Social Medicine State Exam Essays

Contents

1. Social medicine – definition, history, objectives, tasks, and methods.

Definition of Social Medicine

Social medicine is the study of public health and its determinants.

WHO's definition of health

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

Social Medicine as a science

Social Medicine is an integrative discipline, concerned with health and disease as a function of how when and why a disease distributes itself in a population over.

History of Social Medicine

- Hippocrates 400BC = found environmental and host factors have influence on development of disease.
- Romans = Public health concerns and policies; associate plumbism with wine from lead glazed pottery.
- John Graunt, 1603 = The first life table, giving the probability of dying at each age.
- Bernadino Ramazzini, 1700 = The book "De morbis artificum diatriba"; considered the "father of occupational epidemiology"; breast cancer in nuns
- Francois Bossier de Lacroix, 1706 to 1777 = Systematic classification of diseases (Nosologia Methodica)
- Johan Peter Frank, 1745 to 1821 = "Die medizinische Polizei"; considered the "father of social medicine"
- France, 1848 = Public health legislation
- John Snow, 1849 = Field epidemiological approach; waterborne transmission of cholera
- John Grove, 1851 = On the nature of epidemics (presented the germ theory)
- Guerin G., 1884 = Defines the term "Social medicine", including social aetiology, social pathology, social hygiene and social therapy.
- Rudolf Virchow (1821 to 1902) = Awareness on the powerful relationship between people's social position, their living conditions and their health outcomes.
- Grotian A., 1920 = The first Department of social hygiene at the Berlin University
- Austin Bradford Hill, 1937 = Principles of Medical Statistics.
- World Health Organization (WHO), 1948 = Established on 7 April 1948. WHO's objective is the attainment by all peoples of the highest possible level of health.
- Kenneth Newell, 1975 = Published the book "Health by the People", advocating a robust engagement with the social dimensions of health
- The Alma Ata Declaration (Kazakhstan), September 1978 = Need for a comprehensive health strategy that not only provides health services but also addresses the underlying social, economic and political causes of poor health (http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf).
- "Good health at low cost" (GHLC) conference, April-May 1985 = Importance to foster sustainable health improvements in the developing world.

- Ottawa, November 1986 = The First International Conference on Health Promotion; Adopted the Ottawa Charter on Health Promotion, identifying 8 key determinants of health: peace, shelter, education, food, income, a stable eco-system, sustainable resources, social justice, and equity.

- 51st World Health Assembly, May 1998 = Health For All in the 21st Century (World Health Declaration)

History of Social Medicine in Bulgaria

- 1879 = "Temporary rules for establishment of medical management in Bulgaria".
- 1901 = Bulgarian union of medical doctors.
- 1903 = Law for public health protection.
- 1917 = Establishment of a medical faculty at the Sofia University, including department "Hygiene and social medicine".
- 1947 = Department "Healthcare organisation".
- 1949 = Department of social medicine in Plovdiv.

Objectives of Social Medicine

- Study of the health of the population (public health) and its determinants.
- Health policy, legislation, and strategy development.
- Healthcare management and services.
- Health education and promotion.
- Health economics.
- Integration with other medical sciences and collaboration at regional, national, and international levels

Tasks of Social Medicine

- To assess the health of the population and its development
- To work out methods and means for health promotion + prevention of disease, disability, and infirmity
- To organize medical care of rehabilitation for the whole population
- To assess and control the sanitary conditions of the environment
- To control the birth rate in order to secure harmonious development of the population

Methods of Social Medicine

- 1) Epidemiological method = studies the distribution and determinants of diseases in human populations and the application of this studies to control health problems. Epidemiology is considered to be the fundamental method of public health.

- 2) Sociological method = medical sociology or sometimes referred to as health sociology, is the study of the social causes and consequences of health and illness.

- 3) Demographical method = is the study of the characteristics of human populations such as size, growth and density, distribution, and vital statistics. Medical demography in this context studies the demographic processes that are closely related to the health of a population. Demography in this has two main branches being population static and population dynamics.

- 4) Statistical method = is a science of collecting, organizing, analysing, interpreting, and presenting data for the purpose of assisting in making a more effective decision.

- 5) Economical method

- 6) Historical method

Factors of Public health

1. Demographic indices (demography) – 'population information'
    a. Mortality rate, natural growth or total population projection gives the future structure of the EU population.

2. Disease Incidence – 'population health' (incidence and prevalence)
    a. Looks at socially important diseases that appear in young individuals

b. Increase incidence in TB, mental disorders, STDs, oncological diseases
c. Increase incidence in temporary incapacity for work because of:
    i. cardiovascular diseases
    ii. diseases of bone and muscular system
    iii. endocrine disease
    iv. oncology

3. Physical development & activity – quality & functioning of each individual
    a. Combination of morphological, functional & mental indices characterizing the level and dynamics of the growth of human organism and its possibilities for adaptation to the changing environment

Extra

- **Who was:**
    - **the founder of the department of Social Medicine at Medical University of Plovdiv**
    - **director of the National Centre of Hygiene and Public health (PMU)**
    - **initiator and organiser of the R&D public health activities in Bulgaria**
    - **and the scientific coordinator of the biggest research survey of disease incidence in Bulgaria from 1975 to 1977?**
        - *Prof. Todor Zahariev (rector of MU Plovdiv 1957 to 1964).*
- **As an integrative science, social medicine could be viewed as an interdisciplinary scientific complex with which following components?**
    - *1) General social medicine = basic theory and methodology of social medicine.*
    - *2) Integrated public sciences = medical sociology, medical ethics, medical demography, medical statistics, health economics, history of medicine, health education etc.*
    - *3) Integrated medical and clinical disciplines = social hygiene, social epidemiology, social paediatrics, social psychiatry, social pharmacology etc.*
    - *4) Applied disciplines = health management, health policy, health legislation, health promotion etc*.
- **What is the difference between Clinical Medicine and Social Medicine?**
    - *While clinical medicine is dealing with health at individual level, social medicine targets the health status of the whole community.*
- **What is the aim of social medicine specialists?**
    - *To understand the community, risk factors and how we can improve, so they get better general health. Interested in people, outside health care service. What kind of people are sick and if any, are unknown?*
- **What is the difference between clinical specialities and non-clinical specialities?**
    - *Clinical specialities = General surgeon, paediatrician.*
    - *Non-clinical specialities = Hygiene, disaster*

2. Social aetiology, social prophylaxis, social therapy, and social rehabilitation of disease – definition and objectives.

Definition of Social aetiology

Social aetiology is how far social factors have an impact on individual or public health. Impact can be indirect or direct in character but also be positive or negative or combination of both.

Social factors

- Family
- Personal (smoking, drinking, diet)
- Professional (working conditions)
- Public (area of living, transport, infrastructure in area)
- Related to the healthcare services (physical accessibility)

Mechanisms whereby social factors have a negative impact

- Direct cause of the disease
- Predispose to a disease
- Transport the cause
- Influence the flow of the disease

Definition of Social prophylaxis

When you eliminate factors that negatively affect health.

A social risk factor is already identified as one that is affecting health. Once determined, it is essential to developing preventative programs that inhibit any kind of influence/impact by this factor on health of individuals or the public.

Goal of Social prophylaxis

To protect the health of healthy and prevent complications arising in already ill people.

Social prophylaxis stops the adverse impact of social factors through

- Primary prevention
  - Intervention at the stage of susceptibility and reducing the exposure, thus preventing the occurrence of the disease.
    - Non-specific = By enhancing awareness, changing behaviour, and creating environments that support good health practices
    - Specific = By immunisations, sanitation, B12 and folic acid for pregnant women, iodinisation of salt etc.
- Secondary prevention
  - Early detection and treatment of diseases at the pre-clinical and clinical stages to prevent progression and complications.
- Tertiary prevention
  - Limitation of disability and rehabilitation.

Definition of Social therapy

Social therapy describes the introduction of socio-therapeutic factors as well as inclusion of positive factors, that promote re-establishment of health.

Types of Social therapy

- Primary therapy = symptomatic therapy (treat symptoms).
- Aetiological therapy = treat cause (e.g., antibiotics).
- Palliative therapy

Definition of Social rehabilitation (of disease)

Introduce positive social factors to help individuals to progress to a healthy life and reintroduce into society.

Extra

- **Who fulfils the role of social rehabilitation of patients?**
  - *GP (understands social factors related to patient. Should gather social rehabilitation team)*
- **Give me one example of social rehabilitation of a disease?**
  - **For example, if a child has autism, who will be the person heading that team and who will be involved in that team?**
    - *Paediatrician/GP and the doctors included in that team are neurologist, psychologist, social worker*

3. Basic aspects of human health. Social factors of health and disease – classification and mechanism of influence. Individual health. Criteria of health and disease. Health classification. Health determinants.

WHO's definition of health

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

Classification of Social factors (of health and disease)

- Family
- Personal (smoking, drinking, diet)
- Professional (working conditions)
- Public (area of living, transport, infrastructure in area)
- Related to the healthcare services (physical accessibility)

The impact of social factors onto health can be categorized into:

- positive or negative
- direct and indirect.

Mechanisms whereby social factors have a negative impact

- Direct cause of the disease
- Predispose to a disease
- Transport the cause
- Influence the flow of the disease

Criteria of health and disease

- Opinion of doctor
- Opinion of patient
- Examination on patient (lab test)

Health classification

- Healthy people (are observed and the aim of it is health promotion and health protection)
  - Children till 7 years
  - Pregnant women
  - Sporting people
- People after medical treatment (were ill and must checked one time per year).
- People with chronic diseases with stable condition (must be checked one time per year).
- People with chronic diseases with serious condition (must be checked 4 times per year).
- People with chronic diseases with critical condition (need to have additional care).

Health levels

1. Health of individual
2. Health of the group
3. Health of the population

Definition of individual health

Lowest level of health that is composed of genetic, social, mental, and physical health which is influenced by lifestyle and environment.

Components of individual health

1. Physical component = Physiological well-being including normal function organs and organ systems.
2. Mental component = Personal satisfaction with himself and is mental capabilities and has good self-control.

3. Social component = Ability to see oneself as a member of a larger society.
4. Genetic Base = Important component and determinant of health, physical, mental, and social traits of every individual are determined by his genes.
5. Environment = Environmental factors are a root cause of a significant disease burden, particularly in developing countries
6. Lifestyle = Habits and attitudes to health play a significant role to well-being to individual overall health.

Factors of individual health

1. Personal characteristics (age, sex, education, etc.)
2. Patient family background (type of family).
3. Occupational environment (type of work, over work, salary).
4. Patient social environment
5. Plans for medical and social health
6. Healthcare service
7. Social medical conclusion (patients risk factors; patients' needs)

Social determinants of health

1. Social Gradient = Life expectancy is shorter, and most diseases are more common further down the social ladder in each society. Health policy must tackle the social and economic determinants of health.

2. Stress = Stressful circumstances, worrying, anxiety and inability for people to cope are factors that not only bring severe damage to health it also influences premature death significantly.

3. Early life = A good start in life means supporting mothers and young children: the health impact of early development and education lasts a lifetime.

4. Social Exclusion = Life is short where its quality is poor. By causing hardship and resentment, poverty, social exclusion and discrimination costs life.

5. Work = Stress in the workplace increases the risk of disease. People who have more control over their work have better health.

6. Unemployment = Job security increases health, well-being and job satisfaction. Higher rates of unemployment cause illness and premature death.

7. Social support = Friendship, good social relationships and strong supportive networks improve health at home, at work and in the community.

8. Addiction = Individuals turn to alcohol, drugs (legal/illegal) and tobacco and suffer from their use due to their social setting.

9. Food = Because global market forces have major control over food supply, healthy food and its affordability is a massive political issue.

10. Transport = Health transport means less driving and more walking and cycling, backed up by better and affordable public transport.

Extra

- **Describe the conceptual model of health (Australia, 2000):**
  - *The Conceptual Model of Health sees biomedical factors, genetic components, a certain lifestyle and the specific attitude and behaviour towards one's own health as the major factors taking influence on health state of the individual.*
  - *The health state is a dynamic one which can be modified in either way and thus leaves room for negative influencing factors to be changed in order to promote regaining health and well-being. Environmental factors are physical, chemical, biological, social, economic, cultural, and political.*
- **What are the criteria for health?**

- *1) Person (most important opinion)*
- *2) Doctor*
- *3) Lab tests*

- **What % of diseases are due to social factors?**
  - *Social factors are responsible for 60-70% of diseases*
- **What are the three types of health?**
  - *Social health*
  - *Mental health*
  - *Physical health.*
  - *All three-form individual health, based on genetics. They are influenced by environment and lifestyle*

4. Group and public health – definition. Indicators. Health indicators.

Definition of Group health

Group health is the health of social and ethnic groups within a population.

Example for group health could be pregnant women, children's health, diabetic health.

Definition of Public health

Public health is the health of a population and society as a whole.

Indicators (Determinants of Public health)

1. Demographic indices – 'population information'
    a. Mortality rate, natural growth or total population projection gives the future structure of the EU population.

2. Disease Incidence – 'population health' (incidence and prevalence)
    a. Looks at socially important diseases that appear in young individuals
    b. Increase incidence in TB, mental disorders, STDs, oncological diseases
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        i. cardiovascular diseases
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3. Physical development & activity – quality & functioning of each individual
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Definition of Acceleration

Acceleration is the quicker, accelerated development of the human organism → "social infantilism".

Examples include higher indices at birth, earlier teeth, earlier menarche, earlier finish of growth.

Theories of Acceleration

- Heliogenic theory of Koch = affected by sun activity cycles and solar radiation. Females accelerate faster than men
- Nutrigenous theory of Lenox = high energy food intake results in acceleration
- Radio wave theory of Traube = effect of magnetic field
- Theory of urbanisation stress
- Theory of Fox for lifestyle level = depend on different social levels → poor people accelerate faster.
- Theory of cyclic changes

Indices used to evaluate Acceleration (measures of development)

- Anthropometric = height, weight
- Physiometric = vital capacity, muscular strength
- Somatoscopic = statute, secondary sex signs
- Physical activity = speed, power

Social problems with Acceleration

- Earlier exposure sexual life → risk of STI, abortion, infertility
- No sense of social responsibility
- Non adapted to school programs
- Military service problems
- Earlier drug abuse, tobacco smoking and alcohol → earlier manifestation of risk factors and chronic diseases

Health indicators

The European Commission aims at producing comparable information on health and health-related behaviour of the population, on diseases, and health systems.

The first set of European Community Health Indicators (ECHI) was produced by the ECHI 1 project and widely disseminated.

The objective is to complete the European Community Health Indicators list that will serve as a basis for the European health information and knowledge system, including their operational definitions.

ECHI main categories

1) Demographic & social economic factors	• Population • Social-economic factors
2) Health status	• Mortality • Morbidity, disease-specific • Generic health stats • Composite health status measures
3) Determinants of health	• Personal and biological factors • Health behaviours • Living and working conditions
4) Health systems	• Prevention, health protection and health • Healthcare resources • Healthcare utilisation • Health expenditures and financing • Healthcare quality/performance

General requirements for health indicators

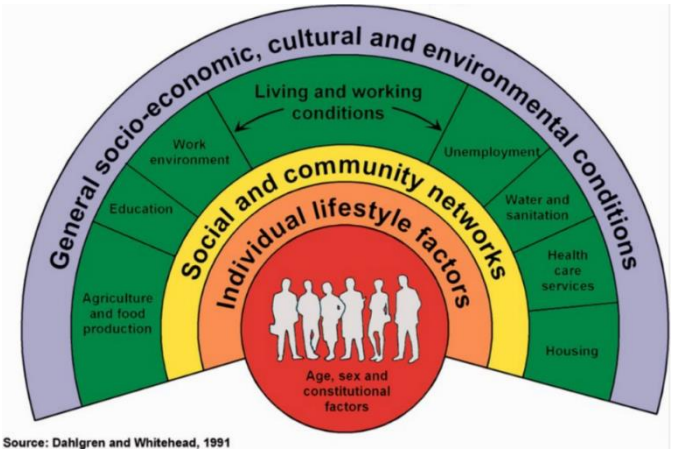
- Easy to read and understand
- Policy relevant
- Mutually consistent
- Available in timely fashion
- Comparable
- Selected from reliable sources
- Should not impose too large a burden to Statistical Institutes, Ministry of Health, and other respondents

Policy rainbow

Also known as Dahlgren & Whitehead's Social Health Mode which tells us about the layers of influence on health.

These determinants of health are divided into 2 groups:

1) Unmodifiable fixed individual characteristic: Sex, Age, Genetic Factors
2) Potentially modifiable factors - expressed as series of four consecutive layers of impact:
    a. 1st layer = is personal behaviour and ways of living that can promote damage to health.
    b. 2nd layer = underlines the impact of social and community networks.
    c. 3rd layer = includes structural factors related to living and working conditions, housing, work environment, access to healthcare services, water and sanitation, unemployment, education, agriculture and food production
    d. 4th layer = Includes wider socioeconomic, cultural and environment conditions



Source: Dahlgren and Whitehead, 1991

5. Medical demography – history, classification. Demographic transition model.

Definition of Medical demography

Medical demography is the study of demographic processes, closely related to the health of the population.

Role of Medical demography

1. To identify:
    a. inadequate service provision at the population level
    b. variation in access to health care
    c. significant differences or anomalies between health authority populations that require further detailed investigation
    d. health outcomes
2. In order to improve:
    a. health promotion and disease prevention strategies
    b. primary and community care
    c. secondary care

Definition of Demography

Demography is the study of the characteristics of human populations, such as size, growth, density, distribution, and vital statistics. The word comes from the Greek demos (people).

Definition of Population

Population has a different meaning in demography and statistics.

- In demography = relates to the number of people in a given area.
- In statistics = it means the universe of units under consideration.

History of Medical demography

1. 3800 BC Babylonian census (for taxation purposes)
2. 2323 BC Egyptian cattle-census becomes annual
3. 2275 BC Earliest record of taxpaying households in China
4. 1500 BC Israelites begin to regularly register men of military age
5. 1400 BC Egyptians begin to regularly register their citizens
6. 400 BC Rome enumerates 120 000 adult male citizens
7. 6 to 7 AD First census of Quiriminus (governor of Syria), census associated with Jesus's birth
8. 1320 Eruption of the Black Death in the Gobi desert. Population of China dropped from around 125 million to 90 million
9. 1347 - 52 Black Death in Messina, Sicily. Population of Europe declines from 75 to 50 million
10. 1589 Giovanni Botero's book "Delle cause della grandezza della città", includes discussion of factors limiting the growth of population
11. 1603 Weekly London Bills of Mortality = regular issues
12. 1612 Felix Platter = first demographic field study (plague in Basel)
13. 1670 Annual reports for births, marriages and deaths in Paris

14. 1693 General census for France to help the distribution of food during a severe shortage

15. 1793 Hung Liangqi writes: "In 4 generations or so, a population will increase 10 or 20 times while dwellings and land will only double or, at best, be some five times the initial amount ..."

16. 1798 Thomas Robert Malthus's "Essay on the Principle of Population as It Affects the Future Improvement of Society"

17. 1801 WORLD POPULATION = 1 BILLION

18. 1801 Periodic census begins in England and France

19. 1854 George Drysdale' book "Elements of Social Science" = the first comprehensive book outlining and defending the birth control movement on broad sociological and economic grounds

20. 1859 Charles Darwin's book "Origin of the Species by Means of Natural Selection" = Chapter 3, The Struggle for Existence

21. 1885 Ernst Ravenstein's book "Laws of Migration"

22. 1885 International Statistical Institute established

23. 1925 WORLD POPULATION = 2 BILLION

24. 1927 Margaret Sanger organised the first World Population Conference, Geneva

25. 1928 International Union for the Scientific Study of Population (IUSSP) founded in Paris

26. 1948 United Nations: Demographic Yearbook

27. 1954 United Nations World Population Conference in Rome

28. 1959 WORLD POPULATION = 3 BILLION

29. 1960 US Food and Drug Administration approves marketing "the pill" for birth-control

30. 1974 WORLD POPULATION = 4 BILLION

31. 1986 WORLD POPULATION = 5 BILLION

32. 2000 WORLD POPULATION = 6 BILLION

Branches of Demography

1. **Population static** (point of time) = status of population
    a. **Definition of Population static** is studying the size, distribution, and structure of the population by age, sex and other factors.
    b. **Types of Population static**
        i. Constrictive
            1. Lower percentage of younger people (more people above 60 years old and below 80)
            2. Declining birth rates
            3. "Protonatalistic policy" - Seen in major European countries
            4. United states
        ii. Expansive
            1. Larger percentage of younger age people
            2. High fertility rates and lower life expectancies
            3. "One child policy"
            4. 3rd world countries
        iii. Stationary
            1. Equal proportion of the population in each age group.

2. No decrease or increase in population = stable.
3. Austria

c. **Main instrument of population static**
   i. Census
      1. It is the total process of collecting, compiling, and publishing demographic, economic and social data pertaining, at a specified time, to all persons in a country or delimited territory (United Nations (UN), 1958)
      2. Happens every 10 years everywhere around the world.

d. The demography of the Republic of Bulgaria is monitored by the "*Natsionalen Statisticheski Institut*" (National Statistical Institute of Bulgaria)

2. Population dynamic (period of time) = changes of population

a. **Definition of Population dynamics** is the study of changes in the population and processes influencing those changes.

b. Source of demographic data for Population dynamics:
   i. Registration of births and deaths (civil registration)
   ii. Residence registry
   iii. Immigration registry

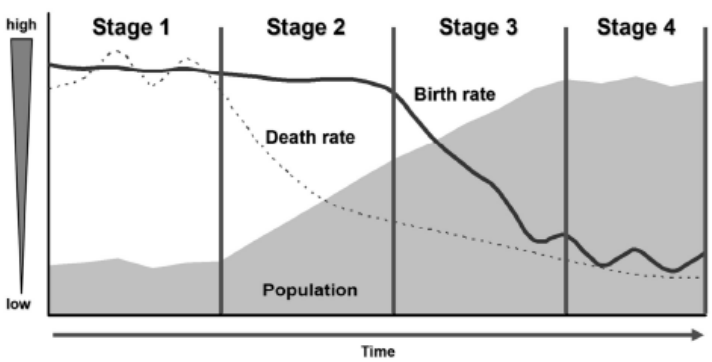
c. Examples include:
   i. Natural and Vital events (births, death, marriages, divorces)
   ii. Migrations
      - **Types of people:**
        - Migrant = a person who moves from one place to another in order to find work or better living conditions.
        - Immigrant = a person who comes to live permanently in a foreign country.
        - Emigrant = a person who leaves their own country in order to settle permanently in another.
      - **Types of migration**
        - External migration (forced migration or voluntary migration)
        - Internal migration (occurs within a country)
          - **Permanent internal migration**
            - Urbanisation = people moving from rural to urban areas
            - Urban depopulation = people moving from urban to rural
            - Regional migration = permanent movement within a country
          - **Temporary internal migration**
            - Daily = every day to school, work & on day trips & back
            - Seasonal = movements of people, related to agriculture (summer), seaside (summer) or mountain (winter) – seasonal employment.
            - Semi-permanent migration = movement of people for a limited period of time to work in another area of the country not associated with seasons (oil rigs, university lecturers)

Demographic Transition Model (DTM)

First described in the 1940s and the model presents four stages in the evolution of the population in a society.

Population change is shown in the Demographic Transition Model by:

- 1) Change over SPACE (a number of countries at the same time can exhibit the population characteristics of different stages)
- 2) Change over TIME (a country will theoretically progress through the stages)



Stage 1 – High fertility, high mortality (pre-industrial)

- Both high birth rates and death rates fluctuate in the first stage of the population model giving a small population growth.
- Possible reasons:
  - Poor birth control
  - High infant mortality
  - Religious beliefs encourage large families
  - High death rates

Stage 2 – High fertility, declining mortality (industrializing)

- Birth rates remain high, but death rates fall rapidly causing a high population growth.
- Possible reasons:
  - Improvement of quality and access to medical care
  - Decrease in infant mortality
  - Better sanitation and water supply
  - Better nutrition
  - Improved transport and communication

Stage 3 – Declining fertility, low mortality

- Birth rates fall rapidly while death rates continue to fall. The total population begins to peak, and the population increase slows to a constant.
- Possible reasons:
  - Increased access to contraception
  - Lower infant mortality rate
  - Industrialization
  - Increased desire for material possessions
  - Equality for women

Stage 4 – Low fertility, low mortality (stable population)

Both birth rates and death rates remain low, fluctuating with 'baby booms' and epidemics of illnesses and disease.

Stage 5 – Low fertility, low mortality

Lower birth rate → negative rate of natural increase.

Some Northern European countries are currently new stage (some authors consider it as Stage 5 of the DTM), where total population is declining where birth rates have dropped below death rates.

One such country is Germany, which has taken in a huge number of foreign workers to fill jobs. The UK's population is expected to start similar declining by 2021.

Examples of Social stages of different nations

- Denmark = low birth and death rates.
- Chile = declining birth rate, low death rate
- Cape Verde = high birth rate, declining death rate

Extra

- **What is population count?**
  - *The exact count is only obtainable from census, in the meantime only the medium population status is available, mostly in the middle of the year and at its end. It is a balance method based on the data of the common births and deaths, emigrants and immigrants count record.*
- **What is population structure composition according to?**
  - *Biological traits (sex, age)*
  - *Social-legal traits (marital status)*
  - *Cultural traits (education, nationality, etc.)*
  - *Socio-economical traits*
- **What are the principles for national censuses, based on UN recommendations?**
  - *Funded by national governments*
  - *Defined territory*

- *Universality (include everyone)*
- *Simultaneity at a fixed day, hour and moment becomes the chronological dividing line for inclusion or exclusion*
- *Individual persons are counted, not groups*
- *Compilation and publication of the data*
- *Defined periodicity - conduct the census at least at 10-yearly intervals, preferably in years, ending in 0 or 1*

- **What are the type of errors in demographic data?**
  - *1) Errors of coverage*
  - *2) Errors of classification*
  - *3) Errors of data processing*
- **What are errors of coverage?**
  - *The failure to enumerate all persons or counting some persons more than once.*
- **What are errors of classification?**
  - *The placing of enumerated persons in the wrong subgroup or category because of*
    - *1) deliberate falsification*
    - *2) misinterpretation of question*
    - *3) ignorance*
    - *4) memory failure*
- **What are the errors of data processing?**
  - *Computer programming errors and other kinds of mistakes that would occur in the stages where the census questionnaires are converted into census data.*
- **Demographic indicators for Bulgaria (2018)**
  - Population = 6 968 225 (present)
  - Growth rate = -5.6 people/1,000 population
  - Birth rate = 8.7 births/1,000 population
  - Death rate = 14.1 deaths/1,000 population
  - Life expectancy = 74.5 years
    - Male → 72.0 years
    - Female → 78.0 years
  - Fertility rate = 1.48 children born/woman
  - Infant mortality rate = 7.3 deaths/1,000 infants
  - Net migration rate = -0.7 migrant(s)/1,000 population

6. Medical demography. Population dynamics. Migration: types and health aspects.

Definition of Medical demography

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Role of Medical demography

1. To identify:
    a. inadequate service provision at the population level
    b. variation in access to health care
    c. significant differences or anomalies between health authority populations that require further detailed investigation
    d. health outcomes
2. In order to improve:
    a. health promotion and disease prevention strategies
    b. primary and community care
    c. secondary care.

Population Dynamic

Population dynamic (period of time) = changes of population

Definition of Population dynamics is the study of changes in the population and processes, influencing those changes.

Source of demographic data for Population dynamics

- Registration of births and deaths (civil registration)
- Residence registry
- Immigration registry

Examples of Population dynamics

- Natural and Vital events (births, death, marriages, divorces)
- Migrations
    - **Types of people:**
        - Migrant = a person who moves from one place to another in order to find work or better living conditions.
        - Immigrant = a person who comes to live permanently in a foreign country.
        - Emigrant = a person who leaves their own country in order to settle permanently in another.
    - **Types of migration**
        - External migration
            - **Forced migration**
            - **Voluntary migration** = When a person decides to move on his/her own free will (new job, better quality of life, joining a family etc.)
        - Internal migration (occurs within a country)
            - **Permanent internal migration**
                - Urbanisation = people moving from rural to urban areas
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                - Daily = every day to school, work & on day trips & back
                - Seasonal = movements of people, related to agriculture (summer), seaside (summer) or mountain (winter) – seasonal employment.
                - Semi-permanent migration = movement of people for a limited period of time to work in another area of the country not associated with seasons (oil rigs, university lecturers)

Health aspects (impact on health care and public health) of Migration

Migration places individuals in situations which may impact their physical and mental wellbeing.

Due to lack of legal status, stigma, discrimination, language, cultural barriers and low-income levels, irregular migrants may be excluded from accessing primary health care services, vaccination campaigns and health promotion and interventions.

Lack of access to health services, inadequate hygiene and sanitation within densely populated living spaces, inadequate nutrition, cold climate, and violence increases the vulnerability to ill health. The increasing pattern of circulatory migration moving between immune and non-immune populations also adds a further challenge with respect to the prevention and control of emerging infectious diseases.

Problems that may occur

- External migration (emigration/immigration)
  - Changes in disease epidemiology (beta thalassemia, sickle cell anaemia)
  - Increased risk for global pandemics e.g., SARS, Ebola
- Internal migration
  - Permanent internal migration = Health risks in case of overpopulation/depopulation
  - Temporary internal migration
    - Daily = cold spreading in workplace, car accidents
    - Seasonal (season peak in disease incidence)
      - Summer
        - Gastrointestinal infection
        - Food poisoning
        - Sunburns
        - Drowning
        - Toxic infections in area
        - Parasites (agricultural work)
      - Winter
        - CVS problems
        - Fractures
        - Hypothermia
- Other problems:
  - Difficulty with medical supplies (beds, medications)

Extra

- **What is a health aspect of daily migration and what kind of organisation would you do as a public health provider?**
  - *Car accidents so you would organise where the ambulances will be available to access, where certain areas can access that help*
- **What is net migration?**
  - *The difference between the number of immigrants and the number of emigrants for a given area in the same calendar year*
- **If birth and death are the two most fundamental demographic processes, what is the third?**
  - *Migration*
- **Birth, death, and migration are expressed how in the demographic balancing equation?**
  - *Starting population + (Births-Deaths) + (Immigration - Emigration) = Starting population + (Natural increase) + (Net migration) = Ending population*

7. Medical demography. Population dynamics. Natural and vital events. Indicators. Factors for birth and mortality. Causes of death, death registrations. Infant mortality. Causes, dynamics.

Definition of Medical demography

Medical demography is the study of demographic processes, closely related to the health of the population.

Role of Medical demography

1. To identify:
    a. inadequate service provision at the population level
    b. variation in access to health care
    c. significant differences or anomalies between health authority populations that require further detailed investigation
    d. health outcome
2. In order to improve:
    a. health promotion and disease prevention strategies
    b. primary and community care
    c. secondary care.

Definition of Demography

Demography is the study of the characteristics of human populations, such as size, growth, density, distribution, and vital statistics. The word comes from the Greek demos (people).

Definition of Population

Population means different in demography and statistics.

- In demography = relates to the number of people in a given area.
- In statistics = it means the universe of units under consideration.

Population dynamics

Population dynamic (period of time) = changes of population

Definition of Population dynamics is the study of changes in the population and processes, influencing those changes.

Source of demographic data for Population dynamics

- Registration of births and deaths (civil registration)
- Residence registry
- Immigration registry

Examples of Population dynamics

- Natural and Vital events (births, death, marriages, divorces)
- Migrations

Demographic balancing equation

It is an equation that is used to calculate population changes from one year to the next in a given area, based on number of births, deaths, and migrations.

Starting population + (Births-Deaths) + (Immigration - Emigration) = Starting population + (Natural increase) + (Net migration) = Ending population

Vital registration

Vital registration is concerned with the recording of key life cycle or vital events.

According to the United Nations (2003) vital events are: "*A live birth, death, fetal death, marriage, divorce, adoption, legitimation of birth, recognition of parenthood, annulment of marriage or legal separation.*"

Unlike censuses that describe the state of the population at a fixed point in time, vital statistics are collected on a continuous basis, and are thus important for the study of population change. Nowadays, for legal purposes, various registers are kept covering deaths, births, and marriages.

Requirements for vital registrations

- Continuous
- Complete
- Permanent
- Compulsory

Main items for vital registration

- Age
- Sex
- Date and place of occurrence of the event
- Date of registration
- Place of residence
- **Additional items for registration:**
  - **For birth registration:** multiple or single birth, attendant at birth or delivery, legitimacy, mother's age, parity, and duration of marriage.
  - **For death registration:** cause of death, certifier, and the age, sex and marital status of the deceased.
  - **For marriages:** type of ceremony, age and previous marital status of the bride or groom.
  - **For divorces:** age, the number of dependent children and duration of marriage.

Indicators related to Natural and Vital Events

1. **Crude marriage rate** = The ratio of the number of marriages during the year, to the average annual population in that year. The value is expressed per 1000 inhabitants.

2. **Crude divorce rate** = The ratio of the number of divorces during the year, to the average annual population in that year. The value is expressed per 1000 inhabitants.

3. The **age of persons at marriage and divorce** is calculated in completed years based on the date of birth of persons and the date of event (marriage/divorce).

4. **Natural increase** = The difference between the number of live born children and the number of deaths for a given area in the calendar year.

Births

Definition of Live births: The complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached.

- **Term** → From 37 completed weeks to less than 42 completed weeks (259 to 293 days) of gestation.
- **Preterm** → Less than 37 completed weeks (less than 259 days) of gestation.
- **Post-term** → 42 completed weeks or more (294 days or more) of gestation.

"Abortion" is a loss or interruption of a pregnancy before the foetus meets the above-mentioned criteria.

Factors influencing Birth rate

- **Increased birth and fertility rates:**
  - Religiosity (prohibition of contraceptives)
  - Intention to have children
  - Maternal support
- **Decreased birth and fertility rates:**

- Wealth
- Education
- Female labour participation
- Urban residence
- Increased female age
- Increased male age

NB: these factors are not universal and differ by region and social class

Birth rate is calculated in several ways:

- Live births from universal registration system
  - **Source of data on births** is the Unified System for Civil Registration and Administrative Services of Population (USCRASP)
  - Births are **registered** through a common (USCRASP-CDS) document known as "Birth notification" *(legal document in Bulgaria)*
- Population counts from a census
- Estimation through specialised demographic techniques

Birth rate

$$\frac{\text{No. of births}}{\text{No. of people in popn in a given area at given time}} \times 1000 = \text{birth rate per million}$$

Crude Birth Rate

It is the ratio of the number of **live births** during the year, to the average annual population in that year. The value is expressed per 1000 inhabitants.
Bulgaria: 9.1% (2016)

Scale of Assessment for Crude Birth Rate

- Low – below 15 ‰
- Average – 15-25 ‰
- High – over 25 ‰

(‰ - per mille = parts per thousand)

Indicators related to Birth

1. **Total fertility rate** = Total number of children a woman would have by the end of her reproductive period if she experienced the currently prevailing age-specific fertility rates throughout her childbearing life.
   a. **Bulgaria:** 1.53 (2015)

2. **Gross reproduction rate** = For a given year of observation is the average number of live-born girls which a generation of women in their reproductive age (15-49 years) would give birth to if their age-specific fertility rates equal to that in the observed year.

3. **Net reproduction rate** = For a given year of observation is the average number of live-born girls which a generation of women in their reproductive age (15-49 years) would give birth to if their age-specific fertility and mortality rates remained equal to that in the observed year.

4. **The age of parents at birth** is calculated in completed years based on the date of birth of parents and the date of the birth event.

5. **The mean age of the mother at childbearing** is calculated as a weighted average within the interval between the birth of mother's generations and children birth.

Death

Definition of Death: It means a termination of all vital functions without a possibility to recover (complete loss of function of the cerebral neocortex and brain stem)

Death registration

- Cause of death
- Age/sex/ marital status
- Certifier

Causes of Death

The causes of death to be entered on the medical certificate. Causes of death are all those diseases, morbid conditions, or injuries which either resulted in or contributed to death and the circumstances of the accident or violence which produced any such injuries.

Reasons for death:

- Diseases of circulatory system
- Malignant Neoplasms
- Diseases of respiratory system
- Diseases of digestive system
- Endocrine, nutritional, and metabolic diseases such as diabetes
- External causes of injury and poisoning (accidents, homicides, suicides)

Factors influencing Death Rate

- Standard of living (income, nutrition, education, occupation)
- Quality of healthcare and access to healthcare
- Age
- Gender

Death rate

$$\frac{\text{No. of deaths}}{\text{No. of people in popn in a given area at given time}} \times 1000 = \text{death rate per million}$$

Crude mortality rate

Represents the ratio of the number of deaths during the year to the average annual population in that year expressed per 1000 inhabitants. Is the total number of deaths per 1000 of a population in a year.

Bulgaria: 15.1% (2016)

Scale of Assessment for Crude mortality Rate

- Low – below 10 ‰
- Average – 10-15 ‰
- High – over 15 ‰

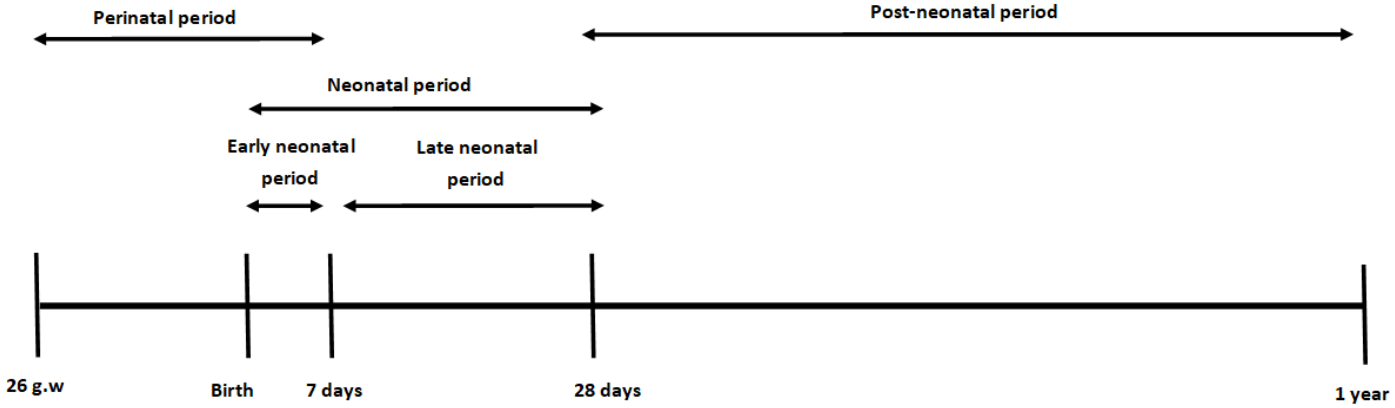
(‰ - per mill)

Specific death rates:

- Age- and sex-related (special rates: infant mortality and foetal losses)
- Cause-related (diseases, injuries, suicide, homicide)
- Life expectancy (sex and age related)

Indicators related to Infant Mortality

1. **Infant mortality rate** = Represents the ratio of the number of deaths of children under one year of age during the year to the number of live births in that year expressed per 1000 live births.



a. This rate is divided up for several subgroups and often used as an indicator of the level of health in a country:
   i. Prenatal period (till birth)
   ii. Perinatal period (26 g.w – 7 day)
   iii. Postnatal period (after birth)
b. **Bulgaria**: 6.6% (2015)

2. **Perinatal mortality rate** = Perinatal mortality rate represents the ratio of the number of deaths of children under one week and the stillbirths during the year, to 1000 births in that year (live births and stillbirths).

3. **Neonatal mortality rate** = The number of deaths in the neonatal period, during a given time period per 1000 live births during the same time period.

   a. **Early neonatal mortality rate (per 1000)** = Deaths at 0-6 days after live birth

   b. **Late neonatal mortality rate (per 1000)** = Deaths between 7-27 days after live birth

4. **Post-neonatal mortality rate** = The number of deaths after 28 days up to, but not including, one year of age

Causes of Infant Mortality

- **Neonatal mortality (Birth to 28 days)**
  - Low birth weight and prematurity
  - Birth injury and difficult labour
  - Sepsis
  - Congenital anomalies
  - Haemolytic disease of new-born
  - Conditions of placenta and cord
  - Diarrheal diseases
  - Acute respiratory infections
  - Tetanus
- **Early neonatal mortality (Birth to 7 days)**
  - Pre-term birth
  - Intrapartum complications
- **Late neonatal mortality (7 days to 28 days)**
  - Infections
- **Post-neonatal mortality (28 days to 1 year)**
  - Diarrhoeal diseases
  - Acute Respiratory Infections
  - Other communicable diseases
  - Malnutrition
  - Congenital anomalies
  - Accidents

Factors influencing Infant Mortality Rate (IMR)

- Quality and access to healthcare
- Age of mother, birth control and birth interval
  - Increased Infant mortality:
    - In young mothers (<20yrs) and older women (40-49)
- Decreased infant mortality:
  - If mother leaves more time between successive babies/before the next birth
  - After 2nd and 3rd child IMR decreases as the woman is more experienced in caring for a child
  - BUT, after 3rd child, IMR increases as less capable of looking after many children
- Standard of living (income, education, occupation, nutrition)
- Societal factors (statue of women, sex of infant)

Extra

- **Life expectancy**

- *Is the mean number of years that a person can expect to live at birth if subjected to current mortality conditions throughout the rest of his or her life.*
- ***Bulgaria:** 74.7 years (2015)*

- **Infertility**
  - *Inability to conceive*
  - *Primary Infertility*
    - *The couple has never conceived, despite cohabitation and exposure to pregnancy for a period of 2 years.*
  - *Secondary Infertility*
    - *The couple has previously conceived but is subsequently unable to conceive despite cohabitation and exposure to pregnancy for a period of 2 years.*
    - *If the woman has breast-fed a previous infant, then exposure to pregnancy is calculated from the end of lactational amenorrhea.*
  - *Worldwide 3-7% of all couples have an unresolved problem of infertility.*
  - *The most common cause of female infertility is ovulatory problems which generally manifest themselves by sparse or absent menstrual periods*
  - *Male infertility is most commonly due to deficiencies in semen, and semen quality is used as a surrogate measure of male fecundity*
  - *Treatment: counselling, fertility treatments (IVF, donor insemination)*
- **IVF**
  - *Centre for Assisted reproduction (a subsidiary unit to Ministry of Health)*
  - *Age limit for IVF is until menopause*
  - *Age limit for IVF with donor eggs*
  - *Up to 4 procedures and 4 frozen embryo transfers covered by public funds for individuals younger than 43 years*

8. Incidence and prevalence – definition. Methods of collecting morbidity statistics. Indicators. International classification of diseases (ICD).

Definition of Incidence

Incidence (I) is a measure of the frequency with which new cases of illness occur in a population over a period of time.

Incidence can be used to estimate the risk of an event during a stated period of time.

$$\text{Incidence} = \frac{\text{New cases}}{\text{Population at risk}} \times \text{Time} \times 10^n$$

- New cases
- Population at risk
- Interval of time

Definition of Prevalence

Prevalence (P) is the most basic of epidemiologic measures. Measure of the number of cases (old and new) at a point of time.

It is defined as the number of cases divided by the population at risk. Prevalence rate is very valuable for administrative purposes and is measured usually by cross-sectional studies. It is a snapshot of the diseases distribution in a population at a given moment.

$$\text{Prevalence} = \frac{\text{All cases (old and new)}}{\text{Population at risk}} \times 10^n$$

- All cases
- Population at risk
- Point in time

Attack rate is a variant of an incidence rate, applied to a narrowly defined population observed for a limited time (during an epidemic). The attack rate is usually expressed as a percent.

Secondary attack rate is a measure of frequency of new cases of a disease among the contacts of known cases, usually expressed as a percent.

Case fatality ratio is a measure of deaths due to a disease in a given period among all cases of the disease in that same period, usually expressed as a percent.

Differences in Incidence and Prevalence

Incidence only for new cases over interval of time (e.g., when they explain rise in COVID-19 over a period of time like a month). Prevalence old and new cases at a point in time. But both look at population at risk.

Prevalence depends on changes in the incidence, disease virulence and duration, prevention, intervention, treatment, classification of cases etc. Studying prevalence and incidence in a population can provide epidemiologists with important information about ongoing processes:

- High Prevalence + High Incidence
  - Epidemic situation
  - Low level of health prevention and treatment
- High Prevalence + Low Incidence
  - Good level of prevention services, low level of treatment
  - Aged population with many chronic diseases
- Low Prevalence + High Incidence
  - Low level of prevention services

  - Infectious diseases epidemic with high fatality rate
  - Effective treatment
- Low Prevalence + Low Incidence
  - Good level of health care services with successful prevention and treatment of diseases

Definition of Morbidity: defined as any departure, subjective or objective, from a state of physiological well-being. It is often equivalent to terms such as sickness, illness, disability, but usually morbidity is accepted as a statistical concept including all cases of diseases that the health system is informed about.

Definition of Illness: a disturbance in the normal interaction between the person and the environment that leads to structural and functional changes in the organism.

Definition of Disease: An affection, that is diagnosed and registered by a professional during a medical check-up, prophylactic examination, epidemiological studies or as a reason for death.

Definition of Incidence: cumulative data for all illnesses that are known by health care system i.e., they are registered. This is data for the dissemination of the disease though the population including the number of the ill people and the diseases.

Sources for studying the incidence
- Data from the patient and their family
- Data from medical establishments
- Data from death registries

Main indicators of Morbidity

1. **Fresh incidence** = number of new-found disease/population of risk *10n

2. **Morbidity** = the totality of all new-found and old registered for a certain year disease, for which medical help was searched for.

3. **Morbidity** = number of all new-found and old registered for a certain year/average annual number of the population * 10n

4. **Momentary morbidity** = number of all diseases for certain moment/number of the examined persons at the moment * 1000

Methods of collecting morbidity statistics

Passive method (where the initiative to seek medical care is left to the patients):
- From the general registries (tracking)
- Acute morbidity
- Chronical morbidity
- From specific documentation/registries
- Infectious diseases
- Non-communicable diseases (Dermatological, Mental, Autoimmune)
- Data from dispensary attendance of the population
- Data from hospitalized patients
- Data from temporary disability
- Data from permanent disability

Active method (where medical professionals actively collect data through):
- Data from check-ups/prophylactic examinations
  - annual (cervical, breast cancer, prostate cancer)
  - before marriage
  - before driving license
  - before entering a new job
- Data from sociological studies (questionnaires)
- Special reporting

- Very dangerous infectious, acute infectious disease, infectious no epidemic disease, incidence with temporary disability and permanent disability, hospitalized incidence

International Classification of Diseases

The International Classification of Diseases (ICD) is the international standard diagnostic tool for epidemiology, health management and clinical purposes. It is commonly known and used in many countries as the principal means of classifying and coding both mortality and morbidity experience. Its full official name is International Statistical Classification of Diseases and Related Health Problems.

It is a system developed collaboratively between the World Health Organization and 10 international centres so that the medical terms reported by physicians, medical examiners, and coroners on death certificates can be grouped together for statistical purposes.

Codes are alpha numeric excluding the letter U, which is reserved for additional codes and changes arising between revision of the classification.
Systematic arrangement of all specific names, diagnostic levels for health-related conditions into groups, according to their mode of causation or body system affected, with numbers assigned to each.

The purpose of the ICD and of WHO sponsorship is to promote international comparability in the collection, classification, processing, and presentation of mortality statistics.

ICD standards allow for:

- Easy storage, retrieval, and analysis of health information for evidenced-based decision-making.
- Sharing and comparing health information between hospitals, regions, settings, and countries
- Data comparisons in the same location across different time periods

The ICD:

- Includes coding rules for causes of death. These rules allow a coder to identify the single condition, the underlying cause of death on the death certificate that is considered most informative from a public health point of view.
- Standardizes definitions such as underlying cause of death, live birth, maternal death etc.
- Includes tabulation lists which recommend the cause-of-death groupings that countries should use to present mortality data that can be compared among countries.
- Prescribes the format of the medical certification of death.
- Includes regulations regarding the compilation and publication of statistics on diseases and causes of death, which require member states to use the ICD for compiling mortality and morbidity statistics.

ICD-11 Chapters for Mortality and Morbidity Statistics

1. Certain infectious or parasitic diseases
2. Neoplasms
3. Diseases of the blood or blood-forming organs
4. Diseases of the immune system
5. Endocrine, nutritional, or metabolic diseases
6. Mental, behavioural, or neurodevelopmental disorders
7. Sleep-wake disorders
8. Diseases of the nervous system
9. Diseases of the visual system
10. Diseases of the ear or mastoid process
11. Diseases of the circulatory system
12. Diseases of the respiratory system
13. Diseases of the digestive system
14. Diseases of the skin
15. Diseases of the musculoskeletal system or connective tissue
16. Diseases of the genitourinary system
17. Conditions related to sexual health
18. Pregnancy, childbirth, or the puerperium
19. Certain conditions originating in the perinatal period
20. Developmental anomalies

21. Symptoms, signs, or clinical findings, not elsewhere classified
22. Injury, poisoning, or certain other consequences of external causes
23. External causes of morbidity or mortality
24. Factors influencing health status or contact with health services
25. Codes for special purposes
26. Supplementary Chapter Traditional Medicine Conditions - Module I
27. V Supplementary section for functioning assessment
28. X Extension Codes

Extra

- **Incidence statistics may be most appropriate for cancer and congenital anomalies, but prevalence statistics for longer-term diseases or disorders such as mental health, respiratory or musculoskeletal problems. The 3 main sources for prevalence and incidence are:**
  - *Health interview surveys = cross section sample, usually of people in private households and panel-cohort surveys. Surveys are appropriate for estimating the prevalence of longstanding chronic diseases with low fatality, such as some cardiovascular and respiratory conditions*
  - *Registers = total population with disease in a sample of hospitals or areas, or in the whole country.*
    - *1. Disease specific registers are primarily a source of incidence data for chronic or acute diseases with high fatality or need for long-term care (for example diseases associated with premature death, high mortality → cancer registry, birth defect etc). Further,*
    - *2.Hospital records*
    - *3. Death registers*
  - *GP data = a sample of GP's either national or local. Estimates incidence and prevalence, it is a good source for chronic and acute diseases.*
- **Health-adjusted life expectancy (HAL)**
  - *Adjusts overall life expectancy by the amount of time lived in less than perfect health. This is calculated by subtracting from the life expectancy a figure which is the number of years lived with disability multiplied by a weighting to represent the effect of the disability*.
- **Quality-adjusted life years (QALY)**
  - *Measures the amount of life in perfect quality gained in a population as a result of health care intervention*
- **Disability-adjusted life years (DALY)**
  - *Measures the amount of life lost in a population as a result of premature death or disability*

9. Physical development and activity. Acceleration.

Physical development and activity

Combination of morphological, functional, and mental indices characterising the level and dynamics of the growth of the human organism and its possibilities for adaptation to the changing environment.

Definition of Acceleration

Acceleration is the quicker, accelerated development of the human organism → "social infantilism".

Examples include higher indices at birth, earlier teeth, earlier menarche, earlier finish of growth.

Theories of Acceleration

- Heliogenic theory of Koch = affected by sun activity cycles and solar radiation. Females accelerate faster than men
- Nutrigenous theory of Lenox = high energy food intake results in acceleration
- Radio wave theory of Traube = effect of magnetic field
- Theory of urbanisation stress
- Theory of Fox for lifestyle level = depend on different social levels → poor people accelerate faster.
- Theory of cyclic changes

Indices used to evaluate Acceleration (measures of development)

- Anthropometric = height, weight
- Physiometric = vital capacity, muscular strength
- Somatoscopic = statute, secondary sex signs
- Physical activity = speed, power

Social problems with Acceleration

- Earlier exposure sexual life → risk of STI, abortion, infertility
- No sense of social responsibility
- Non adapted to school programs
- Military service problems
- Earlier drug abuse, tobacco smoking and alcohol → earlier manifestation of risk factors and chronic diseases

10. Epidemiology – definition, tasks, methods. Natural history of the disease.

Epidemiology – definition

Studies distribution and determinants of disease in human populations and the application of this studies to control health problems.
From Greek, *epi* = upon, *demos* = people, *logos* = science

Widely used in evidence based clinical medicine for identifying risk factors for disease and deciding optimal treatment approaches to practice. Social medicine, based on the epidemiological findings, provides the appropriate public health policies and measures in order to strengthen the health of the population.

Epidemiology – tasks

- Discover the agent, host and environmental factors that affect health
- Determine the relative importance of causes of illness.
- Identify sections of population which have the greatest risk from specific causes of ill health.
- Evaluate the effectiveness of preventive and therapeutic health programs and services.
- Study the natural history of disease
- Conduct surveillance of disease and injury occurrence in populations
- Investigate outbreaks to identify their source and to control

Epidemiology – methods

Studies can be observational or experimental.
Observational studies

- Descriptive studies (no control or comparison group)
  - Case report
  - Case series
- Analytical studies (has control or comparison group)
  - Ecological
  - Cross-sectional
  - Case-control
  - Cohort

Experimental studies (has experimental or control group)

- Randomised control trials
- Field trials
- Community trials

Studies of disease aetiology can also be ordered from simple and rapid investigations that identify a research hypothesis to complex and lengthy ones to evaluate and prove/reject these hypotheses. According to these criteria**, epidemiologic study designs can be:**

- Case reports
- Case series
- Ecological studies
- Cross-sectional studies
- Case-control studies
- Cohort studies
- Intervention trials/controlled trials

Natural history of the disease

Diseases and other phenomena of interest in epidemiology are processes that occur and develop in time.

The course of a disease from its onset to its resolutions (complete/partial recovery or death) is defined as the natural history of a disease e.g., the evolution of the pathophysiologic process.

Natural history of diseases can be also classified into 2 categories:

- Acute diseases (infections) have short natural histories.
- Chronic diseases (cancer, coronary heart disease, diabetes) have long natural histories.

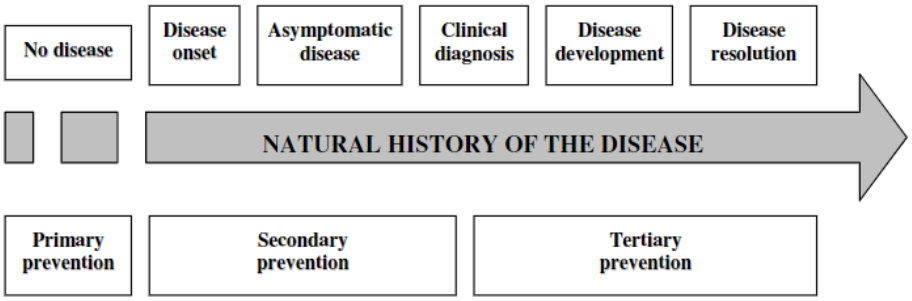


Figure 4. Public health interventions, according to the natural history of the disease

Diseases have well-defined stages

- Pre-symptomatic period → the period of time before clinical manifestations of the disease occurs
  - For non-infectious diseases
    - Induction period: period of time from causal action until disease initiation
    - Latent period: the time interval between disease occurrence and detection
  - For infectious diseases
    - Incubation period: the time from infection to development of symptomatic disease
    - Latency: the time interval from infection to development of infectiousness
- Post-morbid period

11. Risk factors, causality. Bradford Hill's criteria. Measurement of diseases and exposure. Risk assessment.

Risk factors

Definition of Risk: Risk refers to the probability that an event will occur.

In epidemiology:

- Risk is the probability that person, exposed to risk factors will develop a particular disease
  - Risk factors are characteristics associated with increased risk of developing disease or another health-related event.
  - Exposure refers to contact with risk factors before developing a disease.
- Odds are defined as the ratio of the probability of one outcome to the probability of another outcome. If risk or probability of becoming a case is *p*, then the odds of becoming a case are *p/(1-p)*.
  - For example, if probability of developing diabetes is 0.07 (7%), then odds of developing diabetes are 0.07/0.93 = 0.075.
- Probability is restricted to 0-1 interval, while odds can be any non-negative number.
- Confounding factors occur when an apparent association between a presumed causal variable and an outcome is in fact accounted for by a third variable (confounder).

Causality

A cause is something that is:

1. associated with its effect
2. is present before or at least at the same time as its effect
3. acts on its effect

Causality is an assumption, that certain events cause or produce subsequent events.

Association exists when changes in one event are accompanied by changes in another. Events are associated when they occur more frequently together than one would expect by chance. However, it is not necessary that an association will be causal.

Events could occur and interact in several ways

- Not associated (independent) events
  - (A ←//→ B)
- Associated events (statistically)
  - Not causally associated (parallelism of events: (↑A ≡ ↑B)
  - Causally associated
    - Indirectly (A → C → B)
    - Directly (A → B)

The **main aim of epidemiology** is to find, study and assess the causal relationship between the presumed cause and its potential effect.

Four possible relationships between cause and effect (Causal relationships)

- Factor A is necessary AND sufficient for event B
  - *Example: monogenic disease (cystic fibrosis, Huntington disease, and Duchenne muscular dystrophy)*
- Factor A is necessary but NOT sufficient for event B
  - E*xample: infection doesn't always result in tuberculosis. You need immunosuppression for TB to express itself.*
- Factor A is NOT necessary but sufficient for event B
  - *So that factor alone can produce the disease, but so can other factors*
- Factor A is NEITHER necessary NOR sufficient for event B
  - *Example: Dietary habits of a type 1 diabetic*

Bradford Hill's criteria

Published in 1965. Widely recognised as a basis for causality assessment in epidemiology.

To say that an association is causal, it must meet the following criteria:

1. **Strength of the association**:
   a. The stronger the association, the more likely the relation is a causal relationship
   b. Magnitude of association is measured by statistical tests
2. **Consistency**:
   a. Replication of the findings by:
      i. Different investigators, at different times, in different places, with different methods
      ii. Ability to convincingly explain different results
3. **Specificity of the association**:
   a. The more accurately the disease and exposure could be defined, the stronger the observed relationship should be.
4. **Temporality**:
   a. The putative cause must always precede in time of the presumed effect.
   b. This is the only essential criterion.
5. **Biological gradient**:
   a. Change in exposure leads to corresponding change in disease rates.
6. **Plausibility**:
   a. Association must be consistent with the general knowledge and beliefs.
7. **Coherence:**
   a. All the observations must fit with the hypothesized model to form a coherent picture.
8. **Experiment:**
   a. Under controlled conditions, changing the exposure must cause a change in the outcome.
9. **Analogy:**
   a. The association may resemble similar events.

Measurement of diseases and exposure

In epidemiology and public health, many factors and events have only two possible categories: alive or dead; case or control; exposed or unexposed etc. The frequency measures of these variables are ratios, proportions, and rates.

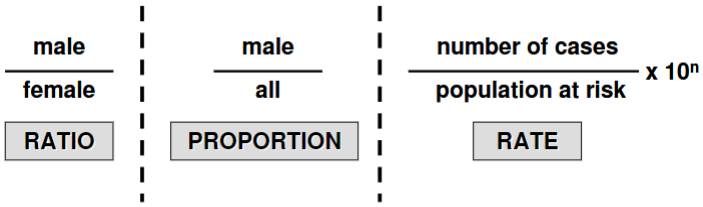


Figure 6. Ratio, proportion and rate

Ratio is a quantitative measure of the relationship of two (independent) rates or events which may not be a part of the same denominator. For example, sex ratio is the number of men/number of women.

Proportion is a ratio, measuring the number of specific events out of total events. For example, the proportion of male patients in a hospital is the number of males/all patients.

Rate measures the occurrence of an event in a population over time. The persons in the denominator must reflect the population from which the cases in the numerator arose. The counts in the numerator and denominator should cover the same time period.
The persons in the denominator must be "at risk" for the event, that is, it should have been possible for them to experience the event.

Prevalence is defined as the number of cases divided by the population at risk. It is valuable for administrative purposes and is measured by cross-sectional studies.

$$\text{Prevalence} = \frac{\text{All cases (old and new)}}{\text{Population at risk}} \times 10^n$$

- All cases
- Population at risk
- Point in time

Incidence is a measure of the frequency with which new cases of illness occur in a population over a period of time. It can be used to estimate the risk of an event during a stated period of time.

$$\text{Incidence} = \frac{\text{New cases}}{\text{Population at risk}} \times \text{Time} \times 10^n$$

- New cases
- Population at risk
- Interval of time

Risk assessment

Several quantitative measures of the magnitude of the causal relationship between risk factors and disease exist. The three most common risk measures are:

- Relative Risk
- Attributable Risk
- Odds Ratio

Relative Risk (RR)

Definition of relative risk: Relative risk is a ratio of the incidence in the exposed group (IE) compared to the incidence in the unexposed group (INE).

Exposed Group/Unexposed Group = Relative Risk

It is usually measured in cohort and experimental epidemiological studies.
The relative risk calculates how many times the risk of developing a disease is higher or lower in the group of exposed or non-exposed.

RR = 1 (whereby number of exposed is same as unexposed) → not a risk factor
RR = < 1 (number of unexposed is higher than exposed) → protective factor
RR = > 1 (number of exposed is higher than unexposed) → risk factor

Attributable Risk (AR)

Definition of attributable risk: Attributable risk is the difference between the incidence in the exposed group (IE) and the incidence in the unexposed group (INE).

Exposed group – Unexposed group = Attributable risk

It is usually measured in cohort epidemiological studies.
The attributable risk measures the amount of absolute risk that can be attributed to a specific risk factor exposure.

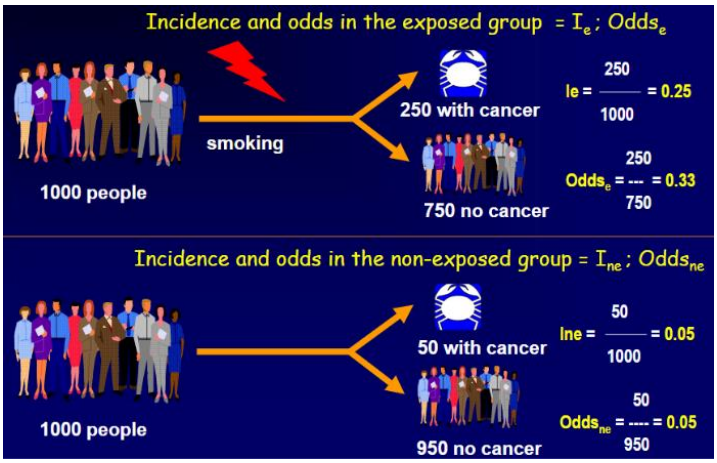
Odds Ratio (OR)

Definition of odds ratio: Odds ratio is the relationship of the probability of occurrence of an event to that of non-occurrence.

Odds of exposed/Odds of non-exposed = Odds ratio

It is usually measured in case- control epidemiological studies.
It calculates how many times the odds of developing a disease is higher or lower in the group of exposed or non- exposed.

Example of Risk Assessment



Relative risk = Exposed Group (IE)/Unexposed Group (INE)
Relative risk = 0.25/0.05 = 5 times higher risk

Attributable risk = Exposed group – Unexposed group
Attributable risk = 0.25 – 0.05 = 0.20 cases per 1000

Odds ratio = Odds of exposed ($Odds_e$) /Odds of non-exposed ($Odds_{ne}$)
Odds ratio = 0.33/0.05 = 6.6

Extra theory

- **Confounding factor**
  - *It occurs when an apparent association between a presumed causal variable and an outcome is in fact accounted for by a third variable (confounder) or "common cause" not in the causal pathway.*
  - *The confounder itself must be associated with both presumed cause and outcome.*
    - *For example, if Factor A causes Disease D, that relationship could be confounded by a factor B, that is associated with both Factor A and Disease D.*

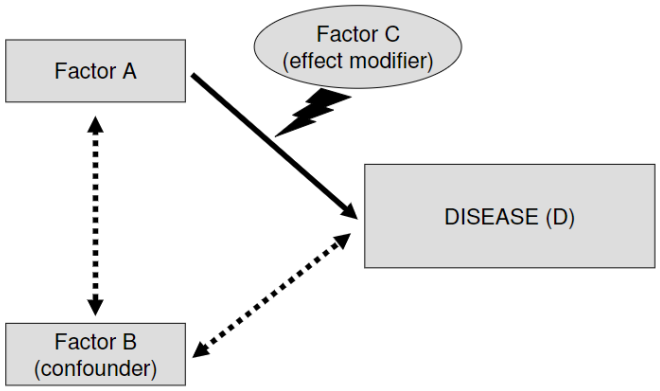


Figure 5. Concept of confounding and effect modification

12. Epidemiological studies – observational studies.

Observation studies

- Descriptive studies (no control or comparison group)
  - Case report
  - Case series
- Analytical studies (has control or comparison group)
  - Ecological
  - Cross-sectional
  - Case-control
  - Cohort

Descriptive studies

Case reports

- **Definition of case reports**: Case reports are detailed description and presentation of a single or several cases.
- They are widely used in the rare diseases research to present new diseases and syndromes or an unusual course of a common disease.
- **Advantages of case reports**:
  - The only way for describing and publishing rare diseases and syndrome OR unusual course of a common disease
  - Sources of hypotheses about aetiology, treatment and resolution of diseases that can be later evaluated by more complex epidemiologic studies
  - Provide very detailed and important information about the diseases pathogenesis, development, and treatment
  - Provides insight for further research and can serve as a bridge between laboratory and clinical research
- **Disadvantages of case reports:**
  - Researchers' own subjective feeling may influence the case study (researcher bias).
  - Highly susceptible to bias because of the small number of cases, especially when case reports comment treatment issues or survival
  - Cannot be directly transferred to clinical practice because of the great level of uncertainty.

References

- https://www.simplypsychology.org/case-study.html

Case series

- **Definition of Case series:** It is a study of larger group of patients with a single disease. It is a descriptive study with no control or comparison group
- Describes the clinical development and treatment of a group, gathered usually at one point of time.

Analytical studies

Ecological studies

- **Definition of ecological studies:** In ecological studies, the unit of analysis are populations (group, community, or political entity)
- Efficient and economical study design taking advantage of pre-existing data.
- No time dimension measured in these studies (similar to cross-sectional studies)
- **Advantages of ecological studies:**
  - Easy to obtain data
  - Sources of hypotheses about aetiologic relationship between exposure and disease
- **Disadvantages of ecological studies:**
  - Cannot prove that a causal relationship actually exists
  - Ecological fallacy – the bias that occur when researchers directly infer observed associations and relationships from an aggregated to individual level. *The ecological fallacy consists in thinking that relationships observed for groups necessarily hold for individuals.*
    - *E.g., if countries with more fat in the diet have higher rates of breast cancer, then women who eat fatty foods must be more likely to get breast cancer.*

Cross-sectional studies

- **Definition of cross-sectional studies:** Subjects are sampled without respect to disease status and are studied at a particular point in time.
- They are also called "prevalence studies" because cross-sectional studies do not measure the time dimension and cannot estimate the incidence. Typically, these studies are used to measure the prevalence of health outcomes and describe characteristics of a population.
- In epidemiology and public health research, cross-sectional studies are used to assess exposure (cause) and a disease (effect) and compare the rates of diseases and symptoms of an exposed group with an unexposed group.

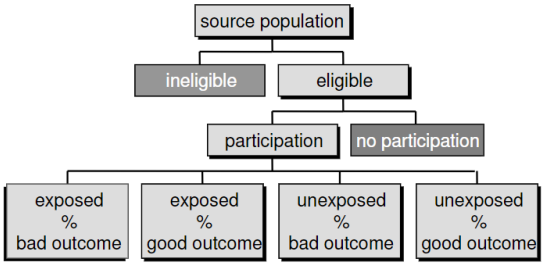


Figure 10. Cross-sectional study design

- Cross-sectional studies can be:
  - Descriptive
    - Used to characterize and assess the prevalence and distribution of one or many health outcomes in a defined population.
    - They can assess how frequently, widely, or severely a specific variable occurs throughout a specific demographic.
  - Analytical
    - Researchers investigate an association between two parameters. They collect data for exposures and outcomes at one specific point in time in order to measure an association between an exposure and a condition within a defined population.
    - The purpose of this type of study is to compare health outcome differences between exposed and unexposed individuals.
- **Advantages of cross-sectional studies:**
  - Can study entire populations or a representative sample
  - Provide information about prevalence
  - Good level of generalisability of finding
- **Disadvantages of cross-sectional studies:**
  - No time dimension → cannot prove causal relationship
  - Susceptible to selection *(error in choosing the individuals or groups to take part in a study)* and misclassification bias
  - Not suitable for rare diseases
- **Risk assessment Indicators**
  - Prevalence rate of exposed
  - Prevalence rate of non-exposed
  - Odds ratio
  - Rate ratio = prevalence rate of exposed/prevalence rate of non-exposed

References

- https://www.simplypsychology.org/what-is-a-cross-sectional-study.html

Case-control studies

- **Definition of case-control studies:** It looks backwards from the outcome to the exposure (retrospective design). It is a comparative study of two or more groups of individuals, selected in terms of whether they have a disease (cases) or do not have a disease (controls).
- It can use prevalent (existing at time of study) or incident cases (newly diagnosed during period of study)
- Case-control design does not provide an estimate of incidence or prevalence unless data about population size is available.
- **Method:**
  - 1) Selection of cases
  - 2) Matching (procedure of balancing study groups in terms of basic socio-demographic factors such as sex, race, age, education). It is also used for controlling for confounding effect.

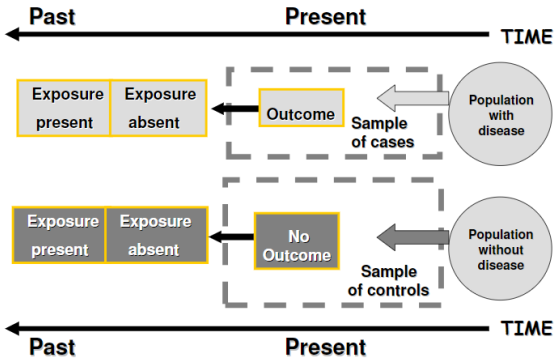


Figure 11. Case-control study design

  - 3) Elimination of bias (selection bias, information bias, mismatching, overmatching)
- **Advantages of case-control studies:**
  - Suitable for rare diseases
  - Efficient in terms of time and resources
  - Applicable for fast evaluation of chronic diseases
  - Can be used as an exploratory study
- **Disadvantages of case-control studies:**
  - Difficult to establish if cause precedes the outcome
  - Susceptible to selection and misclassification bias
  - Lack of representativeness
  - Indirect risk estimation
  - Not suitable for rare exposures
- **Risk assessment Indicators**
  - Odds ratio (OR)
  - Attributable risk for exposed = (OR-1) x 100/OR

Cohort studies (follow-up)

- **Definition of cohort study:** A group of people without the disease are followed up for period of time to see how much it develops.
- The disease incidence in persons with an exposure is compared with incidence in persons without the exposure. If the followed population is a defined group of people ("cohort"), the study is defined as a cohort study.
- The main characteristic is that the cohort study proceeds from cause to effect.
- Can be
  - Retrospective → subjects have already experienced the outcome of interest, or developed the disease, before the start of the study.
  - Prospective → investigators will design the study, recruit subjects, and collect baseline data on all subjects before any of them have developed the outcomes of interest.
- Classic example is Framingham Heart Study
  - Objective was to identify common factors or characteristics that contribute to CVD by following its development over a long period of time in a large group of participants who had not yet developed overt symptoms of CVD or suffered a heart attack or stroke.

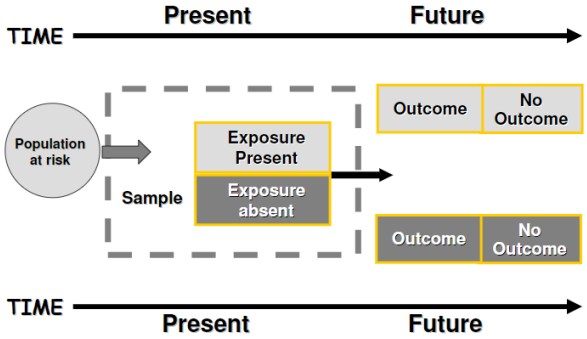


Figure 12. Design of follow-up/cohort studies

- **Advantages of cohort studies:**
  - Suitable for rare exposures
  - Can detect causal relationship
  - Provides information about incidence
  - Can investigate several outcomes from one exposure
  - Less susceptible to errors due to observer, subjectivity, and technical issues
- **Disadvantages of cohort studies:**
  - Costly and time consuming
  - Lost to follow-up cause selection bias
  - Large populations and samples are needed
  - Ethical problems
- **Risk assessment Indicators**
  - Incidence rate of exposed (IE)
  - Incidence rate of non-exposed (INE)
  - Relative risk (RR) = IE/INE
  - Attributable risk = IE-INE

References

- https://www.simplypsychology.org/cohort-study.html

Extra

- **3 main types of bias**

- Selection bias = distortion that results from the processes by which subjects are selected into the study population
- Information (misclassification) bias = distortion that results from inaccuracies in the measurement of subject characteristics and incorrect classification
- Confounding bias = distortion in the interpretation of findings due to failure to take into account the effects of disease, risk factors other than the exposure of interest

Table 2. Types of bias and possible solutions for control

Type of bias	Control
Selection bias	
Self-selection	Sampling from representative population
Selection of controls	Matching
Lack of randomness	Random sampling
Lost to follow up	Shorten the study; increasing number of enrolled patients
Information (misclassification) bias	
Reporting bias	Standardization of study instruments
Recall bias	Repeated investigation
Misclassification bias	Systemic correction
Inter-observer bias	Pre-test training, repeated investigation
Confounding bias	Randomization, restriction, matching, stratification and statistical modelling

13. Epidemiological studies - experimental studies.

Experimental studies (has experimental or control group)
- Randomised control trials
- Field trials
- Community trials

Randomised Clinical Trial (RCT)

- **Definition of RCT:** a prospective study that estimates the effect of an intervention by comparing participant outcomes between randomly assigned treatment and control groups. RCT are the gold standard for development of new drugs.
- **Types of RCT:**
  - Randomised → each patient has equal chance of being the control or experimental group.
    - Simple (random allocation of patients to trial groups performed by table or computer generator)
    - Cluster (block) (carried out on groups of patients (blocks) where units are randomly allocated to intervention or non-intervention)
    - Stratified (carried out in non-homogenous populations within groups defined by a participant characteristic such as age, sex, disease severity, intended to ensure balance of factors across intervention groups)
  - Blinded
    - Subject and investigator are unaware of treatment assignments to reduce potential bias
    - **Types of blinded:**
      - Single blinded (only subject is uncertain about treatment assignment)
      - Double blinded (subject and investigator uncertain)
      - Triple blinded (subject, investigator, and outcome assessor unaware)
  - Placebo controlled
    - Pharmaceutical substance that contains no active agent
    - Drug does better than placebo = effective
    - Drug does worse than placebo = toxic
- **Gold standard RCT** is one that is randomised, double-blinded and placebo-controlled.
- **4 phases of RCT:**
  - Phase 1
    - Early study to determine non-toxic dose level in animals and healthy volunteers.
    - Assess safety, tolerability, pharmacokinetics, pharmacodynamics of a therapy.
    - ***Example:***
      - Single ascending dose studies (small dose of drug, observation for specific period of time and continue until intolerable side effects show up)
      - Multiple ascending dose studies (low dose of drug which is escalated up to predetermined level)
  - Phase 2 → designed to assess clinical efficacy of therapy
    - Phase 2A → designed to assess dosing requirements
    - Phase 2B → designed to study efficacy
  - Phase 3
    - Designed to confirm the effectiveness, monitor side-effects, and compare to alternative treatments.
    - Successful RCT apply for registration and market approval at European Medicines Evaluation Agency (EMEA) or Food and Drug Administration (FDA).
  - Phase 4
    - To detect rare/ long-term side effects on a larger population and timescale
    - Post-marketing trials
    - Real world evidence
- **Advantages of RCT:**
  - Provide the strongest evidence for causality
  - Can investigate many outcomes from one exposure
  - Less susceptible to errors due to observer, subjectivity, and technical issues
- **Disadvantages of RCT:**
  - Costly and time consuming
  - Selection bias

- Ethical problems

Field trials

- **Definition of field trial:** It is a type of interventional study designed to evaluate prevention strategies, aimed at reducing exposure without necessarily measuring the occurrence of health effects.
- Studies are carried out "on the ground" or "on the field", in people not admitted to an institution but in subjects of the population, free of disease.
- Field trials can be carried out among individuals or groups of people
  - The group may be a household, a block of houses, a school, or a whole community.
  - Field trials in which whole communities are the unit of allocation are called community trials.
- **Example:** One of the largest field trials was the testing of the Salk vaccine for the prevention of poliomyelitis, which involved over one million children
- **Advantages of field trials:**
  - Helpful in assessing the value of new strategies to prevent the risk of certain diseases in developing countries.
  - It can evaluate a single variable in a precisely defined group of people.
  - Eliminates bias by comparing two otherwise identical groups.
  - Able to control selection, confounding and measurement biases.

References

- https://thebiologynotes.com/field-trials/

Intervention trials/controlled trials

- **Definition of intervention trial**: It is a follow-up experimental study in which the exposure under investigation is applied by the investigator.
- **Aim of intervention trials**: The aim is to investigate a possible causal relationship by exposing one or more groups of patients to a factor (treatment) and compare results to one or more control groups that are unexposed to this factor.
- Investigator decides which subjects are to be "exposed" and which not.
- Can be:
  - Community trials (carried out in a realistic community setting, that can involve an individual-level intervention, a community-level intervention or both)
  - Clinical trials (study to test new methods of screening, prevention, diagnosis, or treatment of a disease, carried out in hospital settings)
  - Laboratory experimental trials (carried out on animals or tissues in lab)
- **Types of interventions:**
  - Prophylactic (target on prevention e.g., vaccines)
  - Diagnostic (target on evaluation of new diagnostic procedure e.g., new lab test)
  - Therapeutic (target on treatment e.g., new drug)
- **Types of control groups:**
  - Placebo concurrent control group → subjects are randomly assigned to a test treatment or to an identical-appearing treatment that does not contain the test drug
  - Dose-response concurrent control group → subjects are randomized to one of several fixed-dose groups.
    - Subjects may either be placed on their fixed dose initially or be raised to that dose gradually, but the intended comparison is between the groups on their final dose
  - Active concurrent control group → subjects are randomly assigned to the test treatment or to an active control treatment (comparable standard treatment).
  - Historical control group→ compares a group of subjects receiving the test treatment with a group of patients external to the study, rather than to an internal control group (consisting of patients from the same population assigned to a different treatment). The external control can be a group of patients treated at an earlier time (historical control).
  - No treatment concurrent control group → subjects are randomly assigned to test treatment or to no (i.e., absence of) study treatment. The principal difference between this design and a placebo-controlled trial is that subjects and investigators are not blind to treatment assignment.

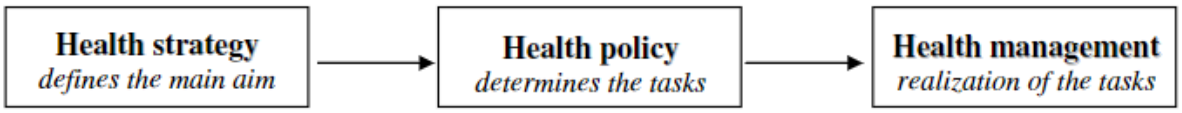
References

- https://www.ema.europa.eu/en/documents/scientific-guideline/ich-e-10-choice-control-group-clinical-trials-step-5_en.pdf

14. Health policy – structure, factors, principles. Health service – definition, factors, structure, functions. Health in all policies.

Health policy
Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.
Policy is a principle or protocol to guide decisions and achieve rational outcomes.
Definition of Health policy: Health policy can be accepted as political and administrative mechanisms, that are arranged around the goals to achieve better public health.

Health policy is closely related to health strategy and health management.

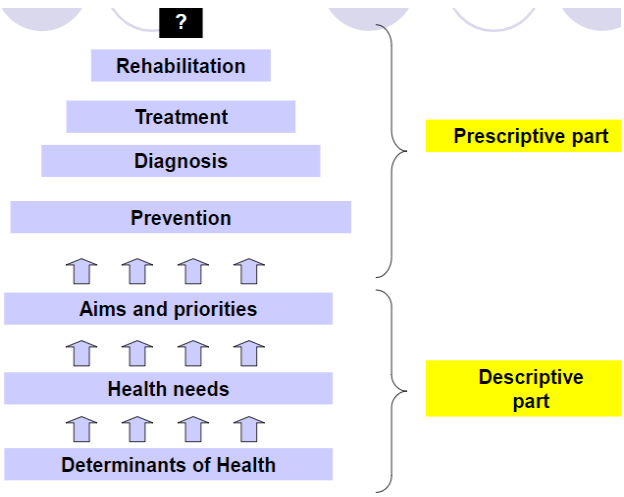


- **Health strategy** = general aim is long term, sustainable, constant over time.
- **Health policy** determines the tasks to achieve the main goal and its **main priorities** are short term and flexible.
- **Health management** is about realisation of the priorities and achieving the results.

Law of health
- Article 3.
  - (1) The state health policy shall be managed and implemented by the Council of Ministers.
  - (2) The Council of Ministers, at a proposal of the Minister of Health shall approve National Health Strategy which shall be adopted by the National Assembly.
  - (3) The Council of Ministers, at a proposal of the Minister of Health shall adopt national health programmes.
  - (4) The National Health Strategy and the national health programmes shall be based on:
    - an assessment of the health status and health needs of the citizens.
    - the health demographic tendencies.
    - the resource capacity of the national system of health care.

Nature of Health policy includes
- Aim
- Priorities
- Means:
  - Law
  - Information
  - Incentives and motives
  - Infrastructure

Types of Health policies
- **Depending on the scope**:
  - National Health Policy
  - Regional Health Policy
  - Municipal Health Policy
- **Depending on the orientation:**
  - Drug policy
  - Specific disease or group of diseases
  - Policy of Primary Health Care
  - Policy of the hospital care



Health policy – Structure
- Descriptive part *(descriptive factors of health)*
  - Determinants of health
  - Health needs
  - Aims & priorities

- Prescriptive part *(specific indication as to how health strategy is realised)*
  - Prevention
  - Diagnosis
  - Treatment
  - Rehabilitation

Steps for building a health policy involve:

- Health resources *(requires human power and infrastructure)*
- Health needs *(groups of patients who have unfulfilled needs)*
- Position of politics *(Council of Ministers needs to be in favour of policies)*
- Attitude of the public *(requires use of public money so public needs to be in favour of its use)*

Health policy – factors ???

- Social and Economic environment (income level, employment status, access to medical care)
- Health Services and Health System
- Physical Factors (climate change, safe water, clean air, nutrition)
- Physical Development of population

Health policy – principles ???

Health service – definition ???

Definition of Health service: A health service is a system of health authorities and medical establishments that a country creates to provide public health services and management of health activities.

Levels of health services

Primary healthcare

The level of contact between the individual and the health system where "essential" health care is provided. A majority of health complaints and problems can be dealt with here.

- ***Example***
  - Ambulatory for primary medical care:
    - Individual practice for primary medical care (GP works alone)
    - Group practice for primary medical care (2 or more GP's working together)

Secondary healthcare

More complex problems are dealt with at this level. Secondary care comprises essential curative services provided by district hospitals. It is the first referral level.

- ***Example***
  - Medical establishments for specialised medical care
  - MDs with specialities

Tertiary healthcare

Offers super-specialised care provided by regional/central level institutions.

- ***Example***
  - Medical establishments for hospital and other (Art. 10) care
  - MDs with specialities, experts

Health service – factors ???

Development of the health service depends on the following factors:

- Medical factors
  - Level and trend of public health (one of the most important factors)

        - Level and dynamics of incidence and prevalence
        - General infant mortality
        - Changes in the structure of morbidity and mortality
            - All these leads to changes in health needs and require restructuring of the health service at all levels
    - Development of medical science
    - Development of medical education
    - Medical traditions and more
- Non-medical factors
    - Health and social policy of the country
    - Level of economic development
    - Climate and geographical features
    - National traditions and more

Health service – structure ???

Legislative, management and administrative

- National Assembly (Health Committee)
    - Council of Ministers
    - Ministry of Health
        - Regional Health Inspectors
        - Executive Agency "Medical Supervision"
        - Bulgarian Drug Agency

Medical treatment facilities (Medical Establishments Act)

- Medical Establishments for Non-Stationary Care
- Medical Establishments for Hospital Care
- Other Medical Establishments
    1. Centre for emergency medical care
    2. Centre for transfusion haematology
    3. Mental health centre
    4. Skin and venereal disease centre
    5. Complex oncology centre
    6. Home for medical and social care for adults
    7. Centre for complex service of disabled children and chronic diseases
    8. Hospice
    9. Dialysis centre
    10. Tissue bank

Healthcare establishments

- National centres for public health affairs
- National expert medical commission (NEMC)
- Health offices
- Pharmacies
- Optician offices

Health service – functions

- Preventative
- Diagnostic
- Medical treatment
- Rehabilitation
- Medical educational (and upbringing)

Health in all policies ???

Health in All Policies (HiAP) is a collaborative approach that considers health in policymaking, across sectors to improve the health of all communities and people.

Policy in every sector of government can potentially affect health and inequities in health. Using a HiAP approach **aims to address policies such as those influencing:**

- Transport
- Housing and urban planning
- The environment
- Education
- Agriculture
- Finance
- Taxation and economic development so that they promote overall health and health equity.

WHO supports countries to implement HiAP and intersectoral action to address the social determinants of health equity **by engaging in several different actions, including:**

- Making training resources and tools available and offering capacity building opportunities
- Coordination support to a network of trainers and adaptations of training materials to different focuses (e.g., Health, environment, housing).
- Setting standards for transforming education for health workforce towards social determinants of health
- Promoting links with other WHO governance and programme tools through improved intersectoral planning for health and health equity.
- Supporting government policymakers, programme leaders and health provider groups to improve intersectoral action and coherence in policies, services and programmes responding to disadvantaged groups' needs; and
- Providing advice through the Global Network for HiAP.

15. Healthcare systems – types.

Definition of Healthcare system: Healthcare systems are the organisations, institutions and resources that are devoted to performing health activities such as promoting health, preventing the appearance of risk factors or disease, providing care, and reducing the functional and social consequences of disease.

Types of Healthcare systems

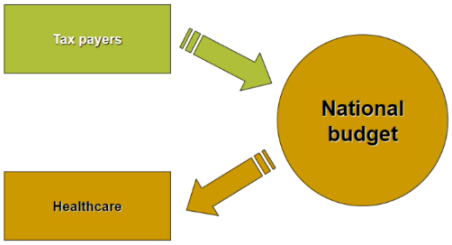
1. Charity model
2. Budgetary (state) model
3. Public fund insurance model
4. Private insurance model
5. Mixed type

Funding for Healthcare systems

- Governmental (budget)
  - Centralised *(system in which the government makes budgetary decisions)*
  - Decentralised *(system in which most budgetary decisions in healthcare are handled by local government)*
- Non-governmental
  - Health funds
  - Municipals
  - Private
  - Donations, charity

Budgetary System (e.g., UK)

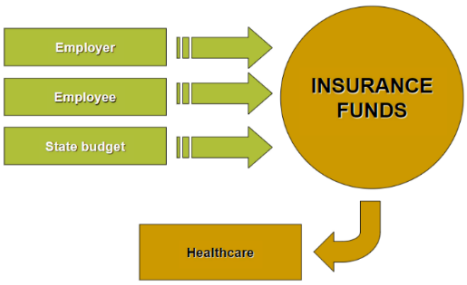
Advantages of Budgetary system	Disadvantages of Budgetary system
• Free and universal healthcare • Equal rights for everyone • Better geographical coverage of population • Well-funded if economy is good	• Irregular funding • No mechanisms for self-management • No external stimuli for users • No stimuli for medical professionals • Less money if economy is bad



Public funds Insurance System (e.g., Germany, Bulgaria)

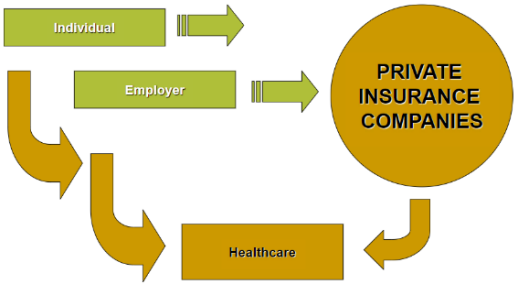
Advantages of Public funds Insurance system	Disadvantages of Public funds Insurance system

• Social security for users
  ○ Health insurance
  ○ Social insurance
  ○ Pension insurance
• More stable funding of medical services
	• Higher administrative costs
	• Difficult coordination
	• Free negotiation → increasing costs for healthcare services



Model of Public Funds Insurance System vs. Model of Private Healthcare System

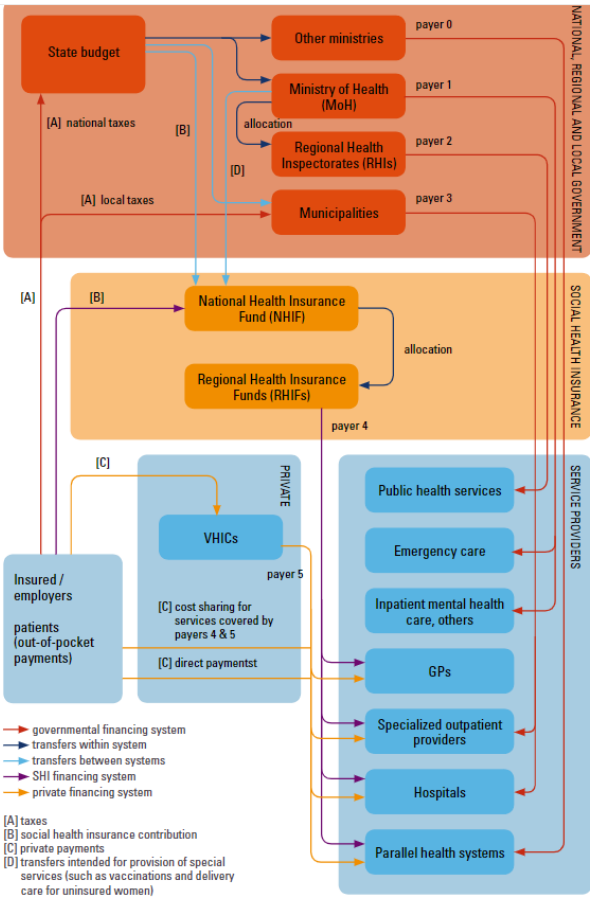
Public funds insurance	Private healthcare system
Compulsory for all persons	Voluntary for all persons
Compulsory for all health insurers	Voluntary for all health insurers
Governmental co-funding for special populations and State supervision	No governmental co-funding



Who is involved in Healthcare System

Legislative, management and administrative

- National Assembly (Health Committee)
  - Council of Ministers
  - Ministry of Health
    - Regional Health Inspections
    - Executive Agency "Medical Supervision"
    - Bulgarian Drug Agency



Medical treatment facilities (Medical Establishments Act)

Medical Establishments for Non-Stationary Care
Medical Establishments for Hospital Care
Other Medical Establishments

1. Centre for emergency medical care
2. Centre for transfusion haematology
3. Mental health centre
4. Skin and venereal disease centre
5. Complex oncology centre
6. Home for medical and social care for adults
7. Centre for complex service of disables children and chronic diseases
8. Hospice
9. Dialysis centre
10. Tissue bank

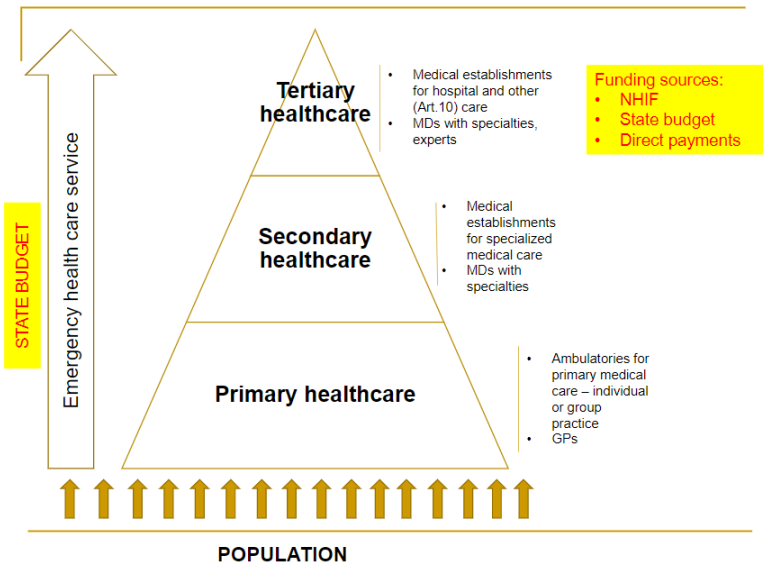
Health Establishments

They are structures of the national system of healthcare in which medical and non-medical specialists carry out activities related to preservation and building-up of the health of citizens. They include:

- National centres for public health affairs
- National expert medical commission (NEMC)
- Health offices
- Pharmacies
- Optician offices

Healthcare service funding

- Free of charge
  - paid by the state (emergency care, maternity care, immunizations, mental health, etc.)
- Public health insurance
  - in accordance with the National framework contract of the NHIF
- Optional private health insurance
- Direct payments (out-of-pocket)
- Charity (donations, Red Cross, religious and NGO activities etc.)



16. Health policy and reforms in Bulgaria. National health strategy.

Health policy and reforms in Bulgaria

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.
Policy is a principle or protocol to guide decisions and achieve rational outcomes.
Health policy can be accepted as political and administrative mechanisms arranged around the goals to achieve a better public health.

Healthcare system reform in Bulgaria

- Before 2000
  - Model → budgetary state system
  - Structure → centralization with pyramidal structure
  - Management → state regulation and planning
  - Primary healthcare → residential (territorial) principle (Int:Ped:OG), dispensaries

- After 2000
  - Model → public fund insurance (NHIF)
  - Structure → decentralization
  - Management → pseudo-market principles
  - Primary healthcare → general practitioners

National Health Strategy (NHS)

According to the Law of Health

- Article 3.
  - (1) The state health policy shall be managed and implemented by the Council of Ministers.
  - (2) The Council of Ministers, at a proposal of the Minister of Health shall approve National Health Strategy which shall be adopted by the National Assembly.
  - (3) The Council of Ministers, at a proposal of the Minister of Health shall adopt national health programmes.
  - (4) The National Health Strategy and the national health programmes shall be based on
    - an assessment of the health status and health needs of the citizens
    - the health demographic tendencies
    - the resource capacity of the national system of health care.

National Health Strategy focuses on a convergence of Bulgarian health indicators with the EU average. Although, there has been notable progress in several indicators such as infant mortality rate, life expectancy and an uptake of prevention efforts, there is still considerable room for improvement. The underperformance in the field of cardiovascular mortality and lack of substantial results in reducing cancer mortality could be partly attributed to deficiencies in the health system (especially so for screening, early detection and diagnosis).

Health policy priorities are determined by the Council of Ministers and the Ministry of Health through the Government Programme and the National Health Strategy. The Supreme Medical Council is an advisory body to the Ministry of Health; national health strategy, health-related draft bills.

This strategy combines the public health policies to be applied at every level - economic, public, institutional.

The NHS 2020 represents an advancement of health policy compared with previous strategies. **Areas of improvements are:**

- Underlining the need for long-term health policy strategies, continuity, and coherence in governance on the basis of broad social and political consensus
- Ensuring sustainability of the implementation process through action plans and stakeholder consultation
- Stressing health system integration (between different levels of health care provision) as well as service integration (focusing on both health and social needs)
- Pressing problems such as the lack and migration of health professionals, health prophylaxis and prevention, regional inequalities, anti-corruption practices, health of elderly and people with disabilities, development of civil society and the participation of citizens in the management of the system
- The allocation of responsibilities between the institutions and cross-sectoral cooperation
- Emphasis on regional health policies

National Health Strategy - objectives

- Reducing child mortality rate
- Reducing mortality rate in young people
- Reducing the death rate in people who are in their active years and who are economically active
- Increasing life expectancy

National Health Strategy - priorities

- **Health for all**
  - General priorities
    - Protecting and improving mental health
      - *Several key challenges include:*
        - increasing incidences of depression and suicide
        - increasing temporary and permanent incapacity due to mental disorders
        - institutionalization of care for mentally ill and lack of community services.
    - The best possible health for people with disabilities
    - Health for vulnerable groups
  - Specific priorities
    - Health for mothers and babies
    - Health for children and adolescents
    - Health for people of working age
    - Health for the elderly
- **Efficient health system**
  - Financial sustainability of the health system
  - Qualitative, effective, and affordable medicines
  - Integrated emergency medical care system
  - Developed primary medical care and high-tech specialized assistance
  - Optimized hospital care
  - Development of human resources in the healthcare system
  - Providing quality and safe medical care
  - Effective strategic management of the health system
- **Increasing the capacity of public health**
  - Health Promotion and Disease Prevention
  - Surveillance of infectious diseases
  - Effective and quality health control.

References

- https://healthymunicipality.com/media/attachments/2020/04/30/national_health_strategy.pdf
- Bulgaria Health System Review book: https://apps.who.int/iris/bitstream/handle/10665/330182/HiT-20-4-2018-eng.pdf?sequence=7&isAllowed=y

17. Health legislation in Bulgaria. Health Act.

Health legislation in Bulgaria

Health legislation is a set of all legal norms regulating the various relations in the healthcare system. Legal norms are a set of legal rights and obligations governing the behaviour of legal entities and the relations between them.

Structure of the legal norm

- Hypothesis = conditions and prerequisites
- Disposition = the rule of conduct
- Sanction = adverse effects and penalties

Major legal systems

- Religious/Traditional systems (historically)
- Civil law (Continental, Romano-Germanic, European Continental)
- Common law (Anglo-American, English)

Sources of law

- Primary law (laws)
  - The constitution
  - Laws and regulations for law application
- Secondary law (by-laws)
- Decrees of the Council of Ministers
- Ordinances, regulations, instructions, etc.

Liability of doctors (dismissal, fine, sanction, deprivation of the right to practice, imprisonment)

- Disciplinary → Labour Code; Employment contract; Job description; Internal rules of the medical establishments, etc.
- Civil → Law on obligations and contracts; Code of Civil Procedure; Medical standards, etc.
- Administrative → Administrative-penal provisions to the Health Act, Law for Medical establishments; Law for the health insurance; Law for the professional organizations of doctors and dental practitioners, etc.
- Criminal → Criminal Code (crime = socially dangerous act, that has been committed guilty and is declared by the law to be punishable)

Health Act

This law settles the public relations for the protection of the health of the citizens.

The protection of the health of the citizens as a state of a complete physical, psychic, and social welfare is a national priority and shall be guaranteed by the state through applying the following principles:

1. Equality in using health services
2. Providing accessible and qualitative health care, with priority for children, pregnant women, and mothers of children up to one year
3. Priority of the health promotion and the integrated prophylactics of diseases
4. Prevention and reduction of the risk for the health of the citizens from the unfavourable effect of the factors of the living environment
5. Special health protection of children, pregnant women, and mothers of children up to one year of age and handicapped and mentally disordered persons
6. State participation in financing activities aimed at preservation of the health of the citizens.

State Health Policy

The state health policy is managed and implemented by the Council of Ministers.

- The Council of Ministers, at a proposal of the Minister of Health approves National Health Strategy which shall be adopted by the National Assembly
- The Council of Ministers, at a proposal of the Minister of Health adopts national health programme

- The National Health Strategy and the national health programmes are based on an assessment of the health status and health needs of the citizens, the health demographic tendencies and the resource capacity of the national system of health care.

National System of Healthcare

The national system of health care includes:

- Medical establishments under the Law for the medical establishments
  - Medical establishments involve diagnostics whereas healthcare establishments do health promotion
- Healthcare establishments under this law and the Law for the medicines and pharmacies in the human medicine
- State, municipal, and public bodies and institutions for organisation, management and control of the activities related to preservation and strengthening of health.

Management of the national healthcare system

- Minister of Health
- Supreme Medical Council
- Regional Healthcare Inspectorates
- Health care service at the municipal administration

State Health Control

- Chief State Health Inspector of the Republic of Bulgaria
- Regional Healthcare Inspectorates
- National Centre for Radiobiology and Radiation Protection (NCRRP)

Healthcare establishments

They are structures of the national healthcare system, where medical and non-medical specialists provide activities for the protection and promotion of the health of citizens.

- National centres for public health affairs
- National Expert Medical Commission (NEMC)
- Health and dental medicine offices at:
  - kindergartens and schools
  - specialised social welfare institutions
- Opticians' shops
- Pharmacies

Health protection activities

- Ensuring a Healthy Environment
- Health Requirements to Cosmetic Products
- Activities to Impact Health Risk Factors
- Control of Infectious Diseases
- Protection against the Impact of Ionizing Radiation
- Protection of the Health of Citizens in the Performance of Works with Asbestos and Asbestos-containing Materials
- Resort Resources and Resorts

The Patient

Patient is any person who has sought or who is receiving medical aid.

Patient's rights

1. Respect or his/her civil, political, economic, social, cultural, and religious rights
2. Care from the community in which he/she lives
3. Accessible and high-quality medical aid
4. More than one medical opinion on the diagnosis, treatment, and prognosis of the disease
5. Protection of the data related to his/her health condition
6. Remuneration for the work he/she performs equal to the one he/she would receive if healthy

7. Becoming aware of his/her rights and obligations in a language comprehensible to him/her
8. Clear and accessible information on his/her health condition and the methods of the possible treatment.

Patient's obligations

1. Take care of his/her own health
2. Not harm the health of others
3. Assist the providers of medical aid in the performance of the activities related to the improvement and recovery of his/her health
4. Observe the order established at healthcare and medical establishments.

Palliative care

Palliative medical care is to maintain the quality of life through reduction or elimination of some immediate signs of the diseases, as well as the related adverse psychological and social effects.

Palliative medical includes

1. Medical observation
2. Healthcare aimed at providing care to the patient, removing pain and the psychological and emotional effects of the disease
3. Moral support to the patient and his/her relatives.

Palliative medical care is provided by the GP, medical establishments for outpatient and hospital care and hospices.

No euthanasia shall be applied within the territory of Bulgaria.

Medical Aid in an Emergency

Emergency is an acute or sudden change of human health, which requires urgent medical aid.

Medical aid in emergency shall be aimed at preventing

1. Death
2. Severe or irreversible, morphological, and functional damage to vital organs and systems
3. Complications in women at childbirth, which threaten the health and life of the mother or the foetus.

Other things covered in Health Act

- Health protection of specific groups of the population
  - Health Protection of Children
  - Reproductive Health
  - Genetic Health and Genetic Tests
- Mental health
- Medical education. Medical profession. Medical research on people. Medical science
- Administrative penalty provisions
- Additional provision

Chapters of the Health Act

- **Chapter 1. National System of Healthcare**
  - **Section I:** General provisions
  - **Section II:** Bodies of Management of the National System of Healthcare
  - **Section III:** State Health Control
  - **Section IV:** Health Establishments
  - **Section V:** Health Information and Documentation
  - **Section VI:** National Health Information System
- **Chapter 2. Activities on Health Preservation**
  - **Section I:** General provisions
  - **Section II:** Ensuring of health living environment

- **Section III:** Health requirements to the cosmetic products
- **Section IV:** Articles for impact over factors risky for the health
- **Section V:** Supervision of the infectious diseases
- **Section VI:** Protection from the impact of ionising radiations
- **Section VII:** Protection of the health of the citizens at implementing activities with asbestos and asbestos containing materials
- **Section VIII:** Resort resources and resorts

- **Chapter 3. Medical servicing**
  - **Section I:** Accessibility and quality of the medical care
  - **Section II:** Rights and obligations of the patient
  - **Section III:** Medical care upon emergency status
  - **Section IV:** Medical expertise
  - **Section V:** Medical ensuring at disasters, accidents, and catastrophes
  - **Section VI:** Control over medical services
- **Chapter 4. National System of Health Care**
  - **Section I:** Health protection of children
  - **Section II:** Reproductive Health
  - **Section III:** Assisted reproduction
  - **Section IV:** Genetic health and genetic investigations
- **Chapter 5. Psychic Health**
  - **Section I:** Protection of the psychic health
  - **Section II:** Compulsory, accommodation, and treatment
- **Chapter 6. Unconventional methods for favourable impact on the individual health**
- **Chapter 7. Medical education, Medical profession, Medical scientific investigations of people. Medical Science**
  - **Section I:** Medical Science
  - **Section II:** Medical profession
  - **Section III:** Recognising professional qualification in medical profession
  - **Section IV:** Medical scientific studies of people. Medical science
- **Chapter 8. Administrative Punitive Provisions**
- **Additional Provisions**
- **Transitional and Concluding Provisions**

18. Health legislation in Bulgaria. Health care Establishments Act.

Health legislation in Bulgaria

Health legislation is a set of all legal norms regulating the various relations in the healthcare system. Legal norms are a set of legal rights and obligations governing the behaviour of legal entities and the relations between them.

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Health care Establishments Act

This law settles the structure and activity of the medical establishments in the Republic of Bulgaria.

(1) Medical establishments, in the context of this law, are organisationally separate structures on functional principle, in which doctors or dental doctors, individually or with the assistance of other medical and non-medical specialists, carry out all or some of the following activities:

1. Diagnostics, treatment, and rehabilitation of patients
2. Care of pregnant women and provision of natal assistance
3. Care of chronically ill patients and persons threatened by disease
4. Prophylactics of diseases and early discovery of diseases
5. Measures for strengthening and protection of the health
6. Transplantation of organs, tissues, and cells.

(2) Medical establishments, in the context of this law, are also organizationally separate structures, in which doctor's assistants, nurses, midwives or rehabilitators, carry out all or some of the following activities:

1. Provision of medical and health services
2. Medical interventions
3. Health promotion, prevention, and prophylactics of diseases

The medical establishments are founded according to the Commercial Law or according to the Law for the co-operatives, as well as companies under the legislation of European Union Member State or of a state which is a party under the European Economic Area Agreement subject to compliance with the requirements of this Law.

The medical establishments have equal status regardless of their ownership.

The control over the work of the medical establishments, the medical activities and the quality of the medical help is provided by the Executive Agency "Medical Supervision" to the Minister of Health.

Types of Medical Healthcare Establishments

A. Medical establishments for Non-stationary care

1. Ambulatory for primary medical care:
    a. Individual practice for primary medical care (GP works alone)
    b. Group practice for primary medical care (2 or more GP's working together)
2. Ambulatory for specialised medical care
    a. Individual practice for specialised medical care (alone in own office)
    b. Group practice for specialised medical care (2 or more specialised doctors)
    c. Medical centre and medical dental centre (work together in a centre, min 2 doctors)
    d. Diagnostic and consultative centre
3. Independent medical diagnostic and medical technical laboratories
4. Dental centres
5. Ambulatory for health care (in private sector, not state)
    a. Individual practice for health care
    b. Group practice for health care

B. Medical establishments for Hospital care

1. Hospital for active treatment
2. Hospital for continuous treatment
3. Rehabilitation hospital
4. Hospital for continuous treatment and rehabilitation.

C. Other medical establishments

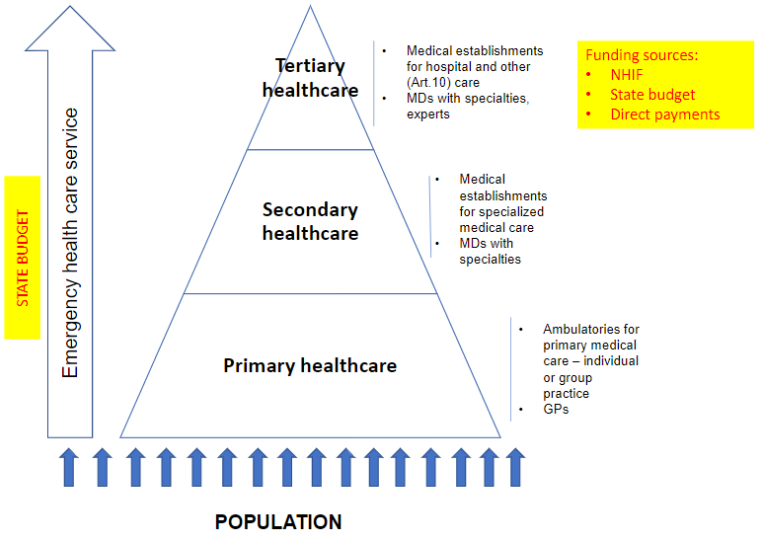
1. Centre for emergency medical care
2. Centre for transfusion haematology
3. Mental health centre
4. Skin and venereal disease centre
5. Complex oncology centre
6. Home for medical and social care for adults
7. Centre for complex service of disabled children and chronic diseases
8. Hospice
9. Dialysis centre
10. Tissue bank

Types of Hospital

The hospitals can be multi-profiled (for example UMHAT St. Georgi) or specialised.

University hospitals are determined by the Council of Ministers for:

1. Clinical training of students and PhD students in medicine, stomatology, and pharmacy
2. Clinical training for health care and medical colleges
3. Post graduate training



Chapters of the Medical Establishments Act

- Part One – General Part
  - **Chapter 1. General provisions**
    - A) Control of new health care establishments and of medical activities
- Part Two – Medical Establishments
  - **Chapter 2. Types of Medical Establishments**
  - **Chapter 3. Medical Establishments for Non-Stationary Care**
  - **Chapter 4. Medical Establishments for Hospital Care**
  - **Chapter 5. Other Medical Establishments**
- Part 3 – Founding and Closing Down Medical Establishments
  - **Chapter 6. National Health Card. Regional Health Cards**
  - **Chapter 7. Founding, Registration and Permitting Medical Establishments**
    - Section I: Founding Medical Establishments
    - Section II: Registration
    - Section III: Permit for carrying out activity
    - Section VI: Closing down Medical Establishment
  - **Chapter 8. Structure, Management and Personnel of the Medical Establishment**
    - Section I: Structure of the Medical Establishments for hospital care
    - Section II: Management and control of the Medical Establishments
    - Section III: Personnel in the Medical Establishments
    - Section IV: Hospital Board of Trustees
  - **Chapter 9. Accreditation**
  - **Chapter 10. Participation of the Medical Establishments in the Medical education**
  - **Chapter 11. Interaction between the Medical Establishments**
  - **Chapter 12. Financing of the Medical Establishments**
  - **Chapter 13. Transformation and Privatisation of Medical Establishments**
    - Section I: Transformation of the public health establishments
    - Section II: Privatisation of Medical Establishments with State and Municipal Participation
  - **Chapter 14. Administrative Penal Provisions**
- Additional Provisions
- Transitional and Concluding Provisions

19. Health legislation in Bulgaria. Health Insurance Act.

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Health Insurance Act

The **health insurance** is an activity related to collecting health insurance instalments and health insurance premium, the management of the collected resources and their spending for payment of health activities, services, and commodities, stipulated by this law, by the National Frame Agreement and by the contracts for voluntary health insurance.

Types of Health Insurance

1. Obligatory health insurance
   a. The obligatory health insurance is an activity related to the collecting of resources of obligatory health insurance instalments determined by a law, carried out by the National Insurance Institute (NII), their management and spending for health care, which is carried out by the National Health Insurance Fund (NHIF) and by its territorial divisions - Regional Health Insurance Funds (RHIF).
   b. The obligatory health insurance shall provide a basic package of health care activities guaranteed by the budget of NHIF.
2. Additional voluntary health insurance
   a. The optional voluntary health insurance is additional, and it shall be carried out by shareholder companies (private companies) registered according to the Commercial Law and who have obtained licence under the conditions and by the order of this law.

Obligatory Health Insurance

The obligatory health insurance guarantees to the insured persons accessible medical care through a definite type, range and volume of package of health activities, as well as a free choice of a provider who has concluded a contract with a Regional Health Insurance Fund.

The right of choice is valid for the whole territory of the country, and it cannot be restricted on geographic and/or administrative grounds.

Principles of Obligatory Health Insurance

1. Obligatory participation in collecting the instalments.
2. Participation of the state, the insured persons, and the employers in the management of NHIF.
3. Solidarity of the insured persons in using the raised resources.
4. Responsibility of the insured persons for their own health.
5. Equality in using medical care.
6. Equality of the providers of medical care in concluding contracts with RHIF.
7. Self-management of NHIF.
8. Contracting the relations between NHIF and the providers of the medical care.
9. Basic package of health care activities guaranteed by the budget of NHIF.
10. Free choice by the insured persons of providers of medical care.
11. Publicity of the activity of NHIF and public control over the expenses

Rights of those with Obligatory Health Insurance

- to medical care within the range of the basic package of health care activities guaranteed by the budget of NHIF
- to choose one medical care executive who has concluded contract with RHIF
- to emergency medical care wherever it is needed
- to receive information from RHIF about the contracts concluded by it with the medical care executives
- to participate in the management of NHIF through their representatives
- to file appeals to the director of the respective RHIF for violations of the law and the contracts.

The health insurance instalment → 8% from the monthly salary at a ratio of 60 (employer) : 40 (by person)

National Health Insurance Fund (NHIF)

Revenue of NHIF

The revenue of NHIF is raised from:

1. Insurance instalments
2. Interest and receipts from the management of the property of the fund
3. Revenue stipulated by other laws in favour of the health insurance
4. Reimbursement of insurance expenses in the cases stipulated by normative acts
5. Fines and penalty interest
6. Taxes determined by a tariff of the Council of Ministers
7. Liquidation shares of trade companies - debtors, declared for liquidation
8. Donations and inheritance
9. Other sources

NHIF pays for

- Medical and dental services for prevention against diseases
- Medical and dental services for early discovery of diseases
- Out-patient and hospital medical care for diagnostics and treatment of a disease
- Medical rehabilitation
- Emergency medical care
- Medical care for pregnancy, labour, and motherhood
- Abortions for medical indications and for pregnancy as a result of rape
- Dental services
- Medical care in cases of home treatment
- Prescription and dispensing of permitted medicines for home treatment on the territory of the country
- Medical expertise of the labour capacity
- Transport services for medical indications

National Frame Contract (NFC)

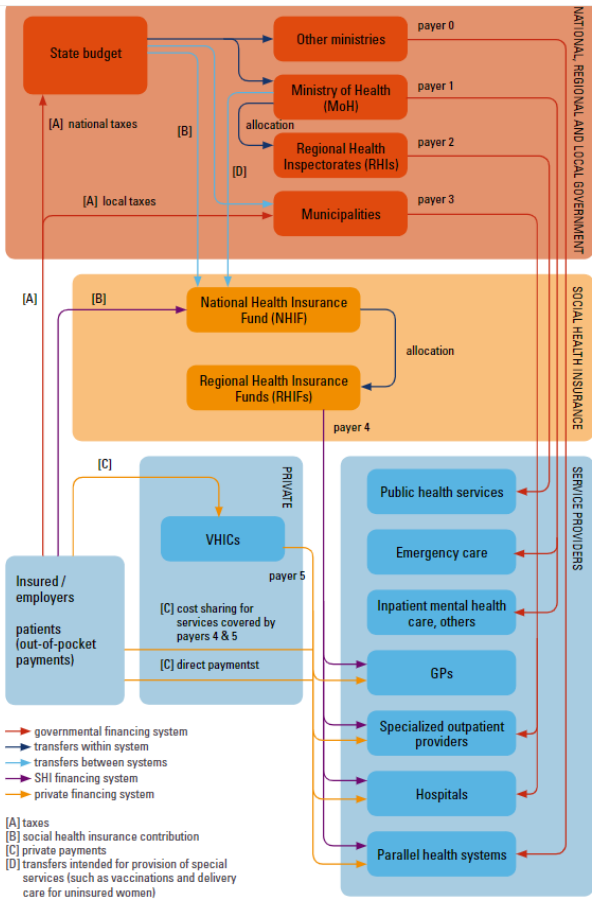
The representatives of NHIF and of the professional organisations of the physicians and dentists sign the National Frame Contract.

The National Frame Contract contains

- the conditions to be met by the providers of medical care, as well as the order of concluding contracts with them
- the range, the prices, and the methodology of payment of the services
- the quality and the accessibility of the contracted medical aid
- the documentation and the documents circulation
- the lists of medicines and consumables for which NHIF, partially or in full, pays; the requirements for prescribing and dispensing the medicines and consumables, with exception of medicines containing narcotic or intoxicating component
- the obligations of the parties to the informational services and the informational exchange
- the conditions and the order of control over the fulfilment of the contracts
- other issues of importance for the health insurance
- sanctions for failure to fulfil the contract.

Chapters of the Health Insurance Act

- **Chapter 1. General Provisions**
- **Chapter 2. Compulsory Health Insurance**
  - **Section I:** General Provisions
  - **Section II:** National Health Insurance Fund
  - **Section III:** Financial Structure of the National Health Insurance Fund
  - **Section IV:** Insured Persons. Rights and Obligations
  - **Section V:** Health Insurance Contributions
  - **Section VI:** Scope of Medical Care Covered by Compulsory Health Insurance
  - **Section VII:** National Framework Agreement
  - **Section VIII:** Contract between National Health Insurance Fund and Medical Care Provider
  - **Section IX:** Information Support of the Operation of the National Health Insurance Fund
  - **Section X:** Control, Expert Evaluations and Disputes
  - **Sections XI:** Issuance of Documents required for exercise of Health Insurance Entitlements according to Rules for Coordination of Social Security Schemes
  - **Sections XII:** Cross-border Healthcare
- **Chapter 3. Voluntary Health Insurance**
  - **Section I:** General Dispositions
  - **Section II:** Activity Comprehended in Voluntary Health Insurance
  - **Section III:** Health Insurance Companies and Licensing
  - **Section IV:** Transformation, Dissolution, Liquidation and Bankruptcy of Health Insurance Companies
  - **Section V:** State Supervision over Activity Comprehended in Voluntary Health Insurance
- **Chapter 4. Medical Control**
- **Chapter 5. Administrative Penalty Provisions**
- **Supplementary provisions**



20. International collaboration for Global Public Health. WHO. Programs and priorities.

International collaboration for Global Public Health

- During the Renaissance the idea of international health cooperation was raised by the spread of plague and cholera epidemics.
- In 1348 the Venetian Republic established the Quarantine Council, consisted of three official representatives, who have permanent public functions.

WHO

History of WHO

- 1945 → during a conference in San Francisco has been considered the draft made in Dumbarton Oxus and a decision for the World Health Organization to be established as soon as possible.
- 22 July 1946 → the contract for the creation of the World Health Organization (WHO) is signed.

In a short period of time the Constitution of WHO gained the required number of ratifications (26 countries) and came into force on April 7, 1948 - the day was declared as a World Health Day and since 1950 has been celebrated annually.

Bulgaria becomes a member of WHO on 9 June 1948. At present 192 countries are members of WHO.

Main activities of WHO

- Management and coordination of international health activities
- Assisting governments to develop national health services
- Development of agreements, conventions, and more concerning international and national health issues
- Cooperation with the specialized agencies of the UN system - UNICEF, FAO, UNESCO
- Stimulating scientific research
- Specialization and training of medical staff
- Development of international standards for food, biological and pharmaceutical products
- Publishing activity etc.

WHO regions and regional office

WHO Headquarters are in Geneva

- Africa → Brazzaville, Congo
- Americas → Washington, USA
- South-East Asia → New Delhi, India
- Europe → Copenhagen, Denmark
- Eastern-Mediterranean → Cairo, Egypt
- Western-Pacific → Manila, Philippines

Management of WHO

- General Assembly
  - Meets annually in Geneva (May)
  - Attended by delegates from all Member Countries
  - Accepts the budget and the policy of WHO
- Executive Board
  - 32 members collected two times a year
- Secretariat
  - About 3800 employees working at headquarters and the regional offices of WHO

WHO Global Strategy "Health For All"

- 1977 → WHO decided that the main social objective of this organization and the governments in the coming decades should be:
  - "Citizens of all countries into the world to obtain such a level of health that will permit them to live a fruitful life from both social and economic point of view "

- 1978 → Alma-Ata - International Conference on Primary Health Care

It is assumed that primary care is the central unit in the national healthcare system and performs its main function.

- Inequality of health status between the developed and the developing countries
- Health as a socio-economic issue and as a human right
- Role of the state in providing adequate health and social measures
- Incorporate the concept of primary health care in their health systems

Programs and priorities

WHO Global Strategy on Health, Environment and Climate Change

- Strategic objective 1
  - Primary prevention: to scale up action on health determinants for health protection and improvement in the 2030 Agenda for Sustainable Development
    - Engagement for massively expanded primary prevention.
    - Integration of action on primary prevention in disease programmes
- Strategic objective 2
  - Cross-sectoral action: to act on determinants of health in all policies and in all sectors
    - Systematic consideration of health in the development of health-relevant policies beyond the health sector.
    - Gaining the health co-benefits of more sustainable policy choices
- Strategic objective 3
  - Strengthened health sector: to strengthen health sector leadership, governance and coordination roles
    - Developing the capacity of the health sector to engage in policies with other sectors
    - Stepping up health sector efforts to reach out to other sectors for health protection and promotion
    - Ensuring essential environmental services and healthy workplaces in health care facilities, and greening the health sector
- Strategic objective 4
  - Building support: to build mechanisms for governance, and political and social support
    - Strengthening of governance mechanisms to allow sustainable health-protective action
    - Stepping up demand and leadership for health.
    - Building high-level political movements and enabling agreements.
- Strategic objective 5
  - Enhanced evidence and communication: to generate the evidence base on risks and solutions, and to efficiently communicate that information to guide choices and investments
    - Integration of environmental monitoring and health surveillance in order to evaluate the health impacts from environmental risks and services
    - Development of evidence-based guidance to support effective action at the national and subnational levels
    - Interpretation and targeted communication of evidence
    - Mechanisms and capacity for early identification of and response to possible emerging threats to health
    - Shaping research and driving innovation
    - Building the case for adequate funding allocation and influencing investments
- Strategic objective 6
  - Monitoring: to guide actions by monitoring progress towards the Sustainable Development Goals.
    - Monitoring of progress towards the Sustainable Development Goals and their and other indicators
    - Monitoring change and implementation of relevant strategies at the regional and country levels.

References

- https://apps.who.int/iris/bitstream/handle/10665/331959/9789240000377-eng.pdf?ua=1

European Programme of Work

The European Programme of Work, 2020–2025 – "United Action for Better Health in Europe" (EPW) has been developed through a process of extensive consultation with Member States, the European Commission, non-State actors, intergovernmental and United Nations organizations, as well as WHO staff.

This EPW sets priorities for the coming five years by starting from what citizens in the Region legitimately expect from their health authorities. People want their authorities to guarantee

- their right to universal access to quality care without fear of financial hardship
- they want them to offer effective protection against health emergencies
- they want to be able to thrive in healthy communities, where public health actions and appropriate public policies secure a better life in an economy of well-being.

People increasingly – and rightly – hold their health authorities to account for meeting those expectations.

21. European Union Health policy. Programs and priorities.

European Union Health policy

Objective of the EU policy in the field of healthcare

The provision of all living in the Union people of access to quality health services:

- Prevention of diseases and disorders
- Promotion of healthier lifestyle
- Protecting people from health threats, such as pandemics.

Institutions and bodies of the EU, related to healthcare

- European Parliament
- Committee on the Environment, Public Health and Food Safety
- Council of the European Union Employment, Social Policy, Health and Consumer Affairs
- European Commission
    - Healthcare (DG SANTE)
    - European Economic and Social Committee Section "Employment, Social Affairs and Citizenship"
    - Committee of the Regions
    - Commission for Natural Resources (NAT)
- EU Agencies
    - Executive Agency for Consumer Health and Food
    - European Foundation for the Improvement of Living and Working Conditions
    - European Medicines Agency (EMA)
    - European Centre for Disease Prevention and Control (ECDC)
    - European Agency for Safety and Health at Work (EU-OSHA)
    - European Food Safety Authority (EFSA)

Commission's health priorities

- Fight against cancer
- Reducing the number of antimicrobial-resistant infections
- Improving vaccination rates
- Expand successful initiatives like the european reference networks for rare diseases
- Pursue international cooperation on global health threats and challenges.

Health legislation of the EU

According to the "Contract on the Functioning of the European Union", the EU may adopt legislative Initiatives in regard to healthcare:

- Article 168 (protection of public health)
- Article 114 (approximation of laws)
- Article 153 (social policy)

Directive: Directive 2011/24/EU on patients' rights in cross-border healthcare

Recommendations and communications:

- Use of alcohol by young people (2001)
- Prevention of drug addiction (2003)
- Screening for cancer (2003) Accidents and Safety conditions (2007)
- Patient safety and control of VBI Rare Diseases (2009)
- Smoking (2009)
- Seasonal influenza vaccination (2009)

EU action on health based on three key principles:

- Integration
- Sustainability
- Focus on priority issues

WHO Programs

EU4Health 2021-2027

A vision for a healthier European Union.

EU4Health is the EU's response to COVID-19's impact on medical and healthcare staff, patients, and health systems in Europe. The new programme will go beyond crisis response to pave the way for a stronger, healthier, and more resilient Health Union.

Aims of EU4Health programme:

- Boost EU's preparedness for major cross border health threats by creating
  - reserves of medical supplies for crises
  - a reserve of healthcare staff and experts that can be mobilised to respond to crises across the EU
  - increased surveillance of health threats
- Strengthen health systems so that they can face epidemics as well as long-term challenges by stimulating
  - disease prevention and health promotion in an ageing population
  - digital transformation of health systems
  - access to health care for vulnerable groups
- Make medicines and medical devices available and affordable
- Advocate the prudent and efficient use of antimicrobials
- Promote medical and pharmaceutical innovation and greener manufacturing.

Communicable Diseases Department (CDS)

Work with countries, partners, and the wider WHO community to accelerate progress in reducing the impact of communicable diseases.

- Blood safety and laboratory technology
- HIV/ STI / Hepatitis
- Malaria
- Neglected tropical diseases
- Tuberculosis
- Research policy and cooperation

Family Health, Gender and Life Course (FGL)

FGL focuses on the development and implementation of programs for:

- Child and adolescent health
- Gender, Equity and Human Rights
- Healthy Ageing
- Immunization and vaccine development
- Maternal and reproductive health
- Nursing and midwifery

Non communicable disease

Water sanitation/occupational health/health promotion education/mental health/tobacco free/climate change.

WHO priorities

WHO's priority is for "Citizens of all countries in the world to obtain such a level of health, that will permit them to live a fruitful life from both social, and economic point of view "

22. Health culture and health behaviour. Health education – basic principles, methods, and forms.

Health Culture and Health Behaviour

Definition of Health Culture: Culture defines what we think, say, and do so health culture is any combination of health, education, economic, political, spiritual or organisation initiatives designed to bring about positive attitudinal, behavioural, social, or environmental changes conducive to improving the health of populations.

Culture impacts on:

- An individual's perception of health and illness
- Their health behaviour
- Beliefs of what is a health issue
- Why they have the illness
- Influences how people perceive they should talk about the illness

Definition of Health Behaviour: Health behaviour is an action taken by person to maintain, attain or regain good health and to prevent illness. It reflects a person's health beliefs. Common health behaviour is exercising regularly, eating a balanced diet, and obtaining necessary immunisation.

Significance of Health Culture and Health Behaviour

Health is a dynamic process whereby we have times of good health, times of sickness and even times of serious illness. Health culture and health behaviour have a significant impact on health of individual as these factors can improve current and future levels of our health.

Health Education

Definition of Health Education: It is a process that informs, motivates, and helps people to adopt and maintain healthy practices and lifestyles, advocates environmental changes as needed to facilitate this goal and conducts professional training and research to the same end.

Aims of Health Education

- Motivating people to adopt health-promoting behaviours by providing appropriate knowledge, and helping to develop positive attitude
- Helping people to make decisions about their health and acquire the necessary confidence and skills to put their decisions into practice.

Health Education – basic principles

- Interest → health teaching should relate to the interest of the people
- Participation → way of delivering knowledge should encourage participation to improve learning process
- Known to unknown → start with what people know and then build on this to teach a new thing
- Comprehension → use terminology which is easily understood
- Reinforcement → repetition of new information as new content cannot be learned in a single contact
- Motivation → realistic and appealing short-term goals should be set
- Scientific precision and credibility → have correct, recent scientific information
- Attractive way of presentation → attractive way of presentation to draw attention of the target group
- Good relation to the audience → wins the confidence of the target group, form good rapport

Health Education – methods

- **Traditional methods**
  - **Oral methods**
    - Health talks *(talking is natural way of communicating and can be done individually or with family or groups)*
    - Lectures *(efficient but ineffective when audience is passive)*
    - Group discussion *(free flow of communication)*
    - Demonstration
    - Role play *(learning takes place through active experience)*

- **Written methods**
  - Printed material *(posters, flipcharts, leaflets)*
  - Visual materials *(strongest especially when accompanied with interactive methods)*
  - Audio-visual material and audio

- **Modern methods**
  - **Social learning** *(by direct experience or observing behaviour of others)*
  - **Diffusion of innovation**
    - *Innovation is a new concept, behaviour, or technology. Diffusions takes place in stages (awareness, implementation, maintenance). Appropriate for health education within closed communities*
  - **Social immunisation** *(people are trained to argue in favour of healthy lifestyles)*
  - **Mass media**

Health Education – forms (of organisation)

- **Behavioural Change Model**
  - It is a preventative approach that focuses on lifestyle behaviours that impact health.
  - Seeks to persuade individuals to adopt healthy behaviours, use preventative service, and take own responsibility.
    - e.g., use slogans, pamphlets, or media messages to stop you from smoking.
  - **Characteristics of Behavioural Change model:**
    - Focuses on health professionals' perceptions of health needs (suggests experts know best)
    - Transmits knowledge
    - Educates about health
    - May have moralistic tone and imply "victim blaming"
    - Focuses on risks rather than on protective or preventive factors

- **Self-Empowerment Model**
  - Seeks to develop individuals ability to control their own health within their environment.
  - Enhances personal identity and self-worth to make person more willing to take control of their life.
    - e.g., providing access to medication, telephone counselling, or 'quit smoking' programmes and support groups
  - **Characteristics of Self-Empowerment model:**
    - Promotes reflection in relation to others and society
    - Encourages people to reflect and change their views
    - Helps people to know where, when why and how to seek help
    - Encourage independence
    - Focuses largely on the individual

- **Collective Action Model**
  - Focuses on many people, not just the individual. Socio-ecological approach that considers the inter-relationship between the individual and the environment. A view on health that is determined by factors outside control of individual.
  - **Characteristics of Collective Action model:**
    - Encourages democratic process and participation
    - Emphasises empowerments for all participants
    - Uses critical thinking and critical action in relation to the individual, others, and society
    - Takes holistic approach

23. Methods of sociological investigation in medicine. Questionnaire. Observation.

Definition of Medical Sociology: Medical sociology is concerned with sociological analysis of medical organisation and institutions, productions of knowledge and selection of methods, actions and interactions of health professional and the social and cultural effects of medical practice.

It is an important field of study because it recognises, the critical role that social factors play in determining or influencing health.

Methods of sociological investigation in medicine

- Interview *(verbal information from investigated subject)*
- Self-administered questionnaire *(verbal information from subject's circle)*
- Observation *(subject's behaviour)*
- Documents review *(documents from and concerning the investigated subject)*

Questionnaire

Definition of Questionnaire: It is an important measurement device that figures prominently in social research. It is an expression of the programme of the social research and an instrument for data collection.

It is composed of questions that reflect the programme of research and the concrete characteristics of the investigated subjects.

Designing the Questionnaire

Steps to take:

- Determine the survey objective
  - define the areas that need to be covered
  - define the variables to be measured
- Decide research format (self-administered questionnaire/face-to-face interview/interview by distant means/observation)
- Formulate appropriate questions to obtain needed information
  - *What should be asked?*
- Decide on wording of questions
  - *How should each question be phrased?*
- Decide on question sequence and layout
  - *In what order should the questions be presented?*
  - *What layout will best serve the research objectives?*

Once first draft is ready, do a pilot study (test over a number of subjects from the proposed population). Used to identify ambiguities, poor questions, and omissions. Then redraft and if necessary, pre-test again.

Requirement of Questionnaire structure

1. Name of institution
2. Topic of survey
3. Introduction stating:
   a. Invitation for participation
   b. Aim of the survey
   c. How the subject has been chosen
   d. Instructions for answering
   e. How the info received will be used
   f. Approximate time for completion
   g. Reinforcement that respondent is appreciated
   h. Assurance of anonymity
4. Closing part should include:
   a. Expression of gratitude for the participation
   b. Questions about the experience while answering the questionnaire and reminder that their opinion counts

5. Questionnaires should be well-designed with simple and concise questions
    a. *Firstly, introductory questions, then selective, the basic ones and finally identification questions. Open questions should be interesting, simple, and easy to answer.*
6. Questions that should be avoided:
    a. **Double-barrelled questions**
        i. Contain a two in one
        ii. *Do you like science or art?*
    b. **Loaded questions**
        i. They suggest social desirability
        ii. *How often do you go to church? Person who doesn't attend if pressured to lie to be socially acceptable*
    c. **Double negative questions**
        i. *Two negative words in questions which can confuse respondent e.g., Do you OPPOSE NOT wanting children before 34?*
    d. **Burdensome questions**
        i. Relies too much on memory
        ii. *How many sweets have you eaten in the last 3 months?*
    e. **Ambiguous questions**
        i. Contain words such as "often" or "usually" without explanation
        ii. *"Old people" may refer to over 30's for a teenager, but means over 60's to an adult*
7. Level of wording should correspond to respondents
    a. Use words that would make sense for the respondent
8. Questionnaire should not be too long
    a. No more than 40 minutes for self-administered questionnaire
    b. No more than 1 hour in case of interview
9. Other things:
    a. Questions should flow
        i. logically from one to the next
        ii. flow from factual and behavioural to attitudinal and opinion
        iii. from least sensitive to most sensitive
    b. General questions asked before specific ones
    c. Earlier questions should not influence response to later ones
    d. Similar questions should be grouped together
    e. Leave lots of space for open-ended questions
    f. Booklet form is recommended

Basic requirements of Questionnaire content

- Questions should be relevant
- Questions should be accurate
- Respondents should have the necessary information
- Respondents should be able to understand and interpret the questions
- Questions should be designed in a way that predisposes the respondents to give the required information.

Types of Questions

- **According to response format:**
    - Open-ended = there is no predetermined response schedule
    - Closed response = the respondent is supplied with a predetermined list of response options
        - Likert type *(allows you to avoid opinion)* → strongly agree, agree, undecided, disagree and strongly disagree
        - Forced choice → strongly agree, agree, disagree, strongly disagree
    - Semi-closed = predetermined list of responses but a category 'others' is also provided
- **According to their position in the questionnaire:**
    - Introductory = in the beginning of the questionnaire, give general information and predispose the subject
    - Transition = directly related to research objectives which require more effort and get respondent thinking about the topic
    - Selective = they divide the investigated subjects into different groups according to different factors/for example smokers and non-smokers
    - Basic = encompass the topic
    - Identification = classifying and demographic questions. Better to be placed at the end of the questionnaire.

Self-Administered Questionnaire (SAQ)

Definition of SAQ: It is one of the methods of collecting sociological information involving asking and answering questions in written form.

Types of SAQ

- Direct group SAQ
  - **Definition of Direct group SAQ:** Investigated subjects answer to the given questionnaire in writing in presence of investigator. Suitable for already organised groups like classes at school.
  - Group size varies between 5 and 40 people. Less than 5 people can endanger anonymity and more than 40 are difficult to control
  - **Advantages of Direct Group SAQ**
    - More people can be investigated for shorter time
    - Investigator has opportunity to observe behaviour of the subjects
    - Investigated subjects have the opportunity to ask questions so received final information will be correct as far as possible
    - Almost all previously planned subjects can be included.
  - **Disadvantages of Direct Group SAQ**
    - Not suitable for people who are not organised in groups
    - There are a lot of requirements for organisation
- Direct individual SAQ
  - **Definition of Direct individual SAQ:** Investigated subjects answer the questionnaire in private and at their convenience. The investigator distributes the questionnaire in person, giving some instructions for answering and returning the questionnaire.
  - **Advantages of Direct individual SAQ**
    - The investigated subject answer at their convenience
    - All planned subjects can be included
    - There are no special requirements of organisation
  - **Disadvantages of Direct individual SAQ**
    - Many investigators are required
    - Doubt about the anonymity could arise
    - The subject could be influenced by other people' opinion
    - Much more time is required
- SAQ by mail/postal SAQ
  - Similar to Direct Individual SAQ but subject receives it in the mail. Main disadvantage being the low response rate (40-50%). The respondents are commonly not representative for the population planned to be investigated. Older people are more responsive than younger people, women more often than men.
- Indirect SAQ
  - Most complex method. Investigator fills in the questionnaire after collecting data from subject and their circle. Investigator employs interview, observation and documents review and they must be experienced and even-handed. Expensive and time-consuming method.

Observation

Definition of Observation: Common method for data collection which involves being close to things such that the observer is in the position to directly perceive and record specific aspects of the environment under study.

Main roles the observer may take

- Complete participant = here the observer is a participant, doesn't disclose their information to other participants
- Participant as observer = observer participates and discloses his identity to other participants
- Observer as participant = observer interacts with other participants and observes
  - Example → observer might study individuals living and working in a geriatric hospital. Observer obtains permission to record events and observe patients, whilst interacting with staff and the patients.
- Complete observer = observer does not interact, nor disclose his identity to participant.

Types of Observation

- Naturalistic observation (observation in secret)

  - Done in respondent natural social settings
  - Respondent's behaviour recorded without consent and researcher has no influence on behaviour
  - Hawthorne effect is avoided
    - **Definition of Hawthorne effect:** Change in subject's behaviour caused by awareness of being studied
- Structured observation
  - Systematic and planned observation in controlled environment
- Unstructured observation
  - Unplanned and informal
- Non-participating observation
  - Planned and structured observation where observer does not participate in what is going on
  - **Advantages of Non-participating observation**
    - Avoidance of observer effect
    - Biased free
    - Low cost
    - Less time consuming
  - **Disadvantages of Non-participating observation**
    - No in-depth study
    - No identification of real problem and prevailing social settings
- Participant observation (fieldwork)
  - Best known method
  - Prolonged physical immersion of observer in a social setting in which he seeks to observe behaviour of members of that setting
  - **Advantages of Participating observation**
    - Insiders view
    - Researcher becomes an accepted part of the environment
    - Detailed study of social settings
    - Identification of real problems and elements that are leading to such problems
  - **Disadvantages of Participating observation**
    - Problem of objectivity documentation relies on memory, personal, disciplined and diligence of research)
    - Close relation may affect study
    - Time consuming
    - Unstructured

- **According to who makes the observation**
  - Self-observation
    - Preferred when research involves the observation of human subjects
    - **Advantages of Self-observation**
      - Greater access to subjective experience
      - Less intrusive
      - Less expensive
    - **Disadvantages of Self-observation**
      - Greater bias
      - Less likely to record accurately
      - Less likely to carry out observations as agreed
  - Outside observer
    - Observer records elements of behaviour of subjects
    - **Advantages of Self-observation**
      - Greater objectivity, less bias
      - More likely to record accurately
      - More likely to carry out observations as agreed
    - **Disadvantages of Self-observation**
      - Cannot directly access subjects perceptions

- More intrusive
- More expensive and time consuming

- **According to the setting of observation**
  - Observation in laboratory settings
    - Allows better control over extraneous variables, easier application of observation aids and recording instruments.
    - Phenomena under study may be distorted and ecological validity is problematic
      - **Definition of Ecological Validity:** It is the extent to which the results of a study may be generalised to the real world
  - Observation in natural settings
    - Guarantees better ecological validity
    - Recording equipment more difficult to use

- **According to the use of instrumentation**
  - Unaided observation
    - Most appropriate for observation of certain aspects of human behaviour such as abnormal postures, discolouration of skin, abnormalities in eye movement.
    - It is less disruptive, simple, inexpensive
  - Observation using instrumentation
    - Appropriate for observation of very small objects by microscope, complex events such as human locomotion by video camera
    - It allows increased accuracy but may distort phenomenon. Might be complex and quite expensive.

Extra

- **Medical sociologists study:**
  - *Social causes and patterns of health and disease*
  - *Social behaviour of healthcare personnel and their patients*
  - *Social functions of health organisation and institutions*
  - *Relationship of healthcare delivery systems to other social systems*

24. Methods of sociological investigation in medicine. Interview. Documents review.

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Methods of sociological investigation in medicine

- Interview *(verbal information from investigated subject)*
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- Documents review *(documents from and concerning the investigated subject)*

Interview

Definition of Interview: Defined as a conversation between interviewers and interviewees with the purpose of eliciting certain information.

Types of Interviews

- **According to the type of interview**
  - Structured interview (direct, formal, guided)
    - Predetermined questions
    - Consists mostly of closed response questions
    - Researcher gets answer to the questions only and doesn't add new ones
    - Conversation guided by interviewer
    - Questionnaire is filled by interviewer with only things said by subject (no alteration of language)
    - **Advantages of Structured interviews**
      - Less time-consuming
      - Same information collected for all respondents
    - **Disadvantages of Structured interviews**
      - Responses are not recorded in respondent's own words
      - Respondents may be lead and hence give biased information
  - Unstructured interview (non-directive, informal, open-ended)
    - No predetermined questions
    - Most questions are open-ended
    - Interview collects info by free discussion
    - Subjects have a more active role in the conversation (narrate experience, opinions, reactions)
    - **Advantages of Unstructured interviews**
      - Responses are recorded in the respondent's own words
      - Less bias in interpretation
    - **Disadvantages of Unstructured interviews**
      - Time-consuming
      - Different information is collected for all respondent's
  - Semi-structured interview
    - Questionnaires consist mostly of semi-closed questions

- **According to the number of interviewees**
  - Personal interview
  - Collective interview

- **According to the number of meetings** (between interviewer and interviewees)
  - Single time interview
  - Panel (repetitive) interview

- Is held periodically in order to note the gradual influence of some or psychological process, to study change in continued sequence. Same questionnaire and subject.

- **According to the methods of conducting interview**
  - Face-to-face interview
    - **Advantages of Face-to-face interviews**
      - Permits a full range of non-verbal behaviours to be observed
      - Permits development of closer rapport arising from the more 'natural' setting
      - The interviewer may use their observations of non-verbal cues to supplement the verbal information being provided
    - **Disadvantages of Face-to-face interviews**
      - May require a substantial amount of participant travel time and hence higher costs than for telephone interview
      - May be too confronting or embarrassing for some subjects
  - Interview with distance means of communication (telephone)
    - **Advantages of Telephone interviews**
      - If the interviewer is trusted, some people find disclosure of sensitive information to be easier by telephone
    - **Disadvantages of Telephone interviews**
      - With certain interview objectives may not be suitable
      - If the interviewer and their credentials are not well known to the interviewee, it is unlikely to provide valid and reliable information about personal topics

Stages of interview process

1. Selection of interviewees
2. Recruitment of interviewees (interviewer contacts interviewee, explains purpose, makes assurance)
3. Starting the interview (interviewer creates atmosphere for interview to freely express themselves)
4. Securing rapport with the interviewee
5. Recall (when interviewee drifts from subject, interviewer should give time to recollect and refresh memory)
6. Probe questions (used when the subject side-tracks)
7. Encouragement
8. Guiding the interview (used when subject digresses to less important topics)
9. Recording (interviewer should only jot important points)
   a. Appropriateness determined by objectives of researcher.
10. Closing the interview (bring to a natural close)
11. Report (should be compiled soon after)
12. Analysis of data (interview transcript)

Documents review

Definition of Document review: Analysing the document to see if it fulfils its purpose.

Definition of Document: It is a piece of text which aims to meet a purpose. For example, journals, test results, letters, newspapers.

Media documents

- Digital (e.g., phone, tablet, PC)
- Newspapers

Examples of Document Review in medicine

- Reviewing medical documents to check for diabetes history over time
  - Advantage → you can understand the big picture of the patient's history
  - Disadvantage → it's static and may have been left unreviewed if filled in by less experienced doctor

Quantitative analysis

- Researchers count number of words spoken by each participant to obtain the quantitative measure of their relative contributions to the conversational process.

- Quantitative measured could be used to test hypotheses such as sex differences between number of questions asked by male and female subjects.

Qualitative analysis

- It is applied in descriptive and theoretical studies
  - Descriptive qualitative studies → aim to provide detailed description of a particular set of circumstances and to encourage the reader to make their own interpretations.
  - Theoretical qualitative studies → attempt to develop theories and concepts to verify them
    - **Methods used:**
      - Constant comparative method = researcher codes and analyses data to develop concepts
      - Theoretical sampling methods = cases are selected purposively to refine theory previously developed.

Costs and Benefits of Interview vs Self-Administered Questionnaire

	Costs	Benefits
Interview	• Expensive to administer (requires help • Responses much more susceptible to interviewer bias	• Lower rejection rate • More detailed responses can be elicited • Greater control over filling out of response form
Self-Administered Questionnaire	• Higher rejection rate • Difficult to elicit detailed responses • Less control over how response form is filled out	• Cheap to administer • Less susceptible to interviewer bias • Can be administered by mail

25. Social history of the patient. Family anamnesis.

Social history of the patient

Definition of Social history: Social history is about the individual's medical history addressing:

- family
- marital status
- occupational and recreational aspects of the patient's personal life → potential to be clinically significant

General history has 7 parts

- Patient's personal characteristics
  - Passport data *(name, age, address, marital status)*
  - Psychobiological qualities *(temperament, character, goals, life position and psycho-traumatic experience [stress, crisis, and conflict])*
  - Patient's behaviour towards health and disease *(risky behaviour such smoking, use of alcohol, drug abuse and bad diet)*
- Patient's family background
  - Family structure *(incomplete family, family with several generations living together)*
  - Type of family *(nuclear, joint, three families)*
  - Family way of life and activities *(living conditions, financial problems)*
  - Personal peculiarities of family members
  - Way of living *(sharp or stressful situations, leisure time)*
- Occupational environment
  - Profession, position, place of work
  - Character of work, regime, hygienic conditions
  - Professional satisfaction and professional ambitions
  - Sociopsychological climate at the workplace
- Patient's social environment
  - Ecological problems *(concerning the environment like pollution, noise, the transport)*
  - Public activities, membership of any informal activities
  - Friends, time spared outside the family
- Health services and patients
  - Hospitalisation, dispensarisation (preventative medical examination/screening) and medico-social help
  - Patient's attitude and behaviour to health, disease, and health services → 'hard' patients or fearing patients
  - Patient's evaluation for health services' attitude to him
  - Stress situations while fulfilling the medical care
- Socio- medical conclusions
  - Patient's risk factors
  - Patient's needs
- Reasons for medico-social help to the patient

Family anamnesis

Definition of Family anamnesis: In medicine, a family history consists of information about disorders from which the direct blood relations have suffered from in the past.

Advantages of obtaining Family anamnesis

- Accurate knowledge of patient's family history may identify a predisposition to developing certain illnesses which then allows us to take steps to reduce the risk of a disease occurring.
- Allows effective management or even prevention of conditions
- Genetic diseases can be identified and allow the physician to estimate the risk of offspring developing a similar disease.
- Can provide information on rare diseases such as Cystic Fibrosis and sickle cell disease.

Disadvantages of obtaining Family anamnesis

- Misinformation or inaccurate description of the disease
- Uncertainty about a relative's diagnosis
- No contact with blood relatives
- In complex situation a family tree or genogram may be used to organise resulting information