothly functioning society is not necessarily a good one. ***Attention!*** A totalitarian society might be well-organized, but it is hardly the moral ideal for human community.

Level III. Post-conventional morality

Stage 5 Social contract and individual rights

At stage 5th people begin to ask, "What to do in order to make a good society?" Stage 5th is the period of the elaboration of one's conception of the good society and the ability to understand the social relationship.

Stage 6 Universal moral principles

The individual in maturity moral stage 6th is expected to be aware of protecting certain individual rights and settling disputes through democratic processes. However, democratic processes alone do not always result in outcomes that we intuitively sense, are just.

4. Acceleration of physical development (maturation praecox)

The acceleration of physical development is a complex process, characterized by change of parameters of physical and mental development of the individuals in all age groups and continuation of the period of normal functional ability such as: early eruption of teeth and early puberty inception, increased physical performance ability, late vision disorders appearance, etc. The process of acceleration of development and maturity occurs by shift of the morphogenesis on earlier stages of an ontogenesis.

The average age of menarche in Europe fell from 16-17 in the early 1800s to roughly 13 years of age by 1960. During the same period, the age of menarche in the U.S. fell from just under 15-teen to less than 13-teen years of age. ***Earlier puberty set up*** shifts from 12-15 to 11-13 year of age for early puberty and from 15-20 to 13-18 for ***late puberty.***

These remarkable changes are widely thought to have resulted from improvements in nutrition and health status brought on by the industrial revolution. Indeed, the decreasing age of menarche was accompanied by increasing height and weight of girls and boys during the same period, and when growth leveled off as optimal conditions were approached, the age of menarche also stabilized.

A similar pattern has been observed in developing countries, such as urban China after 1979. The beginning of the nation's transformation to a booming market economy in the get up of reforms instigated by Deng Xiaoping—Chinese coincided with urban girls' age of menarche fall by 1.23 years at the same time that they have been getting taller and heavier.

5. Meta-theories explaining the acceleration of physical development

The phenomenon of acceleration of physical development of younger generations is the result of a complex influence of various factors from the bio-social environment. The knowledge

on the acceleration assists the educators and the educational institutions in the elaboration of an appropriate approach in directing children and adolescents to become accustomed in the fast changing social conditions, such as: ***social planning, change of life, organization of work, conditions of training and education, etc.***

Meta-theories are applied to explain the spread among adolescents of medical conditions usually observed in the groups of adult population. They contribute to understand the mechanism of shaping the individual and population life and thus to predict risks' exposition to some specific health problems and plan strategies for prevention.

There are two groups of meta-theories, relevant to acceleration – theories explaining the causes of this phenomenon and theories explaining the impact of this phenomenon on the overall development of the individual and the population as a whole (social and emotional adjustment).

5.1. Theories, explaining the causes of acceleration

1. Theories, related to rising ***concentration of the carbon dioxide*** resulting from the ***expansion of industry;***

2. Theories related to the influence of ***improved conditions of life***: nutritional; informational;

3. ***Genetic theories***: cyclic biological changes; ***heteresis*** (appreciable amount of the world population migration resulting in increase of the opportunity to find spouses from a bigger pool of probable partners including different races);

4. ***Complex influences theories***, including social and biological factors, such as: urbanization, gene modified foods, social stress theories, etc.

5.2. Theories, explaining the impacts of acceleration on social and emotional adjustment

Among many classifications of the impacts of acceleration on social and emotional adjustment, three broad theoretical categories may be defined: ***psychosocial, biological, and selection***, relevant to the mechanisms by which ***pubertal timing coincides with emotional adjustment***.

Psychosocial theories, both the most commonly used and empirically validated, revolve around ***interpersonal difficulties***. Psychosocial theories are advantageous in that they effectively explain all outcomes associated with maturational timing, but are problematic as they fail to account for inter-individual ***differences in propensity for psychopathology or early sexual maturation.***

Biological theories concentrate on evidence that early matured differ from their peers both in initiation of hormonal increases and in overall hormone levels. This perspective explains outcomes such as depression and sexual activity quite well and interconnects tidily with psychosocial theories in explaining medical conditions such as eating disorders; but it is ***less persuasive for academic achievement and other outcomes explanations.***

Evolutionary (selection) theory of socialization investigates how family environment and genetic predispositions might influence associations between early maturation and associated outcomes. Although there has been limited investigation in this domain, selection research seems to ***capture sexual activity and academic achievement well, while understanding the role of selection in other correlates is more questionable.***

All three theoretical perspectives require and would benefit from ongoing inquiry. However, ongoing research in two areas might be of particular utility: ***1) genetically informed***

studies targeting selection effects and ***2) studies investigating racial and ethnic differences in pubertal timing.*** With regard to selection effects, this perspective has received the least research attention to date. Some advantage is detected in "family studies" measuring family ability to control the children's development considering environmental differences.

Therefore, psychosocial and biological theories can both be investigated and validated using genetically informed data. For example, studies such as those conducted by Dick et al. (2000), Burt et al. (2006) were able to establish that associations between alcohol use and externalizing behavior, respectively, are not influenced by pre-existing genetic predispositions for such behavior. This supports a ***causal role of early maturation, as described by psychosocial theories***.

It should be stressed that in advocating ***genetically informed*** studies the authors are not advocating mere heritability estimates. Rather, research should attempt to elucidate the mechanisms by which early maturation affects the emergence of adolescent psychopathology. In particular, the authors believe that analyses should consider ***pubertal timing an example of genotype-environment correlation.***

5.3. Risk of accelerated maturation of adolescents for their health status and socialization

Early maturation may predispose stressful life events and ***depressive symptoms*** during adolescence such as "early baby delivery" suicide attempt, aggression, drug abuse and other deviant behaviors.

Early menarche indicates genetic variation for ***early ovulary cycles*** and chances for earlier age ***first sexual intercourse.*** It is the onset of a risk factor for ***breast cancer*** into adulthood, interpersonal development, and reproductive strategy. ***Psychiatric risk*** associated with early puberty in adolescent girls consists of mental health problems in middle adolescence.

Biological maturation and social development: Based on a longitudinal study of some adjustment processes from mid-adolescence to adulthood it was found that the timing of normal puberty and the age limits of sexual precocity varies around the world. The pubertal status is influenced also by the social environment changes due to migration (***timing and age of adolescent, sexual experience, and delinquency***).

While the timing of puberty is genetically influenced, precocious maturation incites a chain of environmental reactions of female adolescents -- such as ***attention from older males or feelings of isolation from peers*** -- which shape the course of future development. This model is conceptually satisfying, because it captures the social causes and consequences associated with early maturation, while maintaining an integral role of biology and genes.

Discrepancy between social maturity and physical maturity apart the acceleration, is due also to the longer school period attendance. It causes additional "generational conflicts" and increases the risks for difficult finding first job and thus of unemployment and underemployment of young people rate.

Emotional maturity is the ability to bear tension and it is the ability to develop high tolerance for disagree circumstance. Self-concept is love and ease with who you are now. It is an agreement with yourself to appreciate, endorse, accept and support who you are at every moment. Self-concept is the degree to which an individual, having considered his personal

characteristics, is able and willing to live with them. **Self-conceptions' people recognize their assets and are free to draw upon them**, even if they are not all that could be desired. Self-concept does not need outward approval. The individual will accept other's approval with gratitude, but intuitively knows when he or she has done well. **One assesses these qualities through estimates rather than by measurement.** Those qualities may concern ***what one does*** (e.g. having a disposition for compassion and consideration) and/or may concern non-measurable aspects of ***how one appears*** (e.g. pretty, handsome). The assessments placed on these qualities may significantly be influenced by outsiders in one's immediate environment and/or by society at large.

Research finds out the following ***factors affecting the emotional maturity and self-concept***: hereditary factors, maturation, training, health, intelligence, family relationship, social environment and control over emotions. Self-concept is affected by factors like age, appearance, gender, culture, economical status, environment, and parents' education.

The emotional maturity and self-concept become important in the behavior of individuals. Emotional maturity and self-concept are very essential for the students in their early (pre-adolescence) educational period. **This should be promoted in the minds of the students to improve their educational status without fear.** As the students are the pillars of the future generations their value pattern of emotional maturity and self- concepts are vital. So, studies to measure the emotional maturity and self-concept of higher education students are carried out.

Physical development and social and emotional maturity monitoring produces a sound base for health status predictions and planning of appropriate strategies for better health and healthcare delivery.

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Chapter 3: Demographic indicators

1. Demography and public health needs
2. Demography and statistics
3. Demographic processes
4. Demographic trends

Demography represents a fundamental approach to the understanding of human society. Its primary task is to ascertain the number of people in a given area, to determine what change that number represents from a previous census, to explain the change, and to estimate the future trends of population development. The demographers also trace the origins of population changes and study their impact on the specific fields of social life. Demographers compile and analyze data that are useful for understanding various social systems and for establishing public policy in such areas as housing, education, public health, and employment.

Demography is widely taught in many universities across the world, attracting students with initial training in social sciences, statistics, or health studies. Being at the crossroad of several disciplines such as geography, economics, sociology or epidemiology, demography offers tools to approach a large range of population issues by combining a more technical quantitative approach that represents the core of the discipline, with many other methods borrowed from social or other sciences.

1. Demography and public health needs

1.1. Demography: basic facts and evolution of knowledge

The first name in history, associated to the definition of the subject of demography is that of ***Ibn Khaldun*** (1332-1406). The second most important contribution was the formulation by ***John Graunt*** (1662) the primary form of life table under the name of ***"Bill of mortality".*** Later, mathematicians, such as ***Edmond Halley, developed the life tables*** as the basis for life insurance mathematics. ***Richard Price*** was credited with the first textbook on life contingencies published in 1771 followed later by ***Augustus de Morgan*** work "***On the Application of Probabilities to Life Contingencies***" (1838). **Thomas Malthus,** by the end of the 18th century concluded that, if unchecked, populations would be subject to exponential growth. He feared that population growth would tend to surpass growth in food production, leading to ever increasing famine and poverty. He is seen as the intellectual father of the ideas of overpopulation and the need to limit growth. **Benjamin Gompertz and Verhulst** presented later a more sophisticated and more realistic models of the Earth population growth trends.

The transition of demography from statistics as a separate field of science occurred during the period 1860-1910. This period is known by the presence of great demographers such as: ***Adolph Quételet*** (1796-1874), ***William Farr*** (1807-1883), ***Louis-Adolphe Bertillon*** (1821-1883) and his son ***Jacques Bertillon*** (1851-1922), ***Joseph Körösi*** (1844-1906), *Anders Nicolas Kaier* (1838-1919), ***Richard Böckh*** (1824-1907), ***Wilhelm Lexis*** (1837-1914) and ***Luigi Bodio*** (1840-1920). They contributed to the development of demography through improvements in methodology and enlargement of the field of application to include populations' analyses.

1.2. Definitions

Demography is a quantitative study of human populations. It encompasses the study of the ***size, structure and distribution of populations***, and ***spatial and/or temporal changes*** in them. In addition, the population is characterized by residence, density, employment rate, income, health status, education. Demographers study subjects such as the geographical distribution of people, birth and death rates, socioeconomic status, and age and sex distributions in order to identify the factors influencing on population growth, structure, and development.

Birthrate: (crude birth rate): the annual number of births per 1,000 people.

Mortality rate (crude death rate): the annual number of deaths per 1000 people.

Infant mortality rate: the annual number of deaths under 1 year age per 1000 live births.

Fertility rate: the annual number of children women delivered per 1000 women.

The general fertility rate: the annual number of live births per 1000 women of reproductive age (often taken to be from 15 to 49 years old, but sometimes from 15 to 44).

Age specific fertility rates: the annual number of live births per 1000 women in particular age groups (usually age 15-19, 20-24 and so on.)

The gross reproduction rate: the annual number of daughters who would be born to a woman completing her reproductive life at current age-specific fertility rates.

The net reproduction ratio: the expected number of daughters, per newborn prospective mothers, who may or may not survive to and through the ages of childbearing.

Replacement rate: The reproduction of population of working age is best characterized by the demographic indicator "replacement rate". It represents the ratio between the number of persons entering working age group (15 - 19 years) and the number of persons exiting the working age (60 – 64 years).

Life expectation (life expectancy) the number of years which an individual at a given age could expect to live at present mortality rates.

Migration refers to the movement of people from a place of origin to a destination place across some pre-defined, political boundary. Researchers do not designate "migrations" movements of people groups unless they have somewhat permanent or longstanding chaacters. **Demographers do not consider tourists and travelers to be migrating.**

1.3. Application of demographic knowledge for public health purposes

Understanding a society's demography is an essential tool in determining current and prospective public health needs. Demographic structure can affect public health needs as follows:

(1) the age structure and sex ratio affect the types of health problems encountered,

(2) the population growth rates affect future needs for health care delivery,
(3) the existence of substantial immigrant and refugee populations can also be important challenge for a given country health system.

The health needs of a population differ considerably by age and by sex. A population's history of birth and death rates changes ***the age structure*** in a way that is easy to predict. Generally, a fertility decline reduces the proportion of children in a population, while a decline in death rates increases life expectancy and the proportion of elderly in the population. The United States provide a good illustration. During the baby boom period the age structure of the population was relatively "young" because birthrates were fairly high. A major emphasis of health care policy during that period was on prenatal and maternity care and on the health problems of mothers and children. During the latest decades of the twentieth century, the population of the United States became older, on average. By 2025, a substantial and growing portion of the American population will be 65 and older. Therefore, health policy is increasingly being focused on the needs of the elderly. In countries with even higher fertility rates, such as many African and some Asian countries, maternal and child health needs are even more of a priority because the proportion of the population at younger ages is even higher.

The sex ratio can also affect healthcare needs. For most age groups, the sex ratio (that is the ratio of males to females) is close to equal. In general, however, men have higher death rates than women. As a result, at older ages men to women sex ratios are generally much lower. While women are likely to have longer life spans than men, they are also more likely to become widows and to have to care for themselves at older ages and need ***social support and specific medical care***.

With improvements in transportation and changing political and economic circumstances, immigration and emigration will be an important issue. Governments and international organizations generally divide immigrants into two groups: ***refugees***, who are fleeing their home countries because of political persecution or war; and labor or ***economic migrants***, who go to other countries seeking employment and a better life.

Refugees and economic migrants can move between two countries or within a single country. Note that the distinction between refugees and economic migrants is often not very clear. For example, migrants from a country facing severe drought may be fleeing to seek better economic opportunities and/or because they may face starvation and violence due to drought if they remain at home.

Immigrant populations, and particularly refugees, often pose important challenges for health planners and health-service providers. For example, ***recent immigrants may have little knowledge of the health care system or health and social service providers***. They often arrive with a different set of health beliefs and they may face language and cultural barriers when seeking health care. Recent immigrants are also likely to have lower incomes and to be more vulnerable to downturns in economic conditions such as recessions. Although immigrants in established migration streams usually have a network of social and family contacts in the country they migrate to, recent migrants often live closer to the margin than long-term immigrant group.

Refugees often have additional health problems. Their special health needs may include ***psychological treatment for conditions such as post-traumatic stress disorder and depression, as well as treatment for infectious diseases, injuries, and malnutrition.*** Refugees, like other immigrants, may also face discrimination in employment or in access to

health and social services in the country they migrate to which is likely to affect their health status. Immigrant populations, and particularly refugees, often pose important challenges for health planners and health-service providers. While many refugees settle in the United States or other industrialized countries, the majority (more than 80%) find asylum in developing countries in Africa, Asia, and Latin America, where health services are often poor.

Refugees often face serious barriers to finding employment in countries of asylum for two reasons: (1) farm land is not readily available to outsiders, especially those without funds to purchase land, and (2) few jobs exist in other sectors of the economy. As a result, they can become dependent on international aid organizations for economic support, food aid, and health services.

2. Demography and statistics

2.1. Demographic data collection

Formal demography limits its object of study to the measurement of populations' processes while the broader field of social demography analyzes the relationships between economic, social, cultural and biological processes influencing a population.

2.1.1. Methods of data collection

There are two basic methods of data collection: direct and indirect. Vital statistics registers and censuses are the most common methods of demographic data collection.

Direct data collection originates from ***vital statistics registries*** that track all births and deaths as well as certain changes in legal status such as marriage, divorce, and migration (registration of place of residence). In developed countries with good registration systems (such as the United States and much of European countries), ***registry statistics is the best method for estimating the number of births and deaths.***

Census is a common direct method of the collection of demographic data. A census is usually conducted by a national government and attempts to enumerate every person in a country. However, in contrast to vital statistics data, which are typically collected continuously and summarized on an annual basis, censuses typically occur only every 10 years or so, and therefore, are not usually the best source of data on births and deaths. Analyses are conducted after a census to ***estimate how much over or undercounting took place***. Censuses typically collect information about families or households, as well as about such individual characteristics as age, sex, marital status, literacy/education, employment status and occupation, and geographical location. They may also collect data on migration (place of birth or of previous residence/citizenship), language, religion, nationality (ethnicity or race), and citizenship.

In countries in which the vital registration system may be incomplete, the censuses are also used as a ***direct source of information about fertility and mortality.*** For example the censuses of the People's Republic of China gather information on births and deaths that occurred in the 18 months immediately preceding the census.

Indirect methods of data collections are required in countries where full data are not available, such as is the case in much of the developing world countries. One of these techniques is the "sister method", where survey researchers ask women how many of their sisters have died or had children and at what age they had the first delivery. With these surveys, researchers can then indirectly estimate birth or death rates for the entire population. Other indirect methods ***include asking people about siblings, parents, and children.***

Methods for modeling population processes: They include ***models of mortality*** (life table, Gompertz models, Hazards models, Cox proportional hazards models, multiple decrement life tables) ***fertility*** (Hernes model, Coale-Trussell models, parity progression ratios), ***marriage*** (Single mean at marriage, Page model), ***disability*** (Sullivan's method, multistate life tables), ***population projections*** (Lee Carter, the Leslie Matrix), ***and population momentum*** (Keyfitz).

2.1.2. Basic demographic equation:

Let's suppose that a country (or other entity) contains ***population*** N_t (N persons at time moment *t, or for period t).*

What is the size of the population at time *t* + 1year?

The size (number) of the population, for a given year **is equal to the sum of:**

+Number of the population of latest census

+Natural growth for the time (t) = Births (t) – Deaths (t)

+Net-migration for the same period (t) = Immigration (t) – Emigration (t).

2.2. Age and sex distributions (Age pyramid)

According to World health organization (WHO), there are ***5 main age groups of adult population***: Young age - up to 44; middle age –45- 59; mature age - 60 –74; elderly- 75-90; advanced (aged) – over 90. Actually ***the type of the population*** (is defined based on the proportional distribution in three main groups (0-14, 15-49, over 50), (Table 7).

Table 7 Types of populations based on the proportion between age groups

Type		***Age groups***	
	0-14	**15-49**	**Over 50**
Progressive	30%	50%	20%
Static	25%	50%	25%
Regressive	20%	50%	30%

2.2.1. Social and cultural impacts on the demographic trends

The following examples aim to show ***the impact of different social and cultural factors on the process of shaping the demography pattern.*** Regionally, the comparison between "old industrial and democratic regimes of EU" and the evolving national economies of "liberated West Asia and North Africa" showed the demographic trends in European Union and North Africa/ West Asia for a period of 100 years. It is evident that the increase of life expectancies while birthrate is going down in EU correlate with an overall decrease of the population and shift to a static or regressive demographic type, while the sustainably high birthrate and the moderate increase of life expectancy in North Africa and West Asia correlate with an overall increase of the population size with progressive demographic type (Fig. 12).

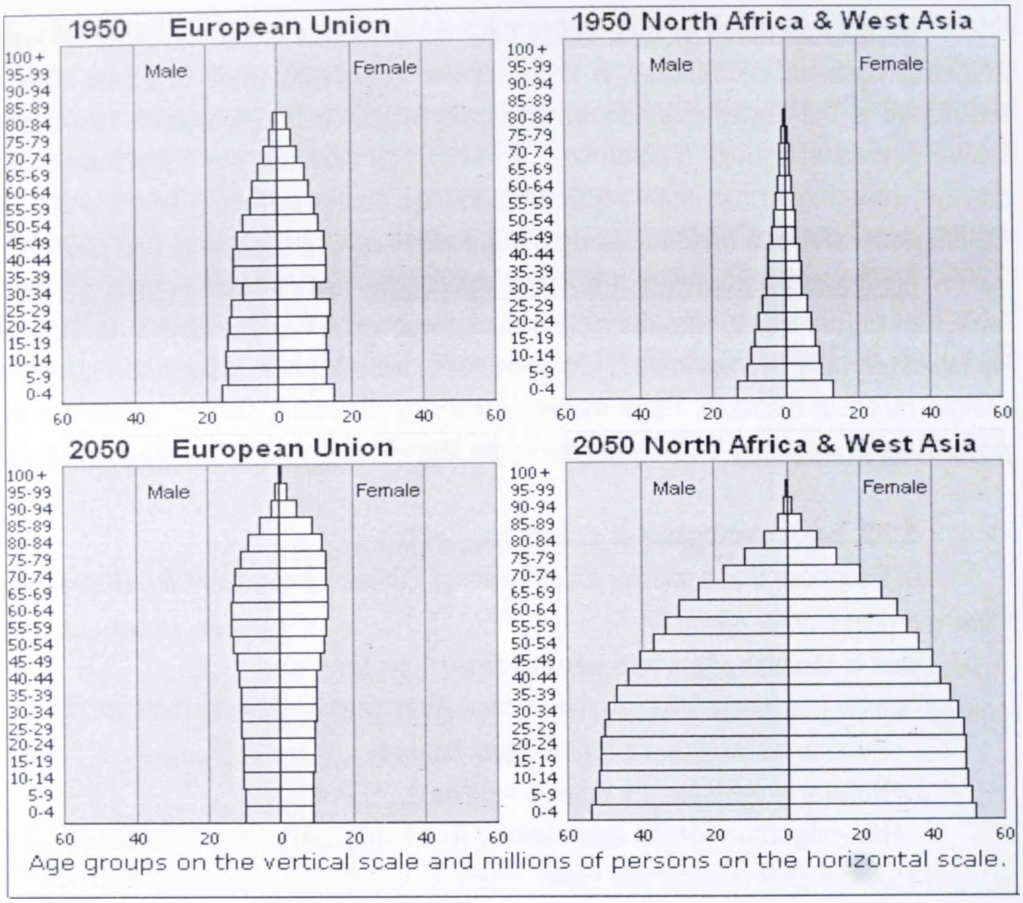

Fig.12. Demographic structure long term trends (age pyramids)

The comparison between the demographic pictures of two countries with high living standard but with different ***cultural particularities in the reproduction patterns and natural factors*** (Brunei and Ireland) –- shows that the family planning implemented in Ireland, even the overall higher nativity rate, resulted in a stable decrease of the number of youngest population groups, while the shorter life longevity is demonstrated in the Brunei demographic pyramid (Fig. 13).

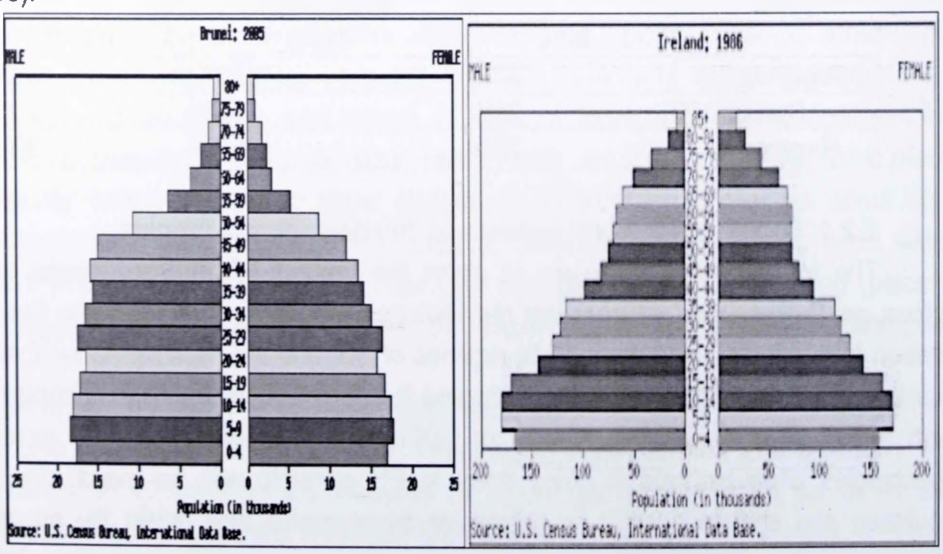

Fig.13. Comparison between the demographic structures of Brunei and Ireland

2.2.2. Migration pattern impacts on the demographic trends

Within the EU, the comparison between France and Germany populations' structure showed some similarities and some particularities. The general trend in both countries is towards increase of life expectancy and sustainable but insignificant population growth, due to that fact. The difference is observed in the groups 30-45 years old due, probably, to the different pattern of immigration policy in those countries (fig.14).

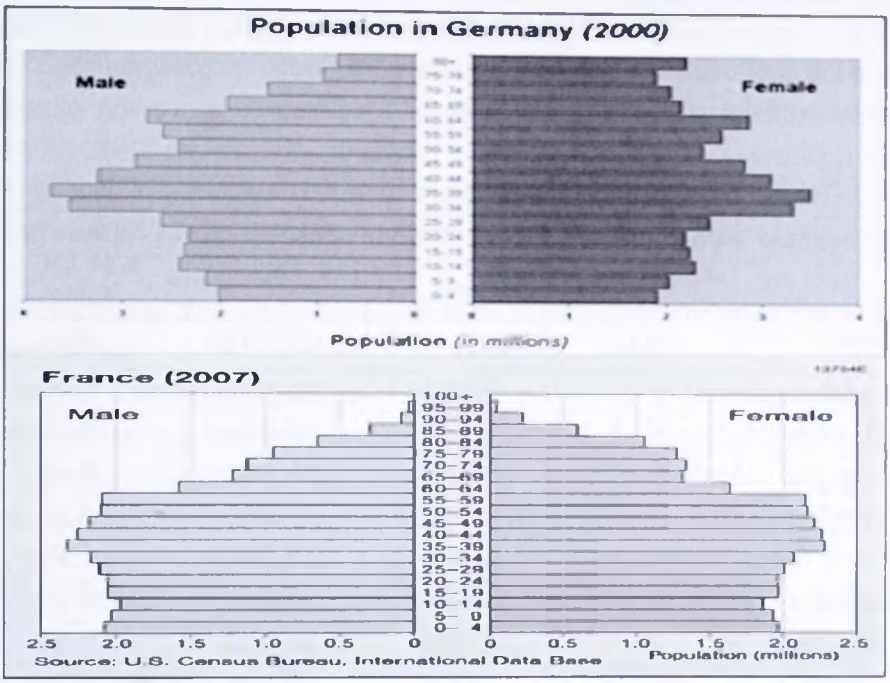

Fig.14. Comparison between two highly industrialized EU countries

2.2.3. Child care and demographic trends

When we compare the demographic types of Kenya and Indonesia we can see some similar and some visibly different trends in these countries (Fig. 15). In both countries the birthrate is higher and the life expectancy is lower than in industrialized countries as on fig.14.

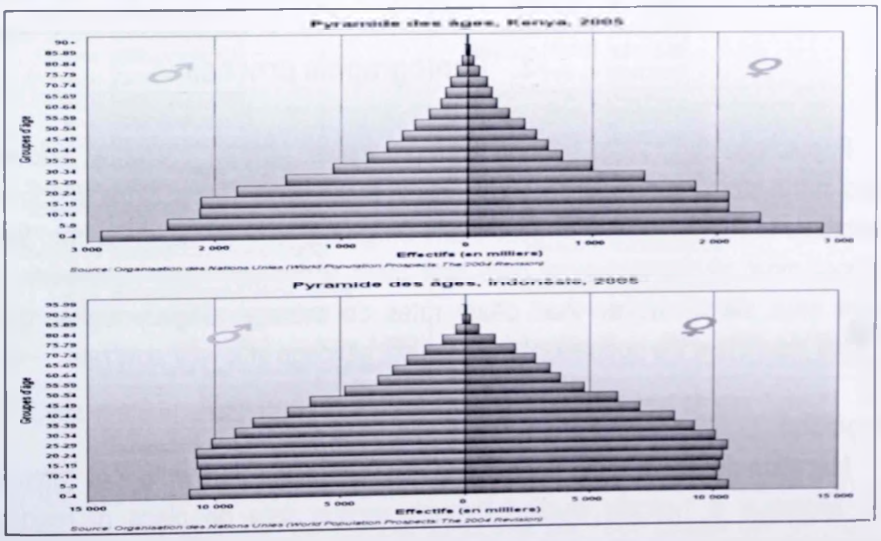

Fig.15. Age pyramids of Indonesia and Kenya

Life expectancy is lower but steadily increasing in both countries, mostly in Indonesia. The difference between the counties is mostly due to the **difference in the infant and child mortality rate** – higher in Kenya than in Indonesia. Advances in industrialization and banking development in Indonesia play a sustainable role ***in life improvement and increase of life expectancy.***

2.3. Territorial distribution of the population in the EU

The average density for EU is 112 people per km sq. The difference between countries is due both to natural and social impacts. France, Austria, Cyprus, Greece and Hungary are most close to this quote. The less populated countries are Finland and Estonia (Nordic countries), while Germany and Belgium are the most populated (Table 8).

Table 8 Density of the population in some EU countries

EU country	Population in millions	Population % of EU total	Surface in km^2	Surface in % of EU total	Density number/km^2
EC	**494.8**	**100%**	**4,422,773**[2]	**100%**	**112**
Austria	8.3	1.7%	83,858	1.9%	99
Belgium	**10.5**	**2.1%**	**30,510**	**0.7%**	**344**
Bulgaria	**7.7**	**1.6%**	**110,912**	**2.5%**	**70**
Cyprus	0.8	0.2%	9,250	0.2%	84
Check Rep	10.3	2.1%	78,866	1.8%	131
Denmark	5.4	1.1%	43,094	1.0%	126
Estonia	1.4	0.3%	45,226	1.0%	29
Finland	**5.3**	**1.1%**	**337,030**	**7.6%**	**16**
France	64.1	13.0%	643,548	14.6%	99
Germany	**82.3**	**16.6%**	**357,021**	**8.1%**	**231**
Greece	11.1	2.2%	131,940	3.0%	84
Hungary	10.1	2.0%	93,030	2.1%	108

3. Demographic processes

Populations can change through three processes: ***fertility, mortality, and migrations***. Changes in the size of a population occur only in these ways: Either births and immigrants add new members to the population, or deaths and emigrants remove members from the population. Throughout most of human history both birth rates and death rates have been high, though birthrates were slightly higher than death rates on average. Slightly higher birthrates than death rates meant that the population was growing, although at a very slow rate.

3.1. Migration

Migration added to some populations and subtracted from others at different periods in history. Migration is typically studied through census data on place of residence. Indirect sources of data about migration include mainly tax forms and labor force surveys.

3.2. Population growth rate

Birthrates and death rates give the two most important measures of the demographic process. The birthrate, similarly, the death rate (also called a crude death rate) represent the numbers of births, respectively of the deaths in a given place and year per 1000 people.

In a population with no immigration or emigration, the population growth rate is simply the birthrate minus the death rate divided by 10 (as it is done in %).

By convention, population **growth rates are expressed in percent** (per hundred people) rather than per thousand people (as birthrate and mortality rate are).

3.2.1. Mortality rate

The mortality rate is most commonly studied using the Life table, a statistical device which provides information about the mortality conditions (most notably the life expectancy) in the population, distinguished into: ***crude death rate, the maternal mortality rate, infant mortality rate, standardized mortality rate, age specific mortality rate.*** Mortality rate per country of EU is given on Fig.16.

-***crude death rate***: the total death per year in the world-*perinatal mortality rate*: neonatal and fetal deaths per year

-***the maternal mortality rate***: number of deaths of mothers due to child delivery;

-***infant mortality rate***: number of deaths of children less than one year of age;

-*child mortality rate*: number of deaths of children less than 5 years old;

-***standardized mortality rate***: adjusted according to the standard composition in terms of age, gender and other factors;

-***age specific mortality rate*:** total number of deaths of a particular age group of the population.

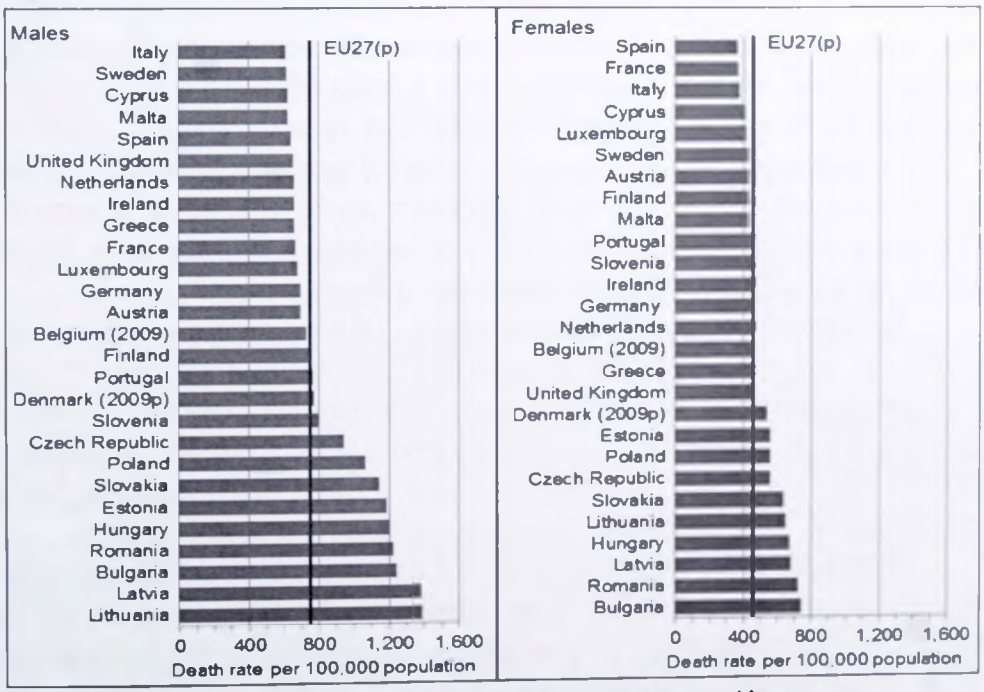

Fig. 16. Difference in death rates in EU countries by country and by sex

The crude death rate as defined above and applied to a whole population can give a misleading impression. For example, the number of deaths per 1000 people can be higher for

developed nations than in less-developed countries, despite standards of health being better in developed countries. This is because ***developed countries have relatively more elderly people, who are more likely to die in a given year, so that the overall mortality rate can be higher even if the mortality rate at any given age is lower.*** A more complete picture of mortality is given by a life table which summarizes mortality separately at each age. A life table is necessary to give a good estimate of life expectancy.

3.2.2.Infant mortality rate

In 2000, ***the infant mortality rate*** of 18.6 infant deaths per 1 000 live births in Romania, was the highest of the 27 EU Member States, and the lowest rate was 3.4 in Sweden. By 2010, infant mortality had fallen to 9.8 deaths per 1 000 live births in Romania, and the lowest rate in the EU was 2.3 in Finland.

3.3. Fertility rate and life expectancy

The Total Fertility Rate (TFR) measures the average number of children that women have in their lifetime (child delivering years, conventionally defined as 15 to 49 years of age for women) if birthrates remain at current rates in the future. Between 1995 and 2000 the TFR ranged from 1.2 children per woman in Italy to 7.1 children per woman in Uganda. The total fertility rate for women during the baby boom years 1955 and 1960 averaged 3.7 children per woman in the USA.

The fertility rates can give a misleading impression that a population is growing faster than It in fact is, because measurement of fertility rates only involves the reproductive rate of women, and does not adjust for **the sex ratio**. For example, if a population has a total fertility rate of 4.0 but the sex ratio is 66/34 (twice as many men as women), this population is actually growing at a slower rate than a population having a fertility rate of 3.0 and a sex ratio of 50/50. This ***distortion of sex ratio*** is greatest in India and Myanmar and is present in China as well.

Life expectancy measures the average number of years that people will live if death rates remain at the current level in the future. Demographers use the term "cohort" to mean all people who were born during a particular year. In 2010, life expectancy for males in the EU was 77.0 years and life expectancy for female population was 82.9 years.

Male life expectancy was highest in Italy — 2.8 years above the EU figure and lowest in Lithuania — 9 years below the EU average. These figures equate to 17% higher life expectancy in Italy than in Lithuania, with a gap of 11.8 years. Life expectancy for males in five member states, in addition to Italy, was more than 2 years above the EU average in 2010 (Sweden, Malta, Cyprus, Spain and the Netherlands). It was at least 6 years lower than the EU average in Latvia, Romania, Bulgaria, Estonia and Hungary, as well as in Lithuania

Female life expectancy was lowest in Bulgaria — 5.5 years below that for the EU — and 7.9 years or 10 % higher in France and Spain — i.e. 2.4 years above the EU average. Italy had the third highest female life expectancy — 2.1 years higher than the EU average. (Fig 15). Apart from Bulgaria, life expectancy for females in five other member states — Romania, Latvia, Hungary, Lithuania and Slovakia — was at least three years lower than in the EU as a whole in 2010. In no other country was female life expectancy more than 2 years above the EU average. ***Inequalities in life expectancy between member states and the EU average were smaller for females than for males in 2010*** (Fig. 17).

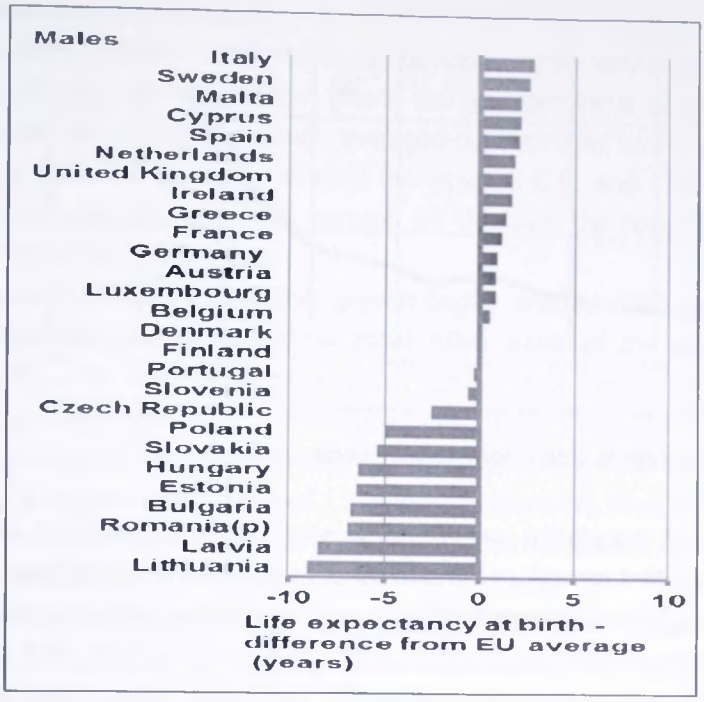

Fig.17. Life expectancy at birth difference from EU average for men

4. Demographic trends

4.1. Demographic transition

Historical research shows that much of the mortality decline in Europe and North America occurred before most modern changes in medical technology and treatment therefore it was caused by other factors. These factors included: ***improvements in public health*** (such as sanitation, waste disposal, clean water supply, and quarantine); ***changes in personal hygiene*** (such as bathing, hand washing, and household cleanliness); ***improved standards of living*** (such as better nutrition and housing); and ***improved societal structure and governance*** (political, economic, and transportation systems), which led to better responses to food shortages and water drought. Despite continuing gains in health and survival, the pace of population growth began to slow in the mid–twentieth century in industrialized countries and in other regions of the world. The reason is that birthrates began to decline in the last three decades of the twentieth century.

The fall in population growth has occurred despite large rises in life expectancy in these countries. Natural population growth in most developed countries has diminished to close to zero, without being held in check by famine or lack of resources, as people in developed nations have shown a tendency to have fewer children. The decline in birthrates is due to dramatic changes in economic and social conditions, ideas about the family and the role of children and women, the availability of family planning programs, and the acceptance and use of contraception (Fig 18 and 19).

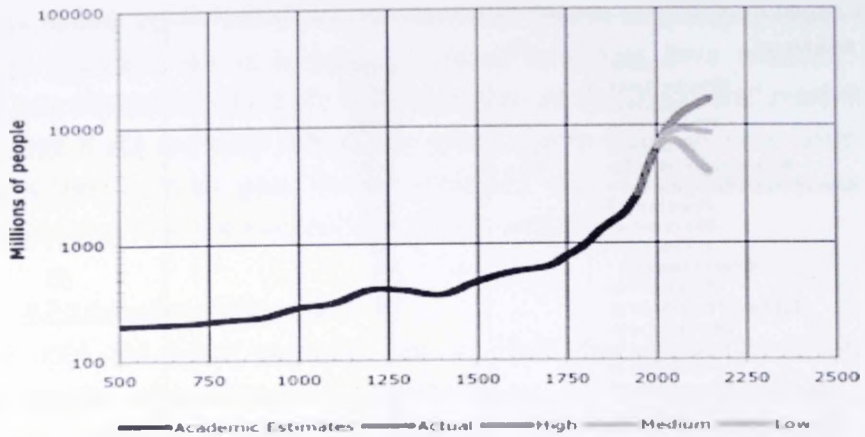

Fig. 18. Demographic transition global trends

This pattern of population growth, with slow (or no) growth in pre-industrial societies, followed by fast growth as the society develops and industrializes, followed by slow growth again as it becomes more affluent, is known as the demographic transition.

World population from 500 CE to the year 2150, based on UN 2004 projections is presented on Fig 18 (red, orange, and green) and US Census Bureau historical estimates (black). Only the section in blue is from reliable counts, not estimates or projections. Similar trends are now becoming visible in ever more developing countries, so that far from spiraling out of control, ***world population growth is expected to slow markedly in the next century, coming to an eventual standstill or even declining.*** The change is likely to be accompanied by major shifts in the proportion of world population in particular regions. The figure in this section shows the latest (2004) UN projections of world population out to the year 2150 (red = high, orange = medium, green = low). The UN "medium" projection shows world population reaching an approximate equilibrium at 9 billion by 2075. Working independently, demographers at the International Institute for Applied Systems Analysis in Austria expect world population to peak at 9 billion by 2070. The United Nations Population Division expects the absolute number of infants and toddlers in the world to ***begin to fall by 2015***, and the number of ***children under 15 by 2025***. Throughout the 21st century, the average age of the population is likely to continue to rise (Fig.19).

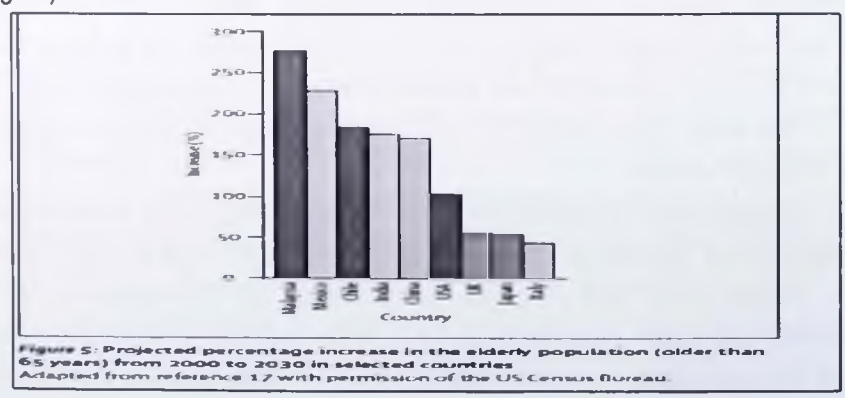

Figure 5: Projected percentage increase in the elderly population (older than 65 years) from 2000 to 2030 in selected countries
Adapted from reference 17 with permission of the US Census Bureau.

Fig.19. Projected percentage increase in the elderly population from 2000 to 2130

Source: Prof. Sir M. Marmot. Social determinants of health inequalities. Lancet 2005; 365:1099 -104.

4.2. Global demography dynamics

Throughout most of history, the human population grew very slowly. Occasionally, there were periods of very rapid population growth and also very rapid population decline in some regions. However, these periods generally averaged out over time, and overall population growth was extremely slow. For example, between the years 1 C.E. and 1750, the average annual population growth rate was only 0.06 percent. (At this rate, the population would double, on average, only once every 1,250 years).

A period of rapid population growth began around 1750 in Europe and North America. Rapid population growth in most other parts of the world began between 1920 and 1960. The twentieth century was a very unusual period, demographically. World population grew at a more rapid and sustained pace than at any time in human history. The global population grew from approximately 1.7 billion people in 1900 to 6 billion in 1999. The annual population growth rate averaged 1.3 percent for the entire twentieth century, and was as high as 2.3 percent between 1965 and 1970. (A sustained 2.3 percent annual growth rate would have meant a doubling of the world's population in thirty years.)

Beginning in the eighteenth century, however, ***death rates began to decline***, slowly at first and then more rapidly. For example, death rates declined from about 35 to 45 deaths per 1,000 people in the period from 1750 to 1850 to around 8 to 12 deaths per 1,000 in low-mortality countries (Europe, North America, Japan, and Australasia) in the late twentieth century. This decline began in different parts of the world at different times. In North America and Europe, the timing of the mortality decline was closely tied to the beginning of the Industrial Revolution. In Asia, Latin America, and Africa, declines in death rates took place mostly during the twentieth century. ***Declining death rates in combination with continuing high birthrates triggered the rapid growth of the population*** (Table 9).

Table 9 Average annual birth rates, death rates, total fertility rates, and life expectancy for the regions of the world for (1995-2000)

	Birth rate (per 1000 population)	Death rate (per 1000 population)	Total fertility rate (average births per woman)	Life expectancy (average years of life)
World Total	*22.1*	*8.9*	*2.7*	*65.4*
Africa	*38.0*	*13.9*	*10*	*51.4*
Asia	21.9	7.7	2.6	66.3
Europe	*10.3*	*11.3*	*1.4*	*73.3*
Latin America and the Caribbean	23.1	6.5	2.7	69.2
Northern America	13.8	8.3	1.9	76.9
Oceania	17.9	7.7	2.4	73.8
United States	14.0	8.5	2.0	76.7

SOURCE: United Nations (1999) World Population Prospects: The 1998 Rev. Vol. I: Comprehensive Tables. New York: Population Division, Dept. of Economic and Social Affairs, United Nations. ST/ESA/SER.A/177.

In some European countries, birthrates fell so low by the end of the twentieth century that their population growth rates became slightly negative, meaning that the number of people in these countries is declining slightly. For example, between 1995 and 2000, Italy had a birthrate of 9 per 1000 people, or an average of about 1.2 births per woman. During this period, Italy's death rate was 10.4 per 1000 people, so the Italian population became slightly smaller each year. Birthrates have also fallen to historically low levels in many countries in Asia and Latin America. There is also substantial evidence that birthrates are declining in many African countries.

Although birthrates have fallen substantially in many countries, their populations continue to grow because of the effects of their age structure, or "population momentum." For example, the U.S. population continued to grow at almost 1 percent per year during the 1980s and 1990s despite a very low birthrate. The reason is that a substantial proportion of the population was in their childbearing years because of the "baby boom" in the 1950s and early 1960s. In the absence of immigration, if birthrates remain low for the next fifty years, the size of the U.S. population will begin to decline. However, immigration is likely to continue during this period, keeping the U.S. population growing at a relatively slow pace.

4.3. Population growth rates effects on the health care needs in a population

Provision of health services to a rapidly growing population is more difficult than to a population growing more slowly. Consider two relatively poor countries in 1990, both of which have exactly 1 million people in population, or 250,000 people covered by health insurance, and each country has a goal of extending health care to cover 35 percent of the population by 1995 (Table 10).

Table 10 Example of the effects of population growth on the demand for health services

Countries	Country A	Country B
1990 Total Population	1,000,000	1,000,000
Number of People Covered by Health Services in 1990 (25%)	250,000	250,000
Annual Population Growth Rate	**3.0%**	**1.5%**
1995 Total Population	1,161,834	1,077,884
No of people covered in 1995 if 25% coverage is maintained	290,459	269,471
No of people covered in 1995 if target of 35% coverage is met	406,641	377,260

As shown in Table 10, in each of two developing countries providing health services to 25 percent of the population, the policymakers are even more concerned with expanding access to health services. ***Rapid population growth can make it difficult to continue to provide the same level of services to all segments of the population, and even harder to increase the level of health services available.*** If the population in the Country A is growing at 3 percent per year and the population in the Country B is growing at 1.5 percent, Country A is going to have a harder time in both cases - maintaining 25 percent health-service coverage and expanding its health services to cover 35 percent of the population. Therefore, health planners need to ***take population growth rates into account when estimating the future health care needs of a population***. The United Nations Population Division and the United States Census Bureau

regularly produce population projections which can be used as guides to the likely future size and structure of a country's or a local area's population.

4.4. Demographic trends in Bulgaria: (Fig. Fig. 20, 21, 22, 23)

The demographic situation in Bulgaria is very unfavorable. The density of the population is below the average for the EU.

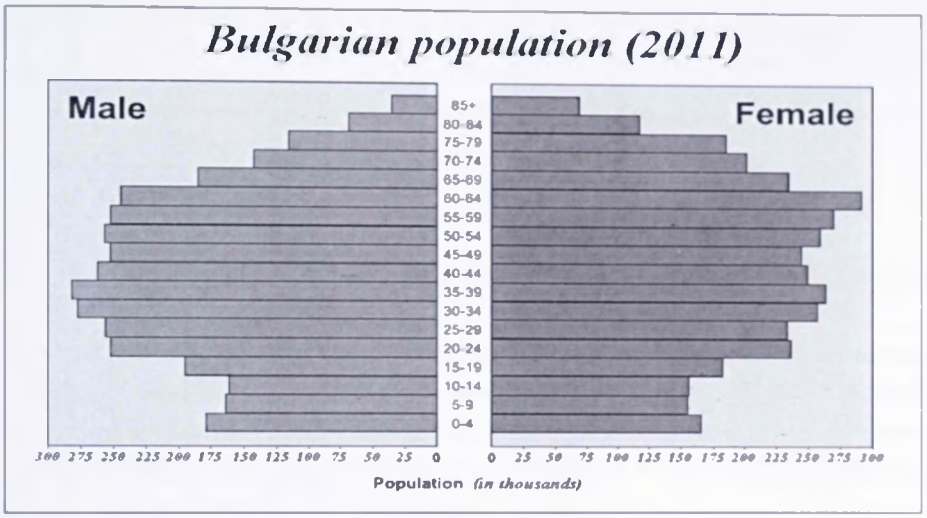

Fig. 20. Distribution of the population in Bulgaria by age and sex

Despite the favorable natural conditions of life, the crossroad position, good communications and developed infrastructure, a considerable part of the young population emigrated abroad during the last two decades of the 20th century.

Fig. 21. Dynamics of changing the size of the population in Bulgaria 1900-2011

The overall size of the population is steadily decreasing after 1985 (Fig.21) nevertheless trends of increase of life longevity for the same period are observed (Table 11).

Table 11 Dynamics of change of the life expectancy at birth in Bulgaria

Periods	Total population Average age	Men Average age	Women Average age
1935–1939	**51.75**	**50.98**	**52.56**
1956–1957	65.89	64.17	67.65
1960–1963	69.59	67.82	71.35
1969–1971	71.11	68.58	73.86
1974–1976	71.31	68.68	73.91
1978–1980	71.14	68.35	73.55
1984–1986	71.19	68.17	74.44
1989–1991	71.22	68.02	74.66
1993–1995	70.60	67.10	74.90
1997–1999	71.00	67.60	74.60
1998–2000	71.70	68.15	75.34
1999–2001	71.80	68.50	75.20
2000–2002	71.87	68.54	75.37
2001–2003	72.07	68.68	75.59
2003–2005	72.60	69.00	76.30
2004–2006	72.60	69.10	76.30
2005–2007	72.70	69.20	76.30
2006–2008	73.00	69.50	76.60
2007-2009	**73.43**	**69.90**	**77.08**

Source: National Health Institute of Bulgaria, 2011.

The population growth rate (Fig. 22) is negative – the number of deaths (15/1000) is almost twice higher than the number of births to (8/1000). The infant mortality rate is going down slowly but the total mortality rate is remaining high (Fig. 23).

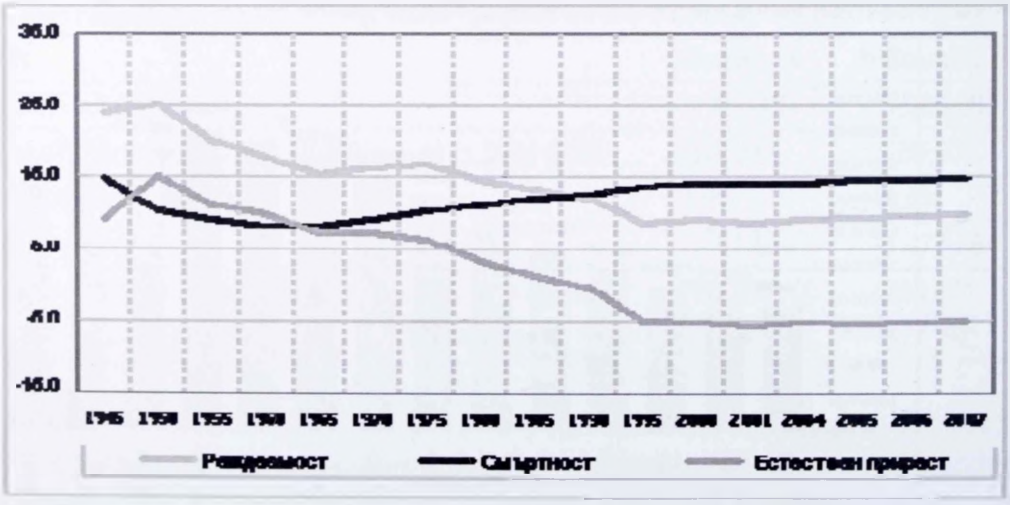

Fig. 22. Population growth in Bulgaria dynamics
Source: National center for health information

As seen on fig 18, the population is dominated by older groups. As a result, the working population replacement rate for the year 2011 gained 70% (for every 100 retired people 70 enter the working age), while this ratio for 2001 was at 124% (100 retired people were replaced by 124 working people).

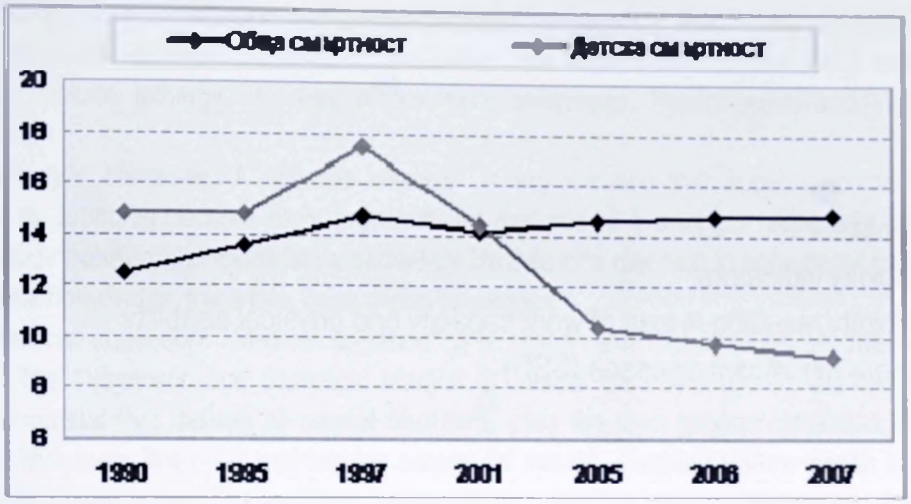

Fig. 23. Total and infant mortality rate Source: National center for health information

The optimistic demography scenario for Bulgaria is related to economic development and inclusion of "fresh" workforce from the group of foreign trained highly qualified Bulgarians who would return home and grow up their children in this country. The pessimistic scenario is related to the continuing decrease of the size of the Bulgarian population or a probable mechanic increase of the number of the population due to a minority and immigration groups number increase in the future.

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Chapter 4: Indicators of morbidity

1. Definitions
2. Morbidity indicators
3. Morbidity resulting in loss of work capacity and physical disability
4. Socially significant diseases (SSD)

1. Definitions

Disease: The term "disease" broadly refers to any condition that impairs normal functions, and is therefore associated with dysfunction of normal homeostasis. Commonly, the term disease is used to refer to specifically infectious diseases, which are clinically evident by the presence of pathogenic microbial agents, including viruses, bacteria, fungi, protozoa, multi-cellular organisms, and aberrant proteins (known as prions). Diseases are defined also as "latent", "acute", "chronic" or "transitory". Non-infectious diseases are all other diseases, including most forms of cancer, heart diseases, and genetic diseases. Diseases usually affect people not only physically, but also emotionally, as living with many diseases can alter one's perspective on life, and one's personality. In many cases, the terms disease, disorder, morbidity, and illness are interchangeably used. In some situations, specific terms are preferable. There are four main types of disease: pathogenic disease, deficiency disease, hereditary disease, physiological disease. Diseases can also be classified as: communicable/non-communicable, infectious diseases, contagious diseases, **food borne illness, and airborne diseases**.

Disorder: In medicine, a disorder is a functional abnormality or disturbance. The term "disorder" is often considered more value-neutral and less stigmatizing than the terms disease or illness, and therefore is preferred terminology in some circumstances. In mental health, the term mental disorder is used as a way of acknowledging the complex interaction of biological, social, and psychological factors in psychiatric conditions. ***Medical disorders can be categorized as mental disorders, physical disorders, genetic disorders, emotional and behavioral disorders, and functional disorders.***

Food-borne illness or food poisoning is any illness resulting from the consumption of food contaminated with pathogenic bacteria, toxins, viruses, or parasites, while airborne diseases are spread typically by means of aerosols.

Illness: Illness and sickness are generally used as synonyms for disease. However, this term is occasionally used to refer specifically to the patient's personal experience of his or her disease. In this model, it is possible for a person to have a disease without being ill (to have an objectively definable, but asymptomatic, medical condition), and to be ill without being diseased (such as when a person perceives a normal experience as a medical condition, or medicalizes a

non-disease situation in his or her life). Illness is often not due to infection, but to a collection of evolved responses—sickness behavior by the body—that helps clear infection. Such aspects of illness can include lethargy, depression, anorexia, sleepiness, hyperalgesia, and inability to concentrate.

Lifestyle diseases: A" lifestyle disease" is any disease that appears to increase in frequency as countries become more industrialized and people live longer, especially if the risk factors include behavioral choices like a sedentary lifestyle or a diet high in unhealthful foods such as refined carbohydrates, trans fats, or alcoholic beverages.

Medical condition: "Medical condition" is a broad term that includes all diseases and disorders. The Diagnostic and Statistical Manual of Mental Disorders (DSM), the widely used psychiatric manual that defines all mental disorders, uses the term general medical condition to refer to all diseases, illnesses, and injuries except for mental disorders. Some health insurance policies also define a medical condition as any illness, injury, or disease except for psychiatric illnesses. As it is more value-neutral compared to terms like disease, the term medical condition is sometimes preferred by people with health issues that they do not consider to be dangerous. On the other hand, by emphasizing the medical nature of the condition, this term is sometimes rejected, such as by proponents of the autism rights movement.

Pre-disease: Pre-disease is a type of disease or medicalization in which currently healthy people with risk factors for disease, but no evidence of actual disease, are told that they are sick. Pre-diabetes or pre-hypertension are some common examples. "Labeling" a healthy person with pre-disease can result in overtreatment, such as taking drugs that only help people with severe disease, or in useful preventive measures, such as motivating the person to get a healthful amount of physical exercise.

Progressive disease is a disease which typical natural course is the worsening through serious debility or organ failure with lethal end. Slowly progressive diseases are also chronic diseases; many are also degenerative diseases. The opposite of progressive disease is stable disease or static disease: a medical condition that exists, but does not get better or worse.

2. Morbidity indicators

Morbidity indicators represent a group of indicators measuring the loss of health. They are statistical figures describing the spread of the diseases among the general population and in separate medical units. The registered diseases are analyzed by distribution in groups by age, sex, professional status, etc.

2.1. Terminology

"Compression of morbidity": The increased life expectancy would be accompanied by a shortening of the length of morbid life. Fries believed that the same forces that resulted in decreased mortality would be linked to a lower incidence of chronic disease and a higher age of onset of chronic disease (Fries, 2000, 2001, 2002). Increasing life expectancy has been accompanied by a "***rectangularization of the survival curve"*** as survival until old age becomes

almost universal. As ***life expectancy has a limiting biological maximum, Fries postulated that the time with disease would be compressed into a shorter period at the end of life.***

Disease burden: Disease burden is a term to identify the impact of a health problem in an area measured by financial cost, mortality, morbidity, or other indicators. This term is relevant to socially significant conditions (diseases). The deadliest diseases in humans are: ischemic heart disease (blood flow obstruction) cerebro-vascular disease and lower respiratory infections, respectively. Death due to disease is called death by natural causes. There are several measures (indicators) used to quantify the burden imposed by diseases on people.

Health index reflects the number of healthy persons per unit of medically examined population. It is calculated as proportion of healthy persons in regards of the total number of examined people.

Incapacity: The concept of incapacity, upon the definition of the employment office in Geneva, describing biological, social, and legal aspects of the health status, is as follows: "Weak or handicapped is a person who, because of severe, lasting physical and/or mental disability unfit fully or partially for work and is unable to perform everyday self-care and needs assistance".

Indemnity: An indemnity is a kind of insurance, in which payment is made (often in previously determined amounts) for injuries suffered, not for the costs of recovery. The indemnity payment is designed not to be a dependent on anything the patient can control. From the point of view of the insurer, the indemnity mechanism avoids the moral hazard problem of victim spending too much in recovery (economy terms).

Morbidity rate: The ratio of diseased to healthy people in the population; the ratio of sick to well people in a community. The ratio is standardized when it is expressed as a proportion of the expected rate compared with a standard group. For example, the frequency of the appearance of complications following a surgical procedure or other treatment carried out in a medical department, compared to the average rate of complications. ***Morbidity rates*** are generally presented for specific conditions, rather than as a general rate, and may be reported as ***absolute numbers within a year*** (for example 200 cases of rabies had been registered in X country for the year 2013) or as ***incidence rates per thousand of population***, to facilitate comparisons between different sub-populations (such as sexes, age-groups, or occupations).

Morbidity: Morbidity is ***an incidence of ill health***. It is measured in various ways, often by the probability that a randomly selected individual in a population at some date and location would become seriously ill for some period of time. In epidemiology and actuarial science, the term "morbidity rate" can refer to either the incidence rate, or the prevalence of a disease or a medical condition. There are two major types of morbidity rate: the ***prevalence rate*** and ***the incidence rate***. The ***prevalence*** rate gives an indication of the number of individuals in a population suffering ***from a particular condition at any time***, while ***the incidence rate*** shows how many individuals develop a condition within ***a particular period of time, usually one year***.

Proportional morbidity: The proportion of all ill persons in the population that have the particular disease under discussion. This indicator reflects the structure of morbidity. For example, 7% of the total morbidity rate is due to diabetes. It means that 7% of all diseased people experience diabetes.

2.2. Data collection: registration of cases and official sources of information

The registration of cases and storage of health information differs from country to country but is always in accordance to the systems of monitoring and control of the health services and the management of providers' organization. Health statistics become available to the public by the intermediary of official agencies responsible for the collection and publication of information under the appropriate form. Unlike reported in official statistics, morbidity statistics are available from a variety of sources, including the following:

-Official statistics on contagious diseases and other significant illnesses
-Out-patients' files and records compiled by the general practitioner
-In-patients records compiled in hospitals
-Claims for sickness benefit records
-Per purpose/ national interview surveys which obtain self-reported data on health
-Cause-of-death statistics

Over the years, health statistics enlarges its field of application and its importance in the decision making process at different level of the public health management. Health status data and data collected from hospitalizations records book, leave of work records, and other primary sources of information, give an efficient tool for medical, social, and economic research. Epidemiology is the method of diagnosis for social medicine in the study of health and disease of the populations and for populations groups corresponding to the clinical examination and diagnosis of individual patients in clinical medicine. Morbidity (illness) statistics are widely used by epidemiologists in the analysis of health within human populations. Studying of morbidity assists also to determine:

- Risk factors;
- Diseases predisposition and mechanisms of spread;
- Prevention of diseases strategy;

Morbidity scores or predicted morbidity are assigned to ill patients with the help of systems such as the APACHE II, SAPS II and III, Glasgow Coma scale, PIM2, and SOFA. Morbidity scores help decide the kind of treatment or medicine that should be given to the patient. Predicted morbidity describes the morbidity condition of patients, and is also useful when comparing two sets of patients or time schedule in hospitals.

World Health Statistics (compiled by World Health Organization) contains a compilation of data pertaining to diseases, mortality, causes of death, and mortality rates. Publications like MMWR (Morbidity and Mortality Weekly Report, by Center for Disease Control and Prevention, USA), and databases like EMDB (European hospital Morbidity DataBase, Europe), and NHMD (National Hospital Morbidity Database, Australia) maintain patient health and disease records, health information and recommendations, accessible to physicians, nurses, and other healthcare professionals. Part of these data bases represents also the standardized structure of mortality from socially significant conditions, especially oncological diseases.

2.3. Diseases burden assessment

Years of potential life lost (YPLL) is a simple estimate of the number of years that a person's life was shortened due to a disease. For example, if a person dies at the age of 65 from a disease, and would probably have lived until age 80 without that disease, then that disease has caused a loss of 15 years of potential life.

Quality-adjusted life years (QALY) and disability-adjusted life years (DALY) metrics

are similar, but take into account whether the person was healthy after diagnosis. In addition to the number of years lost due to premature death, these measurements add part of the years lost to being sick. **YPLL** measurements do not account for how disabled a person is before dying, so the measurement treats a person who dies suddenly and a person who died at the same age after decades of illness as equivalent. In 2004, the World Health Organization calculated that 932 million years of potential life were lost to premature death. Unlike **YPLL,** these measurements show the burden imposed on people who are very sick, but who live a normal lifespan. A disease that has high morbidity rate, but low lethality rate, has a high **DALY** and a low**YPLL**. In 2004, the World Health Organization calculated that 1.5 billion disability-adjusted life years were lost to disease and injury. In the developed world,heart disease and stroke cause the most considerable loss of life, but neuropsychiatric conditions like major depressive disorder cause the most years lost to being sick (Table 12).

Table 12 Diseases responsible for diseases burden in EU, USA/Canada and globally

Disease category	Percent of all YPLLs lost, worldwide	Percent of all DALYs lost, worldwide	Percent of all YPLLs lost, Europe	Percent of all DALYs lost, Europe	Percent of all YPLLs lost, US &Canada	Percent of all DALYs lost, US &Canada
Cardio-vascular diseases: heart attack and stroke	14%	10%	35%	23%	26%	14%
Premature birth and other perinatal deaths	11%	8%	4%	2%	3%	2%
Cancer	8%	5%	19%	11%	25%	13%
Injuries, Motor vehicle	14%	12%	13%	18%	10%	18%

Slovenia, Slovakia, Estonia, Bulgaria and Latvia demonstrate the ***shortest span of healthy life as well shortest total expected time to live.*** This correlates with the overall life expectancy's rate and the country's economic development. In this group the life expectancy rates of male/female populations differ according to the general trends in favor of female populations. There is a negative trend in Bulgarian female group which demonstrated a shortening of healthy span (fig. 24).

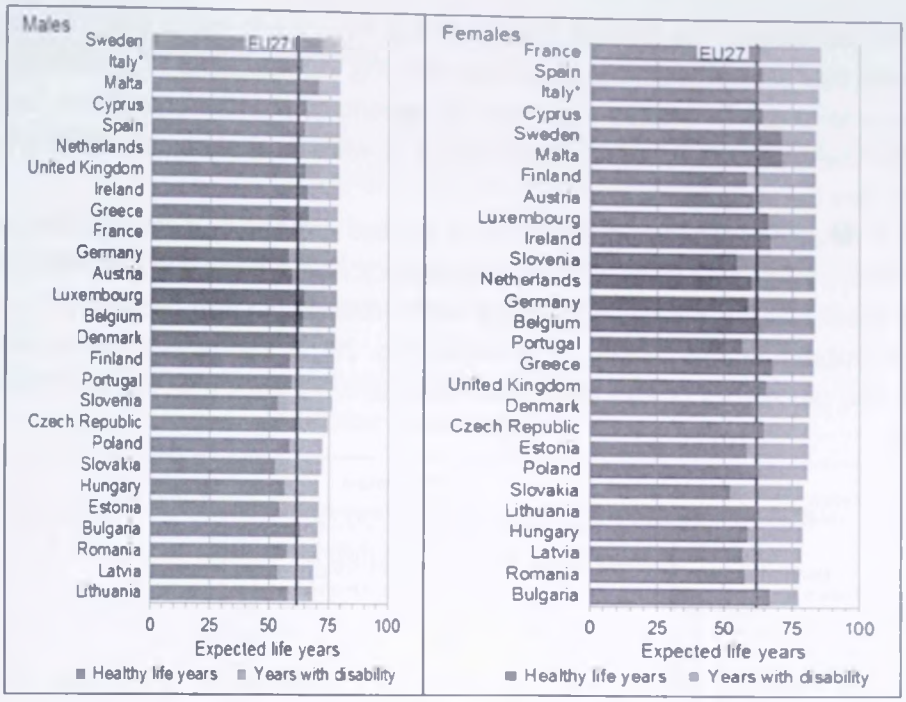

Fig.24. Expected healthy life and with disability years, EU comparison by sex, 2010.

2.4. Self-assessment and perception of health status

The EU Statistics on Income and Living Conditions ***(EU-SILC)*** carried out an international comparative study on self-perceived health status of adults. The responses to three main questions yield three measures for assessing variations in health between countries had been compiled and results were analized: % with a long standing illness, bad or verybad health, limited day activities (fig. fig. 25, 26, 27).

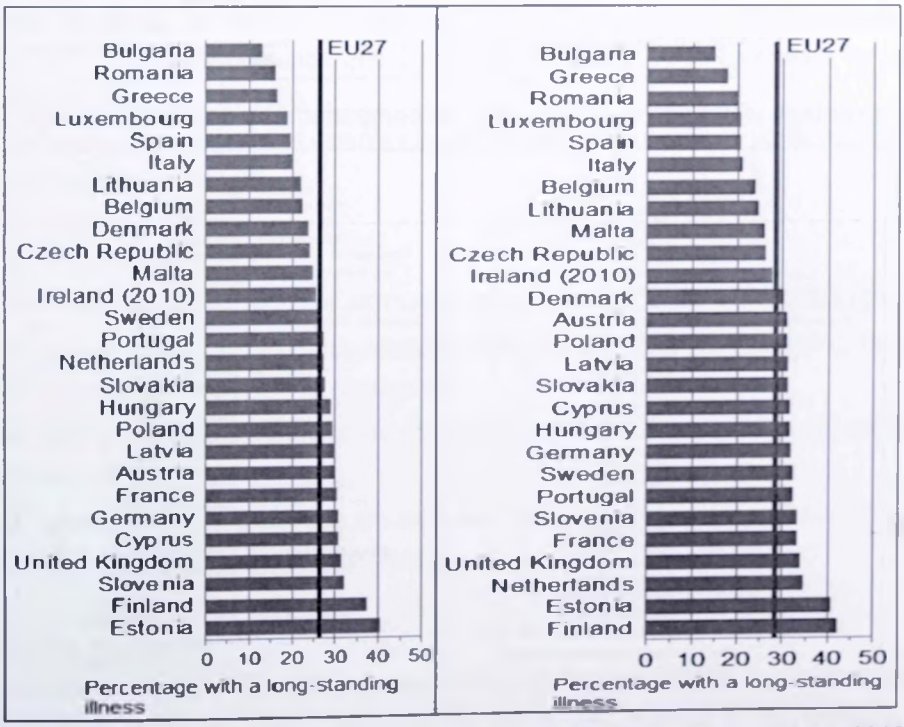

Fig.25. Percentage with long-standing illnesses, standardized by states and sex 2010 EU

The gap between the Member States with the highest and lowest percentages ***of men who*** reported their general health was bad or very bad (Fig. 25) was about ***11 percentage points.*** The corresponding gap for ***women*** was about ***12 percentage points***. Among men, bad or very bad general health was most often reported in Lithuania; while most of women reporting bad/ very bad health were in Portugal.

The variation of perceived health status as bad and very bad by member states population does not always reflect the pattern seen for life expectancy. This is partly due to the fact, that self-perceived health status is affected by people's health attitudes but also because of the different criteria on "limitation in daily activity" by countries (Fig. 26). It also reflects the fact that these limitations and perceptions of less than good health do not always give rise to a substantially shorter life.

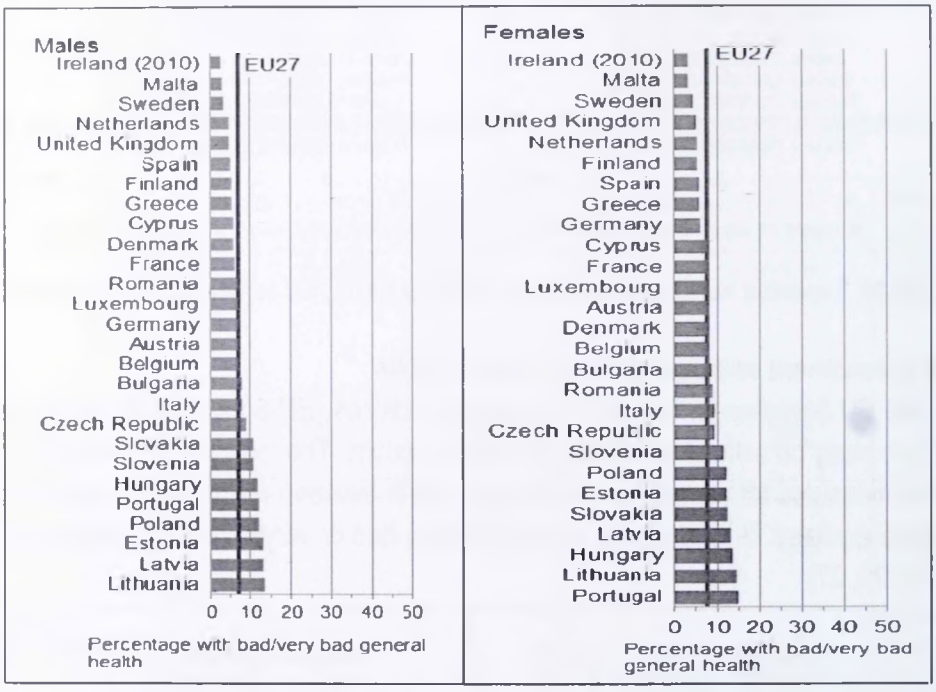

Fig.26. Percentage with bad/very bad health. EU comparison by countries and sex, 2010

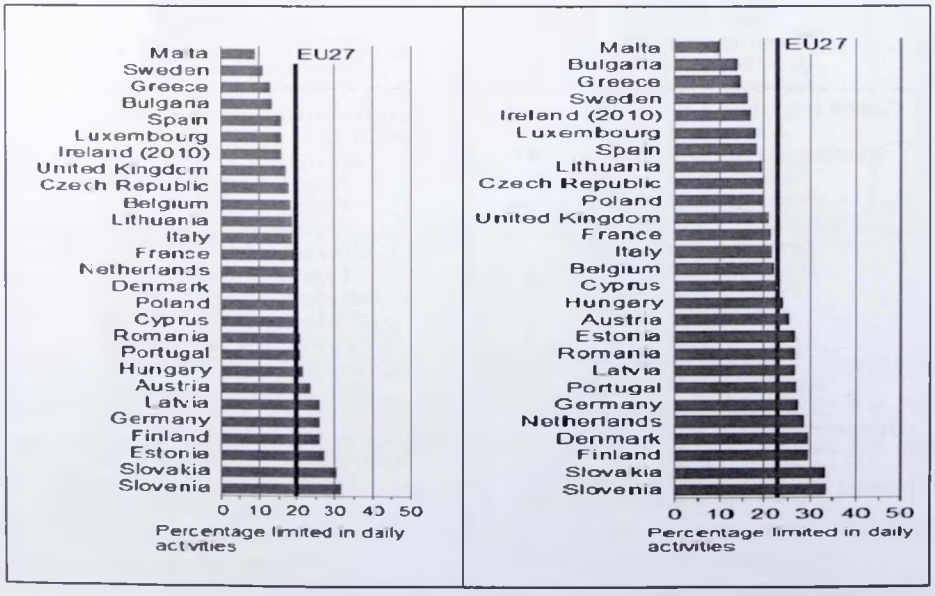

Fig. 27 Percentage limited in daily activities by EU states and sex distributions 2010

2.5. Calculation of morbidity indicators:

1. Incidence = $\frac{\text{Number of people with newly registered diseases}}{\text{Average annual number of population}} \times 1000 \text{ people}$

2. Prevalence = $\frac{\text{Number of people with all registered diseases}}{\text{Average annual number of population}} \times 1000 \text{ people}$

3. Health Indicator $\frac{\text{Number of healthy people}}{\text{Number of examined people}} 100\%$

4. Lethality = $\frac{\text{Number of people died from a disease}}{\text{All suffering from the same disease}} \times 100\%$

3. Morbidity resulting in loss of work capacity and physical disability

3.1. Permanent loss of work capacity

Incapacity or permanent loss of work capacity can result from a hereditary or acquired chronic condition. Disability is subject of monitoring and assistance by social and health insurance system in a given country. It aims to define the duration and resources necessary for physical and social rehabilitation of diseased people and lasting consequences for their reintegration. Taking into consideration the considerable rate of chronic diseases and aging of the population, even the most affluent societies suffer from the high cost of health and social security assistance and the missed economic profit. In addition, the negative effects are expressed by the degrading quality of life. Most people, who develop permanent loss of work capacity, need assistance for their usual daily activities for the rest of their life.

There are three degrees of disability leading to limitation of work and/or life activities:

1. Disability/impairment
2. Deficit/deficiency
3. Social failure /handicaps

The expertise of the degree of permanent loss of capacity "labels" three main groups:

1st group: People in this group have the right to receive personal assisting, but are not allowed to exercise their professional occupation.

2nd group: People in this group are considered partly capable to work under special work conditions.

3rd group: People in this group are expected to be capable to practice their profession after recovery albeit to a limited extent.

3.2. Temporary incapacity

Temporary disability (incapacity) occurs when an insured person is unable or prevented from working on a temporary basis. This could be due to one or more of the following causes:

accident, acute disease, medical examination, quarantine removal from work following the recommendation of health authorities, looking after an ill family member, hospitalization, pregnancy, child delivery, looking after an ill or quarantined child.

3.3. Sick leaves indemnity

According to human rights on work and health and subject to national legislation the ill worker is allowed to receive health care and to be paid indemnity for the missed benefit, within the contracted wage (to receive "sick pay"). Only medical doctors and dental surgeons have the competence to certify the medical status of a worker and issue the sick leave indemnity verification. Based on this document the insurer pays the sick leave indemnity. Depending on the nature of the medical condition, the duration, and the consequences for the work fitness of the diseased person the expertise is performed by the general practitioner, an ad hoc commission of specialists or by National Specialists Commission.

Proportional distribution (***Structure of morbidity with incapacity)*** of medical conditions, leading to temporary work incapacity, as seen on fig.28 correlates with the socially significant morbidity rates as on fig 29 and fig.30.

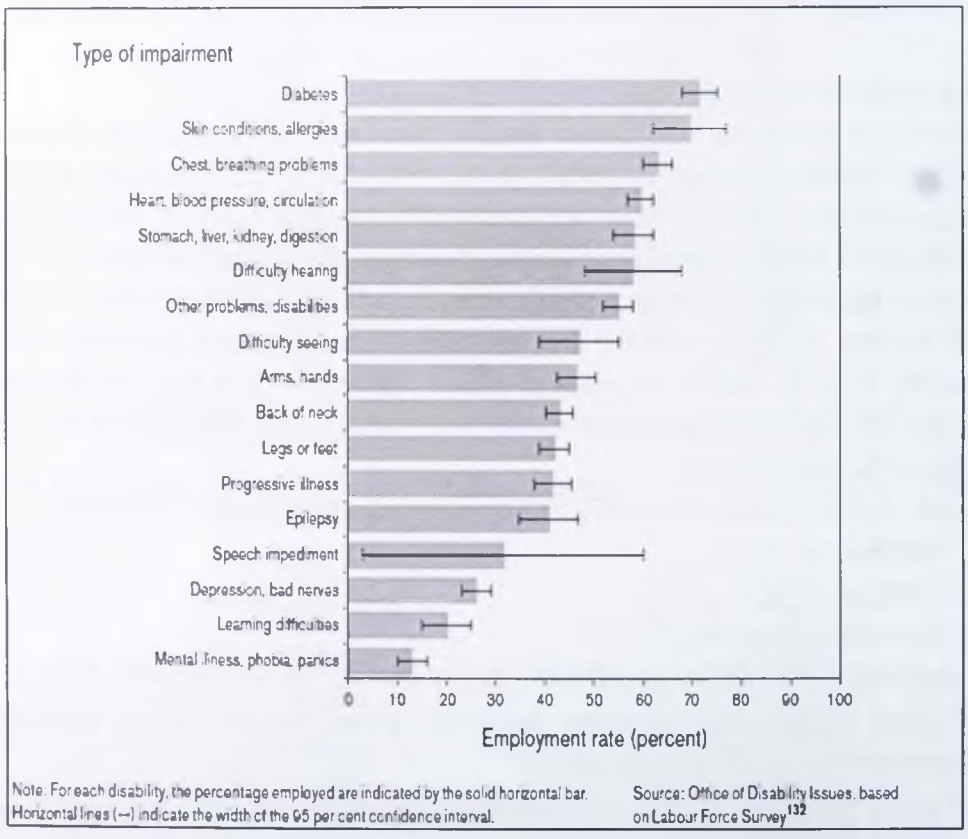

Fig. 28. Structure of morbidity leading to temporary incapacity
Source: Sir Prof. Michel Marmot

Temporary working incapacity is assessed using the following indicators:

1. ***Total number*** of working days lost due to illness;
2. ***Average number*** of lost days due to illness/per person/per year;

3. Total number of lost working days due to a specific medical condition (including the so called occupational morbidity);

4. ***Average number*** of lost working days due to a specific medical condition per person/per year

4. Non-communicable diseases (NCDs)

Non-communicable diseases (NCDs) have become a major public health problem with social and economic impact all over the world. Their impact is demonstrated at different levels -the household level, the health system level and the macroeconomic level. They are usually, like cardiovascular diseases (CVDs), at the top among the leading ten causes of adult (25–69 years) deaths. The effects of NCDs are inequitable with evidence of reversal in social gradient of risk factors and greater financial implications for the poorer households. Out-of-pocket expenditure associated with the acute and long-term effects of NCDs for the households in some countries and the significant challenge for the health system to provide treatment, care and support in others are typical feature. The proportion of hospitalizations and outpatient consultations as a result of NCDs rose sustainably within latest decades. In macroeconomic terms, most of the estimates suggest that the NCDs expenditures represent up to 5–10% of GDP. The treatment of these diseases may not be efficient without being strongly supplemented with population-based services aimed at health promotion and action on social determinants of health along with individual services. Since health sector alone cannot deal with the "chronic emergency" of NCDs, a multi-sectorial action addressing the social determinants and strengthening of health systems for universal coverage to population and individual services is required.

4.1. International classification of diseases

In 1893, a French physician, Jacques Bertillon, introduced the Bertillon classification of causes of death at a congress of the International Statistical Institute in Chicago. The system was based on the principle of distinguishing between **general diseases** and those **localized to a particular organ or anatomical site**, as used by the city of Paris for classifying deaths. Subsequent revisions represented a synthesis of English, German and Swiss classifications, expanding from the original 44 titles to 161 titles. In 1898, the American Public Health Association (APHA) recommended that the registrars of Canada, Mexico, and the United States also adopt it.

The APHA also recommended ***revising the system every ten- years to ensure the system remained current with medical practice advances***. As a result, the first international conference to revise the International Classification of Causes of Death took place in 1900; with revisions occurring every ten years thereafter. At that time the classification system was contained in one book, which included an Alphabetic Index as well as a Tabular List. The sixth revision included morbidity and mortality conditions, and its title was modified to reflect the changes: ***International Statistical Classification of Diseases, Injuries and Causes of Death (ICD)***.

Table 13 Content Model of the International Classification of diseases

1. ***ICD Entity Title*** - Fully Specified Name
2. ***Classification Properties*** - disease, disorder, injury, etc.
3. ***Textual Definitions*** - short standard description
4. ***Terms - synonyms***, other inclusion and exclusions
5. ***Body System/Structure Description*** - anatomy and physiology
6. ***Temporal Properties*** - acute, chronic or other
7. ***Severity of Subtypes Properties*** - mild, moderate, severe, or other scales
8. ***Manifestation Properties*** - signs, symptoms
9. ***Causal Properties*** - etiology: infectious, external cause, etc.
10. ***Functioning Properties*** - impact on daily life: activities and participation
11. ***Specific Condition Properties*** - relates to pregnancy etc.
12. ***Treatment Properties*** - specific treatment considerations: e.g. resistance
13. ***Diagnostic Criteria*** - operational definitions for assessment

Prior to the sixth revision, responsibility for ICD revisions fell to the Mixed Commission, a group composed of representatives from the International Statistical Institute and the Health Organization of the League of Nations. ***In 1948 the World health organization (WHO) assumed responsibility for preparing and publishing the revisions to the ICD every tenth year.*** The ICD is currently the most widely used statistical classification system for diseases in the world. International health statistics using this system are available at the ***Global Health Observatory (GHO).*** In addition some countries—including Australia, Canada and the United States—have developed their own adaptations of ICD. **ICD exists in 41 Languages** in electronic versions. Each ICD entity can be seen from different dimensions or "parameters". For example, there are currently 13 defined main parameters in the Content Model (see below) to describe a category in ICD (Table 13).

4.2. Most frequent morbid conditions in industrial societies

The morbidity rate of a group of medical conditions in industrial societies is the cause of major social burden: hypertension, diabetes, chronic obstructive pulmonary disease, neoplastic processes. They affect some target body systems (heart and brain - vascular diseases, lung, colon, breast - malignant tumors, liver, pancreas - endocrine disease. Risks for these conditions are detected in a ***constellation of factors*** from the biological and social conditions of life such as atherosclerosis, high tension, diabetes, especially with nephropathy, obesity, immobilization, cigarettes smoking, alcohol drinking.

These diseases and their complications affect primarily ***people in active working age*** and are the common cause of disabilities and even fatalities when not diagnosed on time or treated and controlled improperly. For example, the risk of diabetic complications may comprise: ***diabetic neuropathy-98.2%, diabetic retinopathy-33%, diabetic nephropathy-7%, microvascular complications-10.5%. Some of these diseases have a very high mortality rate. For example, cancer mortality rate in Bulgaria is as follows:***

(1) for men: lung cancer-75,4%, colorectal cancer-52%, prostate cancer - 54%, gastric cancer- 19%, pancreatic cancer- 7%;

(2) for women: breast cancer-84%, colorectal cancer-50%, cervix cancer- 31%, gastric cancer- 15%, pancreatic cancer-7%.

The ishaemic heart disease, affecting people in the 30-69 year age group results in death in 60% of cases. The rate of IHD in Bulgaria for the last decade of the 20th century increased of 20%. ***The second important cause of death in Bulgaria is the Brain vascular disease, affecting people between*** 35 and 64 years of age.

4.2.1. Trends in diabetes mortality and morbidity rates

Diabetes is the sixth leading cause of death in the United States. Age-adjusted death rates for diabetics are about twice that for people without diabetes, and about two to four times that for people with heart disease. Diabetes is also an important contributor to mortality from other conditions, often listed as a contributing factor to deaths assigned to other causes. Age-adjusted death rates from diabetes declined from 1970 to the mid-1980s but increased substantially (about 47%) from 1987 to 2002. The lifetime risk of diabetes for Americans born in the year 2000 is estimated to be 33% for men and 36% for women.

Age-adjusted incidence rates of diabetes doubled between 1980 and 2008 for both men and women between 18 and 79 years of age (Center for Disease Control and Prevention, 2010). Increasing prevalence and incidence of diabetes relates to the growing problem of obesity, projected to continue to increase. Trends in diabetes mortality, incidence, and prevalence all point to growing population health problems from this condition.

4.2.2. Trends in cardiovascular diseases (CVD) mortality and morbidity

CVD is also a major cause of morbidity. Results from the Framingham Heart Study show that, at age 50 the lifetime risk for developing CVD was 51.7% for men and 39.2% for women. The Framingham Heart Study also shows that when methods of diagnosis are taken into account incidence rates for a first myocardial Infarction (MI) remained relatively stable between 1960 and 1969 and 1990–1999 (Parikh et al., 2009); however, trends differ by gender. For men, there was no clear trend in incidence of MI before 1980, but a decline characterizes most of the 1980s and 1990s, although two studies report small increases in incidence rates in the late 1990s.

4.3 .Social determinants of SSD

Among the not-wealthy people and countries, mortality by heart disease and stroke are especially related to income differences. Importantly, premature death by injuries, cancers, infectious disease, and diabetes are also all strongly related to not being wealthy. These rates are especially high among the least well-off (Fig.29, 30.)

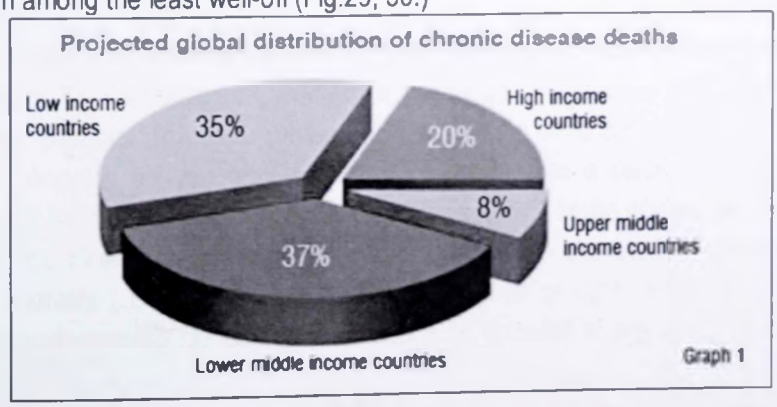

Fig. 29. Projected global distribution of chronic disease deaths

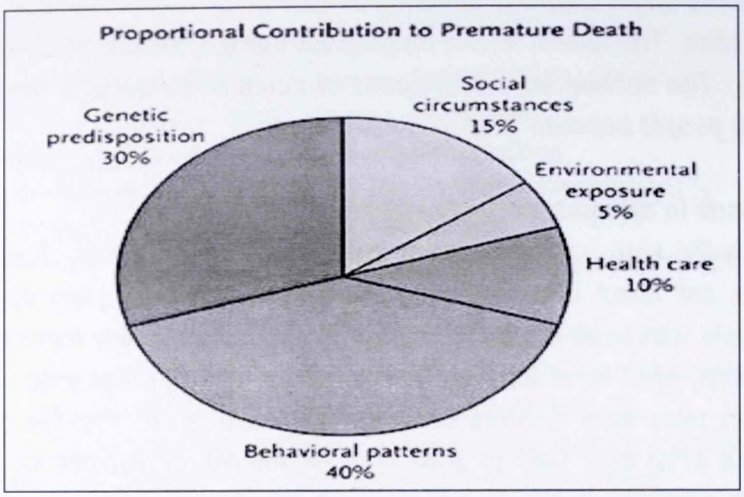

Fig. 30. Proportional contribution to premature death

4.4. Dental diseases as socially significant diseases

Setting aside oncological diseases, severe traumas, and craniofacial anomalies, there are very few dental cases for hospitalization. Few oral and dental conditions cause systemic complications, high lethality and/or require long rehabilitation period, with social assistance. These are the basic arguments when considering the socially significance of dental diseases. On the other hand, the high morbidity rate and prevalence of dental diseases is affecting the amount of social resources to respond the patients' needs and demands. In addition, oral health is controllable through preventive measures. It is evidenced that oral health is a significant factor in general health and wellbeing, in particular the older patients. Therefore, the social attention toward oral health promotion is significant in industrialized countries with increasing trends to provide patient-centered preventatively oriented minimum intervention dental care.

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Chapter 1 Foundations of Ethics, Bioethics and Medical Ethics

1. Philosophy and sociology of morality. Definitions and concepts
2. Social values, human rights and legal regulations
3. Medical ethics and bioethics, medical research ethics

1. Philosophy and sociology of morality. Definitions and concepts

As an academic discipline, dental ethics has developed its own specialized terminology, but also many terms that have been borrowed from philosophy.

1.1 Definitions

1. Values: (v.) to consider something to be very important; (n.) something that is considered to be very important. Principles, goals or standards held or accepted by an individual, a social group, and the society as a whole, as a basis for agreement on any course of action. Moral values are generally "shared" values held by individuals and held collectively by socially cohesive groups of individuals. Most cultures value honesty and are intolerant of doing harm to other people. Other such shared values include (among many others) loyalty, justice and promise-keeping. The opposite of moral values includes intentional deception: lies of omission (deceiving others by omitting the truth); peddling half-truths as if they were the whole truth, peddling half-lies as if they were the whole truth, distorting the truth. The scientific study of values is axiology.

2. Morality: (from the Latin words "mors" and "moralitas" - manner, character, and proper behavior") is the term to define the differentiation of intentions, decisions, and actions between those that are "good" (or right) and those that are "bad" (or wrong). Morality is a system of "shared" values which "justify" actions when people interact with each other and while deciding on best courses of action in all situations. The notion of morality refers to all important beliefs and reflects opinions about: what is right (honest, ethical, true) conduct and what is wrong (dishonest, false, harmful) conduct. To a large extent, morality is related to relationships with other people: family, friends, clients, patients, students, profession, and fellow citizens. Morality can be a body of standards or principles derived from a code of conduct from a particular philosophy, religion, culture, or it can be derived from a standard that a person believes should be universal. Morality may also be specifically synonymous with "goodness" or "rightness." Immorality is the active opposition to morality (i.e. opposition to that which is good or right), while amorality is variously defined as an unawareness of, indifference toward, or disbelief in any set of moral standards or principles.

*3. **Ethics*** (also known as moral philosophy): The branch of philosophy that deals with distinctions between right and wrong and with the moral consequences of human actions. Examples of ethical issues that arise in medical practice and research include informed consent, confidentiality, respect for human rights, and scientific integrity. ***Ethics is state of mind***. Ethical sensitivity is directly related to honesty and truthfulness. ***Descriptive ethics*** is the branch of philosophy which studies morality in the sense of personal or cultural values, codes of conduct or social mores. In its descriptive sense, "morality" does not refer to objective claims of right or wrong, but only refers to that which is considered right or wrong. ***Normative ethics*** is the branch of philosophy which studies morality in the sense of differentiation of the right from wrong. An example of normative ethical philosophy is the Golden Rule which states that, "One should treat others as one would like others to treat oneself." In its normative sense, "morality" refers to whatever (if anything) is actually right or wrong, which may be independent of the values or mores held by any particular peoples or cultures. Moral philosophy includes ***moral ontology***, or the origin of moral, as well as ***moral epistemology,*** or what we know about morals. Different systems of expressing morality have been proposed, including deontological ethical systems which adhere to a set of established rules, and normative ethical systems which consider the merits of actions themselves.

*4. **Bioethics*** studies moral issues that occur in medicine, dentistry, health care and the biological sciences, the ethical implications of biological research, in general. It has four major subdivisions: clinical ethics, which deals with issues in patient care, research ethics, which deals with the protection of human subjects in health care research; professional ethics, which deals with the specific duties and responsibilities that are required of dentists and other health care professions (dental ethics is one type of professional ethics); and public policy ethics, which deals with the formulation and interpretation of laws and regulations on bioethical issues.

*5. **Right***: In accordance with fact, reason, justice, law, and morality; correct in thought and action; Synonyms for right include: correct, honest, ethical, just, true, accurate, precise, suitable, fitting, appropriate, and proper.

*6. **Wrong***: Contrary to fact or reason, unlawful, immoral, and improper; Synonyms for wrong include: dishonest, illegal, mistaken, criminal, unethical, sinful, unsuitable, inappropriate, improper, incorrect, injurious, harmful, damaging, and unjust.

*7. **Consensus***: Consensus is general, but not necessarily unanimous, agreement.

*8. **Courage***: Courage is the ability to confront fear in the face of pain, danger, uncertainty or intimidation. Courage ensures firmness in difficulties and constancy in the pursuit of the good. It strengthens the resolve to resist temptations and to overcome obstacles in the moral life. "Physical courage" is courage in the face of physical pain, hardship, or threat of death, "Moral courage" is the ability to act rightly in the face of popular opposition, shame, scandal, or discouragement. Ernest Hemingway defined courage as "grace under pressure."

*9. **Pluralistic***: – having several or many different approaches or features: the opposite of singular or uniform.

*10. **Justice***: – fair treatment of individuals and groups. There are different understandings of what constitutes fair treatment: the fair access, distribution and chances.

*11. **Non-maleficence***: – literally, not doing wrong. Dentists and dental researchers are to avoid inflicting harm on patients and research subjects.

*12. **Beneficence***: – literally, "doing good". Dentists are expected to act in the best interests of their patients.

13. Profession – from the word 'profess' – to state a belief or a promise in public – which is also the basis of the terms 'professional' and 'professionalism'.

14. Accountable: – answerable to someone for something (e.g., employees are accountable to their employers for the work they do). Accountability requires being prepared to provide an explanation for something one has done or has not done.

15. Advocate: – (verb) to speak out or take action on behalf of another person or group; (noun) someone who acts in this way. Dentists serve as advocates for their patients when they call on governments or health insurance officials to provide services that their patients need but cannot easily obtain on their own.

16. Rational – based on the human capacity for reasoning, i.e., to be able to consider the arguments for and against a particular action and to make a decision as to which alternative is better.

17. "Whistle-Blowing" is the disclosure by an individual of confidential information, which relates to some fraud, danger or other illegal or unethical conduct connected with research. Whistle blowing may be seen as a means to deter wrongdoing, promote transparency and good governance, underpin regulation and maintain professional and public confidence.

18. Whistle-blower: someone who informs people in authority or the public that an individual or an organization is doing something unethical or illegal. (The expression comes from the world of sport, where a referee or umpire blows a whistle to signal an infraction of the rules). A "whistleblower" is a person who alleges misconduct.

19. Virtue: – a good quality in people, especially in their character and behavior. Some virtues are particularly important for certain groups of people, for example, compassion for dentists, courage for fire fighters, truthfulness for witnesses, etc.

20. Temperance: —Temperance is moderation of needed things and abstinence from things which are not needed. Temperance is constant mindfulness of others and one's surroundings; practicing self-control, which includes the enjoyment of pleasure.

21. Liberality: —Liberality is a spirit of generosity for a proper and worthy charity that may involve the donation of our time, our money, or other possessions.

22. Magnanimity: —Magnanimity is the pursuit of what is great and honorable in his life, even if it is difficult. St. Thomas Aquinas describes it as a "stretching forth of the mind to great things." A magnanimous person seeks to do great acts, "things as are deserving of honor." A magnanimous person knows him/her-self to be worthy of honor but neither over or underestimates their own contributions or worth. A magnanimous person is generous in forgiving an insult or injury and is free from petty resentfulness or vindictiveness.

23. Proper ambition/pride: —Pride is the appreciation of one's own worth. Ayn Rand said, "Pride is the recognition of the fact that you are your own highest value and, ***like all of man's values***, it has to be earned —that of any achievements open to you, the one that makes all others possible is ***the creation of your own character.*** Pride is virtuous of self -respect. Proper ambition is the possession of motivation for doing good.

24. Character: The action you take to carry out the values ethics and morals that you believe in, consistency between what you say you will do and what you actually do, putting the ethics into action, defines, builds, or breaks your reputation, moral strength. It takes moral courage to do what is right when it may cost more than you are willing to pay. Someone character is what

he/she does when no one is looking. Josephson's Six Pillars of Character: 1. Trustworthiness; 2.Respect; 3.Responsibility; 4. Fairness; 5.Caring; 6.Citizenship.

25. Patience/good temper: —Patience is endurance under difficult circumstances, persevering in the face of delay or provocation without acting on annoyance/anger in a negative way; or exhibiting forbearance when under strain, slow to anger, level headed.

26. Truthfulness: —Truthfulness consists in speaking honestly about one's accomplishments and living up to one's commitments. Truthfulness is being honest in your words and actions. Truth or truthfulness is the virtue which consists in showing oneself true in deeds and truthful in words, and in guarding against duplicity, dissimulation, and hypocrisy.

27. Friendliness —Friendliness is being a friend, through good times and bad. You take an interest in other people and make them feel welcome. You share your belongings, your time and yourself. The friendly person accepts the right words and deeds of others.

28. Modesty —Modesty is having self-respect. When you value yourself with quiet pride, you accept praise with humility and gratitude. Modesty is being comfortable with yourself and setting healthy boundaries about your body and your privacy. Modesty is being sensitive to one's honor and feeling appropriately bad when it is besmirched. Modesty consists of feeling shame at the appropriate times.

29. Righteous indignation —Righteous indignation is a sense for the appropriate treatment of others or that which is sacred. Righteous indignation is being angry for the right reason, at the right time, in the right way and with the right person(s). Righteous indignation is a balanced feeling of sympathetic pain concerning the undeserved pleasures and pains of others; a feeling of pain at undeserved good fortune in the same way that pity is a feeling of pain at undeserved misfortune.

30. The Four Cardinal Virtues (Wisdom 8:7)

1. Prudence—able to judge between actions with regard to appropriate actions at a given time

2. Justice—proper moderation between self-interest and the rights and needs of others

3. Temperance or restraint—practicing self-control, abstention, and moderation

4. Fortitude or courage - forbearance, endurance, and ability to confront fear and uncertainty, or intimidation.

31. Three Theological Virtues (1 Corinthians 13:13)

1. Faith is the theological virtue by which we believe in God and believe all that he has said and revealed to us, and that Holy Church proposes for our belief, because he is truth itself. By faith "man freely commits his entire self to God." For this reason the believer seeks to know and do God's will. "The righteous shall live by faith."

2. Hope is the theological virtue by which we desire the kingdom of heaven and eternal life as our happiness, placing our trust in Christ's promises and relying not on our own strength, but on the help of the grace of the Holy Spirit.

3. Charity is the theological virtue by which we love God above all things for his own sake, and our neighbor as ourselves for the love of God.

32. Seven Capital Virtues

1. **Humility** is a conscious awareness of our complete dependence upon God and smallness compared to him; a willingness to serve anyone in any way —no matter how small, mundane, or socially degrading.

2. **Liberality** is a spirit of generosity for a proper and worthy charity that may involve the donation of our time, our money, or other possessions.

3. **Chastity** embraces moral wholesomeness and purity, and in both thought and action treats God's gift of sexuality with due reverence and respect.

4. **Meekness** is enduring injury with patience and without resentment; strength under control.

5. Temperance is moderation of needed things and abstinence from things which are not needed. Temperance is constant mindfulness of others and one's surroundings; practicing self-control,

6. **Kindness** is charity, compassion, friendship, and empathy without prejudice and for its own sake.

7. **Diligence** is constant and earnest effort to accomplish what is undertaken; persistent exertion of body or mind.

33. Seven Deadly Sins: 1. Pride, 2. Greed 3. Lust, 4. Wrath or rage, 5. Gluttony, 6. Envy, 7. Sloth.

1.2. Ethical theories and concepts

The question of how best to lead a moral life, and how the word "morality" can be best defined is one of the foundational questions of philosophy. Moral philosophers (Ethicists) have, over the years, formulated numerous theories designed to help people make the best moral decisions. The different philosophical schools help us to find patterns of moral thinking.

Value theory encompasses a range of approaches to understanding how, why and to what degree people value things; whether the thing is a person, idea, object, or anything else. This investigation began in ancient philosophy, where it is called axiology or ethics (Aristotle. Nikomachean Ethic). Today, most of value theories are scientifically empirical, recording what people do value. These theories attempt to understand why people value a given item in the context of psychology, sociology, and economics.

Popular value theories include: virtue ethics, relativism, utilitarianism, the categorical imperative, the theory of the natural law, theory of the social contract. Aristotelian approach, relevant to practical reasoning, is based on the notion of a virtue, and generally does not separate "moral" considerations from other practical considerations, while Kantian approach is based on notions such as duty, obligation, and principles of conduct and is related to formal ethical considerations.

(1)Virtue Ethics: Most people trace the origin of virtue ethics to Aristotle and his writings in Nicomachean Ethics. Virtue ethics states that only good people can make good moral decisions. Therefore, the best way to be moral is to constantly seek to improve him or herself and become a "good one". Virtue ethicists list a number of qualities that they believe are universal, and are appreciated in all cultures. They include wisdom, prudence, loyalty, honesty, temperance, bravery, magnanimity, and justice. Virtue ethicists argue that if a person tries his best to embody these traits, then by definition he will always be in a good position to make moral judgments. Major Western theorists who stress the importance of values as an analytical independent variable include Max Weber, Émile Durkheim, Talcott Parsons, and Jürgen Habermas. Classical examples of sociological traditions which deny or downplay the question of values are institutionalism,

historical materialism (including Marxism), behaviorism, pragmatic-oriented theories, postmodern philosophy and various objectivist-oriented theories.

(2)Relativism: Moral relativism is a theory which states that no one person's moral is better or worse than any other. Relativists argue that a person's moral code is shaped by the society in which he is raised, and that no society is inherently better or worse than any other. Many people find it useful to distinguish instrumental value and intrinsic values. First discussed by Plato in the "Republic". Relativism: Platho, Hobs The followers of relativism reject the existence of universal moral values. According to them, moral evaluations depend on the given point of view. It is quite obvious why the relativist approach is unacceptable when trying to set up systems of rules.

(3)Utilitarianism: First popularized by British philosophers Jeremy Bentham and John Stuart Mill in the 19th century, it is a theory holding that the best way to make a moral decision is to look at the potential consequences of each available choice, and then pick the option that either does most to increase happiness or does least to increase suffering. Utilitarianism, also known as "consequencialism", is often summed up as a philosophy of "The greatest good for the greatest number." Utilitarianism is a very simple view that matches common sense – right and wrong can be determined by a cost-benefit analysis. We must consider all the good and bad consequences when deciding if an action is right. Utilitarian disagree about what counts as "good" or "bad." Some think that fulfilling desires are good and thwarting desires are bad. Classic utilitarian think that happiness is good and suffering is bad, while pluralists believe that there are multiple "intrinsic goods" that are worth promoting. An action will then be said to be "right" as long as it satisfactorily causes good consequences compared to alternative actions, and it will be "wrong" if it doesn't. It should be pointed out that right actions and right moral decisions are two different things. In order to know if something is morally preferable for a utilitarian, we must ask, "Will it lead to more benefits and less harms than the alternatives?" If the answer is, "Yes", then it is morally preferable. ***Objections to utilitarian concept:*** Consequences might not be enough. Utilitarianism requires us to do whatever promotes the good the most, but that could require us to be disrespectful or even harmful to certain people. For example, if killing one to donate the organs and save five lives could seem like such an action maximizes the good and wasn't wrong. Actually it is absolutely unacceptable. This example suggests that utilitarianism is incomplete because **we might have rights that must not be violated, even for the aim to maximize the benefit.** Utilitarianism doesn't discriminate or encourage egoism. It is out of believed wrong harming others to benefit anyone because everyone counts.

(4)Deontology: Deontology is a duty-based moral theory. Deontology states that society needs rules in order to function, and that a person can only be called moral to the extent that he abides by those rules. The most famous and eloquent proponent of deontology is generally agreed to be Immanuel Kant. Kant formulated the following maxim, known as the Categorical Imperative, to help people decide which actions should be governed by rules: "Act only according to that maxim by which you can also will that it would become a universal law." In other words, people should only do things that they would be happy to see everyone do. For example, people shouldn't lie, because if everyone lied all the time then society would collapse. In other words, the Categorical Imperative asks us to behave in a rational way that would be rational for anyone. If it is right for me to defend myself when attacked, then it is right for everyone to defend themselves in self-defense.

(5)Natural rights theorists believe that every person is endowed with certain inalienable rights, such as the right to life, the right to own property, and the right to liberty. Natural rights

theorists argue that these rights are self-evident, and would exist even if nobody believed in them. The reason that natural rights theorists hold these rights as self-evident is that they are essential to the flourishing of human happiness and the foundation of civil society. For example, they argue that without the right to own property, there is no incentive to create property. Therefore, there is no mechanism by which society can advance. Examples of things that are good include: life, procreation, theoretical and practical knowledge, social life, justice.

(6)Social Contract: Morality is the set of rules that rational people will agree to obey, for their mutual benefit, provided that other people will obey them as well (Hobbs and the State of Nature). Right action is action that responds non-defectively to the good in this sense. Elements of the Montesquieu and John Rawls Social Contract: A characterization of the initial situation, called variously the "state of nature", the "original position" or the "initial bargaining position". Those in the original position are behind a "veil of ignorance". No one knows his place in society, his class position or social status, nor does anyone know his fortune in the distribution of natural assets and abilities, his intelligence, strength, and the like. The parties do not know their conception of the good or their special psychological propensities. A characterization of the parties to the contract, particularly in terms of their rationality and motivation to come to agreement comprises the following:

Persons are self-interested. Their preferences and interests do not necessarily include the wellbeing of others.

Persons are presumed to want the benefits of social interaction if they can be achieved without sacrifice of individual self-interest.

Justice, and so a social contract, is only possible where there is some possibility of ***benefit to each individual from cooperation.***

1.3. Moral decision making process

Good moral decision making involves a) knowing the facts of the situation, and b) careful consideration of the moral values (some call these principles) that are relevant to the given situation. Importantly, it involves sensitivity to the moral dimensions of everyday situations, and an awareness of the range of interests involved in specific decisions. The primary skill involved in making good moral decisions is sensitivity to the moral issues involved in so many of our everyday activities. Quite often we may act in a morally questionable manner just because we were insensitive to the moral nature of the situation. This is crucial, since the first step in problem solving is always identifying the problem. Sometimes, due to the technical nature of a problem, we fail to recognize that it also has a moral dimension. The decision of which medicine to prescribe for a particular condition, for example, involves making not just a technical decision about efficacy, but also a value judgment concerning the relative acceptability of various side effects and various risks. The decision is anticipated by solving conflicts between two or more values or ideals. In order to make decision in accordance with the ethical principle it is important to be aware of the qualities of character and shared values which have to be present during the process.

Loyalty is the first virtue of organizational life. Loyalty, of course, should never be absolute: being loyal to your company or to your friends doesn't imply that your company or your friends can do no wrong. Loyalty doesn't mean being morally agnostic or refusing to take action when you see wrong being done. The focus on loyalty here is just to remind us that in various roles — as employee, as trustee, as leader — you have been entrusted by others to do your job and to do it

right. When we voluntarily associate ourselves with particular people and organizations, the default setting is that they deserve our loyalty.

Integrity: Each of us should aim at integrity. Each of us is responsible for our own actions, and those actions should add up to a clear and consistent pattern of honest and trustworthy behavior.

Fairness: Reminds us of the importance of treating each other fairly. We should treat like cases alike, and give people what they are owing. Fairness is a value that has to do with the fact that we want not just to do good in the world, but to make sure that that good is distributed justly — whatever justice demands in particular cases.

Empathy: reminds us of the importance of figuring out how other people feel, in ethically-contentious situations, and what their point of view is. We need empathy in order a) to understand the impact that our actions really have on others, as well as b) to understand other people's reasons, when our ethical judgment differs from theirs.

Courage: is essential for morality because people must be willing to do what they believe will be right even at a personal cost. Sometimes doing the right thing requires altruism, such as when a whistle blower must tell the American public about corruption at the work place (despite the fact that they might be killed for doing so).

Education is good because it helps us know how to be a productive member of society, it helps us knowing empirical facts that are relevant to knowing which actions are likely to benefit or cause harm (e.g. better parenting techniques or healthy eating), and it helps us think rationally to make better decisions.

Promising – It is wrong to break a promise because doing so would make other people upset and waste their time. People depend on the honesty of others in order to take business risks, plan on their retirement, etc.

2. Social values, human rights and legal regulations

2.1. Application of moral thinking in social life

2.1.1. (Cultural) relativism

Right and wrong are relative to the customs of one society upon ***cultural relativists.***

They appeal to anthropological data indicating that moral rightness and wrongness vary from place to place and that there are no absolute or universal moral standards that could apply to all persons at all times. ***Advances in social organization reject these views as they are not giving stable background for contemporary legal systems***. The paradox is that the relativism, established by the social practice, is rejected by this same phenomenon, ***the contemporary contract culture of social relationships.*** Today it is largely accepted that:

> ***"What is wrong is wrong, even if everyone is doing it. Right is still right, even if no one else is doing it." – W. Penn.***

2.1.2. Utilitarianism

The followers of ***Utilitarianism***[15] accept the natural human inclination to accept pleasure and reject suffering as a basis for moral assessment. As a result, we can say that an ethical

doctor might cure as many people as possible thus eliminating as much suffering as possible. This sounds very natural at first glance. Yet, how can we explain a single doctor's behavior or even a whole system's behavior which could occasionally deny service to a single individual human subject in order to better accommodate "community needs" or ignore a patient's personal choice in that same token?

The utilitarian concept is very traditional for the medical field but is not yet fully acceptable as the public relations evaluated towards autonomy. The utilitarian concept defines the acceptance of "paternalism" in the doctor/patient relationship and an emphasis of responsibility that heavily falls over the doctor.

2.1.3. Ethical Universalism

Unlike the above mentioned schools the ***Ethical Universalism*** (E. Kant, 1724-1804) puts the emphasis on ***the undoubted human right of self-determination***. It accepts an initial position of equality and these principles regulate all further agreements— the kinds of social cooperation and forms of government that are permissible. As based on the autonomous decision making the moral life is indefinite explicitly and frequently requires thoughtful reflection and justification for the choices made. ***Kant***, helps further characterize moral justification with his famous dictum, ***the categorical imperative.*** Under the rule of the moral imperative:

> ***"Every individual has rights regardless of the practical benefit or damage which exercising those rights might bring to society as a whole."***

The ultimate imperative of Kant's ethics presumes that ***we treat every individual as a free and equal to the others. This rule presumes the individual autonomy as well as equal judgment of individuals throughout the pursuit of their interests.*** The consideration of individual rights as a social value is the most important part in the development of the European legislation including the ethical capacity of the dental professional community.

An influential result of Kant's search was the idea of a ***good will*** being the only intrinsic good. Moreover, Kant saw a ***good will*** as acting in accordance with a moral command, the "Categorical Imperative": "Act according to those maxims that you could will to be universal law". The deontological nature of the moral imperative should not be confused with ***the "Ethic of Reciprocity or Golden Rule",*** whereas the golden rule states that ***"One should treat others as one would like others to treat oneself,"*** Kant asks us to analyze whether an act can be performed simultaneously by everyone ***without exception***. Following ***the logic of the golden rule***, if I wanted someone to harm me, then it would be acceptable for me to harm others, because I would be doing to others what I would want to be done to me. ***This is very important to keep in mind, because Kant's categorical imperative avoids this flaw.*** From this, and a few other axioms, Kant developed a moral system that would apply to any ***"praiseworthy person." (See Groundwork of the Metaphysic of Morals, third section, 446-7). This is a sound base when discussing the human rights, patients' rights and the self-determination of the competent individual.***

2.1.4. John Rawl's approach to Justice and the Social contract

The principles of social justice and moral behavior are a "condition sine qua non" (ultimate condition) in an original agreement. In order that the social justice is defended without

violating the freedom of the individuals, the rational persons concerned to further their own interests are expected to agree also on a number of principles incorporating duties as well. Ethicists presume at the very least the following duties:

Duty of fidelity – the duty to keep our promises;

Duty of reparation – the duty to try to pay for the harm we do to others;

Duty of gratitude – The duty to return favors and services given to us by others;

Duty of beneficence – The duty to maximize the good (things of intrinsic value);

Duty of non-injury – The duty to refuse to harm others.

Social contract is expected to be founded on the SELFOBLIGATION of contractors to respect the consented shared values.

2.2. Human rights evolution

The belief that all human beings deserve respect and equal treatment is relatively recent. In most societies disrespectful and unequal treatment of individuals and groups used to be regarded as normal and natural. Slavery was one such practice that was not eradicated in the European colonies and the USA until the 19th century and, though illegal, still exists in some parts of the world. Women still experience lack of respect and unequal treatment in many countries. Discrimination on the basis of race, age, disability is widespread. Clearly, there remains considerable resistance to the claim that all people should be treated as equals.

2.2.1. The formation of civil society

The gradual and still ongoing conversion of humanity to a belief in human equality began in the 17th and 18th centuries in Europe and North America. It was led by the ***French Revolution (La Declaration des droits de l'homme et du citoyen") and the American Revolution (the Bill of Rights)*** and related political developments.

Under these two influences, democracy very gradually took hold and began to spread throughout the world. It was based on a belief in the political equality of all men (and, much later, women) and the consequent right to say who should govern them (electoral right).

2.2.2. Post Second World War period, internationalization of human rights concept

The most intensive development of Human rights came after World War II in both international and domestic plan. In today's society ***interactions between individuals are regulated, in the most cases, by institutions authorized to uphold the fair distribution of mutual consideration of rights***. One of the first acts of the newly established United Nations was to develop ***the Universal Declaration of Human Rights (1948),*** which states in article 1, ***"All human beings are born free and equal in dignity and rights."*** Many other international and national bodies have produced statements of rights, either for all human beings, for all citizens in a specific country, or for certain groups of individuals ('children's rights', 'patients' rights', 'consumers' rights', etc.).

2.2.3. Human rights incorporated into national legislations

Today, human rights are in the basis of constitutions and therefore in those national legislation. The acceptance of human rights as a major guideline by the European countries is a prerequisite for the harmonization of the European legislation. Changes in legislation are mostly

represented by those principles. It is very important that a contradiction between ***individual and group rights*** be avoided. ***Common*** are the rights that are valid for everybody regardless of conditions; ***special*** rights apply to a two-party individual or group agreement. ***Usually the moral right of an individual is actualized through the moral duties of other individuals in regards to the first one rights to be respected.***

2.3. Human rights and professional autonomy

On a moral level, ***the acceptance of superiority for human rights*** means defining them by law whether individual or collective, common or special. The essence of each right stems from the fact that ***it defines activities, behavior and interests for the people who can use it through their freedom of choice***.

Rights represent a basis for justification of a given behavior of an individual, as well as a protection in case of undertaking or not undertaking of actions. Rights are closely related to duties. For instance, the rights of our patients should correspond to the duties that we have assumed professionally. In order to perform ours obligations (duties) we need some rights – freedom for professional practice and free choice of appropriate methods of cure.

In their daily practice dentists face the need for continuous moral thinking and dilemma solving raising both from the human rights and the principles of the professionalism:

-respect and equal treatment;
-communication and consent;
-decision-making for incompetent patients;
-confidentiality; uncooperative patients;
-financial restraints on treatment (explained in the next chapter)

3. Medical ethics, bioethics, and medical research ethics

3.1. Bioethics

Bioethics methodology is conceptualized according to two main stream – ***super-theories concepts*** or midrange principles theory. The first bioethics paradigm comprises a number of mutually excluding hypotheses, based on deductions from: Kantian theory of universalism, Bentham utilitarianism, social contract or a right-based theory. The bioethics build on a "super-theories model", would differ in different place and entities of the world, reflecting the local concepts, and as a result, the justice and human rights would be jeopardized. Therefore, another paradigm, based on an individualistic or universalistic approach, gained more and more supporters. It could be referred to ***a midrange theories*** group and contains a core set of agreed moral principles. Such models are found in ***Beauchamp and Childress four principles: autonomy, non-maleficence, beneficence, and justice.*** This model enables therefore an answer to bioethical questions that abstain from subscribing to general moral theories. Justification of proposals for legal regulations of bioethical issues has to happen through arguments that are valid not only in the light of specific comprehensive moral doctrines, but that can be recognized as valid regardless of diverging philosophical or religious conceptions.

Both models - the super-theory model and the model of midrange principles offer important insights into bioethical questions. But on levels touching on the public use of reason, both models are not appropriate any more without restrictions. The paradigm referring to philosophical super-theories has the problem that it binds relevant argumentations inevitably to comprehensive philosophical theories (Fig.31).

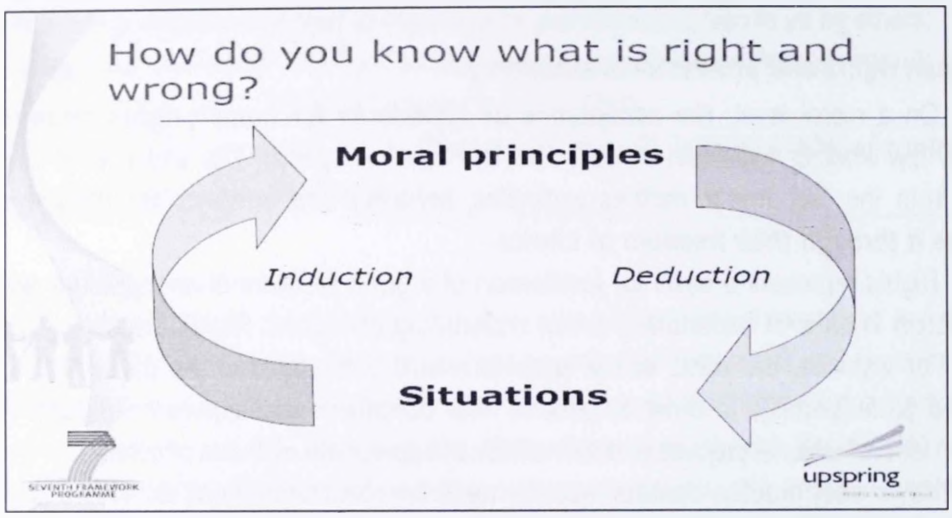


Fig. 31. Decision making model based on moral principles and moral theories

Yet the model of midrange principles is only appropriate ***if the midrange principles can be formulated as social values and as freestanding arguments.*** The public use of reason allows only the appeal to ***values and arguments that can find acceptance from the perspective of different comprehensive doctrines.***

The model of midrange principles seems at first glance to be in better accordance with the public use of reason. But this approach tends to revert back to the philosophical super-theories if the interpretation of the midrange principles is controversial ***or if the principles are in conflict with each other.***

3.2. Medical research ethics

3.2.1. Definitions

Knowledge: The acquisition or awareness of facts, data, information, ideas or principles to which one has access through formal or individual study, research, observation, experience or intuition.

Science: A branch of knowledge that produces theoretical explanations of natural phenomena based on experimentation and observation.

Research: Scientific inquiry or an organized quest for new knowledge and better understanding, such as of the natural world or determinants of health and disease. Research can take several forms: empiric (observational), analytic, experimental, theoretical and applied.

Agent: An individual who is an employee or student is considered an agent when that individual is involved in Human Research. Specifically, it is an individual who, by agreement or otherwise, may act on behalf of the Organization and bind it by words or actions; a person who represents the Organization by its authority or delegated authority has been specifically authorized to conduct research on behalf of the organization.

Clinical Trial: Human research intended to discover or verify the clinical, pharmacological or other pharmaco-dynamic effects of an investigational product(s), to identify any adverse reactions to a drug, device, or biologic product, to evaluate the safety or effectiveness of a drug, device, or biologic product, or to study absorption, distribution, metabolism, and excretion of a drug with the object of ascertaining its safety or efficacy.

Human Subject: A living individual about whom an investigator (whether professional or student) conducting research obtains (1) data through Intervention or Interaction with the individual, or (2) information that is both private information and identifiable information.

Intervention means physical procedures by which data are gathered (for instance venipuncture) and manipulations of the subject or the subject's environment that are performed for research purposes.

Interaction means communication or interpersonal contact between investigator and subject (for example, survey administration).

Private information means information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and which the individual can reasonably expect will not be made public (for example, a medical record).

Identifiable information means information that is individually identifiable (i.e., the identity of the subject is or may readily be ascertained by the investigator or associated with the information). An individual who is or becomes a subject in research either as a recipient of the test article or as a control may be either a healthy human or a patient. A human subject includes an individual on whose specimen a medical device is used.

Investigator: The person responsible for the conduct of the Human Research at one or more sites. If the Human Research is conducted by a team of individuals at a study site, the investigator is the responsible leader of the team and may be called the principal investigator. Research: A systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

Plagiarism – a form of dishonest behavior whereby a person copies the work of someone else, for example, all or part of a published article, and submits it as if it were the person's own work (i.e. without indicating its source).

Conflict of interest is any situation in which personal interest, or interests which an individual owes to another body, and those of the organization arise simultaneously or appear to clash.

Error: The inadvertent or unrecognized omission of a result or experimental detail, or the misinterpretation of data. (A clear distinction must be made between error and fraud. The former can be tolerated, but once recognized must be corrected. The latter cannot be condoned under any circumstances.)

Fraud indicates deliberate fabrication, falsification, or omission of data. It constitutes deception and therefore undermines the scientific enterprise from every aspect.

Misconduct is the fabrication, falsification, plagiarism, or other serious deviation from accepted practices in proposing, carrying out, or reporting results from research. It is the failure to comply with international, national, local and institutional requirements for the protection of researchers, human participants, the public, and also to ensure the welfare of laboratory animals. It is also the failure to meet other legal requirements governing research.

3.3. European charter for researchers

The European Charter for Researchers is a set of general principles and requirements which specifies the roles, responsibilities and entitlements of researchers as well as of employers and/or funders of researchers. The aim of the Charter is to ensure that the nature of the relationship between researchers and employers or funders is conducive to successful performance in generating, transferring, sharing and disseminating knowledge and technological development, and to the career development of researchers. The Charter also recognizes the value of all forms of mobility as a means for enhancing the professional development of researchers. In this sense, the Charter constitutes a framework for researchers, employers and funders, inviting them to act responsibly and as professionals within their working environment, and to recognize each other as such. The Charter addresses all researchers in the European Union at all stages of their career and covers all fields of research in the public and private sectors, irrespective of the nature of the appointment or employment, the legal status of their employer or the type of organization or establishment in which the work is carried out. It takes into account the multiple roles of researchers, who are appointed not only to conduct research and/or to carry out development activities but are also involved in supervision, mentoring, management or administrative tasks. This Charter takes as its premise that researchers as well as employers and/or funders of researchers have an overriding obligation to ensure that they meet the requirements of the respective national or regional legislation. Where researchers enjoy a status and rights which are, in certain respects, more favorable than those provided for in this Charter, its terms should not be invoked to diminish the status and rights already acquired.

Researchers, as well as employers and funders, who adhere to this Charter will also be respecting the fundamental rights and observe the principles recognized by the Charter of Fundamental Rights of the European Union/General Principles and ***Requirements applicable to Researchers.***

(1)Research Freedom: Researchers should focus their research for the good of mankind and for expanding the limits of scientific knowledge, while enjoying the freedom of thought and expression and the freedom to identify methods by which problems are solved, according to recognized ethical principles and practices. Researchers should, however, ***recognize the limitations to this freedom that could arise as a result of particular research circumstances*** (including supervision/guidance/management) or operational constraints, e.g. for budgetary or infrastructural reasons or, especially in the industrial sector, for reasons of intellectual property protection. Such limitations should not, however, contravene recognized ethical principles and practices, to which researchers have to adhere.

(2)Ethical principles: Researchers should adhere to the recognized ethical practices and fundamental ethical principles appropriate to their discipline(s) as well as to ethical standards as documented in the different national, sector or institutional Codes of Ethics (Fig. 32).

(3)Professional responsibility: Researchers should make every effort to ensure that their research is relevant to society and does not duplicate research previously carried out elsewhere. They must avoid plagiarism of any kind and abide by the principle of intellectual property and joint data ownership in the case of research carried out in collaboration with a supervisor(s) and/or other researchers. The need to validate new observations by showing that experiments are reproducible should not be interpreted as plagiarism, provided that the data to be confirmed are explicitly quoted.

Researchers should ensure, if any aspect of their work is delegated, that the person to whom it is delegated has the competence to carry it out.

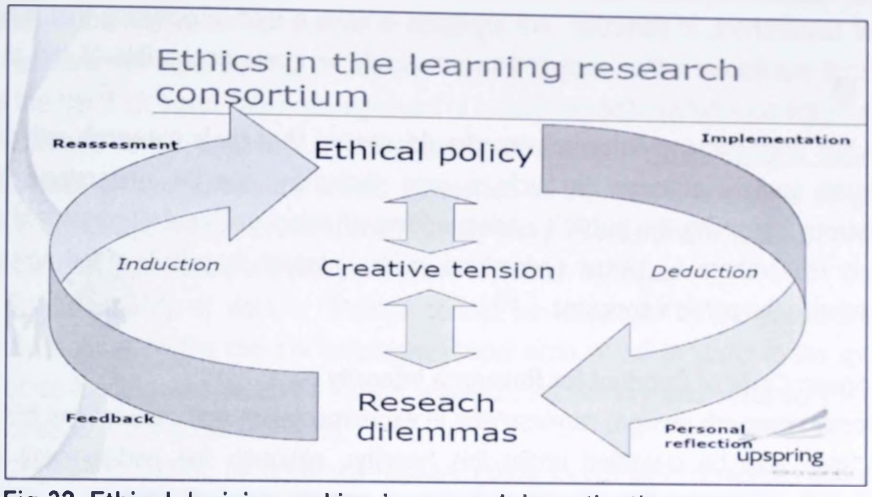


Fig.32. Ethical decision making in research investigation process

(4)Professional attitude: Researchers should be familiar with the strategic goals governing their research environment and funding mechanisms, and should seek all necessary approvals before starting their research or accessing the resources provided. They should inform their employers, funders or supervisor when their research project is delayed, redefined or completed, or give notice if it is to be terminated earlier or suspended for whatever reason.

(5)Rights regulations: It comprises requirements and conditions of any sponsor or funders independently of the nature of their contract. Researchers should adhere to such regulations by delivering the required results (e.g. thesis, publications, patents, reports, new products development, etc.) as set out in the terms and conditions of the contract or equivalent document. This includes intellectual property protection.

Researchers need to be aware that they are accountable towards their employers, funders or other related public or private bodies as well as, on more ethical grounds, towards society as a whole. In particular, researchers funded by public funds are also accountable for the efficient use of taxpayers' money. Consequently, they should adhere to the principles of sound, transparent and efficient financial management and cooperate with any authorized audits of their research, whether undertaken by their employers/funders or by ethics committees. Methods of collection and analysis, the outputs and, where applicable, details of the data should be open to internal and external scrutiny, whenever necessary and as requested by the appropriate authorities.

Researchers should at all times adopt safe working practices, in line with national legislation, including taking the necessary precautions for health and safety and for recovery from information technology disasters, e.g. by preparing proper back-up strategies. They should also be familiar with the current national legal requirements regarding data protection and confidentiality protection requirements, and undertake the necessary steps to fulfill them at all times.

All researchers should ensure, in compliance with their contractual arrangements, that the results of their research are disseminated and exploited, e.g. communicated, transferred into other research settings or, if appropriate, commercialized.

Senior researchers, in particular, are expected to take a lead in ensuring that research is fruitful and that results are either exploited commercially or made accessible to the public (or both) whenever the opportunity arises.

***(6)Public engagement*: Researchers should ensure that their research activities are made known to society at large in** such a way that they can be understood by non-specialists, thereby improving the public's understanding of science. Direct engagement with the public will help researchers to better understand public interest in priorities for science and technology and also the public's concerns.

3.4. The European Code of Conduct for Research Integrity

Improper research design, carelessness in experimentation and calculations that lead to gross errors, may also be classified under this heading, although the partition-wall between incompetence and dishonesty may be rather thin here: insufficient respect to human subjects, animals, the environment, or cultural heritage; violation of protocols; failure to obtain informed consent; insufficient privacy protection; improper use of laboratory animals; or breach of trust (e.g. confidentiality).

Publication-related conduct including authorship practices. It is unacceptable to claim or grant undeserved authorship and to deny deserved authorship, or to inadequately allocate credit. Breaching of publishing rules, such as repeated publication, salami-slicing of publication, no or a too long delay in publication, or insufficient acknowledgement of contributors or sponsors, fall within this category as well.

Reviewing and editorial issues, including independence and conflict of interests, personal bias and rivalry, appropriation of ideas. In general these good practices' refer to practical rules and arrangements in conducting, administering and reporting research.

To avoid plagiarism, you must give credit whenever you use another person's idea, opinion, or theory; any facts, statistics, graphs, drawings--any pieces of information--that are not common knowledge; quotations of another person's actual ***spoken or written words; paraphrase of another person's spoken or written words*** (Table 14).

Unlike the fundamental principles of scientific integrity and the violating of these principles through fabrication, falsification or plagiarism, which have a universal character, ***good practices as outlined above may be subject to cultural differences.***

Definitions, traditions, legislative regulations and institutional provisions may vary over nations or regions, sometimes also over disciplines. A required system of regulations of good practices in research should, therefore, not be part of a universal Code of Conduct. It should rather be developed in the form of national or institutional *Good Practice Rules*, recognizing the legitimate differences between national, disciplinary or institutional systems. Nevertheless a list of issues to be addressed in such Rules should be provided. Each country should adopt, amend or supplement these recommendations in accordance with its legislative requirements or traditions and compose an own set of Good Practice Rules. Then the scientific society will require all its members to adhere to these Rules, and will also ask its institutes and scientific organizations to require their own members to comply.

Proper research procedures: All research should be designed and carried out in a careful and well considered manner; negligence, haste, carelessness, and inattention should be avoided, so as to prevent human errors. Researchers should try to deliver what has been promised in the application for support or funding.

Researchers must seek to minify any harmful impact on the environment, and should be aware of the need for sustainable management of resources; this implies an efficient deployment of the (financial and other) resources, and minimization of waste.

Clients and/or sponsors should be alerted to the ethical and legal obligations of the researcher, and to the possible restrictions this may imply. Clients and/or sponsors should be made aware of the vital importance of publication of the Research findings.

Confidentiality of data or findings should be respected by the researcher when it is legitimately required by the client or employer. Proper account will be given to the sponsor in case a grant or co-funding was received for the research. All primary and secondary data should be stored in a secure and accessible form.

Original scientific or scholarly research data should be documented and archived for a substantial period (at least 5 years, and preferably 10 years).

Research data should be placed at the disposal of colleagues who want to replicate the study or elaborate on its findings.

Freedom of movement of scientists, the right to peaceably and voluntarily associate with other scientists, and the freedom of expression and communication should be guaranteed

Responsible research procedures: All research subjects, be they human, animal, cultural, biological, environmental or physical, should be handled with respect and care. The health, safety or welfare of the community, or of collaborators and others connected with the research, should not be compromised. Sensitivity to age, gender, culture, religion, ethnic origin and social class of research subjects should be evinced.

Table 14 How to recognize unacceptable and acceptable paraphrases?

Here's the ORIGINAL text, from page 1 of Lizzie Borden: A Case Book of Family and Crime in the 1890s by Joyce Williams et al.:	**Here's an UNACCEPTABLE paraphrase that is plagiarism**:
The rise of industry, the growth of cities, and the expansion of the population were the three great developments of late nineteenth century American history. As new, larger, steam-powered factories became a feature of the American landscape in the East, they transformed farm hands into industrial laborers, and provided jobs for a rising tide of immigrants. With industry came urbanization the growth of large cities (like Fall River, Massachusetts, where the Bordens lived) which became the centers of production as well as of commerce and trade.	The increase of industry, the growth of cities, and the explosion of the population were three large factors of nineteenth century America. As steam-driven companies became more visible in the eastern part of the country, they changed farm hands into factory workers and provided jobs for the large wave of immigrants. With industry came the growth of large cities like Fall River where the Bordens lived which turned into centers of commerce and trade as well as

Human subject protocols should not be violated: this implies complying with the requirement of informed consent on the basis of adequate and appropriate information, and to voluntary agreement to participate, treating personal information with highest possible confidentiality, avoiding unnecessary deception, and using the obtained information only for the purpose of the investigation. The use of animals in research is acceptable only if alternative ways to achieve the results have been investigated and have been found inadequate; any harm or distress to be inflicted on an animal must be outweighed by the realistic expected benefits and must be minimized as much as possible. **What makes this passage plagiarism? The writer has only changed around a few words and phrases, or changed the order of the original's sentences. The writer has failed to cite a source for any of the ideas or facts.** If you do either or both of these things, you are plagiarizing. NOTE: This paragraph is also problematic because it changes the sense of several sentences (for example, "steam- driven companies" in sentence two misses the original's emphasis on factories).

3.5. International collaborative research

International scientific collaboration is increasing sharply, not only because of the growth of international funding and the stimulation of modern communication technology but also, because science itself has developed into a truly collaborative and international activity. Common agreement on standards of scientific integrity is important for impacting on rules and procedures to deal with cases of misconduct. This is the main argument for an internationally accepted Code of Conduct. In international collaboration partners should agree to conduct their research according to the standards of research integrity as developed in this document, and to bring any suspected deviation from these standards, in particular alleged research misconduct, to the immediate attention of the project leader(s) and senior responsible officer in the university or research institute (employer). Such a case should be investigated according to the policies and procedures of the partner with the primary responsibility for the project, while respecting the laws and sovereignty of the States of all participating parties. In formal, large scale, and often externally funded international research projects there may be questions as to which country should conduct the investigation if allegations of misconduct are raised, and how; and, even more importantly, what is to happen when the relevant national policies are at odds with each other.

The Declaration of Helsinki is a statement of ethical principles for research involving human participants, including research on identifiable human material and data, which is subject to ethical standards that promote respect for all human participants and protect their health and rights (www.wma.net/en/30publications/10policies/b3/). Research must adhere to the fundamental principles that respect the needs for autonomy, beneficence and justice as well as veracity, fidelity, confidentiality, and non-maleficence. Human participant research comprises, but is not limited to, investigative clinical research, clinical trials, studies using tissue samples and records. Biogenetics, using stem cells and utilizing tissue banks requires complete transparency in all aspects of consenting and confidentiality. It is imperative that investigators remain up to date as these areas are more likely to be subject to legislative change. The prevention of misconduct in research is best achieved through the education of all individuals involved in research. It is a recommendation that all researchers should participate in appropriate educational activities, which is mandatory in some institutions. Of critical importance is maintaining up to date knowledge of best practices and the mentoring of professionals, fellows, and students.

Chapter two

Professional ethics

1. Definitions
2. Professions. Dental profession
3. Ethical system of the physician and the doctor of dental medicine; ethical principles and social practices
4. Professional autonomy. Ethical code of dentists

The dental profession is a rewarding one with a high public recognition and an average income ranking its member in the upper middle class. This relatively stable position in the very fast changing world is maintained by dentists through an adequate attitude towards the emerging challenges. The character of dentistry is in the process of changing due to new research findings and the launch of new dental services. There is an expected increase in demand for dental services by an aging population, as well as in rural and inner-city areas with underserved populations.

In today's new conditions, a dentist actually enters a whole bunch of contracts every day. At first glance those contracts reflect the relation between patients and dental doctors. In reality, however things are much more complicated than that. Relationships with patients and the contracts signed are modeled at a significant level by third parties - public and financial institutions and public's expectations. Patients' and society's satisfaction as well as professional prestige heavily depend on dentists' preparedness to work in those specific conditions. Yet the profession still needs to consider both the autonomy of the patients as well as society's norms as represented by its institutions.

The dynamics of the legal framework, and the economic limitations and specific viewpoints of the general public require a strict determination of dentists' rights and duties. Those should be specified as both a liberal practitioner's rights and duties and also autonomous structural determinants for the right balance of personal, group and social interests in any public health activity.

The universal ethical norms are a common regulator in social relations, including the professional relations' field. Why do some professions require a special ethical framework for professional behavior?

1. Definitions

Professional ethics: Professional ethics carries somewhat specific features yet it cannot differ considerably or contradict in any way with the acceptable social moral norms. The

professional moral demands additional responsibility for the professional without waiving the basic moral virtues. The rights of all participants in a given professional field are being defended, balanced, and coordinated by the norms and standards of professional ethics. Since interests are mentioned again, we have to determine the basic kinds of interests in question, which are being satisfied by considering the basic and specific rights of the participants.

Hippocratic Oath: *(*Appendix No) The Hippocratic Oath: An affirmation usually taken by physicians about to enter the practice of medicine. It is attributed to Greek physician, Hippocrates of Cos who was called the "Father of Medicine" (circa 460-377 B.C). Its content reflects the ethical code of the physicians' attitudes and behavior and obligations towards patients, colleagues and society.

Geneva Oath (Appendix No): By the World Medical Association. It is an association composed by national medical associations. This oath seems to be a response to the atrocities committed by doctors in Nazi Germany. Notably, this oath requires the physician to "not use [his] medical knowledge contrary to the laws of humanity." This document was adopted by the World Medical Association only three months before the United Nations General Assembly adopted the Universal Declaration of Human Rights (1948) which provides for the security of the person.

Equity: A state of being fair or equal; equity in health implies the ideal that everyone should have a fair opportunity to attain his or her full health potential. More pragmatically, it implies that no one should be disadvantaged by being prevented from achieving this potential. The term inequity refers to differences in health, which are not only unnecessary and avoidable but, in addition, are considered unfair and unjust.

Professionalism: Adherence to a set of values comprising both a formally agreed- upon code of conduct and the informal expectations of colleagues, clients and society. The key values include acting in a patient's interest, responsiveness to the health needs of society, maintaining the highest standards of excellence in the practice of medicine and in the generation and dissemination of knowledge. In addition to medical knowledge and skills, medical professionals should present psychosocial and humanistic qualities such as caring, empathy, humility and compassion, as well as social responsibility and sensitivity to people's culture and beliefs. All these qualities are expected of members of highly trained professions. The American Board of Internal Medicine's Project "Professionalism" indicates the most important elements of professionalism to be: altruism, accountability, duty, excellence, honor and integrity, and respect for others. Professional Altruism constitutes the essence of professionalism and is based on the rule that the best interest of patients and not self-interest is the professional obligation.

Professional Accountability is an important element of professionalism which is required of physicians at several levels: to their patients for fulfilling the implied contract governing the patient/physician relationship, to society for addressing the health needs of the public, and to their profession for adhering to medicine's time-honored ethical precepts.

Professional Duty can be expressed by the free acceptance of a commitment to service, availability and responsiveness when "on call," accepting inconvenience to meet the needs of one's patients, enduring unavoidable risks to oneself when a patient's welfare is at stake, and advocating the best possible care regardless of the patient's ability to pay. It is willingness to seek an active role in professional organizations and volunteering one's skills and expertise for the welfare of the community.

Professional Excellence entails a conscientious effort to exceed ordinary expectations. Commitment to excellence is an acknowledged goal for all physicians and includes a commitment to life-long learning.

Professional Honor and Integrity implies being fair, being truthful, keeping one's word, meeting commitments, and being straightforward. It also requires recognition of the possibility of conflict of interest and avoiding any situation in which the interest of the physician is placed above that of the patient or allowing personal gain to supersede the best interest of the patient. It constitutes an integral part of professionalism. The importance of professionalism in the patient/physician relationship cannot be overstated.

Professional Respect for Others is reflected in the respect towards the patients and their families, other physicians and professional colleagues such as nurses, medical students, and residents. It is the essence of humanism, and humanism is both central to professionalism and fundamental to enhancing collegiality among physicians.

Code of ethics: Regarding the specific profession, professional ethics such as an adequate formulation of professional moral norms, has integrating, harmonizing, and protective functions. Such a code reflects the values shared by participants in the professional group, consent on the rules stated and regulations for controlling the following of rules. This document is a collective work of the dental community but is focused on the individual dentist. It is an element of the complex ethical system of practicing doctor dental medicine and most important part of professionalism.

2. Professions. Dental profession

2.1. Specific traits of the interaction between professions and society

Professions are autonomous, which gives the professional a considerable freedom in the choice of methods and means within his/her professional activities and meanwhile it makes impossible a constant supervision of his/her professional conduct. Professionals actualize their product in the most part as a result of individual interactions. People are positioned physically close to each other during a treatment, consultation, teaching, or a legal defense. Only the professional's self-consciousness can be a warranty for the patient against an abuse with his/ her trust.

Professions bring social prestige to their members. The hopes and expectations that society puts on them gives them a great power in terms of influencing the public opinion and developing a public value system.

Professional ethics carries somewhat specific features yet it cannot differ considerably or contradict in any way with the acceptable social moral norms. The professional moral demands additional responsibility for the professional without waiving the basic moral virtues. The rights of all participants in a given professional field are being defended, balanced, and coordinated by the norms and standards of professional ethics. Since interests are mentioned again, we have to determine the basic kinds of interests in question, which are being satisfied by considering the basic and specific rights of the participants. The so-mentioned interests are divided in four separate groups:

-patient's interests, based on his/ her individual rights;

-dentist's interests, based on his/her individual rights;

-interests of the given professional community or association based on autonomous status;

-interests of the society as a whole based on collective rights and legislation

Only after having defined the rights and created conditions for mutual acceptance of those interests, we can and we should start defining detailed contract conditions for each professional activity.

2.2. Moral prerequisites for regulation of the interactions in professional activities

Upon the midrange theories of ethics moral principles give us sound base for structuring and measuring the ethical relationships in a given social or professional domain. Such theoretical basis for the dentistry largely accepted by ethicists and professionals are the principles formulated by Beauchamp and Childress: Non maleficence, Beneficence, Autonomy, Veracity.

The principle of Non-Maleficence ("Primum non nocere") was formulated by Hippocrates and is a core self-obligation.

The principle of Beneficence is incorporated in the overall professional competence because having in mind the exclusiveness of the right of exercise and provision of dental services dentists are the only professional able to satisfy the needs of the society for dental care.

The principle of veracity is the foundation of trust between different participants during the professional interaction in the processes of health services delivery.

The principle of autonomy for the individuals means freedom of action and freedom of choice. Being autonomous is the most important prerequisite for moral conduct because if people do not act in a morally acceptable way under circumstances which threaten them it would not be fair and equitable to judge their morality.

On the other hand even best conditions were created for individuals' autonomy protection in the society it is not obvious that everyone will respect the other's people autonomy. Society protection from possible abuse of individual's autonomy is usually processed by written codes of professional ethics. Dental profession elaborated adequate directions to keep the right balance between social, personal and institutional requirements to assure the autonomy of professionals as well as the autonomy of the patients.

2.3. Social prerequisites. Human rights, health, and professionalism

In the Enabling Act for the World Health Organization from 1948 is stated that "Using the highest possible standard of health is one of the basic rights for any human being regardless of race, religion, political views, economic or social background". The rights of the patient are based on the basic human right of living, non-application of violence or torture and non-violation of the physical and psychical wholeness of the human being. This fact links with the recognition of social and economic rights of society as well as its duties of assuring of an adequate environment for professional activity.

Medical professionals as citizens of a given state should have the same exact rights as the rest of the citizens of this country. Until recently, it was considered normal for medical professionals – doctors and dentists – to only have duties but not have rights.

The reestablishment of private medical practices in Bulgaria brought back the essential professional rights for all medical professionals. The essential right of the profession and its members is the freedom to take professional decisions, independently from political or any other authorities based on power rather than on competence.

3. Ethical system of the physician and the doctor of dental medicine

In the globalizing reality of professional life countless combinations of social values, individual virtues, and previous experiences both in doctors and patients' communities will challenge their professional relationship and confidence. The model on Fig. 33 represents a values' oriented construct including social and personal elements.

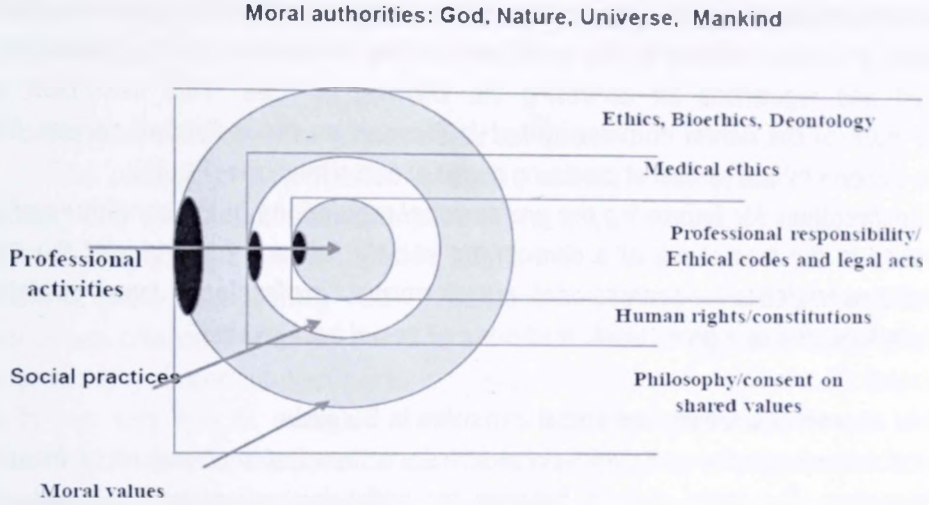


Fig.33. Ethical system of the medical/dental profession

The process of ethical decision making in private life, social practices, and professional activities (marked in the concentrated circles) is directed by the science and law. ***The moral philosophy matters*** are observed using the methodology of the science of Ethics, Bioethics, Deontology, and Medical ethics. ***The social practices are sanctioned*** by the defense of human rights and liberties incorporated into the national legislations.

We can see that the act of healing and the interrelationship with patient being the focus of professional activity is subject of moral and professional control (central axis), but this is much more complex than a concrete practical application of scientific knowledge or skills obtained through education. It represents the result of the integral personal and social experience with ethical dilemmas solving by the dental practitioners. Their integral moral, social and professional identity is strongly influenced by the moral authorities.

4. Professional autonomy. Ethical code of dentists

4.1. Professional moral in regulatory documents

The professional moral is a role model that sets the norms for a given profession. In general, there are two main regulatory documents relevant to it focused on regulations of two main domains of interaction:

1. To regulate the relationships inside the professional community between its members and between the profession and the institutions outside of it ***as stated in the code of professional ethics (conduct);***

2. To formulate the professional standards such as quality, skills, habits, approaches, acceptable for the provision of healthcare product as ***stated in the guidelines for good practice.***

Regarding the specific profession, professional ethics such as an adequate formulation of professional moral norms, has integrating, harmonizing, and protective functions. Such a Code reflects the values shared by the participants in the professional group, consent on the rules stated and regulations for controlling the following of rules. ***This document is a collective work of the dental community but is focused on the individual dentist.*** It is a part of the complex ethical system of practicing doctor of dental medicine (Fig.33).

The directives for improving the professional regulations in the conditions of self-direction and in the framework of a democratic society follow a hierarchy of the above mentioned prerequisites – professional moral norms, professional legal guidelines, specific relations due to a given work, traditions or social background.

4.2. Features of professionalism and social transition in Bulgaria

Autonomous regulation and professional ethics are the most important social features of the professionalism. The social contract between the profession and society is based on the acceptance by society of the freedom for self-regulation of the profession by professionals, and the acceptance by the profession of the duty to prioritize the society's interests over their own interests.

The dental profession all over the world, including the dental profession in Bulgaria, during its dynamic history, has passed through periods of blossom and declines with altogether ranging from stabilization of liberal professional status, to autonomy limitations, even to complete loss of autonomy.

As a result of radical social transformation at the end of 20th century the dental profession in the former communist countries of Central and Eastern Europe got the unique opportunity to determine the ethical framework for professional standards and to reestablish its place in society and the confidence of the public, based on respect to professional competence without any outside political or administrative restrictions.

During the transitional period some voices in the dental community insisted "Let us establish rules that accommodate us, avoiding organization". This is not surprising. After a long period of forced centralized and over-supervised organization, people wished to go to the other extreme – from a total lack of choices towards a total lack of regulatory obligations. Other opinions were also very popular such as: "Nowadays dentists only care about their income and new opportunities and methods, they are not interested in philosophical matters". Of course there is a simple explanation for this phenomenon too – professional ethics used to be applied to control doctors' interests in the name of public interest.

This practice created a rather absurd paradox – appeals for self-abnegation took over the need for freedom to take autonomous and competent professional decisions, which actually would be harmful for the patients.

For the time being, two very important changes that directly affect the professional and social situation could be explained:

1. Contractual nature of professional activities should become obvious;
2. Complexity of the product dentists deliver to is ever increasing.

Undoubtedly, knowledge of clinical methods and their appropriate application represent a sound basis for successful dental practice. However, research and experience of the professionals over the last few decades has shown that knowing the technological aspects is only a prerequisite rather than a sufficiency in building a successful practice. ***Professionalism has multiple components.*** The everyday practice of a dentist offers various precedents of legal and ethical nature. Lack of preparedness to resolve issues is a drawback even to the best technical solutions.

4.3. Professional code of ethics (professional conduct)

The concept of a profession is deeply rooted in the notion of making a promise to society and to individual members of that society. Professional ethics is not a simple system of ideal social interaction, neither is it a special area of social life. It is an essential element of social group identity. Thus, the unconditional acceptance of professional ethics as social group criterion unifies all the different professions in the same social stratum. This mechanism is an important prerequisite for sustainable social development. Professional ethics has its own very specific elements which stems from the specific appearance of the given professions. A specific manifestation of professional ethics in any profession is a code of professional conduct (appendices 4, 5).

To safeguard the health of the public and (in that sense) to protect the consumers - and at the same time to guide the EU member associations in their effort to describe a Code of Ethics for the Dental Profession, the EU Dental Liaison Committee has adopted a basic Code of Ethics guidelines. These guidelines are based on the EU principle of subsidiary - which means that these guidelines respect the right of national associations to self-governance. These guidelines equally respect the EU- principle of harmonization - which means that the guidelines reflect those directives which have been adopted by the EU likewise this code respects the value of common principles within the dental profession of the European Union.

Table 15 Basic parts of a professional code of ethics for dentists

1. Dentist - patient relationship
2. Conduct of the dentist towards the public
3. Attitude of dentists to professional fellows
4. The practice of the profession
5. Electronic commerce
6. Post-scriptum

National professional ethical codes should be maintained to preserve traditional ethical values within the countries of the EU. The following four areas of ethics represent the basic ethical requirement and should therefore be included within the Code of ethics of each national dental association.

&&&

Chapter three:

Ethical standards in dental practice and legal liability of dentists

1. Moral and legal aspects of professional responsibility
2. Professional standards
3. Informed consent
4. Professional errors and legal liabilities of dentists

1. Moral and legal aspects of professional responsibility

As members of a healing profession, dental surgeons are expected not only just to obey the law of the state but also to abide by ethical principles in their professional and personal life. Ethics are moral principles or rules of conduct expected in the professional and personal conduct of someone practicing a profession.

Professional responsibility means upholding the contract between the dentist and the patient in the course of the treatment that also includes economic responsibility for the fair and adequate cost for the patient's treatment.

Responsibility ethics could be called a social phenomenon. The responsibility of the individual could and should not be juxtaposed to the ethical responsibility of society. Responsible behavior should be based on a mixture of moral and legal rights and duties in accordance with the already assumed personal, professional and social self-obligations.

Deontological requirements for the medical professional have been defined ever since Hypocrites (IV c. B.C.) These sentences form also the bases of the "Declaration of Geneva" and the "International code for medical ethics" from London. Resulting from the above distribution of rights and responsibility the deontological requirements for dental professions are influenced by patient autonomy. Thus the responsibility of decision making is shared between the dentist and the patient. The "partners" model in doctor/patient relationship is now the regulatory framework of the law.

2. Professional standards

2.1. Setting standards

As stated in most professional codes of ethics the dentist - patient relationship represent the most important part of the many different professional competences, which a dentist must have.

A dentist must safeguard the health of patients irrespective of their individual status and must not prescribe or provide treatment which is not necessary.

Following this general framework of professional conduct the dentist has the freedom of choice whether to accept or decline to treat a patient, except for the provision of emergency care, for humanitarian reasons. In order to enter some kind of contract with the patients the dentist must obtain appropriate agreement or consent from the patient for the proposed treatment. To this end, information must be provided about the treatment, treatment options and relevant material risks. The patient must have the opportunity to ask questions. The patient should also be informed of the cost of the proposed treatment, as soon as this is known, and must be assured of professional confidentiality and the security of personal health information. Accurate, detailed and relevant medico-dental records must be kept and the dental staff must be aware of the need for confidentiality. Data must be obtained and processed fairly, for specified, explicit and legitimate purposes and according to data protection principles which apply nationally.

2.2. Generally applied standards

2.2.1. Clinically competent and pursuing continuing dental education dentist

There is nothing to prevent a dental surgeon on qualification and initial registration from setting up in singlehanded private practice, but the benefit of a period of a supervised practice cannot be understated. For example, the majority of UK dental graduates undertake a year of "foundational training" in general practice on qualifying what is not the case for countries like Bulgaria, Greece, and other. "Foundational training", which is under the supervision of regional Postgraduate Dental Deans, provides a very good introduction to the practice and business of dentistry. Without satisfactory completion of a year of foundational training no dentist can now have their own contract to provide dental treatment under the General Dental Service part of the National Health Service. Newly qualified entrants to the Community Dental Service are also required to undergo vocational training. In the hospital service there is supervision from more senior dental staff; the training aspect of junior hospital staff is overseen by the regional Postgraduate Dental Dean.

2.2.2. Records and documentation

Dentists must realize the importance of neat contemporaneous records, detailing all aspects of patient care, have a clear understanding of informed consent prior to undertaking any treatment, and be aware of the importance of testimony and evidences.

Contents of records: The patient's records do not just consist of clinical notes, but also include radiographs, referral letters and replies, study models, occlusion recordings, photographs, dental laboratory cards and investigation results. Consent forms, copies of treatment plans and cost estimates should also be retained with patients' records. If patients are receiving treatment under NHS (NHF) regulations, NHS documentation should also be retained. Appointment books and day sheets may be useful should any query arise concerning the timing and extent of a particular patient's treatment; consequently, their long-term retention can be extremely helpful. Telephone messages and any other memoranda concerning patients should be filed with their records. Finally, all records should be stored in a safe place where they are easily retrievable when next required.

Retention of records; the case of the UK practice: Records should be retained for as long as possible (according to the legislation in any given country!), as patients who have received treatment over many years, or only discover negligence at a later date, may take court action. Allegations have been made by patients concerning treatment carried out over 20 years previously

in UK! Records of dental treatment carried out in general practice, under NHS regulations, have to be retained for a minimum of 2 years after the completion of any course of treatment or period of care. This gives the Dental Practice Board the time to check that treatment and payment coincide, but this is insufficient for reasons of law. Any action for personal injury (e.g. negligence) or\ breach of contract has to be started within 3 years of the incident causing the action or within 3 years of the plaintiff (patient) being aware that something has gone wrong. Courts have the power to extend these limits if good reason can be shown. Therefore, it is recommended that ***records are kept for a minimum of 7*** years from the completion of the last course of treatment. Records of treatment of children should be kept until they are 25 years of age (18 + 7) because their 'legal awareness' that something may have gone wrong does not start until they reach the age of majority (18 years). Prior to this, parents or guardians have to commence action in a court on behalf of the minor concerned. If they decide to take no action, on becoming an adult the patient can undertake legal proceedings in their own right.

Maintaining Standards (Guidance to Dentists on Professional and Personal Conduct) was issued in November 1997 end of the scale, trustees or beneficiaries can take action on behalf of someone deceased. If records are kept on computer, the practitioner must ensure that there is adequate back-up of the records to prevent any risk that the records become lost or irrecoverable. The printing of hard copies of radiographs and clinical photographs is recommended. It cannot be overstated that records should be: accurate, complete, comprehensive, contemporaneous, legible, retrievable, retained for as long as possible, at least 7 years.

Medical history: It should never be forgotten that the medical history is an essential part of medical records. A medical history should always be taken at the initial visit of a patient and re-checked and updated at every subsequent appointment to prevent inappropriate treatment or harm be caused to a patient.

Warnings: Patient should be warned of the possibility of swelling, trismus following treatment and following administration of anesthesia and the risk of trauma to the inferior dental nerve, which would lead to labial anesthesia/ paresthesia, or trauma, in particular, to the lingual nerve, which would cause similar problems with the tongue. These warnings should be entered in the patient's record.

***Confidentiality and disclosure*:** All medical and dental records are confidential between the patient and the dentist, or doctor and should not be disclosed to a third party without the patient's permission. This confidentiality normally extends to withholding records and information from both the police and the courts of law. If either police or the courts have good cause to request patients' records, a formal request should be made, stating the circumstances. Disclosure is then a matter for the dentist's conscience; in the investigation of a serious crime, for instance, the dentist may agree to disclosure. However, the High Court has certain powers to insist on the production of documents in a person's possession or custody. As the rules governing disclosure vary according to the circumstances, the advice of the dentist's defense/protection organization should be sought on this matter. It is essential that all staff employed by a dentist are aware of patient confidentiality and do not break any confidences. Any breach of confidentiality by a member of staff is the responsibility of the dentist both legally as an employer and ethically as a member of a caring profession. If patients' records are maintained on a computer, the dentist must register as a data user with the hard copies.

2.2.3. The presence of a third person

The presence of a third person is always advisable for all patient contact even if active treatment is not involved. It can be useful in confirming consent and may be required to avoid any allegation of impropriety. It is custom and practice in the UK to have a female chaperone (third person), either a member of staff or an accompanying person, when treatment is being carried out by a male practitioner. For female practitioners, the convention of opposite sex chaperonage is less rigid. When carrying out treatment, the dentist should normally be assisted by a dental nurse, who can also act as a chaperone. It should be remembered that whether attending a patient in the dental surgery or on a domiciliary visit, another member of the dental team or another person should be present at all times.

2.2.4. Employment

All employees should have a written contract of employment. There is a nationally agreed contract for the employment of vocational trainees and the Dental Association offers specimen contracts for various types of employee and working agreements to its members on request.

There is specific legislation regarding the termination of employment, redundancy and unfair dismissal. Legal advice should be sought on this matter. Employees cannot be discriminated against on account of either their race or sex. This may also extend to age in the fairly near future. Employer's liabilities. These include the safety of employees, customers and the general public, as well as the collection of income tax and National Insurance contributions:

2.2.5. Specific legislation concerning health safety and technical maintenance at workplace

Premises and working environment; Legislation involving factories, offices and other work places prescribes standards of cleanliness, levels of occupation and the provision of sanitary facilities of any work place.

Specific legislation concerning, for instance, eye protection, air compressors, autoclaves and the safety of all electrical appliances are amongst those applicable to dental practice. For instance, autoclaves should be inspected by a competent person at least once every 14 months.

Health and Safety at work legislation states that every employer has a general duty to ensure the health, safety and welfare at work of all employees. There are many general and specific regulations under this umbrella. Every employer has to:

- provide and maintain safety equipment and systems of work
- ensure safe handling and storage of any potentially harmful substances
- maintain entrances and exits in a safe condition
- provide a working environment for employees without risk to their health
- provide instruction, training and supervision necessary to ensure health and safety.

The Health and Safety Executive has the duty to enforce legal requirements and provide advisory services. Its inspectors have the power to enter premises and carry out investigations. If an inspector notes a risk to health and safety, she/ he can issue a Prohibition Notice preventing the continuance of that risk activity until remedial action as specified has been taken. In the case of a less severe risk, an Improvement Notice may be issued, which requires action within a specified

time to remove that risk. Failure to comply with either of these notices within a specific time can lead to prosecution of the offender (employer).

Additional educational and training as needed will be identified and implemented.

2.3. Regulatory standards

Regulatory standards give clear guidance on standards expected of a practicing dentist; failure to maintain these standards may lead to a charge of serious professional misconduct. Also any criminal conviction of a dentist in a given country is automatically forwarded to the professional body by the competent institution, who may also inform the member and the public of formal cautions and other matters of concern. Complaints procedure and negligence are also in the competence of the Professional body if not under the jurisdiction of penal code, and the professionals are expected to be aware of.

3. Informed consent

No treatment can be carried out on a patient without that patient's or their legal guardian's valid informed consent for that specific treatment to be undertaken. Undertaking treatment without consent is an assault on the patient.

Consent can be implied, verbal or written. It is essential that written consent should contain details of the procedure, the type of anesthetic or analgesic that will be used and any complications that may occur during treatment.

Consent should be worded in a language that a particular patient can understand, avoiding the use of jargon and abbreviations to describe a particular clinical procedure.

3.1. Informed consent basic features

Informed consent is the process by which a fully informed patient can participate in choices about his/her health care. It originates from the legal and ethical right the patient has to direct what happens to his/her body and from the ethical duty of the physician to involve the patient in his/ her health care.

In order for the patient's consent to be valid, he must be considered competent to make the decision at hand and his consent must be voluntary. It is easy for coercive situations to arise in medicine. Patients often feel powerless and vulnerable. To encourage voluntariness, the physician can make clear to the patient that he is participating in a decision, not merely signing a form. With this understanding, the informed consent process should be seen as an invitation to him to participate in his health care decisions.

The physician is also generally obligated to provide a recommendation and share her reasoning process with the patient. Comprehension on the part of the patient is equally as important as the information provided. Consequently, the discussion should be carried on in layperson's terms and the patient's understanding should be assessed along.

Basic consent entails letting the patient know what you would like to do and asking them if that will be all right. Basic consent is appropriate, for example, when drawing blood. Decisions that

merit this sort of basic informed consent process require a low-level of patient involvement because there is a high-level of community consensus.

3.2. Elements of full informed consent

The most important goal of informed consent is that the patient has an opportunity to be an informed participant in his health care decisions. It is generally accepted that complete informed consent includes a discussion of the following elements:

-the nature of the decision/procedure;

-reasonable alternatives to the proposed intervention;

-the relevant risks, benefits, and uncertainties related to each alternative;

-assessment of patient understanding;

-the acceptance of the intervention by the patient

For the patient's consent to be valid, he must be considered competent to make the decision at hand and his consent must be voluntary.

3.3. Standards of informed consent

3.3.1. Reasonable physician standard

What would a typical physician say about this intervention? This standard allows the physician to determine what information is appropriate to disclose. However, it is probably not enough, since most research in this area shows that the typical physician tells the patient very little. This standard is also generally considered inconsistent with the goals of informed consent as the focus is on the physician rather than on what the patient needs to know.

3.3.2. Reasonable patient standard

What would the average patient need to know in order to be an informed participant in the decision? This standard focuses on considering what a patient would need to know in order to understand the decision at hand.

3.3.3. Subjective standard

What would this patient need to know and understand in order to make an informed decision? This standard is the most challenging to incorporate into practice, since it requires tailoring information to each patient. Most states have legislation or legal cases that determine the required standard for informed consent.

In most countries the "reasonable patient standard" is in use.

3.3.4. Implied consent

Implied consent can be usually assumed for the following cases: (1) when a patient has previously been presented with a treatment plan and further appointments arranged for this treatment plan to be carried out or (2) when the patient requests local anesthetic for fillings and opens his mouth to allow local anesthetic to be administered. Many similar common situations may be described – previous agreements and usual interventions.

3.4. Forms of informed consent

3.4.1. Verbal consent

For instance a dentist may say:

- 'Would you like a local anesthetic before I prepare your tooth for a filling?'
- 'I am going to give local anesthetic for this filling/extraction'
- 'I think that your treatment priority is a filling in this tooth.

3.4.2. Written consent

Written consent must be obtained if the patient is having treatment under sedation or general anesthesia when they are not fully conscious of the treatment being carried out and are, therefore, in no position to ask for the treatment to be stopped should they wish to withdraw consent. Written consent is also advisable for any complicated and/or expensive treatment even when this is carried out without any form of anesthetic or with local analgesia. Written consent is advisable when carrying out a procedure that carries one or more specific risks. Written consent is recommended when expensive treatment was undertaken even when this is carried out without any form of anesthetic or with local analgesia. Written consent is advisable when carrying out a procedure that carries one or more specific risks. For instance, prior to the removal of an impacted lower wisdom tooth, a STOLL warning is given to patient (swelling, trysmus, and anesthesia of lingual or labial nerves) may ensure that appropriate warnings are given.

3.5. Special cases

Age of the patient: The minimum age for valid consent is considered to be 16 years of age; however, if a practitioner is satisfied that someone of less than 16 years of age fully understands the treatment to which they are consenting, their consent may be valid. Particularly in the case of sedation or general anesthesia, the consent of a parent, a guardian or someone else over 18 should be obtained as well as from the patient himself for those between 16 and 18 years of age. The maturity and right to direct will expression of adolescents with judicial validity differ from country to country.

Mentally impaired adults: These patients may be unable to give informed consent and the consent of the patient's career should be obtained plus the second opinion of a colleague that the proposed treatment is the most suitable for the patient. For any major treatment, it is normal practice for the agreement of two practitioners of consultant status to be obtained prior to treatment.

Patients with specific ethnic, customs, or religious beliefs: Practitioners should always be sympathetic to specific patient beliefs and requests, for instance the avoidance of blood transfusions to Jehovah's Witnesses, the avoidance of materials derived from any animals for vegetarians and from certain animals for religious or cultural reasons. It should also be remembered that certain cultures object to women receiving treatment from male practitioners.

Life-saving procedures: Occasionally, it may be necessary to carry out a life-saving procedure on an unconscious person. Under these circumstances, informed consent is normally unobtainable, but any treatment under these circumstances should be limited to the life-saving procedure. Non-life-saving treatment should be delayed until consent is obtained.

3.6. Competent patient

Given the nature of dentistry, it is essential that the patient is aware of whether they are consenting to treatment under the NHS (NHIF) or by private contract before treatment starts. In

most cases, it is clear whether or not patients are competent to make their own decisions. Occasionally, it is not so clear. Patients are under an unusual amount of stress during illness and can experience anxiety, fear, and depression. The stress associated with illness should not necessarily preclude one from participating in one's own care.

However, precautions should be taken to ensure the patient does have the capacity to make informed decisions.

There are several different standards of decision making capacity assessment. Generally you should assess the patient's ability to:

-understand his or her situation;

-communicate a decision based on above understanding;

-understand the risks associated with the decision at hand;

-communicate a decision based on that understanding.

When this is unclear, a psychiatric consultation can be helpful. Of course, just because a patient refuses a treatment does not in itself mean the patient is incompetent. Competent patients have the right to refuse treatment, even those treatments may be life-saving. Treatment refusal may, however, be a flag to pursue further the patient's beliefs and understanding about the decision, as well as your own.

What about the patient whose decision making capacity varies from day to day? Patients can move in and out of a coherent state as their medications or underlying disease processes ebb and flow. You should do what you can to catch a patient in a lucid state - even lightening up on the medications if necessary - in order to include him in the decision making process.

What should occur if the patient cannot give informed consent? If the patient is determined to be incapacitated/ incompetent to make health care decisions, a surrogate decision maker must be consulted. There is a specific hierarchy of appropriate decision makers defined by state law. If no appropriate surrogate decision maker is available, the physicians are expected to act in the best interest of the patient until a surrogate is found or appointed. The patient's consent should only be "presumed", rather than obtained, in emergency situations when the patient is unconscious or incompetent and no surrogate decision maker is available.

In general, the patient's presence in the hospital ward, ICU or clinic does not represent implied consent to all treatment and procedures.

The patient's wishes and values may be quite different than the values of the physician's.

3.7. Evolution of complexity in consent taking procedure

While the principle of respect for person obligates us to do our best to include the patient in the health care decisions that affect his life and body, the principle of beneficence may require us to act on the patient's behalf when his life is at stake.

3.7.1. Period between 350 B.C and the World War II

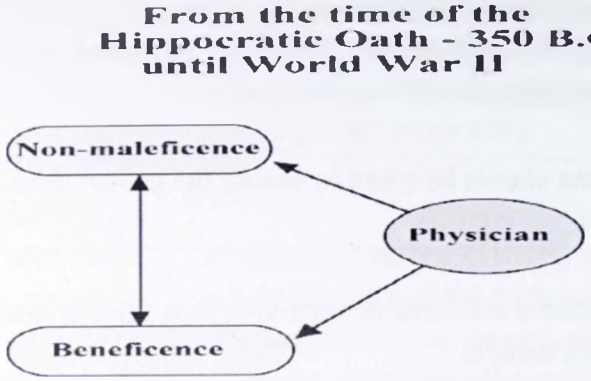


Fig. 34. Consent taking procedure following the model of PATERNALISM

3.7.2. Period after the World War II

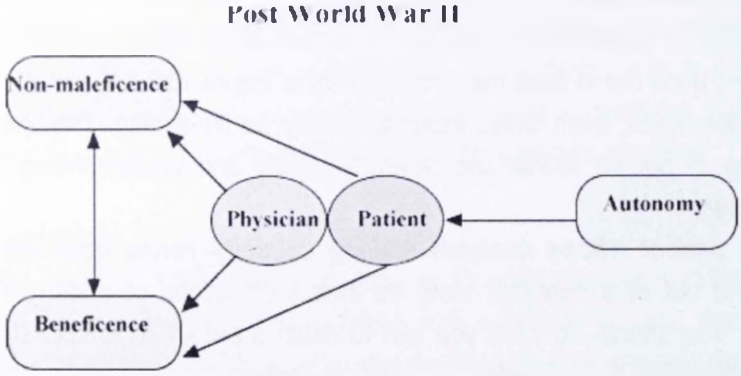
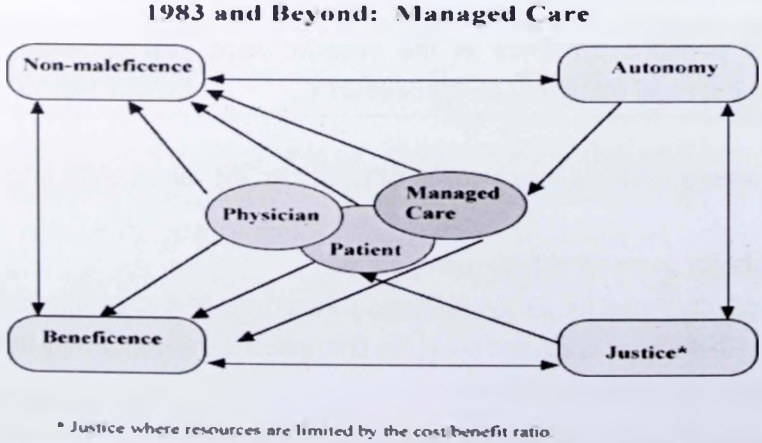


Fig. 35. Introduction of the Partner model based on the autonomy principle

The principles of respect for autonomy, which came to the practice in the years following the World War II, brought the patient into the decision making process. Now it was the patient, together with the physician, who weighted possible harms against hoped for benefits and made decisions accordingly.

3.7.3. Expert model for partnership with third party payment participation



* Justice where resources are limited by the cost/benefit ratio

Fig.36. Current state of the consent taking procedure SOCIAL JUSTICE, SOLIDARITY

Concerns about the just allocation of finite healthcare resources arose in the post-diagnosis related group (1983) Era and gathered momentum with the advent of managed care organizations in the 1990s. These organizations are concerned not only about the cost benefit ratio. Decisions about not providing or allowing treatments not deemed to be cost-effective may severely circumscribe the autonomy of both patients and physicians.

4. Professional errors and legal liability of the dentist

4.1. Disciplinary procedure

In addition to criminal convictions, a patient, a member of the public or another dentist may make a formal complaint to the professional regulatory organization. The professional organization, when the case demands suspension of license or erasure from the registrar, may authorize suspension with immediate effect to protect the public acting as well in the best interests of the dentist. In other cases, there is a period of 28 days during which the dentist may lodge an appeal with judicial committee of the Council, against his/her suspension or erasure before this comes into effect. Should an appeal be lodged, the dentist may continue to practice until the outcome of that appeal is known. ***The professional organization's solicitors*** or a person acting in a public capacity (e.g. an officer of a health authority or similar body) can determine of any matter that they feel should be considered under the professional organization's disciplinary procedure.

There may be up to three stages in this procedure.

(1) Preliminary screening: Preliminary Proceedings Committee normally considers documentary only, unless interim suspension may be considered. Should the Preliminary Proceedings Committee feel that members of the public may be at risk, it can order the immediate suspension of a dentist's registration pending the outcome of the enquiry by the Professional Conduct Committee. In this case, the dentist is immediately advised of this decision and offered the opportunity to make representations to the committee concerning the proposed suspension. Interim suspension can only be considered when the committee has decided to refer a matter to the Professional Conduct Committee and on the advice of a legal assessor. ***The dentist and complainant are normally notified of the committee's decision.*** In those cases that the committee does not refer on, it may give advice on behavior to the dentist concerned. It can also warn the dentist that this matter may be reconsidered if, in the future, further information is formally brought to the attention of the Professional organization.

(2) Professional Conduct Committee sits ***with a legal assessor*** to counsel on matters of law and procedure. The committee sits in public; evidence is taken on oath and either party may invite witnesses. This is similar to a court of law and matters must be proved beyond reasonable doubt' as in criminal proceedings. A notice of the enquiry, including the charge to be faced, is sent to the dentist by the professional organization's solicitors at least days before the date of enquiry. The committee's first duty is to determine whether the circumstances and facts in the charge have been proved.

(3) Only after some or all of these facts have been proved, does the committee consider whether this amounted to serious professional misconduct. If a dentist has been found guilty of serious professional misconduct or convicted in a criminal court ***the committee may***: admonish the

dentist; postpone judgment to a future meeting with consideration of the dentist's conduct meanwhile; judgment is generally postponed for 1 year order the suspension of a dentist for a specific period up to 12 months direct that the dentist's name be erased from the Dentists' Register, refer the matter to the Health Committee and personal conduct of someone practicing a profession.

4.2. Professional indemnity

Professional indemnity is also available on the commercial market but this normally has a maximum limit of indemnity and only provides cover within the time of the insurance contract. This is an important factor, recognized by the professional protection organizations, as there may be a delay of several years between an incident occurring and a patient bringing an action for damages.

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APPENDIX 1:

BOLOGNA DECLARATION

THE EUROPEAN HIGHER EDUCATION AREA Joint declaration of the European Ministers of Education. Convened in Bologna on the 19th of June 1999

The European process, thanks to the extraordinary achievements of the last few years, has become an increasingly concrete and relevant reality for the Union and its citizens. Enlargement prospects together with deepening relations with other European countries provide even wider dimensions to that reality. Meanwhile, we are witnessing a growing awareness in large parts of the political and academic world and in public opinion of the need to establish a more complete and far-reaching Europe, in particular building upon and strengthening its intellectual, cultural, social and scientific and technological dimensions.

A Europe of Knowledge is now widely recognized as an irreplaceable factor for social and human growth and as an indispensable component to consolidate and enrich the European citizenship, capable of giving its citizens the necessary competences to face the challenges of the new millennium, together with an awareness of shared values and belonging to a common social and cultural space.

The importance of education and educational co-operation in the development and strengthening of stable, peaceful and democratic societies is universally acknowledged as paramount, the more so in view of the situation in South East Europe.

The Sorbonne declaration of 25th of May 1998, which was underpinned by these considerations, stressed the Universities' central role in developing European cultural dimensions. It emphasized the creation of the European area of higher education as a key way to promote citizens' mobility and employability and the Continent's overall development.

Several European countries have accepted the invitation to commit themselves to achieving the objectives set out in the declaration, by signing it or expressing their agreement in principle. The direction taken by several higher education reforms launched in the meantime in Europe has proved many Governments' determination to act.

European higher education institutions, for their part, have accepted the challenge and taken up a main role in constructing the European area of higher education, also in the wake of the fundamental principles laid down in the Bologna Magna Charta Universitatum of 1988. This is of the highest importance, given that Universities' independence and autonomy ensure that higher education and research systems continuously adapt to changing needs, society's demands and advances in scientific knowledge.

The course has been set in the right direction and with meaningful purpose. The achievement of greater compatibility and comparability of the systems of higher education nevertheless requires continual momentum in order to be fully accomplished. We need to support it through promoting concrete measures to achieve tangible forward steps. The 18th June meeting saw participation by authoritative experts and scholars from all our countries and provides us with very useful suggestions on the initiatives to be taken.

We must in particular look at the objective of increasing the international competitiveness of the European system of higher education. The vitality and efficiency of any civilization can be measured by the appeal that its culture has for other countries. We need to ensure that the European higher education system acquires a world-wide degree of attraction equal to our extraordinary cultural and scientific traditions.

While affirming our support to the general principles laid down in the Sorbonne declaration, we engage in coordinating our policies to reach in the short term, and in any case within the first decade of the third millennium, the following objectives, which we consider to be of primary relevance in

order to establish the European area of higher education and to promote the European system of higher education world-wide:

Adoption of a system of easily readable and comparable degrees, also through the implementation of the Diploma Supplement, in order to promote European citizens employability and the international competitiveness of the European higher education system

Adoption of a system essentially based on two main cycles, undergraduate and graduate. Access to the second cycle shall require successful completion of first cycle studies, lasting a minimum of three years. The degree awarded after the first cycle shall also be relevant to the European labor market as an appropriate level of qualification. The second cycle should lead to the master and/or doctorate degree as in many European countries.

Establishment of a system of credits - such as in the ECTS system - as a proper means of promoting the most widespread student mobility. Credits could also be acquired in non-higher education contexts, including lifelong learning, provided they are recognized by receiving Universities concerned.

Promotion of mobility by overcoming obstacles to the effective exercise of free movement with particular attention to:

- for students, access to study and training opportunities and to related services
- for teachers, researchers and administrative staff, recognition and valorization of periods spent in a European context researching, teaching and training, without prejudicing their statutory rights.

Promotion of European co-operation in quality assurance with a view to developing comparable criteria and methodologies

Promotion of the necessary European dimensions in higher education, particularly with regards t curricular development, inter-institutional co-operation, mobility schemes and integrated programmes of study, training and research.

We hereby undertake to attain these objectives - within the framework of our institutional competences and taking full respect of the diversity of cultures, languages, national education systems and of University autonomy - to consolidate the European area of higher education. To that end, we will pursue the ways of intergovernmental co-operation, together with those of non-governmental European organisations with competence on higher education. We expect Universities again to respond promptly and positively and to contribute actively to the success of our endeavor.

Convinced that the establishment of the European area of higher education requires constant support, supervision and adaptation to the continuously evolving needs, we decide to meet again within two years in order to assess the progress achieved and the new steps to be taken.

Signatories to the Bologna Declaration

Some Useful Web Sites

Socrates, Leonardo and Youth Technical Assistance Office

http://www.socleoyouth.be/MARS/SilverStream/Pages/pgHomeFrameSetEn.html

Original Bologna Declaration Document

http://www.unige.ch/cre/activities/Bologna%20Forum/Bologne1999/bologna%20declaration.htm The Bologna Declaration: on the European space for higher education: an explanation. See

http://www.crue.upm.es/eurec/bolognaexplanation.htm

Links to Bologna Declaration: Se

http://elfa.bham.ac.uk/ELFA/Bologna_Declaration_1999/bologna_declaration_links.htm

Bachelors, Masters and Bologna:UK Quality Assurance Agency (QAA)

http://www.qaa.ac.uk/crntwork/nqf/bmb/contents.htm QAA Site Map

http://www.qaa.ac.uk/sitemap/sitemap.htmhttp://www.qaa.ac.uk/sitemap/sitemap.htm

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Profile and competences for the graduating European dentist – update 2009

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Abstract

This paper presents the profile and competences for the European Dentist as approved by the General Assembly of the Association for Dental Education in Europe at its annual meeting held in Helsinki in August 2009. A new taskforce was convened to update the previous document published in 2005. The updated document was then sent to all European Dental Schools, ministries of health, national dental associations and dental specialty associations or societies in Europe. The feedback received was used to improve the document. European dental schools are expected to adhere to the profile and the 17 major competences but the supporting competences may vary in detail between schools. The document will be reviewed once again in 5 years time. Feedback to the newly published document is welcomed and all dental educators are encouraged to draw upon the content of the paper to assist them in harmonising the curriculum throughout Europe with the aim of improving the quality of the dental curriculum.

Introduction

In 1999, 29 ministers of Education of the European countries signed the Bologna Declaration, starting the process of aiming to converge and harmonise the higher educational systems across the European countries. One of the objectives continues to be 'to tune' curricula in terms of structures, programmes and actual teaching to make them more comparable. Thus, it will be easier for staff and students to move around in an integrated Europe and obtain reliable information about the role of a dental qualification. A single European social and economic area goes hand in hand with a single European Higher Education Area which should be in action by 2010. The two organisations that have continued to play a role in '*tuning*' dental education in Europe are the *Association for Dental Education in Europe* (ADEE) and the *DentEd* Thematic Network (TNP).

The ADEE is a standing organisation, which, since 1975, has been in the process of furthering professionalism in dentistry. Some 160 schools (out of approximately 200 schools in Europe) are now members. It is therefore legitimate that ADEE continues to have a role to officially represent the dental schools in Europe.

The TNP (1) were funded from the EU in Brussels to converge and harmonise the various dental curricula and to transfer all expertise and activities, including site-visitation and quality assurance systems, to ADEE. The first outcome of the DentEd III project was the '*Profile and Competences for the European Dentist*' document (PCD). This document was approved by the General Assembly of ADEE and subsequently Published in the *European Journal of Dental Education* (2) in August 2005 following a consultation process involving European dental teaching institutions and other educational stakeholders. The document remains available on the ADEE website.

This document has also been sent to national dental associations, European dental associations in the various disciplines and ministries of health and welfare with the request to provide feedback on the document in terms of approval or amendment. These responses have been taken into consideration as part of the revision of the PCD which commenced at a meeting of the working group in Birmingham in May 2008. In addition to this PCD, additional DentEd publications: '*Curriculum Structure & ECTS*' (3, 4) and '*Quality Assurance & Benchmarking*' (5), are available on the ADEE website.

APPENDIX 3:

Hippocratic oath & Declaration of Geneva

Hippocratic Oath

Apollo Physician and Asclepius and Hygeia and Panacea and all the Gods and Goddesses,

making them my witnesses, that I will fulfill according to my ability and judgment this oath and this covenant: To hold him who has taught me this art as equal to my parents and to live my life in partnership with him, and if he is in need of money to give him a share of mine, and to regard his offspring as equal to my brothers in male lineage and to teach them this art - if they desire to learn it - without fee and covenant; to give a share of precepts and oral instruction and all the other learning to my sons and to the sons of him who has instructed me and to pupils who have signed the covenant and have taken an oath according to the medical law, but to no one else. I will apply dietetic measures for the benefit of the sick according to my ability and judgment; I will keep them from harm and injustice. I will neither give a deadly drug to anybody if asked for it, nor will I make a suggestion to this effect. Similarly I will not give to a woman an abortive remedy. In purity and holiness I will guard my life and my art. I will not use the knife, not even on sufferers from stone, but will withdraw in favor of such men as are engaged in this work. Whatever houses I may visit, I will come for the benefit of the sick, remaining free of all intentional injustice, of all mischief and in particular of sexual relations with both female and male persons, be they free or slaves. What I may see or hear in the course of the treatment or even outside of the treatment in regard to the life of men, which on no account one must spread abroad, I will keep to myself holding such things shameful to be spoken about. If I fulfill this path and do not violate it, may it be granted to me to enjoy life and art, being honored with fame among all men for all time to come; if I transgress it and swear falsely may the opposite of all this be my lot.

DECLARATION OF GENEVA

AT THE TIME OF BEING ADMITTED AS A MEMBER OF THE MEDICAL PROFESSION:
I SOLEMNLY PLEDGE to consecrate my life to the service of humanity;
• I WILL GIVE to my teachers the respect and gratitude that is their due;
• I WILL PRACTICE my profession with conscience and dignity;
• THE HEALTH OF MY PATIENT will be my first consideration;
• I WILL RESPECT the secrets that are confided in me, even after the patient has died;
• I WILL MAINTAIN by all the means in my power, the honor and the noble traditions of the Medical profession;
• MY COLLEAGUES will be my sisters and brothers;
• I WILL NOT PERMIT considerations of age, disease or disability, creed, ethnic origin, gender, nationality, political affiliation, race, sexual orientation, social standing or any other factor to intervene between my duty and my patient;
• I WILL MAINTAIN the utmost respect for human life;
• I WILL NOT USE my medical knowledge to violate human rights and civil liberties, even under threat;
• I MAKE THESE PROMISES solemnly, freely and upon my honor.

It was written in Greek by Hippocrates, yet the current translated version was revised many time already. This is one of the translated version.

Similar to Hippocratic Oath, Declaration of Geneva was also undergone revision.

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APPENDIX 4:

GENERAL PRINCIPLES FOR A DENTAL PROFESSIONAL ETHICAL CODE IN THE COUNTRIES OF THE EU

DENTAL LIAISON COMMITTEE IN THE EU EUROPEAN DENTISTS
President: Dr. Liisa Luukkonen
Vice-President: Dr. Matti Pöyry Adopted in Helsinki, May 2002

Preamble

To safeguard the health of the public and (in that sense) the protection of the consumers – and at the same time to guide the EU member associations in their effort to describe a Code of Ethics for the Dental Profession, the EU Dental Liaison Committee has adopted the following Code of Ethics. These guidelines are based on the EU principle of subsidiarity - which means that the guidelines respect the right of national associations to self-govern. These guidelines equally respect the EU- principle of harmonization - which means that the guidelines reflect those directives which have been adopted by the EU, likewise this code respects the value of common principles within the dental profession of the European Union. National professional ethical codes should be maintained in order to preserve traditional ethical values within the countries of the EU.

The following four areas of ethics represent the basic ethical requirement and should therefore be compiled within the Code of Ethics of each national dental association.

1. Dentist - patient relationship: A dentist

1.1 must safeguard the health of patients irrespective of their individual status

1.2 must not prescribe or provide treatment which is not necessary

1.3 has the freedom of choice whether to accept or decline to treat a patient, except for the provision of emergency care, for humanitarian reasons

1.4 must obtain appropriate agreement or consent from the patient for the treatment to be carried out.

To this end, information must be provided about the proposed treatment other treatment options and relevant material risks. The patient must have the opportunity to ask questions. The patient should also be informed of the cost of the proposed treatment, as soon as this is known.

1.5 must ensure professional confidentiality and the security of personal health information.

Accurate, detailed and relevant medico-dental records must be kept and the dental staff must be aware of the need for confidentiality. Data must be obtained and processed fairly, for specified, explicit and legitimate purposes and according to data protection principles

1.6 must keep all data relating to patients confidential and secure. Where data are stored electronically special security precautions must be taken to prevent access from outside the premises during electronic transfer procedures or remote maintenance of the system.

1.7 may not transmit data on patients to third parties except when it is justified by the written consent of the patient or where it is required under statutory provision. All data passed on to third parties should be recorded as such.

1.8 must accept responsibility for the treatment he undertakes, within the framework of an undertaking to make best efforts.

1.9 must refer for advice and/or treatment any patient requiring a level of competence beyond his or her own. He is obliged to refer a patient to a professional colleague for a second opinion, if that is requested by the patient himself.

1.10 must provide to a patient, or his properly appointed representative, information which is correct and does not mislead.

1.11 must respond to patient complaints and try to resolve the issue.

2. Conduct of the dentist towards the public: A dentist

2.1 must act in a manner which will enhance the prestige and reputation of the profession

2.2 must ensure not to mislead the public in respect of the scope of entitlement to care or limitation of insurance coverage.
2.3 must not either mislead the public or impugn the professional reputation or integrity of colleagues
2.4 may provide an information service but this must comply with the professional rules regarding, in particular, the independence, dignity and honour of the profession, professional secrecy and fairness towards the public and other members of the profession.
2.5 must comply with national legislation and any resulting national ethical code, in relation to E- commerce in his country of establishment, for the provision of information society services
2.6 may provide unsolicited commercial communication to the public where this is permitted under national legislation. When such communications are permitted dentists must regularly consult and respect opt-out registers in which persons not wishing to receive such communications can register themselves.
2.7 who is established in a member state where advertising of services is permitted must ensure that any such information is legal, decent and truthful and has regard for professional propriety.

3. Attitude of dentists to professional colleagues: a dentist
3.1 must behave towards all members of the oral health team in a professional manner and should be willing to assist colleagues professionally and maintain respect for divergence of professional opinion
3.2 providing any service must not compare his skills or qualifications with the skills and qualifications of other dentists, when a description of care is given

4. The Practice of the Profession a dentist:
4.1 must practice his mission to promote the health of the individual and of the public in general, in respect of life and humanity. He must practice his profession according to the acquired facts of science.
4.2 has to care, with the same awareness, for each of his patients, whatever notably their origin, their morals and family situation, their belonging of or to any ethnic group, nation or determined religion, their handicap or state of health, their reputation or any personal feelings in respect to them
4.3 must not abandon the care of his patients, except where the dentist has presented to the patient all the necessary information regarding treatment, has ensured that assistance by another professional is available and has promptly informed the decision to the patient
4.4 must take responsibility for the competence and the conduct of his/her staff and must use dental auxiliaries strictly according to the law;
4.5 must continue to develop professional knowledge and skills throughout his professional life so that the quality of care for his patients will be maintained by such means
4.6 must comply with national ethical custom governing the practice of the profession, the use of titles, the establishment, extension or purchase of a dental practice.
4.7 must not employ or work with an individual whom he knows or suspects to be practicing illegally
4.8 must at all times avoid false certification, misleading statements, professional misconduct or abuse of normal professional relationships
4.9 is obliged to uphold the fundamental rights of dental practice, which includes the freedom to prescribe and treat.
4.10 must not abrogate the principle of free choice of practitioner by the patient. Whatever the contractual obligations into which the dentist enters, he may not abrogate his professional independence and responsibility to his patient
4.11 involved in the treatment of patients must be adequately insured or indemnified against claims for accidents or malpractice
4.12 must not pay a financial incentive or other form of commission to a third party or organization in return for encouraging or promoting the uptake of dental care by individual members of the public. He should not accept any financial inducement from a third party to recommend any particular dental scheme

5. Electronic Commerce

The principles of the DLC Code of Conduct for Electronic Commerce are attached and are an integral part of this DLC Ethical Code, in relation to the use of electronic commerce across borders

6. Post-Scriptum

National dental associations (NDA) should include at least all the above principles. NDAs should provide their members with suitable advice on professional ethics.

Notes:

1. The use of the word "he" in this code denotes "he" or "she" in every case
2. Changes from the adopted code are highlighted by italics and underline Code of Ethics

APPENDIX 5:

CODE OF ETHICS AND ETHICAL CONDUCT OF RESEARCHERS Adopted May 2009

The purpose of the Code of Ethics is to provide a set of guiding principles to promote exemplary ethical standards in research and scholarship by investigators and the International Association for Dental Research (IADR). The Code of Ethics is predicated on well-established international guidelines, such as the Declaration of Helsinki, and does not take the place of or supersede any rules, agreements, or Bylaws of the Association.

The IADR expects its members to be guided in their professional conduct by this Code. The IADR, through its Committee on Ethics in Dental Research, advises its members regarding interpretation of the Code.

The ability of the scientific community to regulate itself is critical to the maintenance of the public trust. Adherence to the Code is basic to one's professional responsibility and commitment to an ethical pursuit of knowledge. Members are expected to cooperate in the implementation of the Code.

Misconduct casts doubt on the integrity of individuals and their institutions. It is incumbent upon IADR ***members to take adequate measures to discourage, prevent, expose, and correct unethical conduct.*** Members deemed to be in violation of the Code will be sanctioned by the Association. Statement of Principles

All members of the IADR shall:

1. act with honor and in accordance with the highest standards of professional integrity;
2. conduct work with objectivity;
3. communicate in an honest and responsible manner;
4. show consideration and respect for all components of and individuals associated with the research process;
5. cultivate an environment whereby differences in perspective, experience and culture are recognized and valued;
6. maintain appropriate standards of accuracy, reliability, credit, candor and confidentiality in all research and scholarship activities;
7. use all resources prudently, taking into account appropriate laws and regulations.

Best Practice in Research and Scholarship

The prevention of misconduct in research is best achieved through the education of all individuals involved in research. It is a recommendation that all researchers should participate in appropriate educational activities, which is mandatory in some institutions. Of critical importance is maintaining up to date knowledge of best practices and the mentoring of colleagues and students.

Human research

The Declaration of Helsinki is a statement of ethical principles for research involving human participants, including research on identifiable human material and data, which is subject to ethical standards that promote respect for all human participants and protect their health and rights (www.wma.net/en/30publications/10policies/b3/).

Research must adhere to the fundamental principles that respect the needs for autonomy, beneficence and justice as well as veracity, fidelity, anonymity and non-maleficence. Human participant research comprises, but is not limited to, investigative clinical research, clinical trials, studies using tissue samples and records. Biogenetics, using stem cells and utilizing tissue banks requires complete transparency in all aspects of consenting and confidentiality. It is imperative that investigators remain up to date as these areas are more likely to be subject to legislative change.

Animal research

By definition, animal research committees provide and approve the informed consent by proxy. An investigator using animals in research should strive to advance understanding of basic principles and/or to contribute to the improvement of human or animal health and welfare. Laws and regulations notwithstanding, an animal's overall protection depends upon the scientist's appropriate stewardship. Every effort must be made: (a) to replace the use of live animals by non-animal alternatives; (b) to reduce the number of animals used in research to the minimum required for meaningful results; and (c) to refine the procedures so that the degree of suffering is kept to a minimum (http://royalsociety.org/landing.asp?id=1222).

International collaborative research

It is incumbent on all participating investigators and their colleagues to conduct any research to the highest standards of ethical practice, with due consideration of any local legislation and regulations. Ethical committee approval must be obtained for all sites and written informed consent provided by study participants in the language of each participating site. Where the population may be vulnerable to exploitation it is important to respect their human rights and ensure that the research has relevance and potential benefit to their well-being (Shapiro and Meslin, 2001).

Conflicts of interest

Each individual is expected to behave in an ethical way ***to avoid conflict in terms of decision making, publication of data and post-study investigator responsibility***. The appearance of a conflict of interest, such as the potential for financial and personal gain, can often be as damaging as an actual act of conflict of interest. Full disclosure of any potential conflict of interest must be made to the investigator's institution or to the Associations as applicable

Intellectual property rights of all participating researchers should be protected by giving proper credit for the origin of the new ideas. Intellectual property rights apply to any potential commercial gain, and must be agreed at the outset of the project by the investigators, their institutions and/or any other external body, such as a sponsoring company.

Dissemination of information

Most scientific journals ask authors to make declarations at submission about the integrity of their research. Many journals have experienced plagiarism (Smith, 2008), so that editors of journals need to develop policies to minimize the publication of articles containing evidence of scientific misconduct. It is expected that authors, in any communication, such as manuscripts or abstracts, whether in paper or electronic format, representing a body of research should:

not inappropriately fragment data into several different publications;

credit sources of funding;

adhere to predetermined guidelines regarding qualification and order of authorship;

read the final manuscript and agree to its submission for review and publication.

Emphasis should be on quality rather than quantity of research as a criterion for recognition of scholarship. Appropriate written permission must be obtained to publish any type of image, which should not identify the participant.

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APPENDIX 6:

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