



UNIVERSITY OF PÉCS
Faculty of Health Sciences



HANDBOOK FOR HEALTH PROMOTION AND PREVENTION OF CHRONIC DISEASES FOR HEALTH SCIENCE STUDENTS

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University of Pécs Faculty of Health Sciences, Institute of Physiotherapy and Sport Science
EFOP-3.4.3-16-2016-00005
2022.

ISBN: 978-963-626-051-4

SZÉCHENYI 2020



HUNGARIAN
GOVERNMENT

European Union
European Social
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This book is EFOP-3.4.3-16-2016-00005 Modern university in the modern city: Value-centeredness, openness and inclusive approach in a 21st century higher education model made with the support of a tender.

ISBN: 978-963-626-051-4

Publisher: University of Pécs Faculty of Health Sciences

Pécs, 2022.

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INTRODUCTION

The Handbook for Health Promotion and Prevention of Chronic Diseases for Health Science Students was created with the aim of helping health science students to complete their studies. The handbook was prepared by well-known specialists in health promotion and preventive medicine in order to make the relevant knowledge of the two major fields accessible to students of health sciences in a single volume in an easy-to-use manner. We marked it as an important goal, since we did not have a similar book at our disposal, to fill the volume with content taking into account Hungarian - and in some respect international - social characteristics. Our other priority goal was to make it readable and easy to understand, so we used easy-to-understand language, figures and tables to aid comprehension.

The first chapter introduces the reader to the history and foundations of health promotion. Furthermore, it presents basic knowledge that provides decisive knowledge for later chapters. Knowing our past is important, as our future is built on it, so we can come to know the development of the field of health sciences in outline.

The second chapter explores the knowledge of health behavior, and invites the reader to review his or her own health awareness, wondering in which area he or she could exercise stronger control over his or her own health.

The chapter on the approach to complex health development presents the current worldview as a guideline for the following chapters.

The health education chapter explores and guides the reader through the didactic and systematic system of individual and group interventions. It presents the methodological foundations and possibilities of health education, exploring modern educational possibilities.

Scene-based programs are a prominent area of health promotion that demonstrates practical implementation. In addition to presenting the theo-

retical framework, the authors also tried to highlight good practices, thus making the chapter clear and easy to process.

In the chapter entitled „The role of health policy and health economy in health development”, the authors undertook to present an extremely important area, because it is necessary for the students to have a basic concept of the health economy, since they may have to plan during their future work, and then economic analysis is unavoidable. The examples are excellent for understanding.

Health communication helps students to find their way in the world of special communication, so that it supports the cultivation of their future profession at a high level.

The last chapter, the prevention of the main chronic non-communicable and infectious diseases, outlines the classic primary, secondary and tertiary possibilities of health promotion from a biomedical point of view, focusing on the typical diseases of our time and their prevention.

The didactic glossary compiled at the end of the book can maximally facilitate students' learning, accurate understanding and finding of definitions, highlighting the basic concepts, activities and organizations used at the present time. In the last part, we summarized the brief biographies and activities of the key people who introduced the preventive health approach in our country.

The editors

BIONOTES

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He is a philosopher, lawyer, associate professor at the Faculty of State and Law of the University of Pécs, head of the Department of Legal Philosophy and Social Theory. He also teaches at the PTE Faculty of Arts and Health Sciences. He also works as a secretary of the Philosophical Working Committee of the Hungarian Academy of Sciences. He researches moral and social philosophical topics. His most recent monographs: *Exodus as Rebellion* (2012), *The Philosophy of Human Dignity* (2013), *Three Philosophical Questions about Man* (2016). Major areas of education: Philosophy, ethics, bioethics. For many years, he taught subjects related to health promotion -- their humanities aspects -- in addition to the aforementioned (e.g. Mental recreation, Media and health promotion) at the Faculty of Health Sciences.

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De Blasio Antonio

President of the Carpathian Basin Association of the Healthy Cities Movement, he has more than 30 years of experience in planning and implementing local, national and international health promotion projects, as well as in developing local strategy documents. He has advised the World Health Organization on a number of occasions on health policy, health strategy, health communication, and environmental health issues. Areas of research: health promotion in the local decision-making system, application of the health impact assessment method, health communication. Educational activity: health communication.

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She has been working at the Faculty of Health Sciences of the University of Pécs since 2001 as a senior lecturer, and since 2021 she has been the head of the Department of Health Pedagogy and Emergency Foundation. She defended her doctoral dissertation in the field of education in 2013: "Principles and practice. Perceptions of health, health education and mental health in the light of primary school health education programs and interviews with teachers". In her undergraduate and master's programs, she teaches health sciences and education, and her research is interdisciplinary: it examines the relationships between sense of coherence, health behavior and health status, and the mental health of pupils, students, teachers and health professionals.

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She is a PhD student at the „Education and Society” Doctoral School of Education at the University of Pécs in the sociology of education sub-programme, and a teaching assistant at the Faculty of Health Sciences and Social Education at the University of Szeged. In addition to her doctoral studies, she considers the interests of doctoral students to be a matter of her heart, which is why she is the first vice president of the Department of Psychology and Educational Sciences of the National As-

sociation of Doctoral Students, and then the president from 2021. Her research area is related to the examination of health appearing in textbooks, as well as the examination of the relationship between health promotion, health value and health status. As a member of the PTE research group, she examines university students' attitudes towards people with disabilities.

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She works as a doctor, sociologist, coach, and university professor. She works at the Institute of Behavioral Sciences, Faculty of General Medicine, University of Pécs, and is the head of the Department of Medical Education Development and Communication. She teaches medical sociology, sociology of health, and health behavior in undergraduate and graduate education to medical students, public health students, and PhD students at the Doctoral School of Demography and Sociology at UP. Many of her researches in recent decades are closely related to health behavior topics.

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Dr. Andrea Horváth-Sarródi,

She is an assistant lecturer at the University of Pécs, Faculty of Medicine, Institute of Public Health, where she has been working since 2007 and as a coordinator of the Health Development Program (YourLife @ MSc) for 3 years. She obtained her professional degree in Pre-Medical and Public Health in 2011. She has been able to participate in workplace health promotion projects at many employers in the region, during which she gave not only lectures but also trainings on communication and stress management. Her research

topic is the mental health of medical students and she also tries to help the students as life coaches in the form of individual consultations.

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He is the head of the Institute of Medical Public Health, University of Pécs, Faculty of General Medicine where he has been working since 1986. He defended his PhD dissertation in 2000 and became a doctor of the Hungarian Academy of Sciences in 2014. He has been involved in public health education for medical and dental students for more than 35 years, as well as teaching pharmacy and biotechnology students, and he has been involved in a number of courses at the Faculty of Health Sciences. He is the author of a number of textbooks and one of the editors of the textbook "Public Health Medicine" written for medical students but also used in specialist medical training. His main field of research is the epidemiology and prevention of chronic non-communicable diseases. He is the professional leader of the YourLife Occupational Health Development Program at the University of Pécs.

Kinga Lampek, PhD

She is an economist, sociologist, professor at the Faculty of Health Sciences of the University of Pécs, head of department. Her main research interests are in the field of health sociology: research on the impact of social factors influencing the health status of the adult population, analysis of the health status and quality of life of health professionals, and the role of aging societies in supporting and inhibiting healthy aging. Her field of education is partly the sociology of health and partly the knowledge of the life situation and quality of life of disadvantaged and vulnerable groups through health surveys.

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cation of “summa cum laude”, and was habilitated in 2021. Her main research is in the field of health communication and the communication and prevention of public health programs. The number of scientific publications of Dr. Orsolya Máté is 85. Of these, 19 were published in foreign languages, the author of 2 monographs and 5 book chapters, one of which was in Hungarian. As an instructor, she teaches in 3 languages, gives lectures and exercises in Hungarian, German and English. She works as a senior pedagogical expert at EMMI during textbook registration procedures.

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In 2013, she graduated from the Faculty of Health Sciences of the University of Pécs as a health insurance specialist and in 2015 as a health management expert. She is currently pursuing a PhD in research on innovative fundraising tools, in particular the public health product tax in Hungary.

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In 2000, I obtained my general medical degree at the Faculty of General Medicine of the University of Pécs. After that, I worked at the Epidemiological Department of the ÁNTSZ in Baranya County. In 2005, I obtained a specialist degree in Preventive Medicine and Public Health. Since 2013, I have been working at the Institute of Medical Ethnology of PTE ÁOK as an assistant lecturer. I am writing my PHD thesis on the topic of infectious diseases. I regularly participate in the education of Hungarian and foreign students in the epidemiology and prevention of infectious diseases.

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She is a senior lecturer at the Institute of Public Health, Faculty of General Medicine, University of Pécs. She wrote her doctoral dissertation on allele polymorphisms of genetic factors involved in early carcinogenesis. She is the author of the chapter “Epidemiology of Tumors” in the textbook Public Health Medicine published in 2013. She delivers her knowledge and experience to medical students as part of the optional course “Tumor Preventability”. Her professional interest focuses on health inequalities in disadvantaged communities, particularly the risk factors that can be influenced by chronic non-communicable diseases.

Henriette Pusztalvi, PhD

She is a teacher of pedagogy, since 2002 she has been working at the Faculty of Health Sciences of the University of Pécs as a senior lecturer and associate professor at present. Her field of education is pedagogy, health education and personality development. She participated in the training of a health teacher as a coordinator. Her main field of research is the development and measurement of effective health prevention and education. In 2011, she obtained a doctorate in the process of institutionalization of health education. She has given a number of scientific and educational presentations on health prevention topics and considers research on the factors that determine the quality of life and the study of educational methods in health education to be an important activity.

József Vitrai, PhD

He is a biologist with a basic education but has long been involved in research as an expert in biostatistics and epidemiology. He is one of the initiators of the introduction of modern health surveys and health monitoring in Hungary, and he participated in several health reports as an editor and author. In his doctoral dissertation, he summarized the results of his research in the field of health inequality. He took an active part in the professional management and support of the health promotion offices. Prior to his retirement in 2020, he worked as the Head of the Public Health Department at EMMI. Since 2016, he has been the editor-in-chief of Health

Development magazine. Total number of publications account for 229, Independent citations 1055, Hirsh Index 16.

Chapter I.

I. THE FUNDAMENTALS OF HEALTH PROMOTION (TAMÁS BARCSI - KATALIN JULIANNA DINNYÉS - HENRIETTE PUSZTAFALVI)

I.1. Introduction

According to the famous German philosopher, Arthur Schopenhauer, nine-tenths of our happiness depends on our health: “Through it, everything becomes a source of pleasure, without it, on the other hand, no external thing provides pleasure, and even the subjective goods, the characteristics of the mind, mood, and temperament are greatly degraded and withered by the disease” [1]. On the basis of sociological research on the value of health [2], we can risk the statement that even more people would approve of this idea today than in the 19th century, since in today’s globalized world, people consider happiness and health to be of outstanding value, even if they cannot say exactly what they mean by happiness and they perceive health primarily as physical health. There is obviously a correlation between the two values. Schopenhauer also talks about health in a narrower, physical sense, and believes that a fit person is cheerful, and cheerfulness has a great influence on happiness. Physical well-being does indeed contribute to happiness, but the idea that nine-tenths of our happiness depends on our physical health is questionable, since Schopenhauer exaggerates. Certainly, the philosopher also writes at length about other aspects of happiness in his work on the wisdom of life, and notes that health is not always a guarantee of cheerfulness, sometimes even a perfectly healthy person can be melancholic, and he agrees with Aristotle that excellent, great-minded people are all melancholic [1]. In this chapter, we approach health development from the historical side and show what ideas and practical measures were formulated by our ancestors to maintain health on the international and domestic level.

I.2. On some philosophical and ethical aspects of health and health promotion - Ancient thinkers on the importance of physical and mental health

The great Greek and Roman philosophers generally emphasized the importance of physical health, but they also pointed out that this alone is not enough for a good life. For the Greeks, diet (diatē) meant an art of living, the science of which was dietetics, whose practitioners developed appropriate strategies for taking care of the body, taking into account changing circumstances (dietetics covers physical exercises, food, drinks, dreams and sexual relations). They saw the goal of practicing the lifestyle not in prolonging life at all costs, but in ensuring a useful and happy life. Neglecting to deal with the body can also affect the mind in a negative way, but the effect of the soul on the body is even more decisive, since moral fortitude is necessary to follow the correct way of life [3] (more about the way of life: FOUCAULT, 2011: 104-114). In Plato’s *State*, Socrates talks about the fact that in the ideal state, after the art of the Muses, young people should be educated with physical training, and the importance of this remains even later: “We must educate them carefully in this, from childhood throughout their lives”, at the same time he also adds: “I don’t think that the body, even if it is healthy, would make the soul of good quality with its excellence, but it is the other way around: the right soul makes it possible with its excellence for the body to be of the best quality” [4]. Thus a person with virtues also takes care of his body, but a healthy body alone does not guarantee a healthy soul. Aristotle interprets virtue as striving for the middle, thus avoiding deficiency and

excess, and he cites the “self-evident” example of physical strength and health to prove that deficiency and excess are both poor: “the excessive and the incomplete physical exercise is both harmful to physical strength, just as food and drink, whether more or less than necessary, undermine health, and if used in the right amount, they not only establish, but also increase and maintain” [5]. Like Plato, Aristotle also rejects - among other, undesirable ways of life - the pleasure-seeking life.

Cicero also believes that nutrition and grooming should be for the preservation of health and strength, not for pleasure [6]. The Stoic thinkers also proclaimed the primacy of mental and spiritual health. With Seneca, for example, we can read the following: “I admit that we are instilled with tenderness for our bodies... I do not deny that we should care, but I deny that we should serve. Many others will be addicted, because those who are addicted to their body, fear it too much and relate everything to it” [7] (Ethical Letter XIV). “It was an old custom that survived until my age to add to the first words of a letter: ‘If you are healthy, everything is fine, I am healthy.’ But we correctly say: ‘If you philosophize, everything is fine.’ without it, the soul is sick. ... Therefore, first of all, take care of your mental health, then the other” [7] (Moral Letter XV). Roman thinking during the imperial period placed great emphasis on encouraging people to take care of themselves: the goal is to achieve the individual’s control over himself, which is accompanied by serene joy. Self-knowledge is essential for self-control, but so is the development of an appropriate relationship with the body (parallels can be discovered between medical thinking and philosophy, the concepts of “pathos” and “affectus” apply to both spiritual passion and physical illness [8].

I.3. Christianity’s perception of the body and health, its changes due to the Renaissance and the Reformation

The aforementioned Greek and Roman thinkers placed mental and spiritual health before physical health, and believed that a virtuous person can relate to the body in an appropriate way, but they also emphasized the importance of physical

health. However, the Christian view regarded the body primarily as the source of sins, so the Christian authors of the Middle Ages placed less emphasis on the effort to preserve physical health. In the Renaissance era, the relationship with the body begins to change: this is also reflected in the fact that the great Renaissance painters and sculptors glorify the beauty of the human body in their works, for example Botticelli’s *Birth of Venus* or Michelangelo’s *David*. The Renaissance writer Agnolo Firenzuola wrote a treatise on female beauty in 1541, the main topic of which is not the examination of spiritual beauty and love, but the capture of the physical characteristics of a “lady of perfect beauty” [9]. The Venetian nobleman Luigi Cornaro’s treatise on the moderate life was published in the middle of the 16th century, in which he described the beneficial effects of giving up certain meats and wines, but emphasized that the diet was not only worth following because of its beneficial effects on health, but also because it helped to overcome carnal passions [10]. In Protestantism, health is seen specifically as a gift from God, the preservation of which is a moral duty [11]. Among others, Cornaro influenced the English doctor George Cheyne, whose dietetics is also based on religious and moral principles. In the first half of the 18th century in his published books Cheyne recommended a milk and vegetable diet, regular exercise and sleep, avoiding alcohol, and of course he also mentioned the beneficial mental effects of the diet (for example, it eliminates gloom, see: TURNER, 1997: 56-61). Protestant authors consider the preservation of health and an ascetic lifestyle essential because it ensures the condition of hard work [10]. In his famous writing, the sociologist Max Weber pointed out that the development of capitalism was facilitated by the importance of work for the glory of God, perceived as a vocation, as well as by the Protestant view emphasizing the virtues of thrift and restrained consumption, according to which wealth is not objectionable if one has achieved it through hard work and he lives in moderation, without ostentatiousness [12]. Kierkegaard, the 19th-century Lutheran Danish philosopher, distinguished between the “aesthetic” and “ethical” approaches to life: while the per-

son living the “aesthetic” life wants to enjoy life, the person living the “ethical” life is aware of his own life task and fulfills. There are different ways to realize the “aesthetic” view of life. There are people, for example, whose life revolves around a single thing, they find the meaning of their life in this, however, they do not control this thing. This thing can be health or beauty (or indeed wealth, authority, talent) , however, since these are transitory, sooner or later - in the case of a life built on health and beauty, obviously when diseases appear or when the beauty of the individual wears out - this outlook on life leads to unhappiness, and as Kierkegaard writes: if a person has lived the “aesthetic” life at an appropriate level, they reach mental despair, so they see the futility of their outlook on life. This existential crisis also represents an opportunity: one is forced to make a choice. If you discard your previous outlook on life based solely on the enjoyment of life and choose yourself, in its eternal validity, you can move into the “ethical” life. Those who live “ethically” also like to enjoy life, know the magic of the moment, but are not at the mercy of their moods, moments, desires [13].

I.4. The concept of health and its changes

In the 19th century, thanks to the development of science and technology, there was already a worldwide demand for the creation of a new system of public administration organizations, with public health also a part of it. This is due to the fact that before the establishment of the WHO, which currently functions as the coordinating authority for international public health, there were already international initiatives that were created to combat epidemics or other diseases.

The International Health Conference held in Paris in 1851, where the international cooperation aimed primarily at preventing the spread of epidemic diseases: cholera, plague and yellow fever. Only 5 of the 12 countries present ratified this agreement.

Two more similar conferences were held, one in 1859 in Paris and 1866 in Constantinople, where no results were achieved either.

The International Health Conference, held Vien-

na in 1874, adopted a resolution on the establishment of a permanent international epidemiological committee. Then in 1903, Paris held the 11th International Health Conference. A convention on the protection against cholera, plague and yellow fever was adopted. Due to the ongoing pandemics, in Rome 1907, the delegates of 12 states founded and created the first international health organization, the **International Office of Public Health**, whose tasks included the following:

- continuously inform public about the epidemiological and health situation in the world,
- coordinate the fight against epidemics,
- organize international exchanges of experience.

In 1919, **the International Public Health Office was integrated into the League of Nations** in response to the worsening health situation, such as the great influenza epidemic known as the Spanish flu, which claimed nearly 15 million lives. Furthermore, they were tasked with the fight against the main epidemic diseases, such as cholera, plague, yellow fever, smallpox, and typhus at the international level, in the period between the two world wars. Furthermore, the monitoring of the implementation of the international convention on the treatment of venereal diseases of seafarers and the international standardization of anti-diphtheria serum were a major task. Perhaps the most significant task was the organization and control of the fight against drug abuse. Finally, on July 22, 1946, the World Health Organization (WHO) was established at the international health conference convened by the UN Secretary General in New York, where its charter was adopted.

It officially began its operations as a specialized institution of the United Nations on April 7, 1948 - this day has since become *World Health Day* . The headquarters of the WHO is Geneva (Switzerland), and it currently has 194 member states. The governing body of the WHO is the General Assembly consisting of member states, which meets every year. The General Assembly elects a 24-member Executive Council, whose decisions and policies are implemented. The General As-

sembly prepares an annual work program, directives and recommendations for the governments of the member countries. It consists of Regional Committees. The Regional Committees, consisting of representatives of each geographical region, meet once a year. Our country has been a member of the WHO since the establishment of the organization. Since 1954, the cooperation has been close and continuous. We have been participating in the Healthy Cities project since 1986, the aim of which is to place health on the agenda of city decision-makers and to promote the development of comprehensive local strategies to ensure health and sustainable development.

World Health Organization (WHO), founded in 1948, defined health as follows: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” [14].

We can interpret and define the concept of health through its dimensions, which are as follows:

biological health : the proper functioning of our body

mental health : a sign of our personal worldview, principles of behavior and peace of mind and peace with ourselves

mental health : the ability to think clearly and consistently

emotional health : the ability to recognize feelings and express them appropriately

social health : the health of developing relationships with others

Based on the realistic formulation, however, it should also be seen that health can never be defined objectively, because the social image of health is always subjective, i.e. it develops according to the current expectations of a given society. With realistic simplicity, we can say that based on the general state of health of the population and the development of medicine, a picture of health (which varies by age group) is formed, and healthy is someone whose health is no worse than the social expectation created in this way. The health picture is basically determined by the develop-

ment of medicine, the average health status of the population, and social patterns.

Quality of life is also an important indicator of an individual’s health, as defined by the World Health Organization as follows: “Quality of life is the individual’s perception of his or her position in life, as influenced by the culture and value systems of his or her living space, as well as his or her own goals, expectations, patterns and relationships. Broadly interpreted concept, which in a complicated way includes the individual’s physical health, psychological state, degree of independence, social relationships, personal faith, and the relationship to the essential phenomena of the environment.” A permanently impaired state of health can be tragic for the individual in many ways, as effects (e.g. pain) arise not only from the disease itself, but as a result of the disease, the individual may become hindered from working and his or her social environment may also change. They may have difficulties, for example, in establishing and maintaining social relationships. The disease is therefore not only a burden for the individual and society due to the decrease in physical function, but also negatively affects the “sense of competence” in other areas of life, which significantly reduces the subjective quality of life and may result in further deterioration of the health status [15].

I.5. The development and change of the health promotion concept

In 1974, Canada’s Minister of Health and Welfare, Marc Lalonde, published a publication entitled “A New Perspective on the Health of Canadians”. The most important point of the publication was that improving the environment (structural approach) and human behavior (lifestyle approach) would result in a significant reduction in morbidity and premature death. As a result of the report, the Canadian government shifted its focus from disease treatment to disease prevention and, ultimately, health promotion. The Lalonde report reflected the beliefs of many who considered the medical approach to health too narrow-minded. One should not separate the body from the soul, the disease from the patient, and the person from the environment, the society in which he or she lives. While

the roots of the medical model focused on a causal approach to scientific explanations, they ignored the more complex social issues that the individual had to deal with. The new guidelines of the Lalonde report and the even more recent aspirations were really publicized only nine years later, in the 1986 Ottawa Charter. The literature unanimously considers this document to be the most decisive in terms of the approach to health promotion, since it was here that the WHO officially announced the Health Promotion Program for the first time. Regarding the issue of social factors, the charter created the social model of health - Holistic health concept. The model draws attention to the fact that there is a strong correlation between the location on the social ladder and the rate of death and disease occurrence. According to this, the relationship between social and economic conditions, physical environment and individual lifestyle is inseparable.

The Ottawa Charter created the basic principles of health promotion that are still valid today and its five areas:

1. *Policy supporting health.* Health promotion goes beyond the scope of health care, therefore the coordinated and conscious contribution of all organizations of the state is necessary.
2. *An environment that supports health.* Here it warns about the effects of life, work and rest. Work and rest should become a source of health.
3. *Strengthening community actions.* Communities should have the opportunity to influence their own destiny
4. *Development of individual skills.* If society is educated and cultured, it can influence its own health.
5. *Rethinking the direction of patient care.* The task of the health sector must shift in the direction of health promotion, in addition to providing institutional and curative care.

Several significant and turning-point conferences took place later on, which determined the guidelines for international health development. Such was the case, for example, of the Adelaide recom-

mendations on public policy supporting health: 2nd International Health Promotion Conference. Furthermore, the Sundsvalli statement on the health-supporting environment: They agreed at the 3rd International Health Promotion Conference. The Jakarta Declaration was held under the title of the Health Care in the 21st century. Then, the 5th Global Health Development Conference in Mexico City in 2000 envisioned the elimination of inequality. The aim of the 6th international conference was to examine the extent to which globalization affects health promotion activities. In the final document of the 7th international conference on health promotion, organized in Nairobi in 2009, it was emphasized that, despite the evidence on the effectiveness of health promotion and the previous international declarations, the broad realization of the goals of health promotion is still to be seen. Shortcomings were identified in three areas, such as the implementation of evidence, the consideration of social determinants of health in political decisions, and the movement of health systems in the direction of health promotion. That is why it is important for governments to take responsibility for public health, the conditions for which are intersectoral cooperation, the involvement of the population, and the building of partnerships. The promotion of social justice and equal opportunities, and the social and economic health that underpins this, should be treated as a priority [\[16,17,18,19,20\]](#).

In 2013, the 8th international health promotion conference was organized around the “*Health in all policies*” approach. Its main feature was the validation of health aspects at all levels of policy-making, i.e. it wanted to expand the impact of decisions on the health care system. In 2016, at the 9th international health development conference in Shanghai, The Shanghai Declaration stated that health and well-being are essential for achieving *sustainable development goals*. For this, it designates 3 main areas of action: the first is proper governance, i.e. political decision-making for health. Within the framework of this, it recommends, among other things, the tightening of taxation and legal regulation of unhealthy products, as well as

the introduction of general health insurance. The second is the implementation of local actions with the involvement of cities and communities. Finally, through the development of health literacy, the main goal would be to empower the population, i.e. to increase their decision-making capacity [16, 21].

We can see that the world conferences determine the main directions, but the implementation of each goal is decided in the local governmental and professional policy.

1.6. The process of institutionalization of education and health education

Similar to other European states, the concept of preserving and maintaining health in Hungary was part of the way of life of educated people and the activities of doctors, as evidenced by early written records.

János Csere Apáczai defines health in his *Hungarian Encyclopaedia*, as follows: “Health is the internal state of a person, with which, being well in his organs, he carries out his actions well”, says Apáczai, then he reflects on the important factors that determine a healthy life in this world. These are: “air, food, drink, sleep and care, movement and standing, released and retained, the emotions of the mind, as well as clothing, house and bed”. He repeatedly mentions the importance of staying healthy and the need for human well-being for everyone. Apáczai’s Encyclopaedia created a space for the description and interpretation of health-related knowledge and skills in Hungarian, because it created Hungarian versions of many previously unknown or Latin terms and concepts. He places the relationship between health and illness in the context of the individual and the family, in which he highlights their role in everyday life situations. *Pax Corporis*, Ferenc Pápai Páris openly accepted the advisory and educational role of the doctor and re-arranged it among the doctor’s duties alongside the almighty healing role. The 18th and 19th centuries were the era of the rise of Hungarian health education. Among the great figures of the time, we can mention János Zsoldos, who in his work entitled “*Diateetics or Rules for Maintaining Health and Preventing Disease*” writes: “whoever wants

to live and be healthy, in order to learn and keep it, it is his main duty to teach the right behavior.” István Mátyus Kibédi, a doctor from Kolozsvár-Cluj, explains in detail how an individual should maintain his health in his book *Dietetics (Old and New Dietetics)*, presenting methods aimed at maintaining a healthy lifestyle. In his first published two-volume work, he expands and explains these preventive areas in detail in one volume each, based on several years of experience. For example, in the 4th volume where physical exercise is detailed, he presents the different forms of exercise and explains exactly what physical work/exercise he recommends separately for men and women according to their age. This more than 400-page work, with its meticulousness and detail, draws attention to the fact that the population of the time was also inclined to a comfortable lifestyle and that people could prevent many diseases with conscious and regular exercise [22].

The process of institutionalization of health promotion and health education took place almost simultaneously in the world. We can wonder how this process, which can also be interpreted as early globalization, could have developed despite the fact that the exchange and sharing of information was much more difficult and slower. The 18th and 19th centuries provided space for the rapid exchange of information, as the magazine revolution took place, the publication of technical books was becoming more and more organized, and they were not only published in the nations’ own languages, but appeared in world languages within a year or two, so that the new knowledge or even the new concept or innovation should be known internationally. In addition to the information channels of trade journals, world conferences were organized almost every year, where recognized experts of the profession represented their nation as state delegates. This was the case, for example, at the 1st School Health Congress, which was held in Nuremberg in 1904, with the participation of nearly 1,400 people. Hungary sent eighteen leading specialists.

Of course, institutional education also strove to pass on modern knowledge. Elementary school became available to an ever-wider range of people,

and even later with the introduction of compulsory education (1868 law on public schools). Even though there was no longer any question that these important knowledge for everyday life became available to everyone.

For the first time in the *Ratio Educationis* (1777) we can read the knowledge of health, since there the preservation of the students' health was an important factor in school education. Analyzing its meaning, however, the document only deals with maintaining the physical health of the individual. At the same time, it highlights the importance of seeing a doctor, which they wanted to make aware of during the education. The design and name of the space for free movement - playground - also proves this.

The introduction of hygiene was particularly significant in teacher training, as children could largely rely on themselves and had no other help while raising children. Thus, starting from the 1840s, hygiene was included as an independent subject among the subjects of the Hungarian Teacher Training Colleges (boys and girls), and later in nursery training schools and the nanny training (now known as the Kindergarten Training School). The first textbook that was proven to be used for the subject was written by Jakab Zimmermann, entitled *Health and Emergency Medicine*. This modern textbook was certainly used until the 1879 edition published under the title of Schermann Adolf: *Body and Health*, because no other similar work was available in Hungarian [23, 24].

1.6.1. The introduction of health science as a school subject and the role of József Fodor in the school hygiene movement

There have already been many examples of the emergence and introduction of health education as a school subject in the world. In France, it was the first in the world to be introduced together with the institution of the School Doctor between 1833 and 37. Another significant example is *the English medical school institution*, which has also developed a specific organizational form, yet we can draw parallels with the Hungarian concepts in its ideology and practice. From Jane Pilcher's (2007) study, we can get an idea of one of the important

areas of health education in English schools, sexual education and the concept of character development closely related to it. Health education for children was already part of the state curriculum published in 1870. In 1908, the School Medical Service was established. In 1927, the state Education Committee also included health education in the curriculum of elementary schools, and in 1928 it published the *Handbook of Health Science*, which went through 6 editions. Teachers used this guidebook as a bible for health education, with which they were able to achieve effective physical and mental health maintenance. In the first 3 editions, the topics of physical health activities, physical fitness, cleanliness, good food and preparation for motherhood and child care dominated. The discussion of the alcohol problem and infectious diseases belonged to the chapter dealing with threats to physical health. The author mentions the conservative way of thinking appearing in the book as a significant problem, which was mainly a problem in sex education, since the book promotes sexual innocence and turns a blind eye to the spreading movement of free ideas in reality. This contradiction has been present in public health concepts since the 1940s.

It has been possible to teach health sciences in Hungarian schools since 1885, when the school physician and health science teacher training was introduced at the medical universities (Budapest and Kolozsvár-Cluj) under the leadership and management of József Fodor. In addition to József Fodor, we can find Mór Kármán, who taught pedagogy, among the invited instructors, as well as Gyula Dollinger and István Csapodi. Later, from the academic year of 1895, Gusztáv Rigler also participated in the organization of the course and in the teaching work. "It can be considered a sign of the times that - as our newspaper was informed - 105 people applied for admission to the course," József Fodor recalled about the school medical course in the *Public Health Guide*. "The VKM issued regulation No. 48.381 of 1885 on the training and employment of secondary school doctors and health teachers, according to which 20 people could be hired at the medical universities in Hungary every year from September 15 to December

15. The course was free of charge, but the exam cost 9 frts, the price of the certificate 1 frts. In addition to the exemption from the course, examinees pay 50 frt. Their salary was 200 frt (400 K) in the case of state full secondary school teachers, 100 frt (200 K) for non-full teachers, where health science was not required to be taught.

It was the duty of the health teachers to check the health status of the school and the students, the students' apartments, and to present the health science. The person was a member of the secondary school teaching board and had a vote in health matters. Health science had to be taught in the 7th or 8th grade of all secondary schools (gymnasium or real) as an extraordinary subject throughout the year, for 2 hours a week."

The curriculum of the course covered school health and the part of health science to be taught in secondary schools, according to § 11 of the regulations. The qualification examination consisted of practical and oral parts. In the practical exam, either a lecture experiment had to be presented or a school health examination had to be carried out, which lasted at least a quarter of an hour. In the oral exam, the candidate proved his knowledge of school health and his teaching ability. The title obtained at the end of the qualification was "qualified secondary school health teacher", and if the students were employed, they could bear the name "secondary school doctor and health teacher". Unfortunately, the problems with the training system grew over the years, so the managers decided to renew the training [25].

The proposals made during the ministerial discussions affected the following areas: the expansion of pedagogical knowledge should be aimed at all fields, not only at secondary school age, and it was also necessary to acquire knowledge of pedagogical methodology, "because doctors are not capable of teaching", wrote the self-critic Juba in relation to doctors in his comment.

The most important proposal, which Fodor himself put forward, was that school doctors should be employed in all types of schools, even in the ministry, in all matters requiring expertise. Due to

the unfortunate sudden death of József Fodor, the negotiations were suspended.

School medicine came into effect on February 17, 1906, No. 14,532 was extended to elementary schools by decree, which had the following title: "On the employment of school doctors in public elementary public schools ". The duties of the school doctors, which so many emphasized, only covered preventive activities. According to the 1906 regulation, children entering elementary schools had to undergo a screening test in the same areas as in the case of secondary school students. Central measures were also taken against the ideological system of spreading health knowledge, the best example of which is the introduction of the unified teacher training curriculum in 1902, which eliminated health science as a regular subject in state teacher training schools. The determined and sober principals made up for the central loss and left health science as an extraordinary subject in quite a few institutes in the fourth year. However, the duties of the school doctor remained in secondary teacher training schools as well (qualification was obtained in today's high school education system).

Decree No. 40.036 of 1907 expanded the duty of care of school doctors, as their task became to examine all the students of their school, not only the examination of newly enrolled children and the examination of students with poor health. The examination had to be done right at the beginning of the academic year, and during the academic year, the healing activity also entered the list of tasks, as the healing of inpatient and outpatient students also came under their authority.

With the introduction of higher, regular, full-time schooling for girls and the acquisition of the legitimacy of girls' high schools, the provision of school medical duties was expanded to a new area. First, doctors were given a place in upper schools, and then, with continuous expansion, in other types of schools as well. According to the ministry's idea, they wanted to employ female school doctors in girls' schools, but getting this accepted was not an easy task either. Among the girls' schools,

the commercial schools were the latest to employ a school doctor, but even then only occasionally, although the teaching of organized health science would have been important. This did not happen everywhere, as the school doctor's fees were paid only in public schools, and in other maintained institutions the leaders still had to reimburse the fee of the doctor who was compulsorily employed.

According to the VKM decree 3798 of 1916 in state public schools (general schools), the education was started, in which the following subject contents were designated in the fourth grade: "first aid: injuries and their care, hemostasis, broken bones, sprains, bandaging, fainting, euthanasia, artificial respiration, danger of suffocation, poisonings; drunkenness; convulsions; stroke; epilepsy; sunstroke; freezing; lightning strike; patient transport" (which presented the work of rescue associations).

The defeat of the war had an effect on the schools, and thus also on the work of school doctors. And after the Trianon Treaty, the country's territorial loss also caused a serious shortage in educational institutions. Rethinking and rebuilding the school network imposed a great task on the country's leadership. The relocation of the universities (Kolozsvár-Cluj to Szeged and Pozsony-Bratislava to Pécs) created a new situation in medical education and further education. The opening of the university in Debrecen also opened up a new space in the training of doctors and in the territorial delimitation of medical health education work. The medical school courses were assigned to a newly established institution, the Central Board of Continuing Medical Education, but only from the point of view of organization and announcement. Applications for courses had to be submitted on an official form. The order of the courses had been regulated and the order and timetable of the trainings had been published in advance. They continued to leave it up to the universities to conduct and hold the courses. The construction of the medical hostel, where colleagues from the countryside could stay for free during the course, greatly helped the further trainings with the Budapest

center. The school medical course was suspended in the first half of the 1920s.

The decree published under the title 1926/13.618 VKM *School Doctors Qualification* realized the long-awaited requirement of the weight of pedagogical knowledge and practice in the training of school doctors. By extending the work of school medicine to public elementary schools, it became essential to acquire knowledge of educational theory, methodology and psychology. The training thus consisted of several parts: the school medicine course (theoretical and practical) and the theory of pedagogy (pedagogy, methodology, other school educational activities) and practice. The practice was conducted strictly under the guidance of qualified and experienced health science teachers and required actual attendance. In addition to the school doctor, the director of the school also participated in the sample teaching, which also meant obtaining the qualification.

The place and time of the pedagogical practice was approved by the minister for the candidates. The time and topic of the model teaching were subject to the minister's approval. The filling of the positions was also within the competence of the ministry.

The decree issued in 1933 provided for the new regulation of the course, which restored regular and planned uniform training. According to the VKM decree No. 12,663 of 1933, training once again provided a uniform school medicine and health teacher qualification. Once again, the universities could organize the courses under their own authority. The course lasted two months and could be offered twice a year, in October-November and in the spring, March-April. The textbook version of the lectures of the school medicine course, published in 1933 under the title *Health of the School Age, was used to systematize and unify the training*. The book fully covered the course material. Among the authors we can find the most outstanding representatives of the profession, such as Gyula Darányi, Kálmán Perjéssy, Sándor Imre, Pál Ranschburg, Mihály Horváth, Zsigmond

Gerlóczy, Gusztáv Bárczy, József Melly, György Gortvay, among others, of course, without claiming to be complete. As Gyula Darányi wrote in his foreword. It is possible to create a summary volume that has never been published since the school medical institution was introduced. The book also served as a support for the students of later courses [25].

School medical training survived until the end of the Second World War, and so did the system itself. After the nationalization of schools - from 1948, however, health education merged into education for community life at school and into the pioneer movement. School medicine is still part of the work of public education institutions, but it is implemented with significant alterations in the constantly changing system. School doctors now only carry out medical work (status examination, administration of mandatory vaccinations, treatment of acute ailments), while school health visitors who previously performed the task of school nurses teach health education (I note that it is not necessary to obtain a teacher's qualification) and assist in conducting screening tests. In the 2000s, independent health teacher training started again in university courses, but their school placement was not guaranteed (it was incidental to teach health in schools) [26]. Currently, the school nurses have taken over the education of health experts, along with teachers specializing in biology and physical education.

1.7. Child protection

1.7.1. Child protection: Mother and baby protection and the role of the Green Cross movement in health promotion

Child protection (social care) in our country was fulfilled by the appearance of an increasing number of civil organizations and associations at the beginning of the 20th century. On the one hand, the establishment of the institutions was due to the initiatives of the supportive and sensitive nobility, and on the other hand, strong anti-discriminatory movements that were strengthening in other parts of the world had an impact on the social measures created for the upbringing of poor and low-status children or orphans. In our country, not only

these effects prevailed, but the intervention also became urgent due to the statistics showing lower and lower birth rates. At the same time, the number of orphaned or semi-orphaned children, which also appeared as a consequence of the war, was also increasing, and this called these movements to life. The activities of organizations providing assistance and generous support were no longer sufficient, but the organization of state intervention was necessary. The patroness of the "National Association for the Protection of Mothers and Babies" was the Royal Princess Stefania. Elemér Lónyay's enthusiastic and inspiring words at the opening ceremony of the first "Mothers' Home" sum up the spirit of the age well: "If only my beloved compatriots would accept my word, and let the flame of enthusiasm not only flare, but institutes serving our goals should be established and function in this country!"

In 1901 (Article VIII of 1901) the law provided for the state protection of children found and officially declared abandoned. In the category of "abandoned children", it classified all those children under the age of 15 with no property who have no relatives who were obliged and able to support and educate them, and whose education was not adequately provided for by relatives, benefactors, charitable institutes or associations. The law ordered the establishment of *state children's shelters*. The first state children's shelter was opened to its purpose on May 15, 1902. Orphanages were built in all major settlements, which affected nearly 50,000 children every year [27]. In the past, children were cared for either by the Charitable Women's Associations or orders maintained by the church. Similarly, in Pécs the Orphanage was maintained by the Merciful Order (together with an orphanage, which was unique in the country) [28].

1.7.2. Rockefeller Foundation and public health

The appearance of the Rockefeller Foundation in Hungary dates back to 1920. They already asked the American institution here, the Budapest office of the American Relief Administration of the European Children's Fund, for advice on who they should contact. In the end, Emil Grosz, an ophthal-

mology professor was chosen. After the Second World War, the Foundation attempted to continue, but with little success.

Regarding the fields of expertise, healthcare and medicine have always been at the center of the Foundation's activities in Hungary. At the time of the start, they mainly helped to replace the incomplete equipment of the laboratories and the missing volumes of journals in the libraries of the clinics. As a first step, the scheme of the Foundation's activities carried out a survey in all targeted areas. The first study was prepared by the later deputy president Selskar Gunn under the title Public Health in Hungary in 1926. The approximately 100-page booklet contains relevant statistics, the most important diseases, the main institutions, a description of the Hungarian organization of healthcare, even the medical museum, partly based on printed materials, partly based on the domestic orientation, interviews and discussions. Minister Kunó Klebelsberg and the person in charge of scientific affairs, Professor Zoltán Magyary, showed themselves to be willing partners. According to the Gunn study, the sanitary condition of the country was not satisfactory. The consequence of this was that the largest-scale facility built with the support of the Rockefeller Foundation, which then also served as their headquarters here, became the National Institute of Public Health, opened in 1927. Its first director, Johann Béla, was also considered their resident here. One of the main permanent items of their Hungarian budget was the maintenance and development of the institute; from 1936, they also supported a research topic: the study of influenza. Between 1925 and 1940, the institute received a total of 370,000 dollars in support. Another conclusion of the Gunn study was that the number and level of training of nurses was inadequate. From 1927, the Foundation provided ever-increasing assistance to the nursing education in Budapest and the later started in Debrecen, which was initially initiated and carried out by the Stefánia Association [29, 30].

I.7.3 The Stefania Association

Following foreign examples, the Stefania Associa-

tion was founded in Hungary in 1915, whose task was to protect needy mothers and babies with advice and assistance. With its establishment, it embraced the protection of mothers and babies and the provision and care of orphaned children, and has continuously expanded its network throughout the country. In addition to care, the goal was to reduce infant mortality, which required qualified prevention specialists. The task of the Institution was to protect unborn children, to study and teach prevention of hygienic and social harms affecting pregnant women and mothers, as well as babies and the organization of courses for professionals such as midwives, doctors, pediatric nurses, medical students, etc.

The development of the national network of the Stefania Association began in 1916 in the cities of Szeged, Arad, Debrecen, Újpest, Kolozsvár-Cluj-Napoca, Paks and Salgótarján, and then also in Temesvár-Timisoara, where the institution opened the following year, and the range of institutes and homes continued to expand year by year throughout the country [31].

The association announced the following program;

- the mother cannot be worse off because she gives birth to a new life and raises it;
- the mother and her fetus must be protected from the dangers of the delivery process;
- be allowed to breastfeed;
- mothers must be informed about issues of education;
- society must recognize the loss resulting from infant mortality.

Vilmos Taufer, an obstetrician, supported the movement from its inception, and the term, health visitor, comes from him.

Another task of the association was the professional training of nurses/midwives, and later of Green Cross midwives, which at first was only carried out by the National Hungarian Center for Maternal and Infant Protection, based in Budapest. This work was also supported by the Capital/Budapest. Here, 30 people could be trained on a course each year, but the number of participants in professional training turned out to be small.

1.7.4 Green Cross Movement

The Green Cross Movement, started in 1927, under the leadership of State Secretary Johann Béla. It gave a new impetus to the activities and training of nurses. With the establishment of model districts and the continuous increase in tasks, many more qualified professionals were needed, so the training of the Green Cross Women's Guards already started in Debrecen. This was later joined by Szeged, Kassa and Kolozsvár-Cluj-Napoca, where professional training could begin after the establishment of the institutes. Later on, the state took over this task and created state training courses in a unified system.

But let's see what the duties and activities of the health visitors were. The health visitor, or health nurse in a broader sense, is the employee in the protection of the mother and infant: maternal and infant nurse, or employed in pulmonary care institutions: pulmonary nurse, or working in the school health service: school nurse; but in a narrower sense however, we refer to nurses working within the Green Cross Health Protection Service as "health visitors".

The public calls them "green cross health visitor" or "green cross sibling" known by its name [30]. Health visitors were trained by the director of the H. Royal National Institute of Public Health He also employed and assigned them to one of the health protection services. He also transferred them and dismissed them. The Institute allocated their salaries, which were covered by the budget of the Ministry of the Interior [29].

Child protection activities were considered one of the most important sectors of work for the future of the nation, but let's see what changes the new legal reform has brought, what new health science professions were being created and what actions had appeared in the lives of villagers and city dwellers. In terms of campaigns, the Green Cross Milk Campaign, the Green Cross Sugar Campaign, the Green Cross Children's Meals, and the advertising of regular and occasional campaigns were significant. They helped these poorest settlements with

the help of the Green Cross siblings. The press helped to spread awareness of the Green Cross's work through its propaganda activities, so for example, the article "The Green Cross teaches the village women how to cook" was published in the journal of the American Hungarian People's Word under the title "How to cook". Almost every week, the paper reported on the work of the Green Cross. At the same time, the Green Cross Movement made a much bigger change, in order to highlight only the work of the health visitors, as it brought healthy drinking water to the people living in the village and brought about a change in the quality of life for the residents living in the village by organizing and building electrification. The reorganization, organization, and nationalization of health care significantly changed health care in several



Fig. 1. Green Cross health visitor
Source: [30] Johann Béla (1939) Healing the Hungarian village, Budapest



Figure 2 , Mother and Baby Home, People waiting for counseling
Source: [31] Tolnai Világlapja, 1936, 01, 454-460
The wonderful operation of the Green Cross is blessed

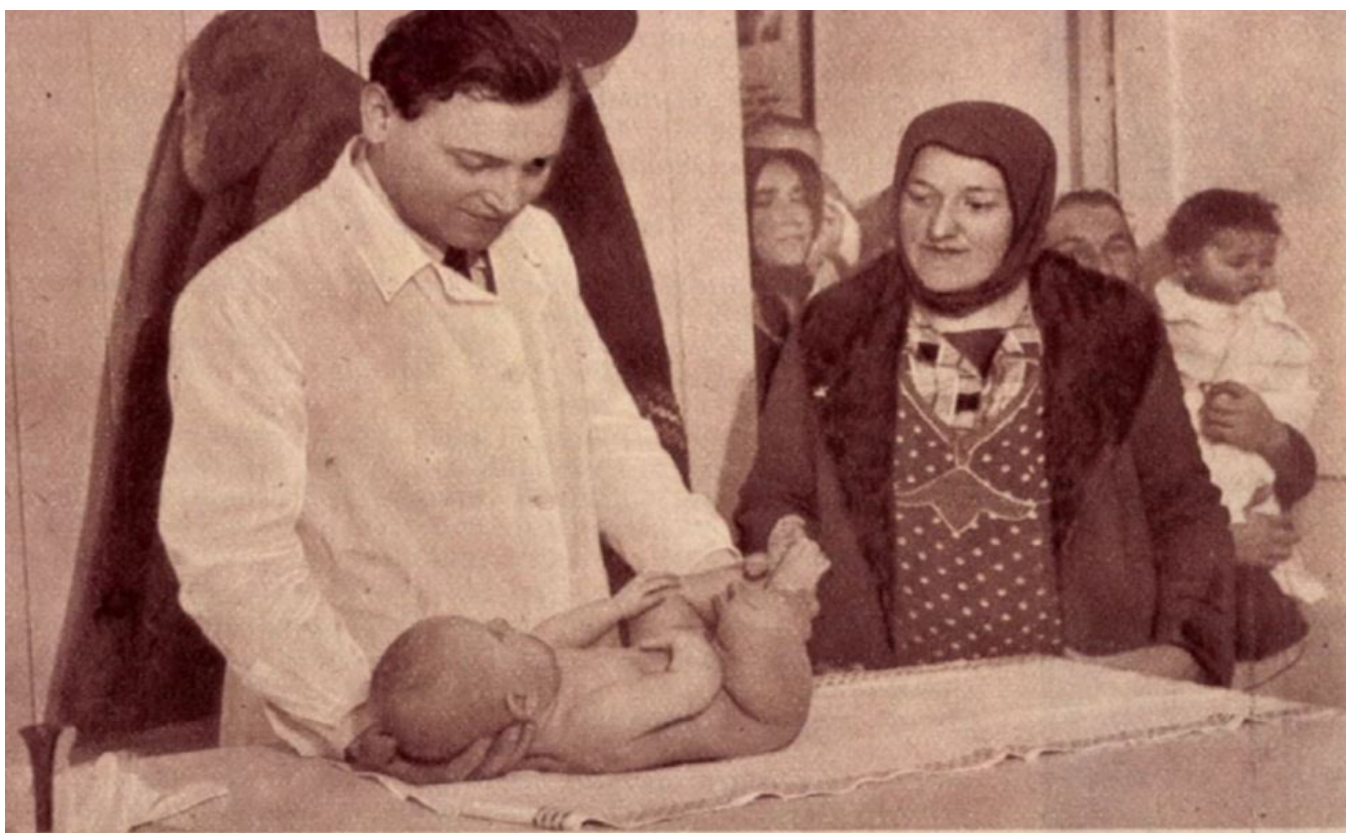


Figure 3, Mother and Baby Home, Baby's examination by a Green Cross doctor
Source: [31] Tolnai Világlapja, 1936, 01, 454-460
The wonderful operation of the Green Cross is blessed

areas, and this also formed the basis of our organization today.

Such was, for example, the organization of patient transportation and rescue (building an ambulance service in the country). Public health was completely transformed with the nationalization of the organization, such as the recruitment of Chief Medical Officers and doctors into the state system, i.e. they had to decide whether to run a private practice or become full-time state officer doctors/doctors in a fixed promotion system. In the same way, the organization of nurses and public health visits and district medicine and the construction of the medical system and health centers, all 1936: IX. Article of law, and the 1936: XXIII. article of law supplemented by decrees 100/1936. BM § 22 of the decree and 1030/1936. BM. decree created a completely new system. The fact that they came under the Ministry of the Interior instead of the VKM, and the Chief Medical Officer took over many tasks from the Education Inspector brought a significant change to the life of the kindergartens. However, we must note that this operation according to district funds helped to modernize the domestic healthcare system, reduced child mortality and improved the fight against infectious diseases. While in 1920 18.7% of 100 babies died, by 1940 the mortality had dropped to only 11.7%. Help was provided to mothers raising babies with the soap and trousseau allowance. In the village, 42.7% of mothers used prenatal care, while 73.3% used infant care in 1941. 756 health protection districts of this size had already been established in the country [30, 31].

The transformation of kindergartens into a health organization did not last, because it was returned to the system of educational supervision and the definition of early childhood in the health system did not work. Similarly, when looking at the system of the nursery school institution, it now considers the administration of care for children between the ages of 0-3 as belonging to the social sector, but at the same time, it also includes early childhood education in the teacher training system. The current health prevention activity can be found in detail in the chapter presenting the scene-based theory.

1.8. The concept of value

The chapter aims to introduce the topic of health as a value, starting with the historical aspect, several definitions of the concept of value, an overview of value changes, the tools of value research and the presentation of health awareness that reflects health as a means and target value.

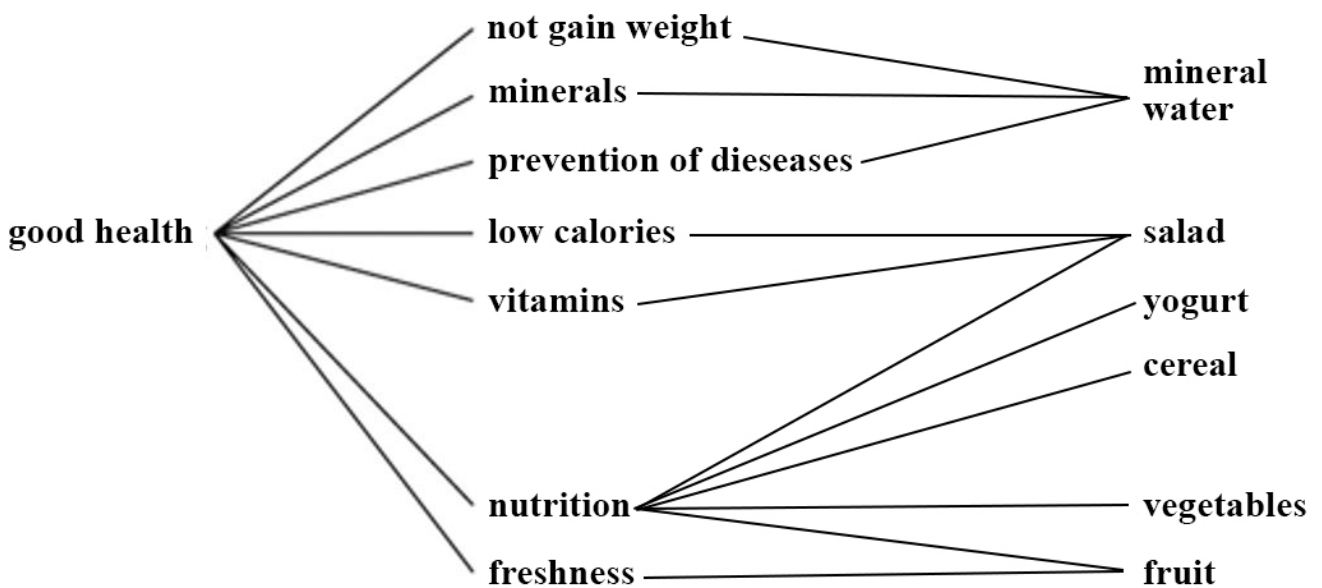
No consensus has been reached regarding the concept of value [33], and its connection to different scientific fields also makes the definition difficult (e.g. health science, education science, psychology, marketing, entrepreneurship, economics, sociology, philosophy). The terminology of value was a topic of discussion in many sciences, only in the field of social science, i.e. sociology-psychology-anthropology, the concept of value is uniform. One of the most commonly used value definitions among marketing specialists can be linked to Milton Rokeach's 1973 definition, which interpreted it as a list of 36 elements and created a tool suitable for measuring values, which is still used by researchers today. According to *Hofmeister-Tóth* (2017), values are "standards, criteria for our behavior and attitudes, which allow us to criticize others and ourselves. Values are culturally determined and we learn them through socialization" [34]. According to *Kluckhohn* (1951), "value is a concept of desirable things, which can be explicit or implicit, specific to an individual or a group, and which influences the choice between certain available modes, means and ends" [35]. *Kluckhohn's* (1954) specialist literature suggests that it means the satisfaction and blocking of values and needs, as well as the elicitation of new needs and the linking of Maslow's pyramid based on physiological needs and values. Based on *Super's* (1995) interpretation, values arise from needs. According to *Roberts and Robins* (2000), value is the motivational system of human personality. According to *Hankiss* (1977), value means from a subjective point of view what a system considers important for its own development and objectively means the factors necessary for existence and operation [36]. In *Andorka's* (2006) formulation, value refers to the cultural principles that express what the given society considers important, desirable, or good [37]. Based on other literature, values organize and

divide our past, present and future, “orient, regulate the use of our physical and mental energies, limit and express our social affiliation and social self” [38].

The *asset-goal chain model* is a hierarchical knowledge structure that includes value groups and product characteristics. The essence of the principle is that “the meaning of a concept depends on the meaning of one or more other concepts to the extent that they are connected to each other in the association network” [34]. The asset-goal chain model is illustrated by *Hofmeister-Tóth (2017)* with the following example: “low-cholesterol margarine - healthy diet - no deposits on the blood vessel walls - value = living health-consciously”. Asset represents the *activity or object*, while goals refer to values. For example, the activity of running or yoga represents the means, while goals represent the end state, which manifests itself in happiness, safety, or performance. The elements of the asset-goal model connect values and behavior, which are intended to describe the consumption process. Based on *Hofmeister-Tóth’s (2017)* approach, the asset-goal chain uses a ladder technique in value research, the essence of which is to reveal with the help of an in-depth interview how it is possible to reconcile the properties of the products with their

own values, so the respondent has to think about his own personal motivations. The figure below refers to the study by *Hofmeister-Tóth (2017)*, which vividly depicts the process from Value “health”: value to product.

Hofmeister-Tóth (2017), values are not elements born with us, but the products of socialization, the formation of which is determined by the social environment, family, education, and belonging to social class. Changes in values can be caused by the life cycle, generation, education and the environment itself. In order for a value change to take place, it is necessary to create new values, reevaluate the value hierarchy and abandon old values. The elements interact with each other. The authors, *Hofmeister-Tóth-Simányi*, can be associated with a comprehensive study of value changes, according to which a shift in emphasis can be observed in relation to values directed at the individual and other people. Politeness, helpfulness, and responsible values were of decreasing importance in the examined period between 1992-2005, while health, happiness, and inner harmony were more popular and came to the fore based on the order of importance. While politeness, helpfulness and responsible values were aimed at the environment, health and happiness referred to the physical and



I. Figure 4: Value “health”: from value to product
(Source: HOFMEISTER-TÓTH , 2017) [34]

emotional state of the individual. Family, security, and true friendship appeared in each group of the population specifically based on their investigation. The authors state that the individual and his or her narrow environment came to the fore, while the importance of the group and society was devalued. “This phenomenon reflects on the mechanisms of the market economy, as opposed to the former socialist solidarity. It is in line with the new living conditions that the focus shifts to the importance of goal values as opposed to asset values”. In the 1990s in our country, the value of assets for a lifestyle based on traditions, which formed the moral basis of society, played a significant role. After the change of regime, social control decreased, so compliance with others was pushed into the background, therefore, it is much more necessary to be innovative in finding ways and appropriate solutions. The environment changes rapidly, i.e. the tendency to develop is essential [34].

The *dominant value hierarchies in society*, “influence, shape or even determine the views of generations through school” [39]. When we think about values, things and cultural elements that determine the important elements of our lives may come to mind. The common characteristics of the values formulated by *Schwartz* (2012) can be read in *Pavluska 's* (2015) study, according to which the values:

1. a belief that becomes saturated with emotion when activated,
2. are part of desirable goals that stimulate action,
3. they go beyond the given action and situation,
4. function as criteria,
5. they guide action and attitudes.

As *Keller* (2008) summarizes in his work, the value perception associated with the names of Maslow and Inglehart is classified as the value perception of values and needs [33]. According to Maslow's view, human needs are arranged on top of each other like a pyramid system, so human behavior is based on biological foundations, and then moves from there towards social and psycho-

logical dimensions. They appear as a lack of needs and are interesting from a psychological point of view because they can never be satisfied. To put it simply, a person motivated by lack is at the mercy of his or her own lack and these motivate him or her to take actions that seek to eliminate the lack. Inglehart's assumption also confirms this point of view, according to which people value those that are scarce.

According to *Keller* (2008), the statement of Rokeach and Schwartz belongs to the group of values and motivations, but he considers it important to mention that Charles Morris is associated with the concept of perceived (desired) values, as well as the formulation of (operative) instrumental values that prevail as guiding principles in people's lives. A test often used in value research, the Rokeach Value Survey (RVS), actually represents a classification system of values. To understand human action, Rokeach distinguishes between the concepts of values and attitudes. According to Rokeach, an attitude is a summation of persistent behaviors in relation to an object, while a value is a persistent belief that refers to individually and socially desirable behaviors and end states. Basically, it distinguishes between target value and asset value, to which it assigns independent values. “Instrumental values are the means of achieving the target values, that the desirable modes of behavior are asset values” [2]. Rokeach's 18-18 target value and asset value can be seen in the table below.

Rokeach's value system is used in sociological, marketing research and psychological studies. The other significant psychological value theory and model can be linked to the name of psychologist Schwartz. Ten basic values were defined by Schwartz, which are based on three universal requirements [2]:

1. the needs of individuals as biological organisms,
2. requisites of coordinated social interactions,
3. survival and welfare needs of groups.

The values are located along two bipolar dimensions: openness to change - preservation, reten-

I.1. table: Target value and asset value list

A./ Target values	B./ Asset values
1. a world of peace	1. courage
2. inner harmony	2. ambition
3. happiness	3. obedience
4. wisdom	4. imagination
5. family security	5. self-control
6. equality	6. responsibility
7. a sense of accomplishment	7. capatibility
8. national security	8. intellect
9. true friendship	9. cheerfulness
10. mature love	10. logic
11. an exciting life	11. forgiveness
12. a comfortable life, material well being	12. independence
13. self-respect	13. honesty
14. pleasure	14. helpfulness
15. freedom	15. broad-mindedness
16. social recognition	16. love
17. social recognition	17. cleanliness
18. salvation	18. politeness

(Source:[2] Rokeach , 1973 In: Pavluska, 2015, 4)

tion, and then self-realization - altruism. Values are related to each other, opposite or compatible. In terms of values and motivation, the name and work of Rokeach and Schwartz are outstanding. International value research began in the middle of the 20th century, which has grown into the most important field of foreign and domestic sociology. In the 1980s, objections to the tests intensified, despite this, Inglehart's international research series (World Values Survey, WVS) started at that time. One of the most significant results of this large research series is the so-called cultural map. The map became popular because it proved that

“people’s faith (values, culture) plays a key role in economic development, the rise and fulfillment of democracy, gender equality and effective governance” [2].

1.8.1. The emergence of value as a concept in society

Based on early lifestyle research, health as a value already appeared in the consciousness of primitive human communities [40]. The importance of the harmony appearing in the relationship between body-soul-man-community was also known, and then the organic worldview was replaced by the

holistic view, the complex conceptual understanding of human health, but the description of this is only the result of the last century. The development of the image of health has undergone many changes in recent times. As the statement that a person is largely responsible for the development of his or her own health, was believed in the world of the Greek polis, it is still valid today. It reflects the individual's health awareness [40,41]. Individual responsibility plays an important role in health awareness, as it means responsible action taken for the sake of one's physical-spiritual and relational balance and to achieve well-being [41].

Health as a value can be explained by the factors that we do in order to be able to maintain or restore our state of health, or to reach the appropriate state, thus connecting the topics of health as a value and health awareness [2].

We can see many parallels on the value of health in the history of the topic. The teachings of the Hippocratic school (Greek medical theories) mostly emphasized health preservation and disease prevention instead of cure [40]. In the Christian perspective, the issue of health is a gift from God, since the main teacher for them is Christ, who is a physician and teacher, and the guide to health preservation, and the collection of life rules is the Holy Scriptures themselves. The Bible contains many health and illness-related tasks (physical health, personal hygiene, treatment of diseases, tasks related to infectious diseases, rules for cleaning, instructions for food). According to their view, health is completeness, which can only be achieved with firm faith, since peace and harmony of the soul are necessary, because without these the physical body cannot function well. According to the Bible, the soul is more important than the body, because it does not need to be taken care of. Purification of the soul can be achieved by stretching the body. We include the English philosopher John Locke among modern thinkers, who in his 17th-century work entitled "Some Thoughts on Education" formulated pedagogical principles, touching on the concept of health and the possibilities of preserving the health of the body. According to his opinion, reaching a healthy state can best be achieved without a doctor and medicine,

with which, according to the literature, he actually popularized prevention. According to Kéri (2007), specialist literature related to the concept and preservation of health began to proliferate in Hungary in the 18th century. In medicine, this was a very significant period, since it was then that an outstanding amount of specialized literature not only on the concept of health, but also on the topic of childcare was born in our country [40]. As a result of rising education levels, the demand for quality food, lifestyle and responsible healthy child rearing has increased. Health as a value has appeared everywhere throughout history.

1.8.2. Examining health as a value

Health as a value can be explained by the factors that we do in order to be able to maintain or restore our state of health, or to reach the appropriate state. This is how health as a value and health awareness is connected.

According to Varga et al.'s [41] (2008) OTKA tender report, there is a strong relationship between the importance of health value and health awareness as a complex variable. Based on Harris and Guten's (1979) model, eight main variables belong to health awareness: conscious nutrition, personal hygiene, regular health self-examination, avoiding substance abuse, balanced mental life, rest hygiene, use of screening tests, physical activity [42].

The model of health awareness was supplemented with sufficient sleep and liquid consumption [42] (in the research of FREYER et al., 2019.) According to Szakály et al. (2014), the majority of the Hungarian population has the knowledge they could use to preserve their own health, nevertheless, they do not act. This is confirmed by the fact that, based on the study, 48% of the respondents do not even plan to change their lifestyle for the sake of their own health. That is why it is an important message for us that, paying attention to the needs and circumstances, education for a more health-conscious lifestyle should be supported and preferred - for all age groups.

In another study, Pavluska (2015) created the *health portfolio*, which represents a checklist "that can be used to evaluate the realization of *health*

as a value and to examine health behavior” [2]. Health as a value in general refers to those factors and actions that appear as instrumental values in achieving, maintaining and restoring health. Instrumental values are ways of behaving that serve to achieve the target value. In the government documents currently in force, health as a value is of prime importance. The Basic Law clearly states that everyone has the right to physical and mental health. The law interprets that this basic value can be achieved with the right environment, health care, sports, food, drinking water and the proper operation of public health. The National Cooperation Program includes health in addition to work, home, family, and order. The government’s commitment is confirmed by the “Healthy Hungary 2014-2020” and the currently valid “Healthy Hungary 2021-2027” programs.

In 2006, the health value was investigated in Hungary within the framework of the project entitled

“The process of becoming a consumer in Hungary”. The study analyzed the importance and realization of the values. According to the respondents, health comes first, followed by family, security, happiness and honesty. The youngest age group indicated the zest for life first, followed by health. The young age group considers frugality the least important, while the oldest age group values success instead of modesty. The results are presented in the summary figure below.

Based on a representative study conducted in Hungary, there is a difference between the importance of values and their implementation. Based on the answers, health is important, as it is in the first place, but in terms of implementation, it is already much lower, falling to the 14th place. In the ranking of personal values, health - which is closely linked to material values (fitness, physical strength, etc.) - ranks high. By researching health behavior, we can get an answer about the value of

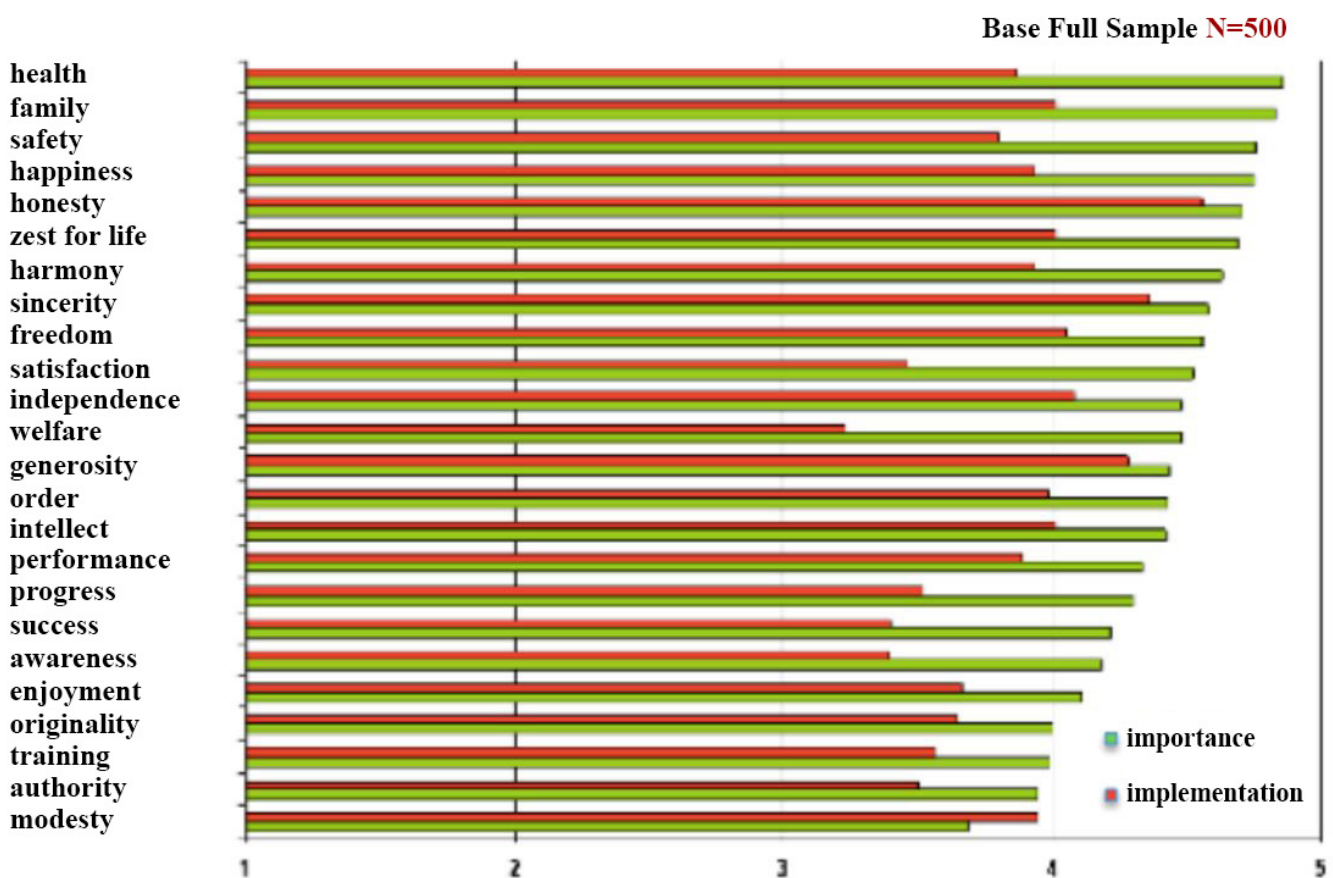


Figure 2: The importance of personal values and their achievement among the entire population (Source: [2] HOFMEISTER-TÓTH – NEULINGER, 2009 IN: PAVLUSKA, 2015)

health, since health as a value is manifested in action.

The elements that serve as asset values in achieving, maintaining and improving a suitable state of *health* can be summarized in a health value portfolio. The elements of the health value portfolio are divided into larger categories: *lifestyle* (health-conscious nutrition, sports and exercise, mental health, quality free time, etc.), *prevention* (screening tests, conscious consumer behavior, awareness, use of vaccinations, etc.) and *treatment/ the category of recovery* (cooperation with primary care and specialist care, treatments, etc.) can be separated.

Health as an asset value. The field of health value includes the examination of those activities and behaviors in which the health value appears. This includes the field of *health* behavior, i.e. the examination of health awareness. Health as an asset value is manifested *in the health status of young people* (physical activity, alcohol consumption, smoking, sexual behavior, nutritional behavior, drugs and other illicit substances, abuses) [2]. *Health* behavior “Personal attributions such as beliefs/convictions, expectations/guessings, motives, *values*, perceptions and other cognitive elements; personality traits, including emotional and emotional states and individual characteristics; and certain behavioral patterns, activities and habits related to the maintenance, restoration and development of health.” [43, 44].

As we can see from the above, health as a value is of interest for research and investigations, however, without a thorough knowledge and interpretation of the concepts of health awareness and health behavior, we cannot start a well-founded research. Therefore, we consider the overview analysis of the above chapter to be decisive and important in relation to the interpretation of health.

I.9. Modernity and biopower: health in the service of efficiency

In the 19th century, religious and moral aspects are still present in discourses about health, but efficiency becomes the most important aspect. In

Volume I of his work on the history of sexuality, Michel Foucault asserts that the sexual “strategy” of the 19th-century bourgeoisie was not characterized by asceticism and the devaluation of the body, but, on the contrary, by the appreciation of the body. The aim of the citizens was to preserve their health, increase their physical strength, create and raise healthy offspring, and the means of this were taking care of the body, controlling the body and sexual life [45]. Foucault explains the generalization of control and supervision over health and life in general by the fact that decisive changes in power took place in Western Europe from the 17th century. In previous centuries, the sovereign’s privilege was the right over life and death, which is symbolized by the broadsword: power is primarily a taxing forum, an expropriation mechanism, the ruler can even take the life of his subject if he breaks his laws. From the 17th century onwards, the emphasis was less and less on confiscation, it became only one element of power, the purpose of which was less submission, and more the efficient organization of life, power became, as it were, the guardian of life, became biopower (the power over death was a supplement to this power , the bloody modern wars were no longer started in the name of the ruler, but in the name of the community as a whole, referring to the preservation of the life of the people, the “race”, and the certainty of its survival, [45]. Two types of appearance of biopower can be distinguished. (1) Anatomy-politics of the human body. Its subject is the human body understood as a machine, and it strives to create supervisory systems in which people function as obedient and useful bodies (school, barracks, workshop, factory, hospital, prison), various regulations play a decisive role here.

(2) The biopolitics of the population (its development can be dated to the middle of the 18th century): “this pole already focuses on the body, which is permeated through and through by the mechanics of living matter, and which is the scene of biological processes: that is, on population reproduction, birth and death rate, health, lifespan, and all the conditions that contribute to the development of these factors” [45], Foucault also dedicates a separate book to the first form, in which he talks

about the microphysics of power when analyzing surveillance systems [46].

Health policies are also related to these two forms. At this time, the preservation and especially the development of health is less important in most supervisory institutions - except for example the better schools - the point is that the individual is able to perform his task properly: when the diets are compiled, the counting of calories begins, the research into what minimum diet is required for maximum energy production [47]. In 19th-century factories, the situation was often particularly poor from a health point of view. The improvement of the situation of urban factory workers living and working in unhealthy conditions, as well as the treatment of health-damaging factors in cities in general, required biopolitical interventions (within the form of biopower called by Foucault the biopolitics of the population). Turner basically traces the recognition of the need for central public health provisions in Western states to three factors: infectious diseases spreading among the urban poor and urban filth threatened the health of the upper classes as well; the housing and care of the sick poor meant serious tax burdens for the rich; finally, at the beginning of modern mass warfare, it became obvious that young people from the working class were in many cases unfit to be soldiers, due to their poor health [47].

I.10. Health in a consumer (and mediatized) society

Between the two world wars, a consumer culture emerged in the West (first in the USA, then in Great Britain), and modern advertisements aimed first at the middle class and then at ever wider masses appeared, with the help of which companies tried to create new needs and desires, and which instead of the values of hard work, duty, and frugality, the values of enjoying life and seizing the moment were slandered. Many unhealthy products are also presented in advertisements (just think of tobacco advertisements, after World War I, smoking also started to spread among women), but the emphasis on health as an important value has been present in consumer culture from the very beginning, in connection with beauty. Products are advertised

with beautiful and healthy-looking people (mainly slender women), advertisements and magazines featuring movie stars suggest that a beautiful body is a condition for enjoying life. With the change in clothing habits clothes show more and more of the body, and it does not matter what the body is like, because instead of character, people increasingly see an attractive personality as the guarantee of success (in private life, social life, at work), and this also includes an attractive appearance, primarily in women, but more and more also in men. Women (and men) who are receptive to the values of the consumer world constantly check their bodies and lifestyles to see if they correspond to the “ideal” body and lifestyle seen in advertising images and magazine photos of Hollywood movie stars [48]. All of this is only apparently a big change compared to the “restraint” of the Victorian period: as mentioned, the bourgeoisie was also very concerned with health in the 19th century in order to increase the efficiency of the body, efficiency is still important, but precisely because of psychoanalysis, sexual liberation” is seen as necessary to ensure a healthy, efficient body [45], and even more emphasis is placed on body maintenance, as physical beauty is valued. Of course, the “mania” of body maintenance is spreading more and more among the lower classes as a result of advertisements, magazines, films, and then television. Supervisory institutions and the biopolitics of the population are also influenced by the aforementioned social trends. In the second half of the twentieth century, masses of people in welfare societies are already waiting to be freed from the constraints of school or work and enjoy life in the afternoon and on their days off, which mostly means consumption (not only consumption of material goods, but also consumption of experiences). The individual does not even realize that by consuming and maintaining the body in order to achieve the current ideal of beauty (diet, fitness, solarium, etc.), he or she is also fulfilling social expectations, adapting to what is expected, exercising self-control if he or she likes (and treating himself in such a way as if it were a commodity, a consumer product, see about this: [48]. In relation to the biopolitics of the population, highlighting

only one aspect: those health education campaigns that highlight the effects of a healthy lifestyle on beauty and good appearance will be the most effective [48].

Today, in the period of globalized (digital) capitalism, people are confronted with an incredible amount of still and moving images depicting ideal bodies on Internet social portals (Facebook, Instagram, etc.) and video sharing platforms (YouTube, TikTok, etc.). We live in the age of the cult of beauty and health, which has many problematic features, for example what Kierkegaard already described, that a life built on one of these values - or even both - may sooner or later end up in a crisis, but even if someone avoids the crisis, the one who does not work on developing himself lives an “empty” and meaningless life. It is also a problem that many people try to be or stay beautiful at the expense of their health (which of course was also present in previous centuries, we can also read in the already mentioned Firenzuola that there are women who overdo the powdering, not thinking about the fact that it wears off prematurely and their skin ages, [9]; or think of the corset, which was popular even at the beginning of the 20th century), this seems quite a contradiction in the age of “healthism”. The background to this is the completion of the already mentioned phenomenon typical of consumer societies, that success is associated with a young or at least youthful body that conforms to the current ideal of beauty manipulated by business interests, and failure is associated with a body shape that does not conform to the “prescribed”. It can be frustrating for people with a body shape different from the “ideal” that they have to face the sight of (apparently) perfect bodies in commercials, Hollywood films, series, images and videos uploaded to social media sites who knows how many times a day. The desire to conform to the beauty cult can also result in serious health damage, young girls often develop anorexia or bulimia (of course, the beauty cult has an increasingly strong effect on men as well, body image disorders can also develop in men, e.g. muscle dysmorphia is typical in their case, see for example: TÚRY – PÁSZTHY , 2008 [49]). But even if there is no question of health-damaging behav-

ior, the issue of health preservation is important to many people only to the extent that it is in the service of improving their external appearance, what is outside of this is neglected (e.g. participation in screening tests, etc.). Of course, there are people who do not put their beauty before their health and want to do everything to protect their health, but they can easily become a follower of some pseudo-expert or some unscientific method without the help of a specialist, relying only on information found on the Internet. That is why it may happen that the effort to preserve health also leads to health destruction. Fortunately, initiatives to mitigate the negative effects of the media are on the rise: we can find advertisements that do not feature models with exceptional physical attributes, but women with more ordinary physiques, rating systems for websites dealing with health issues have been developed (see: KÖDMÖN , 2018) [50], but the entertaining and educational health campaigns can also be mentioned. However, during the COVID-19 pandemic, we witnessed the fact that despite the fact that information helping to protect health reached the masses, representatives of virus-denying and virus-skeptic and anti-vaccination views were able to cause great damage by using social media. In our mediatized world, health promotion specialists must not only help those who know little about health protection due to their poor social situation and poverty (one of the manifestations of which is information poverty), but also those who are lost in the flow of health-related information.

I.11. The most important moral limitation of health promotion

During health promotion work, whether it is individual counseling, group work or planning a media campaign, the principle of respect for human dignity must always be taken into account. The most quoted formulation of the principle is attributed to the philosopher of the Enlightenment, Immanuel Kant: “ Act in such a way that you always need humanity, both in your own person and in someone else’s, as an end, never as a mere means” [51]. We can give another formulation of the principle of respect for human dignity - different from the one described by Kant, but which assumes that

man is an end in himself. Thus, for example, we can grasp the principle as follows: the human person has self-worth as a result of his existence, and consequently it is in his fundamental interest that the “sanctity” of his life, the widest possible freedom, and his unique personality are respected on an equal basis with other persons (for the interpretation of this, see: BARCSI, 2013) [52]. Therefore, it is important that the health promotion professionals sees the people they come into contact with as a goal and not as a means, and respects the sanctity, freedom, and personality of other people’s lives.

Media campaigns that entertain and educate have a *raison d’être*, since more attention is paid to them than to dry social advertisements that only present the facts (dangers, statistical data). However, it is important that campaigns do not violate the principle of respect for human dignity. This kind of thing happens sometimes, even if it is obviously not on purpose. For example, they presented a social advertisement about the harmful effects of smoking, which stigmatized smokers and made them hate. A young woman with a pushcart appeared in one of the advertisements made to prevent drunk driving. Disabled people took action against the advertisement because they saw that it portrayed their disability as worse than death (for more on this and other examples, see: CsÁSZI, 2004 [53]).

Just like doctors and nurses, health promoters also have to take into account additional important (bio)ethical principles. According to the principle of “Do no harm!”, the health promoter must always act with the greatest possible care to minimize the possibility of potential dangers associated with his activity. The realization of charity is also a fundamental goal, since the health promoter must improve the health of all those with whom he or she deals. The principle of justice primarily means the prohibition of discrimination between people, which also follows from respect for human dignity (more on bioethical principles [54]).

I.12. Summary

As a conclusion, health is very important, but it does not guarantee our happiness by itself, our behavior aimed at preserving and improving our health must be part of the pursuit of a meaning-

ful life. Numerous psychological researches have supported what was already formulated by ancient Greek and Roman thinkers: mental-spiritual health, or with another terminology: a meaningful life also has a positive effect on our physical health (see [55, 56]. Professionals who interpret physical health in connection with mental and spiritual health and help people to lead a better, more complete life carry out work of great importance.

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Chapter II.

HEALTH BEHAVIOUR (KINGA LAMPEK, JULIANNA BOROS, ZSUZSANNA FÜZESI)

II.1. Introduction

In the twentieth century, especially since the 1950s, a significant proportion of health problems in developed countries have been caused by chronic, non-communicable diseases, in the context of which a number of studies have confirmed the important role of lifestyle factors. However, the lifestyle is not based on separate individual decisions, but also summarizes the characteristics of the social position, the specifics of the given community and the personality factors of the individual [1].

It is also known that maintaining good health is a factor that significantly affects our quality of life. Changes in our health status can change the activities and habits of our daily lives to varying degrees in the long or short term, but they can also affect our social relationships. Many disciplines, especially the behavioural sciences, have been researching for decades how people respond to their health or illnesses, what, how and why they do, what they want to do to maintain or improve a positive situation, or use defence mechanisms. The main goal of the research is to understand human behaviour, the motivations behind it, the individual, community and social factors and opportunities that influence the behaviour. The chapter contains a concise summary of these researches, focusing on the data and processes characteristic of the health and risk behaviour of the Hungarian population.

II.2. Conceptual background of health behaviour

II.2.1. The concept of health behaviour

The concept of health behaviour has been defined by many researchers since the 20th century in a

more or less similar way. One of the key differences in these definitions is how responsibilities are shared between the individual, the community, and society as a whole, while we also find differences in the resources and motivations to build and sustain activities for human health.

In our study, we use the definition of Harris and Guten, often quoted, that health behaviours are the totality of individual behaviours and attitudes that are intended to maintain, promote, or restore an individual's health status, regardless of whether the behaviours are actually effective or beneficial to the state of health [2].

Observing our daily lives, we can also see that the majority of people believe that they can significantly influence the development of their health and take an active role in increasing the length of life spent in health. Some learn and follow it from an early age to learn health-promoting habits, while others are only led by a serious illness to develop and maintain habits. Research has also shown that, although to varying degrees from society to society, some people act regularly, routinely, others occasionally or ideologically to protect their health, on a fairly wide range of activities. Often the various socio-demographic factors influencing the behaviour - the individual's gender, age, education, labor market position or financial and income situation - also have a significant impact on the chosen behaviour.

Kasl and Cobb [3] distinguish three types of health behaviours: preventive behaviours, disease behaviours, and patient role behaviours. Preventive health behaviour includes all activities aimed at preventing an individual who considers himself or

herself to suffer from illnesses or health problems (such actions as regular physical activity, avoiding smoking, eating healthy). Illness behaviour, on the other hand, refers to the activities of individuals who feel sick, with the aim of accurately defining the disease and seeking a therapy. Patient role behaviour is also related to clients, but its goal is to recover from the disease - this includes, for example, participation in various treatments, willingness to work with doctors and health professionals. These behaviours are referred to by the authors of this study as “problem-focused” because they respond to a potentially occurring or existing problem in the future, also seeking a solution to it.

Health behaviours can be interpreted as health-related and behaviours targeting health [3]. The former is usually not consciously aimed at health, but it also has an effect on health as an unintended consequence. For example, if someone only walks to work for half an hour a day because he or she does not own a car, exercise can still have the same benefits to their health as walking, because they know that regular exercise can reduce the chances of developing a number of illnesses. Actions are another behaviour, especially consciously seeking pleasures, also, as we call it, “hedonist-focused”. The term hedonistic is not used in the meaning of the search for exaggerated pleasures, but in the sense that it seeks the main driving force of human behaviour in pleasures and also appears in many philosophical, religious trends, cultures, and sub-cultures. In all cases, in addition to experiencing pleasures, they are specifically designed to help maintain or improve health.

The two approaches (problem-focused and hedonistic) are not mutually exclusive, they are fortunately related. Just think of nutrition, which, in addition to energy supplementation and the intake of the necessary nutrients, is also enjoyable, especially if it also serves our needs for social activity. The “problem-focused” approach can also turn into a “hedonist”: e.g. when exercise, doing sports is not only used to prevent future illnesses or to maintain or improve the current ones, but when integrated into the nerve pathways, it becomes a habit pattern

and “hormone hunger” (eg endorphins, adrenaline, etc.) also triggering the exercise to be repeated. Like any exaggerated habit has its setback, e.g. if we demonize our diet (anorexia, bulimia) or become addicted to exercise.

Health behaviours are often approached as individual-level behaviours, but, especially in the social sciences, health behaviours can also be measured and analyzed at the level of groups or populations [4, 5, 6].

Activities of health behaviour can be preventive in nature, which can lead to the preservation and, in many cases, development of health, and can also be hazardous behaviours that pose a risk to health in the short or long term [7]. Preventive health behaviours are characterized by awareness, including the development and maintenance of healthy eating habits, regular physical activity, moderate alcohol consumption, avoidance of pollution, habits related to accident prevention, and the prevention or timely detection of diseases. Behaviours that have a detrimental effect on health, such as regular smoking, excessive alcohol consumption, physical inactivity, eating habits that result in obesity, risky, unsafe sexual behaviour, and inappropriate stress management, are called risk or risk-seeking behaviours.

However, preventive and risk-seeking behaviours can often only be sharply distinguished in one model. Some sports are specifically risky augmentative activities: think of skiing, snowboarding, or any athletic sport that carries the risk of injury, it is not even necessary to practice extreme branches. Medical interventions, whether for preventive purposes, can also pose a risk to an individual’s health (eg, due to infections and other iatrogenic harms). A series of examples can be continued, but they do not call into question the importance of preventive health behaviours. Undoubtedly, a trip can also carry risks (from colds to tick bites to more serious accidents), yet we think that sitting on the couch for years carries much greater health challenges.

Behaviours that have a positive effect on health can be characterized along two other dimensions:

the dimension of simple, easy-to-perform or complex behaviours that may involve more effort and inconvenience, and the dimension of the required frequency of a given behaviour. For example, taking a daily vitamin or possibly taking part in routine screening may be less of a burden. Activities that require more effort include exercising regularly, reducing- quitting smoking, or changing eating habits. In terms of frequency, we can talk about health protection activities that require one-time or occasional repetition, as well as actions that need to be performed frequently or continuously.

II.2.2. Health behaviour theories

A number of theories and models have been developed in relation to health behaviour, of which three main model types are presented: *health belief theory* [8], *social cognitive theory* [9], and *planned action theory* [10].

Development of the “*Health Belief Model*” (HBM) by Rosenstock and Hochbaum, who in the 1950s investigated what could be the socio-psychological reason why people had not participated in TB screening even if it was a curable disease. The study did not require any special energy investment because residents did not have to travel much because of the use of screening buses. According to the HBM model, people are willing to take action about their health if they perceive them to be prone to an illness that is expected to have serious consequences or if there is a possible behaviour or action that can reduce their predisposition to the illness or severity of the condition. In addition, it can increase activity if there are benefits to the action or if the costs and difficulties of the action do not outweigh the benefits [11].

“*Social Cognitive Theory*” (SCT) is based on Miller and Dollard’s theory of social learning. Bandura further developed this by incorporating elements of observational learning and reinforcement to try to find an explanation for how people develop and follow certain patterns of behaviour. For this purpose, he developed a three-factor model that shows how the observation of an observed behaviour is influenced by the interaction of per-

sonal, behavioural, and environmental factors. He found that the personal factor refers to how much an individual believes in his or her ability to follow a particular behaviour; the behavioural factor is the response that an individual receives when performing an action; and the environmental factor shows the effect of the social or physical environment on the ability of an individual to successfully perform an action. The three factors constantly interact. In observational learning, a person looks not only at how another person is performing an action, but also at what confirmation he or she is receiving in the process [9]. Social cognitive theory is a value- and expectation-based approach: in relation to health behaviour, value means avoiding disease or maintaining or improving health, while expectation refers to the fact that a particular behaviour or action can prevent a disease or improve health [11].

The “*Theory of Planned Behaviour (TRA)*” is based on Theory of Reasoned Behaviour (TRB), according to which attitude is defined by the intention to behave and the idea and belief in health-related activities and outcomes. The theory of planned action adds to this that health behaviour is not only an individual endeavor but also a good practice for regulating behaviour, and draws attention to the important role of beliefs that are precursors to intention and actual behaviour. The theory assumes a causal chain between behavioural – normative – and control beliefs, as well as behavioural intentions and behaviours realized through attitudes, subjective norms, and perceived control. The version of the theory of intentional action further developed by Montano and Kasprzyk is the integrated behaviour model, in which intention plays a key role in the development of behaviour, but four other factors also directly affect behaviour: behavioural knowledge and skills, habits, environmental constraints (or their absence) and that the behaviour is important to the individual. Behavioural intent is influenced by three factors, attitude (both experiential and instrumental), perceived norms, and the personal component — perceived control and self-efficacy [11].

Finally, it is worth mentioning the model of Okechukwu et al. [12], which examines how health behaviour can be changed in a social context. The model assumes that although health behaviour is an individual characteristic, interpersonal, family, historical, social, political, and other factors outside the individual influence its realization. Basic socio-economic characteristics, such as gender, age, social class, ethnicity, mother tongue, place of birth, act through the modification of several factors. These, i.e. interpersonal factors (e.g. financial circumstances, social ties, extent of network of friends, family roles, responsibilities), organizational factors (e.g. workplace atmosphere, social capital), residential factors (e.g. security of the living environment, neighborhood relations, transport options)) and possible discrimination as a social factor that can both affect individual characteristics. Individual (self-efficacy, attitudes, beliefs, knowledge, intentions) and social (social norms, social support, organizational environment) mediation mechanisms also contribute to all this [13].

II.2.3. Investigation of social factors influencing health behaviour

Health behaviours shape the health and well-being of both individuals and members of society at large. So far, we have focused on individual behaviour, but behaviours that affect health do not operate in isolation, but always as part of a complex, larger whole.

Scientific and political interest in the social determinants of health has grown significantly in recent decades. Researchers agree that the differences in the health status of the population are not primarily determined by the characteristics of the health care system, but by the lifestyle that can be developed in the given natural and social environment, the individual socio-demographic factors (gender, age, education, labor market activity, financial, income situation), as well as health - related knowledge, beliefs, habits, motivations [14, 15].

In the first phase of research on health behaviours and interventions, the approach was that education

is a matter of individual choice and personal responsibility, and education to change health beliefs and actions is a key societal element of change intervention [16]. All of this was conceived by the transmission of information (and still is conceived by many today), despite the fact that information alone, while necessary, is not a sufficient condition for triggering and sustaining desirable actions.

From the 1970s onwards, sociological approaches to health emphasized the need to examine individual behaviour in a social context, taking into account the constraints on choice, the system of social values and norms, and the system of inequality and power relations that shape social structure. It can be stated that health behaviour takes place at the individual level, but is shaped by the community (meso) and social (macro) levels [14]. At the macro level of society we can classify e.g. labor market conditions, the health care system, and below the meso level we can think of the close interpersonal relationships in which people live their daily lives: families, friendships, workplaces, religious communities, and so on. Research shows that the development of health behaviours is significantly influenced by meso-levels - e.g. family socialization, peer relationships, the school and work environment - but all of which are significantly affected by macro-level inequalities - e.g. poverty rates, low educational attainment, unemployment, the emergence of health as a value and their expression in behavioural norms. In the case of meso-level, consider, for example, the eating habits followed in the family, smoking caused by peer groups, and stress management methods in the workplace. At the macro level, we can mention as an example that although members of Hungarian society consider health to be a very important value, heavy alcohol consumption, which carries a significant risk, is a common and well-tolerated behaviour, or smoking habits are very difficult to change in the Hungarian population. This is despite the fact that Act XLII of 1999 and the 2011 XLI. measures to protect non-smokers have been formulated and regulated by law, e.g. banning smoking in workplaces, means of transport, restricting access to those under 18 years of age.

However, according to the results of the European Population Health Surveys, there is unfortunately no significant decrease in the prevalence of smoking in Hungary.

II.2.4. Interventions to change health behaviour

There are three important issues about interventions based on theories of health behaviour: what can be the basis and motivation of the intervention, how can the change take place, and how can the changed behaviour be sustained. To do this, we try to provide practical advice on how to implement change in health behaviours, which we can use to deal with ourselves and our clients:

- One of the common problems with our attempts to improve health behavioural interventions is that while determining what needs to change to change behaviour, there is a lack of planning for concrete, even measurable, steps to change these existing patterns of behaviour.
- When changing health behaviours, we may often find ourselves in a position to suggest more behavioural interventions to improve overall health. This could be the case, for example, if we want to change our smoking, eating and physical activity habits at the same time. Research in this area has concluded that interventions targeting a moderate number of recommendations have resulted in the greatest change. This has been explained by the fact that interventions aimed at changing a single behaviour increase the power of intent for a given behaviour and may be more effective if individuals are encouraged to prioritize this behaviour change goal over other competing goals.
- In addition to the goals of changing health behaviours, it is worth placing more emphasis on maintaining the newly developed health behaviours, as the improvement of health status is primarily related to longer-term interventions. As a health promotion professional, there is a need for a greater understanding of the factors that determine the maintenance of health behaviours, as these are likely to differ in many cases from the factors that characterize the initiation of a change in health behaviours. In

addition, although the health benefits of sustained behaviour are most closely related to consistent long-term performance, interruptions or persistent relapses may be common in these behaviours. It is therefore essential to develop continuous motivation and self-efficacy, emphasizing the supportive power of psychological and physical resources, habits, and environmental and social impacts.

II.3. Protective factors in health behaviour

After the theoretical summary, let's look at some specific data on how the health behaviour of the Hungarian population can be characterized. As already mentioned, there are basically two main types of individual health behavioural and lifestyle factors: on the one hand, we can talk about protective factors, that enable us to maintain or improve health, and on the other hand, risk behaviours that are harmful to health are equally important.

Some of the protective factors are social factors such as social support (including the supportive function of the family), social capital (trust), or religion. In addition, a number of psychological traits can also contribute to maintaining good health, including optimism, life satisfaction, belief in the meaning of life, self-efficacy, self-regulatory behaviour, and future orientation [17].

Another important factor is health consciousness, i.e. recognizing that we are responsible for our own health - without health consciousness, it would be impossible to change our established health behaviours.

In this chapter, we now provide an insight into the protective factors that are more closely linked to lifestyle, highlighting the area of physical activity and diet, and finally examine the proportion of the Hungarian population who use the preventive services of the health care system.

Based on the data of the European Health Interview Survey (ELEF) conducted in 2019 [6], it seems that the majority of the Hungarian population is aware of their own responsibilities in this area, as 26% think that they do much, and another

58% think that they can do quite a lot for their own health. However, theoretical knowledge is often not reflected in everyday life, as evidenced by data on exercise and eating habits.

II.3.1. Physical activity

The right amount and quality of physical activity has beneficial effects on the musculoskeletal system, the cardiovascular system, the respiratory system, and the endocrine system, thereby reducing the risk of premature death, cardiovascular diseases, high blood pressure, colon cancer, and diabetes [18]. In addition to physical well-being, exercise also plays a major role in maintaining mental health, as it can help overcome stress, increase self-esteem, and overcome sleep difficulties.

The World Health Organization recommends that you take at least 150 minutes of physical activity a week to get the benefits of exercise. It is estimated that about a third of European adults are physically inactive [19].

According to the data of ELEF2019, less than a quarter of the adult Hungarian population performs at least 150 minutes of leisure-time exercise per week, 27% of men and 21% of women. Age has a significant effect on sports habits: 42% of men aged 15-34 exercise, 22% of those aged 35-64 do exercise and 17% of those aged 65 and over do physical activity. The proportion of women doing sports is only 30%, even in the young, which drops to 22% in the middle-aged and 11% in the elderly. A better financial situation clearly increases the chances of someone exercising properly, as education does. In the latter case, A-level exam is the dividing line: those up to 8 primary school years and those with a vocational certificate are both less likely to move in their free time than those with secondary graduation and higher education graduates. In addition to leisure-time exercise, we cannot ignore the importance of being physically active in a significant proportion of our daily work. According to the survey, 40% of people sit mostly, 11% stand still, 42% mostly walk, do easy exercise at work, and 7% do heavy physical work.

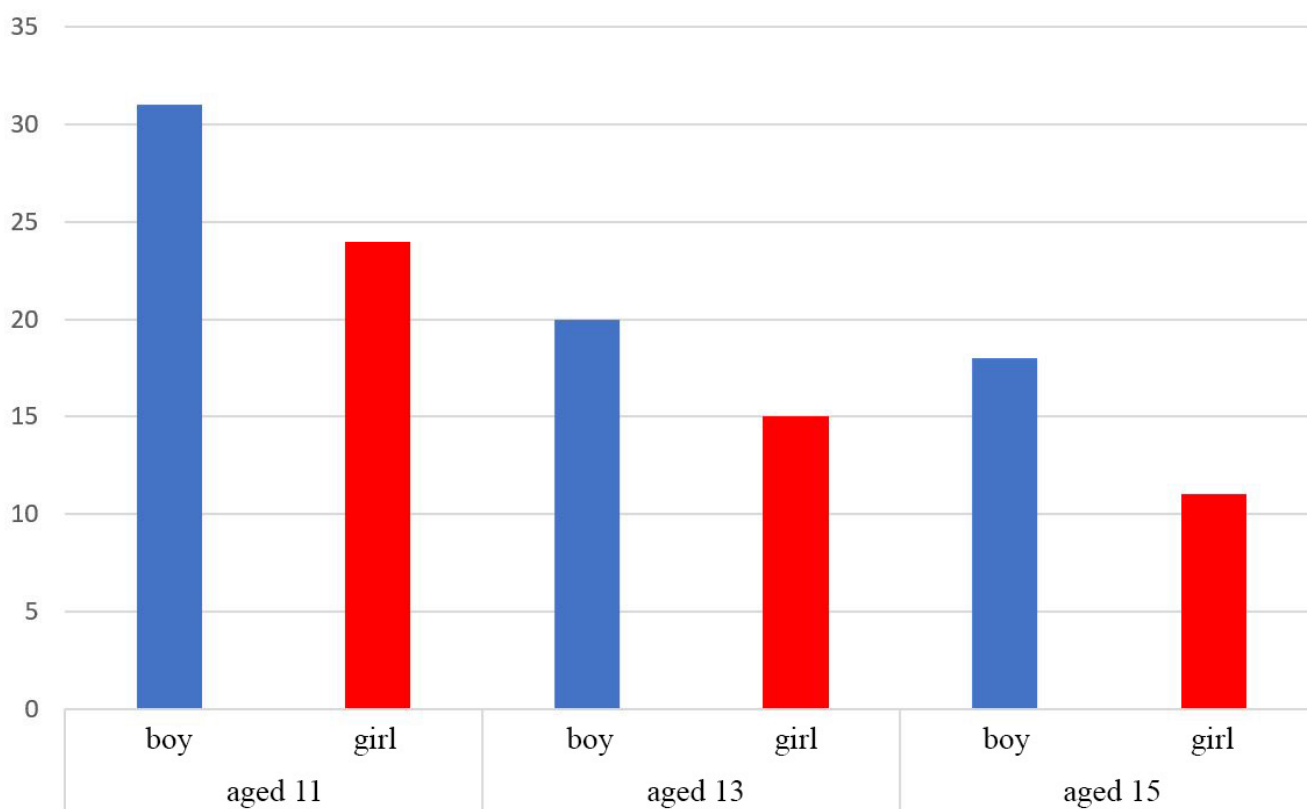
Young people have different recommendations due to their different physical characteristics: ideally, they should exercise at least one hour a day or exercise 4 times a week. According to the 2018 Hungarian data of an international survey conducted every four years on the health behaviour of school-age children [20], boys play sports more often than girls in all three age groups (11, 13 and 15 years old) participating in the survey, but compared to the previous survey (2014) differences between the sexes narrowed as the frequency decreased in boys but there was no change in girls. II.1. Figure 1 also shows that the proportion of people who exercise during the recommended period decreases rapidly with age.

II.3.2. Eating habits

Lifestyle factors that directly affect health include diet.

Eating habits are undergoing very frequent changes today: industrialization, urbanization, economic development and the globalization of markets are accelerating the pace of change. Although the standard of living and access to services has generally increased, there are also setbacks to change: a reduction in physical activity and inadequate nutrient intake can easily contribute to the development of certain chronic diseases. The energy-rich diet rich in fat (especially saturated fatty acids) and low in complex carbohydrates is a worldwide problem, coupled with a decline in physical activity and lower energy consumption.

There are many biological, cultural, lifestyle, and economic reasons for the development of the “Western” diet. Most researchers agree that economic reasons include the transformation of the food system, behind which is the globalization of food production, transportation, and marketing technologies. As a result, the level of food processing is shifting from fresh raw materials and products to a high level of processing. The general advancement of ultra-processed foods (such as soft drinks, salty snacks, sweets, meat products, packaged ready meals, instant soups) increases energy intake, carbohydrate, added sugar and saturated fat intake, but reduces the amount of fibre, vitamins and minerals important to the body. [21].



II.1. Figure: Proportion of those who exercise 60 minutes a day by gender and age group 2018 (%)

Source: HBSC [20]

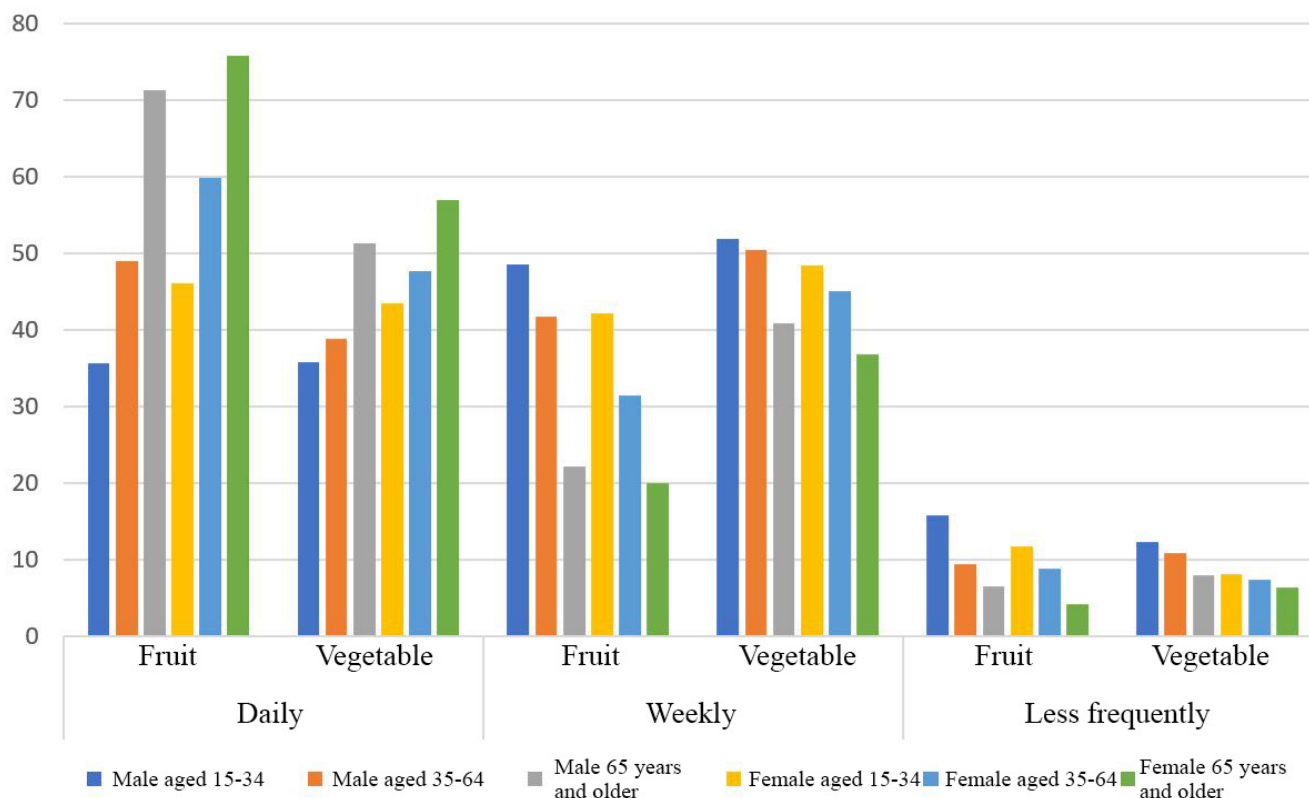
Nutritional recommendations are changing, but there has long been a consensus that eating vegetables and fruits is extremely important for health. Regular daily consumption of vegetables and fruits significantly reduces the risk of mortality, especially in the case of cardiovascular diseases.

According to the results of ELEF2019, more than half of the adult population (61% of women and 49% of men) ate fresh fruit at least once a day. The frequency of consumption was highest in the oldest age group: three-quarters of those aged 65 and over included fruit in their daily diet. However, only a third of young men and less than half of young women were regular fruit consumers (Figure II.2). Consumption of fresh vegetables was slightly less popular than fruit, with 43% of men and 49% of women consuming it on a daily basis. Consumption of fruit and vegetables can also be related to education: 52% of those who complete up to 8 classes eat fruit daily and 40% eat vegetables, and 58% and 48% of those with higher education, respectively.

II.3.3. Preventive medical consultations

Protective health behaviours also include using health services for prevention. In Hungary, several screening programs are coordinated by the government, of which breast and cervical cancer screening stand out, which are of particular importance because cancer mortality is extremely high in Hungary. Regular (at least every 3 years) participation in cervical cancer screening is recommended for women aged 20-69 years. According to ELEF2019, 74% of women in this age group participated in the study within 3 years, but this is a decrease from the previous survey (2014), when the proportion was still 79%. It should also be noted that 39% of screenings took place in private care rather than in the public screening program.

According to professional recommendations, women between the ages of 45 and 60 are recommended to have a breast x-ray every two years for early detection. Half of middle-aged women were in this type of study in the two years prior to the 2019 survey. Participation was also strongly cor-



II.2. Figure: Frequency of fruit and vegetable consumption by sex and age group, 2019 (%)

Source: ELEF2019 [6]

related with education and income: a higher proportion of those in a better financial position and those with a higher level of educational attainment went for a mammography examination.

Screening is also recommended for the other sex: it is recommended that men over the age of 50 be screened for prostate cancer each year. 28% of those aged 65 and over appeared on screening within a year, however, 39% had never been screened. The impact of education is still significant in this case: while 7% of men with a primary education took part in the screening in time, 12% of those with a secondary education and 18% of graduates - even the latter is a very low value.

II.4. Risk factors for health behaviour

In addition to protective factors, let's also take a look at the risk factors that affect health. It is well known that the Hungarian population is characterized by rather unfavourable morbidity and mortality data, and these are due, if not exclusively, to a significant extent to the unfavourable health behavioural and lifestyle factors. In this chapter,

we present the two most harmful habits affecting health: smoking and alcohol consumption.

II.4.1. Smoking

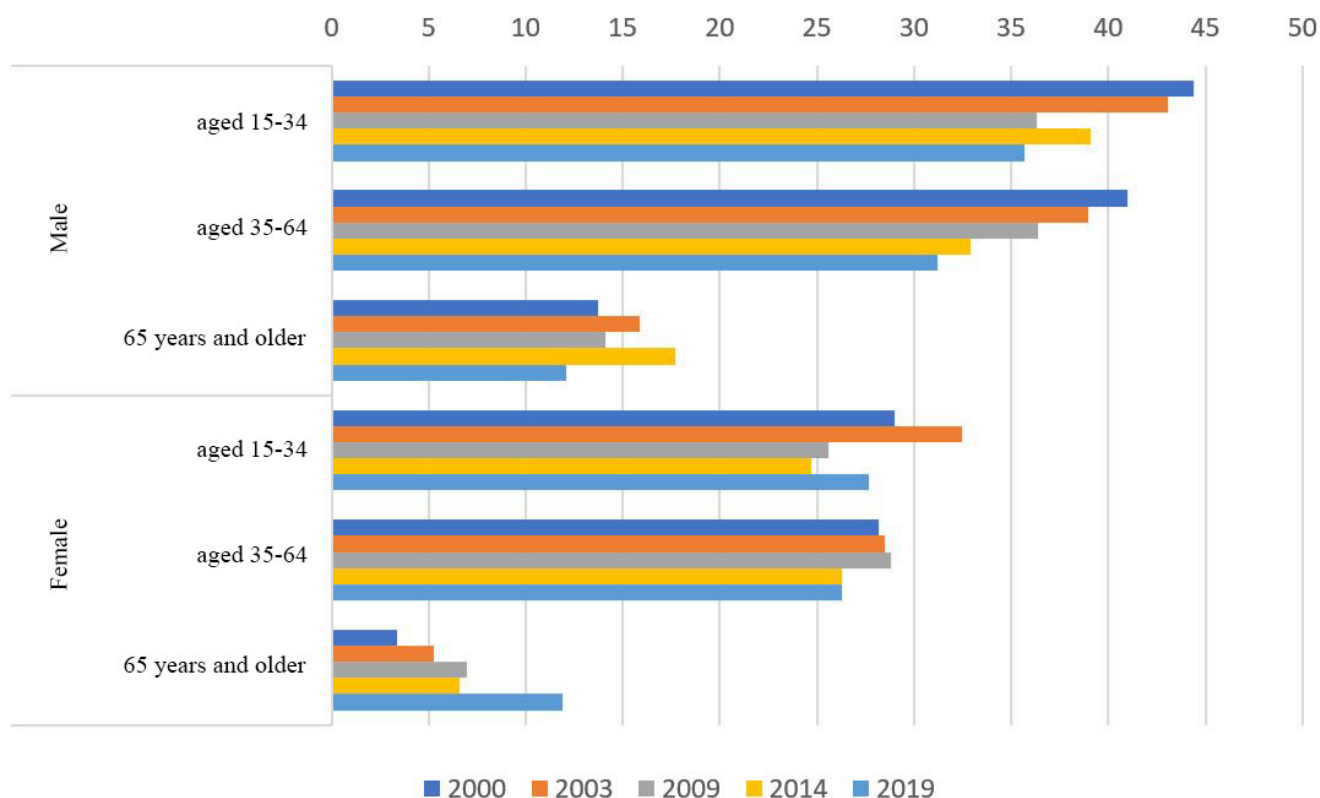
Among the risk behaviours, smoking causes the greatest damage to health. Cancer, cardiovascular and respiratory diseases are more common among smokers, therefore, the WHO estimates that about half of smokers die prematurely, on average 14 years earlier than their non-smokers counterparts. In addition to worsening individual life prospects, smoking also increases the volume of health care expenditures, and lost working days due to illness reduce economic indicators. The effects of smoking have been well known for decades, not only among professionals but also among lay people, and even most smokers are aware of the risks. If we look at the world as a whole, we can see that the proportion of smokers has started to decline in the last 40 years, but in absolute terms, due to the growing population, there are now about 1.3 billion smokers in the world, an increase of more than half a billion compared to 1980.

According to the latest Hungarian data, ie the results of ELEF2019, a quarter of the adult population smokes on a daily basis. Although this frequency is still high, there has been a modest improvement over the last two decades. The decline is more common in men, especially in the young and middle-aged. The decline in women in the young age group seems to have stopped in recent years, with 3 percentage points more women aged 18-34 smoking in 2019 than five years earlier. In the oldest age group, a definite increase can be observed, so the difference between the two sexes in the age group 65 and older has essentially disappeared (Figure II.3).

Overall, smoking affects a slightly higher proportion of men than women: 29% of the former and 23% of the latter are regular smokers. Education is also associated with smoking: the proportion of regular smokers was four times higher (48% vs. 12%) among men in up to 8 grades, and almost three times higher (31% vs. 11%) among women than those with higher education. According to the

income situation, we can see that the proportion of those who light a day is twice as high among those in the worst financial situation as among those in the highest income quintile (38% vs. 20%). We can also observe geographical differences: the highest proportion of regular smokers is in Northern Hungary and the Northern Great Plain (31% and 30%, respectively), while the lowest proportion is in Budapest (17%). Occasional smokers, on the other hand, tend to come from the more educated and those with higher incomes, although their proportion is negligible compared to regular smokers.

The habit of smoking often occurs before the onset of adulthood, and the period between the ages of 15 and 19 is critical in this respect, when young people are often addicted by the desire to become independent and the pressure of peer groups. Bettina Pikó provides four main explanations for the development of substance use in adolescence: conflict resolution, social motivation, self-affirmation, and boredom [22]. According to the Hungari-



II.3. Figure: Proportion of regular smokers by sex and age group 2000-2019 (%)

Source: ELEF 2019 [6]

an data of the HBSC international survey in 2018, smoking shows a popular but declining trend among adolescents: 25% of 15-year-old girls and 21% of boys smoked in the 30 days before the survey - in 2014, 32% of girls and 28% of boys [23].

II.4.2. Alcohol consumption

In addition to smoking, alcohol is the other legally consumable drug that has been embedded in our culture for centuries. Excessive alcohol consumption plays a role in the development of about two hundred different diseases, the best known of which are liver cirrhosis, stroke and cancer, but can also be the cause of many accidents [24]. At the same time, moderate alcohol consumption has a preventive role against cardiovascular diseases, according to some studies: those who drink alcohol only occasionally are less likely to have cardiovascular disease than abstainers and heavy drinkers. However, it should also be mentioned that the positive role of moderate alcohol consumption in the literature is unclear, as abstinence can often be mediated by disease.

According to consumption data on pure alcohol per capita, alcohol consumption was highest in Hungary in the 1980s (16.9 litres in 1980), then began to decline after the change of regime, and has been more or less stagnant in the last 10 years. This value was 10.8 litres / person. This value, which is at least above the EU average, places Hungary, Germany, Poland, Luxembourg, Portugal, Spain, Romania or the United Kingdom among the countries with relatively high consumption, but there are also more alcohol-consuming countries, such as France, Ireland, the Czech Republic or the United Kingdom, the Baltic states.

According to ELEF 2019 self-reported data (which can be considered a strong underestimate), the proportion of adults who drink alcohol daily is 6%, and one in five people drink alcohol at least once a week (but less than a day). At the same time, almost a third of the adult population does not consume alcohol at all. If we take into account the quantities consumed, we can see that every tenth of men and just over one hundredth

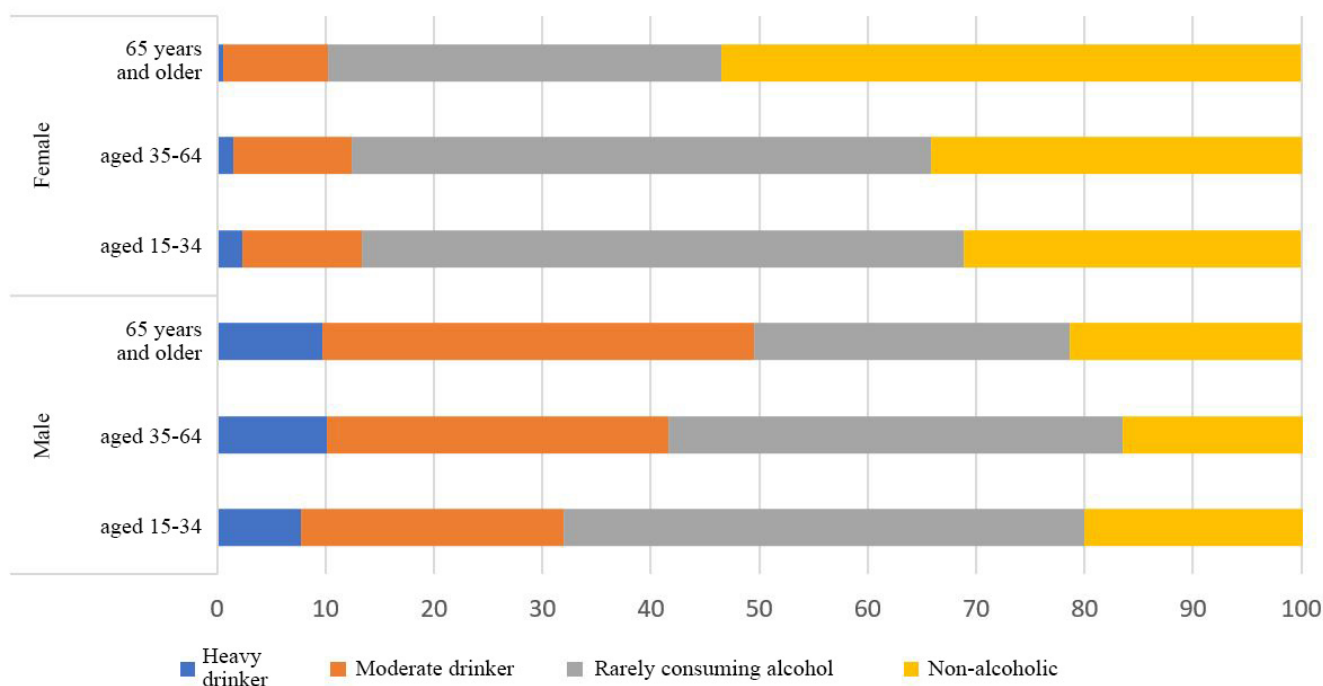
of women are heavy drinkers, ie they consume at least 14 drinks a week - in case of men - or 7 drinks a week - in case of women. The two non-alcoholic drinking patterns differ by age group: there is no significant difference in the proportion of heavy drinkers among age groups, while older men have a higher proportion of daily but moderate drinkers and fewer occasional drinkers. The prevalence of abstinence among women in the oldest age group is outstanding: more than half of women aged 65 and over do not drink alcohol at all, according to their own admission (Figure II.4).

Regarding alcohol consumption, differences can also be observed according to education and financial status. For both sexes, a lower level of education increases the chances of abstinence (59% of women with up to 8 grades and 23% of those with higher education, the same proportions for men: 32% vs. 9%). Similarly, those in the worst income quintile also abstain from drinking more than those living in the best financial conditions.

As for young people, HBSC data show that half of 15-year-olds (51%) drank alcohol in the 30 days prior to the survey, and 20 percent of girls and 24 percent of boys got drunk at least once during that time. But even those younger by two years were got drunk at least once a month, both boys and girls, and 23 percent of 13-year-old boys and 17 percent of girls drank alcohol within a month.

In many cases, smoking and alcohol consumption have a detrimental effect before someone is born: cigarettes and alcoholic beverages consumed during pregnancy can lead to fetal harm, lower birth weight or preterm birth, and the effects on the unborn child can be affected by the effects on the uterus.

With the help of the Cohort '18 Hungarian Birth Cohort Survey [25] we can get an impression of the health behaviour of Hungarian pregnant women. The research is a longitudinal study of a representative sample of children born in 2018, the first phase of which was enrolled among pregnant mothers before birth, in the seventh month of pregnancy.



II.4. Figure: Alcohol consumption categories by sex and age group 2019 (%)

Source: *ELEF 2019* [6]

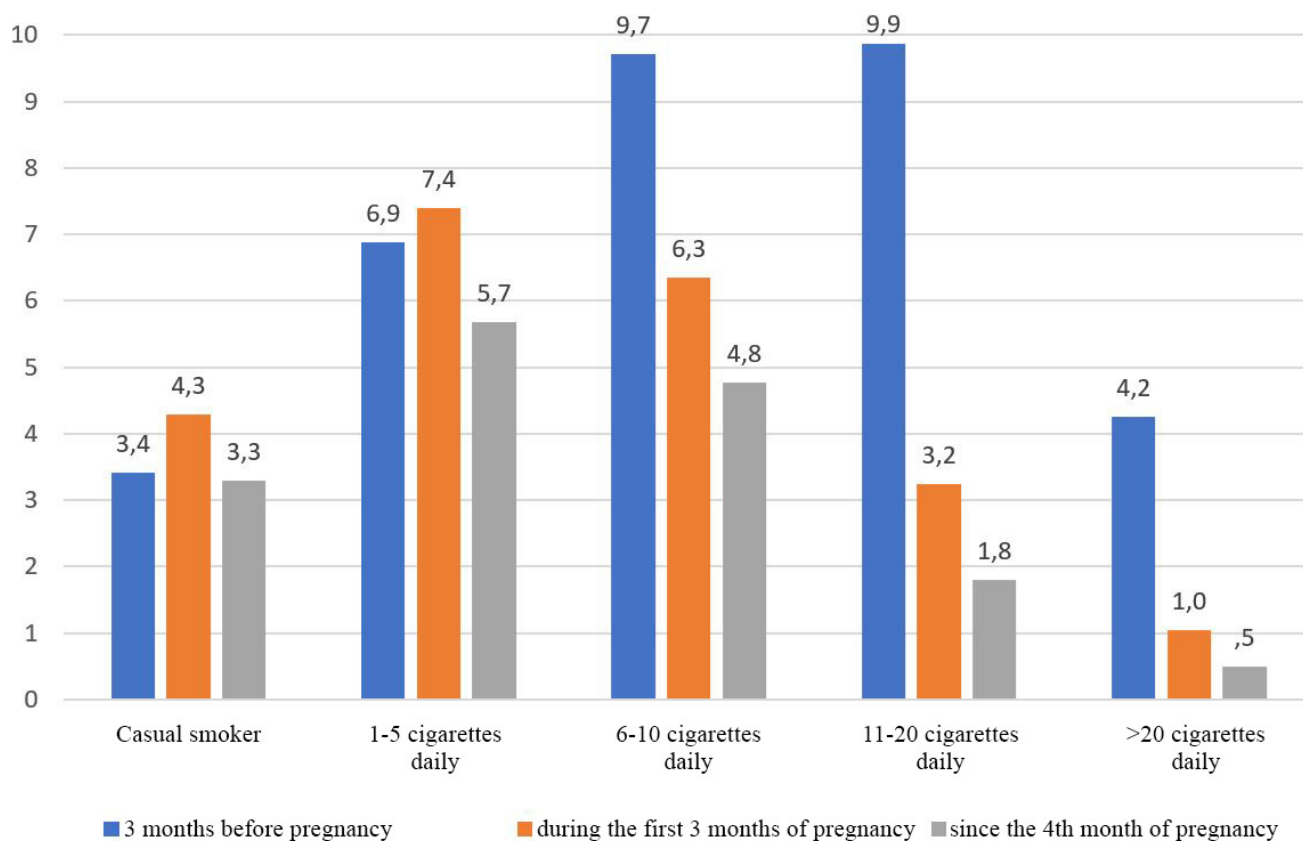
The results show that more than half of pregnant women (53%) smoked at some point in their lives, the vast majority of them for more than a year, and more than a third (34%) even three months before pregnancy were smokers. This rate decreased somewhat during pregnancy, but was still high: more than one-fifth (23%) of expectant mothers in the first trimester of pregnancy and 16% from the fourth month of pregnancy. A small proportion of smokers (3-4%) belonged to only occasional smokers, the rest smoked on a daily basis, although the amount smoked per day decreased slightly during pregnancy. While 14% of mothers smoked more than ten cigarettes a day just before pregnancy, only 4% in the first three months of pregnancy and 2% from the fourth month onwards.

Significant differences in smoking during pregnancy can be observed across socio-economic groups. Younger non-married pregnant women living in smaller settlements, with lower education and in poor financial status smoked at a higher rate. For example, one in 23 graduates smoked during pregnancy, while more than half (55%) of up to 8 grades of primary school. Similarly, the difference between people in the best and the

worst financial status is almost five times higher in terms of smoking: 45% of the poorest and only 8% of the richest. Half of pregnant women under the age of 20 smoked during pregnancy, compared to them the frequency is less than half in the 25-29 age group (21%), and this proportion continues to decline in the older age group. The differences are also significant according to the place of residence: one in eight pregnant women living in the capital smoked, while one in three people living in small settlements with no more than 1,000 people smoked. Three times more people smoked living in cohabitation (34%) than married ones (11%) and almost five times as many people without a partner (51%).

A slightly different pattern can be observed for alcohol consumption. Contrary to the general recommendation that alcohol should not be consumed at all during pregnancy, one-tenth of expectant mothers drank some form of alcohol during the first three months of pregnancy and 8% in the post-fourth month, more or less often.

Alcohol consumption during pregnancy affects mothers with higher social status to a greater extent: more educated, metropolitan, older, better-off



II. Figure 5: Smoking before and during pregnancy (%)
 Source: Cohort '18 Hungarian Birth Cohort Survey [25]

married women have consumed more alcohol, at least according to their own statements, both before and during pregnancy.

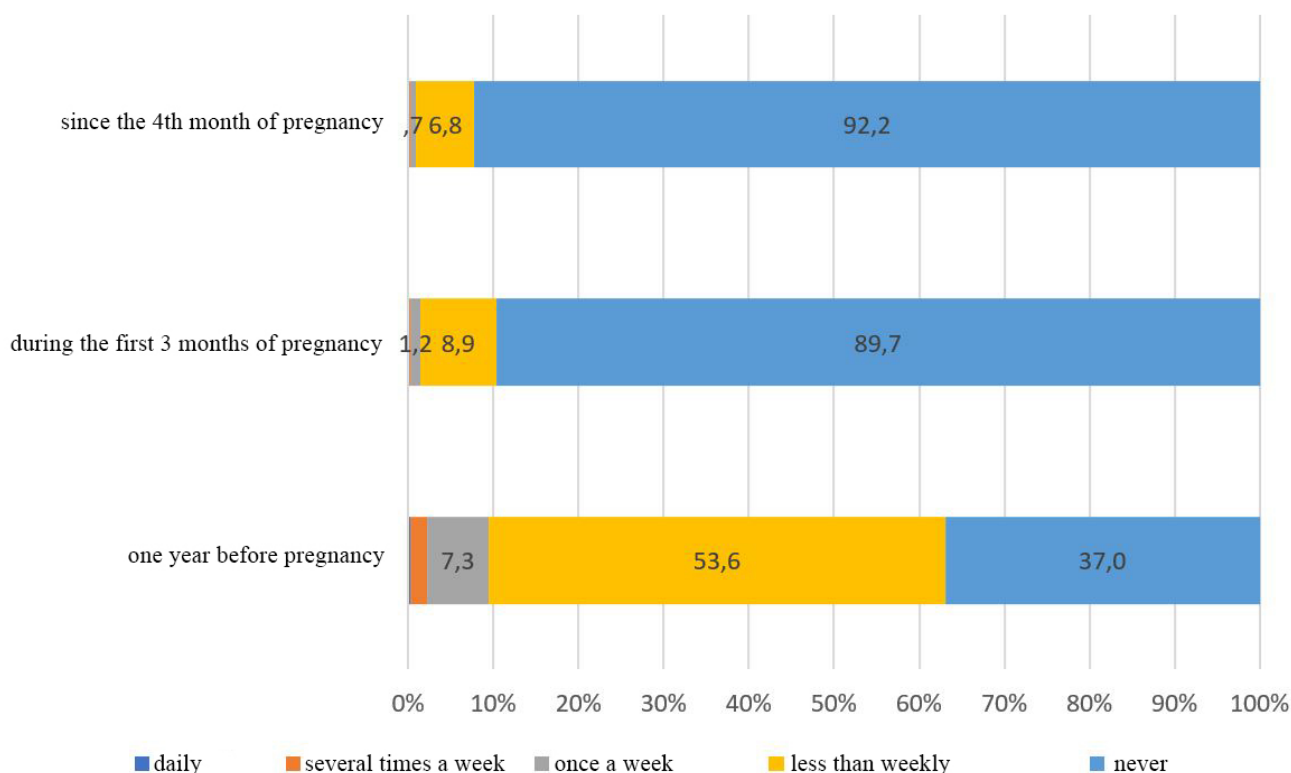
II.5. Summary

The current study is intended for future professionals who will work in the field of health promotion, either directly or indirectly, so that their attitudes and practices will have a major impact on the health behaviour of individuals and population groups. Our critical approach in the summary is therefore not self-concerned, but its intentions are very inspiring to make the necessary changes.

We do not believe that it is an exaggeration to state that the efforts and intervention attempts of the Hungarian public health in relation to health behaviour and health promotion (health education) cannot be considered to be clearly effective. Based on the data, we seem to achieve results in groups where knowledge (from higher education) and living conditions (from the appropriate socio-economic

status) create motivation to choose and live a healthier lifestyle. But even there, it's not always a matter of course! What could be the reasons for this ineffectiveness?

One of the biggest shortcomings of the approach to health behaviours and the interventions based on it is that they do not take into account the whole personality during design and implementation. According to the paradigm of the whole personality [26], in addition to the physical (physical, biological) dimension, the person has an intellectual dimension (need for continuous development, learning), an emotional dimension (need for social connection, love affairs) and a transcendental dimension for most people – searching for the purpose of life). Under 4L, Covey sums up our need for this: Live, Learn, Love, Leave a Legacy. Interventions related to health behaviours, on the other hand, are still very strongly influenced by the concept of health based on a medical approach, which works primarily with the physical dimension in



II.6. Figure: Frequency of alcohol consumption among pregnant women (%)

Source: Cohort '18 Hungarian Birth Cohort Study, Pregnant Research Phase.

CSO Population Research Institute, 2020 [25]

everyday healing practice. Although modern brain research has made it clear in recent decades that the human personality is very complex and that staying healthy depends not only on our physical health, it is not yet available in practice (neither in health promotion nor in medicine). In other words, although Descartes is dead for hundreds of years, his theory of the separation of body and soul, the supremacy of rationality, is still alive. In addition, we admire modern brain research, but we have not yet been able to put its results into practice properly. This can also be seen as significantly limiting our approach (our initial paradigms) and because of this, our actions remain limited, as a result of which we get nowhere else but where we started. It is easy to see that if we build on the same (faulty) paradigm, we use the same (outdated) methods, it is not surprising that we get the same results (failures). The paradigm of the whole personality - as opposed to and taking into account the restrictive physical / biological interpretation - deeply believes in continually reflecting on ourselves (eg through self-improvement), caring for our relation-

ships, seeking meaning in our existence, therefore, it is also worth investing in health behaviours.

Compassion is very often lacking in health promotion, interventions that seek to influence health behaviour. That is, understanding active and emotional attention and reflection in understanding the situation of a given demographic and social group, in shaping interventions for the individual / community. We often recommend and consider models alone (even in the form of instructions) that we would not choose, let alone an individual significantly different from us in age, social status (e.g., a disadvantaged young person in adolescence). Nor is it credible to just ban something but not recommend it, or even to look for another opportunity to live a full - or at least better - life in accordance with the client's capabilities and intentions. No one chooses an ascetic life, a renunciation of pleasures and happiness, in the hope of a result with an uncertain outcome, possibly detectable in its effects decades from now. We don't either! Lack of compassion with the most disadvantaged individu-

als and groups is debatable not only professionally but also morally, especially if it involves accusing the victim.

Professionals working in this field are expected learning agility, flexible and rapid adaptation, adaptability, and to respect the autonomy of individuals and communities. This is not a laissez faire approach and practice. Instead, managed / controlled autonomy is preferred, i.e. a framework provided by science and proven good practice, and within that, to encourage individuals / communities to act freely in order to choose and act according to their opportunities, attitudes and personal development. It is based on a deep respect for both the individual and the community, recognizing that they are adults who are expected to make independent decisions in almost every area of their lives. That is why, in health promotion, they cannot be persuaded to follow our advice blindly without consideration.

There is still room for improvement in terms of credibility for professionals. This credibility is given by honesty, and goodwill (i.e., together with character), appropriate abilities, and proven effectiveness (i.e., together with competence) [27]. In many cases, only character, i.e. honesty and goodwill, can be demonstrated, but professional skills and effectiveness are no longer. However, these make the models recommended by experts for the target groups acceptable and followable. The question is whether we have a sufficient number of professionals who have a modern approach to the VUCA world, responding flexibly and successfully to the very rapidly changing circumstances in the 21st century? The term VUCA means Volatile, Uncertain, Complex, Ambiguous, meaning a fast-changing, uncertain, complex world that is difficult to understand. Although the concept has been on the market for a few years, the pandemic has made it extremely clear that other skills, paradigms and cultures than ever before are needed in an environment that can change so rapidly.

Health promotion, the practice of health behaviour, still places more emphasis on prohibitions than on

what makes something good (or to leave it). That is, it looks at *what isn't working*, instead of focusing on *what makes something work*. Positive psychology [28], although not hundreds of years old, has been present in the sciences for decades; therefore, it is time to start using its proven results in shaping health behaviour. In other words, "*the problem is*" [29] - borrowed from a song of the Hungarian band "*Belga*" and the frequently used Hungarian vernacular, we should instead adopt the "*# that is good*" [30] approach. Reactive language use induces restrictive actions ("what to do") and does not help to motivate, while proactive language use ("*I decided to do this*") energizes and gives us a sense of control over our lives and actions in health behaviour is.

What constitutes preventive behaviour and what carries risks is very often defined by professionals and decision-makers (politicians). For example, the consumption of consumer culture to create and maintain identities is rarely questioned, as their role as GDP generators has been described as socially useful. For example, boosting sales of cars and digitization-related products, increasing the distribution of preserved foods and clothing, and even the constant compulsion to work and perform work against good health decisions. A good citizen works a lot and consumes a lot because it spins the economy. That is, he or she puts in a lot of it and uses it a lot, often sacrificing his or her own health. It is also long overdue to question this approach, and perhaps a pandemic in European countries since the beginning of 2020 could accelerate this process.

The basis for planning and interventions for health behaviour, as in other areas, is the so-called 4C: critical thinking, creativity, collaboration, communication. Without them, there is no efficiency that reaches new generations as well in the 21st century.

Health promotion is very often modeled on health care and unfortunately carries the same organizational culture. That is, it does not respond to needs, it basically targets only the individual, even if you call the interventions community. In addition, it treats the person or target group intermittent-

ly from their own environment, and “diagnosis” and “decision-making therapy” (from school to workplace) take place over the head of the client / community. It often takes over specific health care tasks (e.g. screens students and employees within the framework of health promotion). A serious problem is that, like health care, it is deeply underfunded and, due to ineffective interventions, waste of scarce resources can be felt.

The inconsistency of health-related behaviours, recommended courses of action, messages at the societal level is not used in the commitment to healthy choices. If the cooking of 50 liters of 80% brandy per person per year in Hungary is a legitimate activity (corresponding to 100 liters of 40%), it is difficult to fit into the alcohol consumption advertised as moderate by health promotion professionals.

In health promotion, too, it is often the case that we focus not on our sphere of influence, but rather on our sphere of interest. There are actions in the sphere of influence that we can take and take responsibility for. We have no control over the activities that belong to our sphere of interest, so the question of action and responsibility does not arise either. The decision is in our hands.

II.6. Questions to think about in the field of health behaviour change - Strength-based development in health behaviour (also)

We recommend that you do the following self-directed exercise for yourself. Remember, you do not have to meet anyone and any expectations, so you can afford to answer your questions honestly. You may not find them right away, no problem: think about them, come back to your answers later, and modify them. The time you spend exploring yourself and your strengths is the most valuable thing you can give yourself!

- What would be the only thing you would do to improve your health a lot and / or presumably keep it for a long time?
- Why is this activity the most important of your health care activities right now in your current life situation?

- If you step on this one, what else will it affect? (Think of any dimension of your everyday life, your work, your relationships!)
- How often should you do this activity of your choice? (daily, several times a week, daily, etc.)
- If you imagine your activity on a scale, where 0 means you have not done anything about it yet, and 10 means you have already done everything, where are you now?
- How did you get to where you are now? For example, if you are now at 3, how did you achieve that? Think about what factors, actions, and possibly individuals and groups you have gotten here with!
- And what can help you get from your current value (e.g., 3) to the next level (e.g., 4).

How many strengths do you have that have already helped you get here? Do not forget to remember these! (And be proud of them!)

- If it is only 0 on the imagined scale, what has held you back so far from moving forward?
- If you examine these difficulties, arguments, obstacles separately, how would you rate them? Insurmountable obstacles or something else?
- What can you do to move from 0 onwards on the imaginary scale to the desired goal, despite the difficulties and obstacles?
- Has there ever been one in your life where you really wanted something, and although there were obstacles, difficulties, you overcame them and did it? Remembering who/ what helped you with this?

If you have found such strengths (helpers), you may be able to build on them now! What do you think? Count them, write them down!

Wherever you are on the scale, now imagine that you have managed to move forward or start. You may only be able to do a few things, but you are already moving on. Even today, tomorrow, weeks are slowly passing and still...

- What else do you think will happen in your life if you can keep that?
- What will you experience for yourself?

- What will others see in you?
- And what will you think of yourself?

One last scale question. And now how committed are you on a scale of 0 to 10?

Remember: you have a lot of strengths, as do your clients, your patients. We develop these and leave our weaknesses!

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Chapter III.

THE APPROACH TO COMPLEX HEALTH DEVELOPMENT (JÓZSEF VITRAI)

Health is about being able to do what we want under the given the circumstances. After all, it does not matter what we know, what skills and experience we have, if our physical and mental health at the given moment limits the usability of our other abilities. Our health affects how much knowledge we absorb, what jobs and resources we can acquire, and what living conditions we create for ourselves through them. Ultimately, our health affects the career we run in our lives. There is no doubt that health is the key to our prosperity, one of our greatest values.

III.1. The complexity of health

To improve health and reduce health inequalities, we must first clarify what factors affect our health. Perceptions of influencing factors are often summarized in health models.

III.1.1. Development of health models

Even the ancient Greeks were aware that health is affected by the physical environment (Hippocrates), the occupation of a person (Socrates), or the way of life (Plato). Medieval scientists have identified tiny particles, infectious substances, or even bad air that get into the body as the cause of disease. Although bacteria had already been discovered in the 17th century, yet it took two hundred years for Pasteur to show that the bacteria could cause disease. Understanding the diseases that could be traced back to microbes and clarifying the role of DNA led to the biomedical health model. According to this view, when the balance of biological processes in our body is disturbed, a disease occurs. Restoring balance through medical intervention, such as medication, restores health.

This simplistic approach ignored a number of factors already well known at the time. As a justification, we quote Joseph FODOR, also known internationally as the “first apostle of our public health,” : “ *There are many factors that affect a person’s life and health. The most important of these are: 1. nutrition, 2. housing, 3. occupation, 4. body care, 5. infectious diseases, and 6. accidental danger.*” [1] Expanding Plato’s view, based on the observations and research of the modern age, the so-called lifestyle model approach emerged. According to which our health depends fundamentally on what we eat, how much we move, how we sleep, and how much stress we experience, and if we experience any problems with our health, we ask for help. The combination of this and the biomedical model is the so-called causal chain model, according to which we have a detrimental factor in our lifestyle that causes biological changes in our bodies that lead to disease.

The individual-centered health models mentioned above are based on two worldview beliefs, such as individualism and reductionism. According to the previous, the individual is internally defined and the population is equal to the sum of the individuals, the population ratio of the diseases corresponds to the sum of the individual events. The second assumes that the properties of the parts determine the whole, and therefore it is sufficient to examine the parts to understand the whole.

Arguments have been gathering since the 19th century that political conditions such as the quality of democracy and governance or the social security system strongly determine the health of the

population. In response to these factors, at the end of the last century, DAHLGREN AND WHITEHEAD created the notable “onion peel” model, shown in Figure 1. It was designed to identify the levels of interventions to reduce health inequalities [2]. It should be emphasized that displaying social and community relationships also means acknowledging the importance of psychological factors. For this reason, the model can also be interpreted as a bio-psycho-social model.

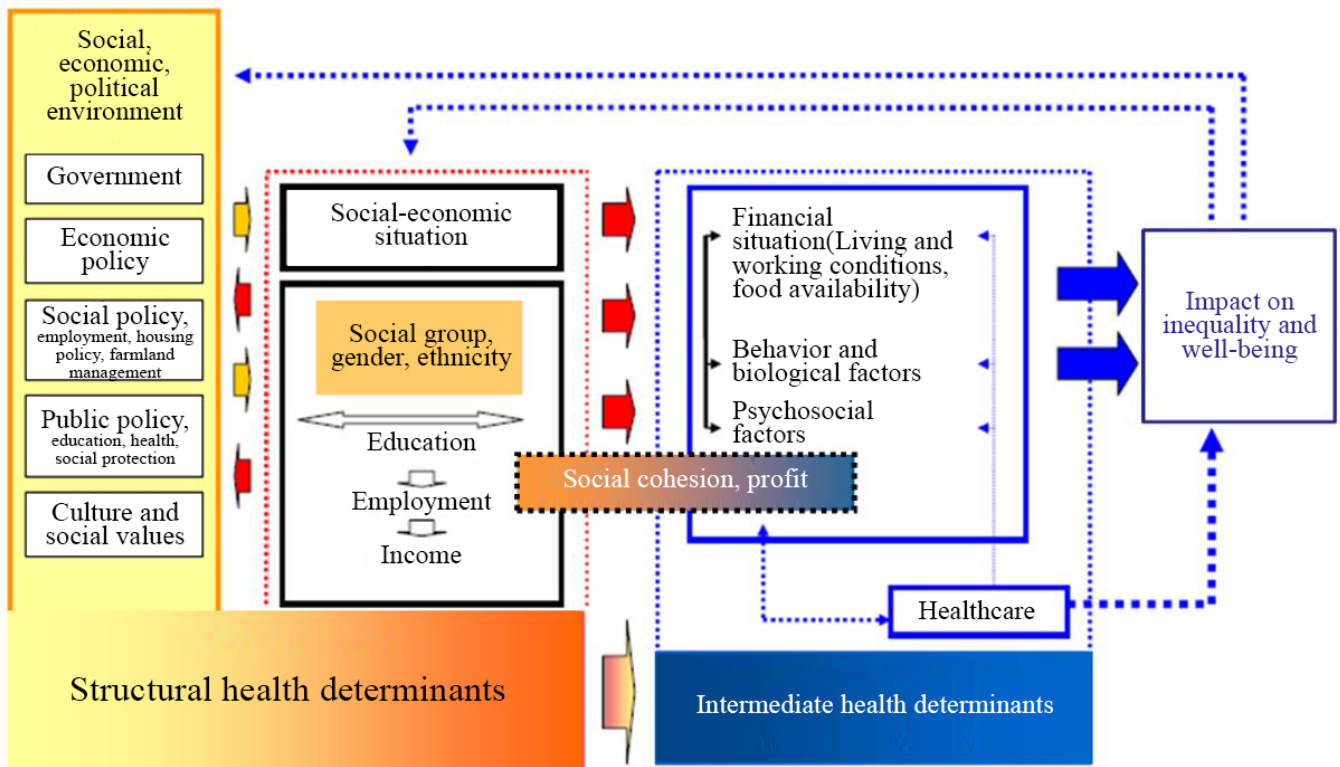
An approach that incorporates both individual and environmental factors was further developed by experts from the World Health Organization in the first decade of the 21st century [3]. In Figure 2 , the number and thickness of the arrows representing the effects indicate that, according to experts, health is largely determined by socio-economic factors.

Krieger on the causes of inequalities in the health of different social groups drew attention to four

characteristics of influencing factors [4]. The first is that environmental influences are about to be incorporated into individuals, that is, they become biological properties. An example of this is that the offspring of a starving generation due to economic crises digest food differently. Second, she explained that influencing factors have varying degrees of impact at multiple societal levels as well as over time and space. Her third argument is that the interactions between individuals ’exposure to environmental impacts and their resilience to inherited diseases accumulate over individual and historical time. More simply, people living in disadvantaged conditions tend to be in poorer health. In the longer term, apart from the consequences of adaptation, this will be inherited. Fourth, and this is perhaps the most unusual finding: science is socially defined. In other words, what we know about the definition of health today is determined by the current (and past) socio-political conditions. For example, what, how they research, and how the results are explained are influenced “through”



III. Figure 1: Onion peel model of the main determinants of health
Source : own editing [2]



III. Figure 2: Model summarizing the effects of social determinants of health

Source: own editing [3]

the values and expectations of the given society. A good example of this is previous studies on the characteristics of human “species” (such as eugenics, the development of “species” or Nazi species theory) and current scientific research on races (e.g. research on Roma-specific biological differences). CSIZMADIA summarized Krieger’s ecosocial theory in Hungarian [5].

III.1.2 Complex health model

Among the previous and other models not detailed here, Bircher’s health model based on a systems approach, created in 2005, stands out, which is described in more detail in Hungarian by Csizmadia [6]. According to the model, health is a product of a complex system that includes the individual, not a property of the individual. To understand the health model, it is absolutely necessary to have a systems science approach, to know the peculiarities of complex systems. Complex systems are a collection of many interconnected, multi-level elements that have new properties that cannot be de-

duced from the properties of each component. ¹All living things can be considered a complex system of biochemical processes and, as such, “create” life as a new property. The communities of living things (formicary, swarm, flock, etc.) can be considered as a complex system, too.

The most important feature of complex systems is that modifying an external effect or the operation of an element can often cause unpredictable changes throughout the system. A class of *complex adaptive systems* can adapt to changes in the external environment — that’s what evolving life does. The uptake of systems science knowledge and methods is progressing slowly in most disciplines, yet the approach has emerged in public health for quite a few years and some of its tools are being applied [7].

Let us assume that the amount of own resources available to meet the needs and requirements es-

¹ Considering a cell as a complex system, it can be seen that life, the new property of the cell as a complex system, its “product”, cannot be connected to the individual constituents, it cannot be interpreted without the cell.

essential to an individual’s life is, on the one hand, the amount of the inherited and, on the other hand, the amount acquired during the career up to that point. The balance of resources needed to meet the needs and demands of a given time determines where the state of health is between perfect (100%) and death (0%), as shown in Figure 3.

If one’s own resources are not sufficient to meet the needs and demands, we can speak of deteriorating health and illness (areas marked in red in the figure.) Both the needs and demands interact with the individual’s environment, together with the complex system outlined in FIG 4 . Therefore, it is important to emphasize that health is to be interpreted in the interaction of the individual with the environment, in other words, a change in health can only be hoped for by an intervention affecting the individual and the environment, i.e. the whole system.

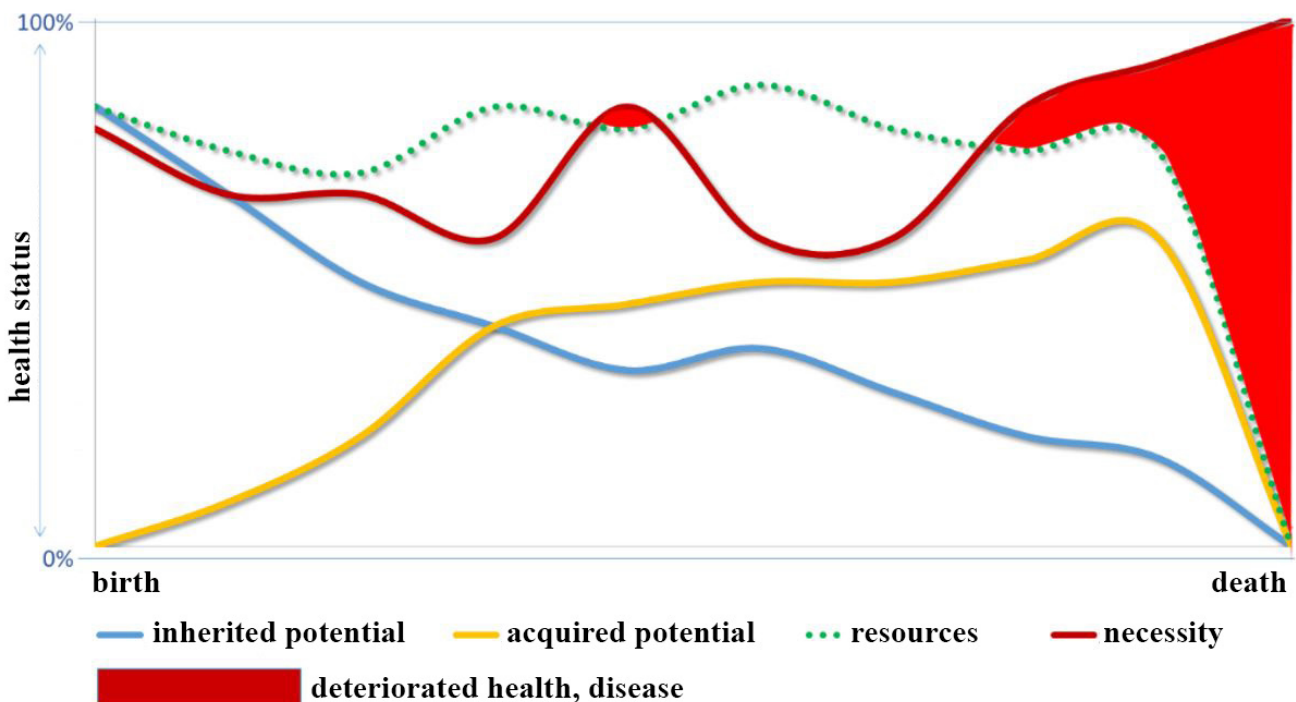
III.2. Social embeddedness of health

The determinant role of social factors is re-emerging in health theories. This is not surprising, since human is not only a biological being but also a social actor. The social embeddedness and definition of health can be better understood on the basis of the following.

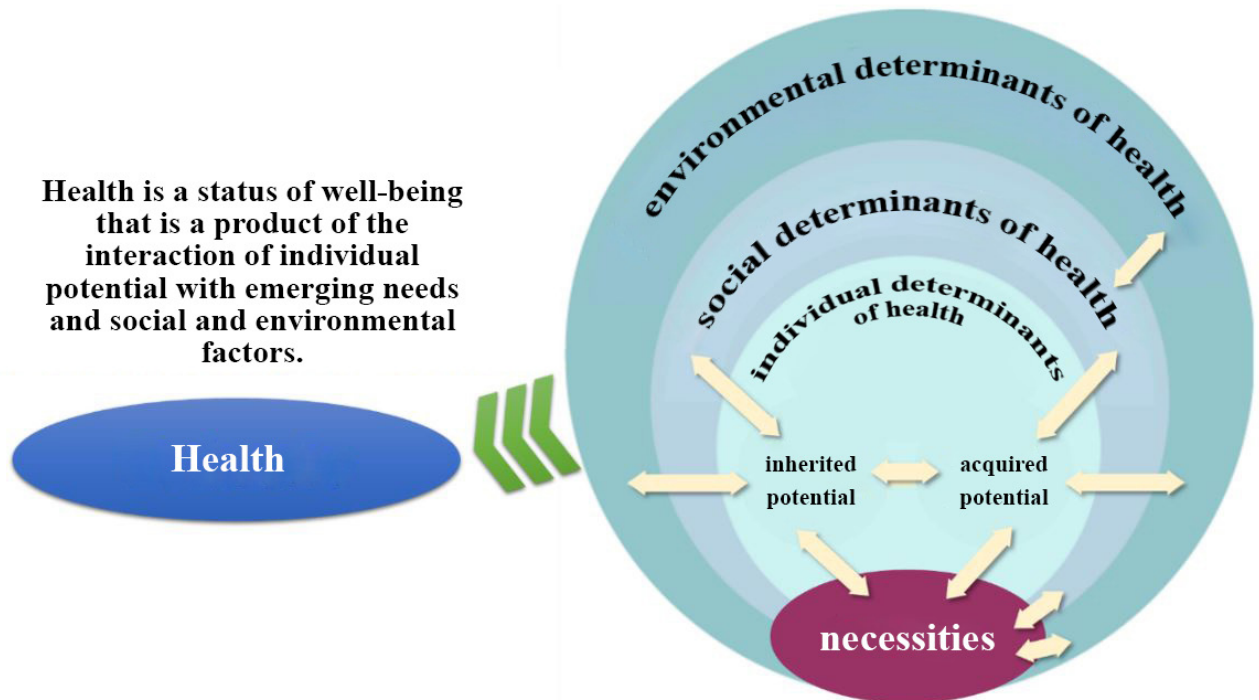
II.2.1 Culture of Health

Many people tend to identify culture with classical music, fiction, or the fine arts. However, according to the definition of the United Nations Scientific and Cultural Organization (UNESCO), culture is much more than that: “the different intellectual, material, intellectual and emotional characteristics of society or a group of society, which, in addition to art and literature, includes lifestyles, ways of living together, values, traditions and beliefs.” Culture in an extended sense actually encompasses everything that man himself has created, and this is most vividly illustrated by the Rocher’s Iceberg model in Figure 5 [9].

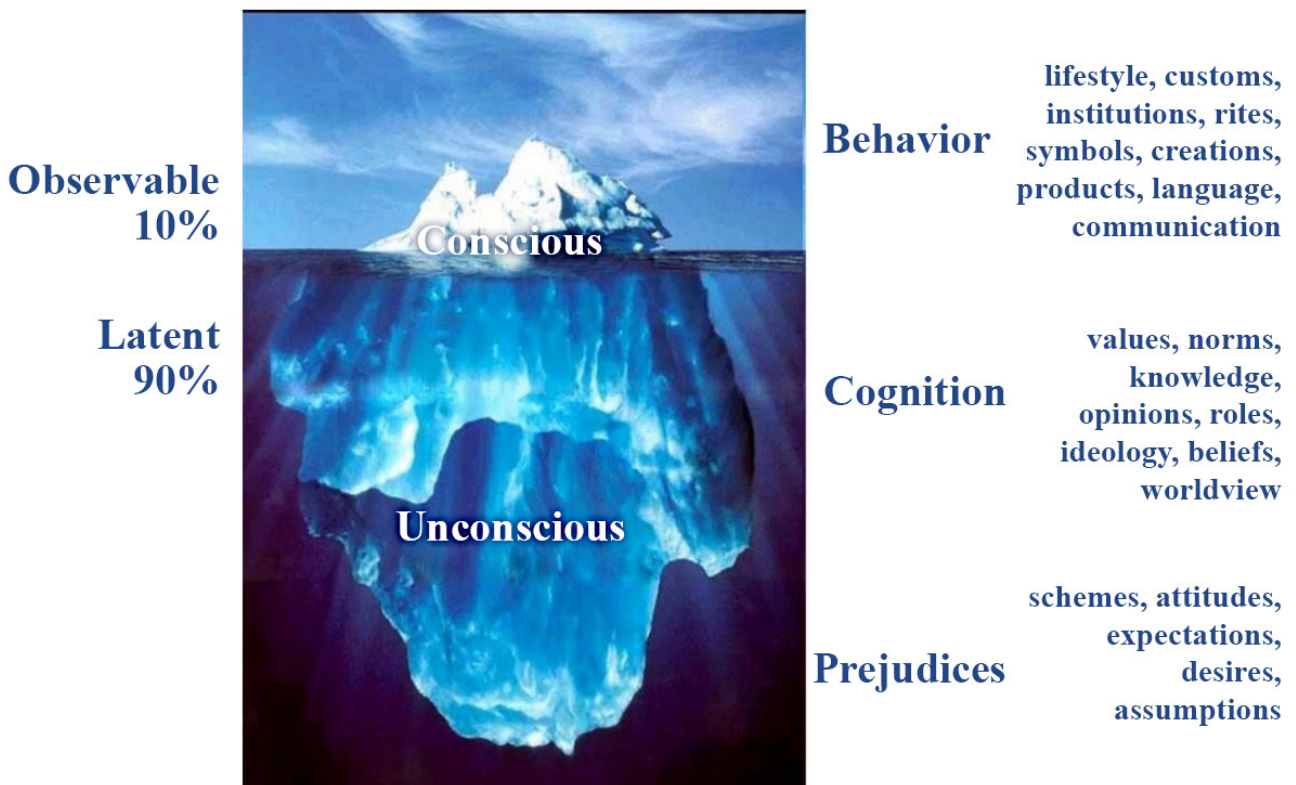
It includes the physical world around us, such as the settlement structure that determines local transportation, which affects how much we walk, but includes newspapers, goods, sculptures, and other works of art, that is, virtually all “above water” created by human activity , that is, an observable „thing.” Another great area of culture is the level of “hidden things,” which includes, for example , the written and unwritten rules, values, customs, traditions, myths, and expectations of the behavior of individuals in a given communityAs we grow up, we incorporate these into our personalities, as



III. Figure 3: Change in health status from birth to death in Bircher ‘s health model
Source: own editing [8]



III. Figure 4.: Health as a “product” of a complex system
Source: own editing [8]



III. Figure 5: Iceberg model of culture
Source: own editing [9]

well as our preconceptions, tastes or assumptions about the world, to shape our lifestyles and thus our health, so that we can meet the challenges of our lives as successfully as possible.”

In summary, the components of culture determine our self-image, our worldview, the framework in which we make our decisions, the actions we take to act in our family, our communities, our workplace, our social environment. Based on this, it is obvious that we bring our actions only partly out of our free will, since on the one hand our will depends on our socialization, and on the other hand we are forced to take into account the possibilities of the circumstances. This is why interventions aimed only at individual responsibility and behavior are doomed to failure [10].

The part of culture that deals with health and the factors that affect it is often called culture of health. An example is the role of food and meals in culture. In 2014, the Mediterranean diet was included in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity. According to Barbara Nagy [11], the list (in a complex way) characterizes diet as skills, knowledge, and traditions that include crops, harvesting, fishing, animal husbandry, processing, cooking, and especially sharing and consuming food as a whole. The Mediterranean diet is also characterized by hospitality, the importance of neighborhood, intercultural dialogue and creativity, and respect for diversity, which makes it clear that eating is never just about nutrition. The World Health Organization’s Regional Office for Europe [12] illustrates the extent to which the social embeddedness of diseases relative to medical activity has an impact on the care of diabetics, as shown in Figure 6 .

Recognition of the key role of socio-economic factors in the treatment of diseases has prompted a group of upstream doctors² to extend their activities beyond traditional medicine [13]. It has been proved that the development and persistence of the treated disease is partly caused by the socio-economic

factors that determine the patient’s living conditions.

III.2.2 Health inequalities

Social inequalities are traced back by many to the spread of agriculture about 10,000 years ago, when private property appeared against the community. The formation of the power relations ensuring the protection and enrichment of private property and the culture supporting it resulted in the formation and perpetuation of inequalities between social groups.

As we have seen above, the health of individuals and communities, in addition to the natural environment, is strongly influenced by the man-made, artificial environment, the culture as broadly understood. Differences in the health of different social groups are denoted by several terms: *inequalities* , *disparities* , *inequities* , *injustices* . Health inequalities are the differences in health caused by factors that can be modified to the best of our knowledge.

Education is a social dimension often used to illustrate health inequalities. For example, Hungarian men with tertiary education could expect to live more than 11 years longer in 2017 than those who did not complete 8 grades of primary school³ [14]. According to the European Health Interview Survey 2019⁴, the data presented in Figure 7 also convincingly illustrate the inequalities in the health of social groups.

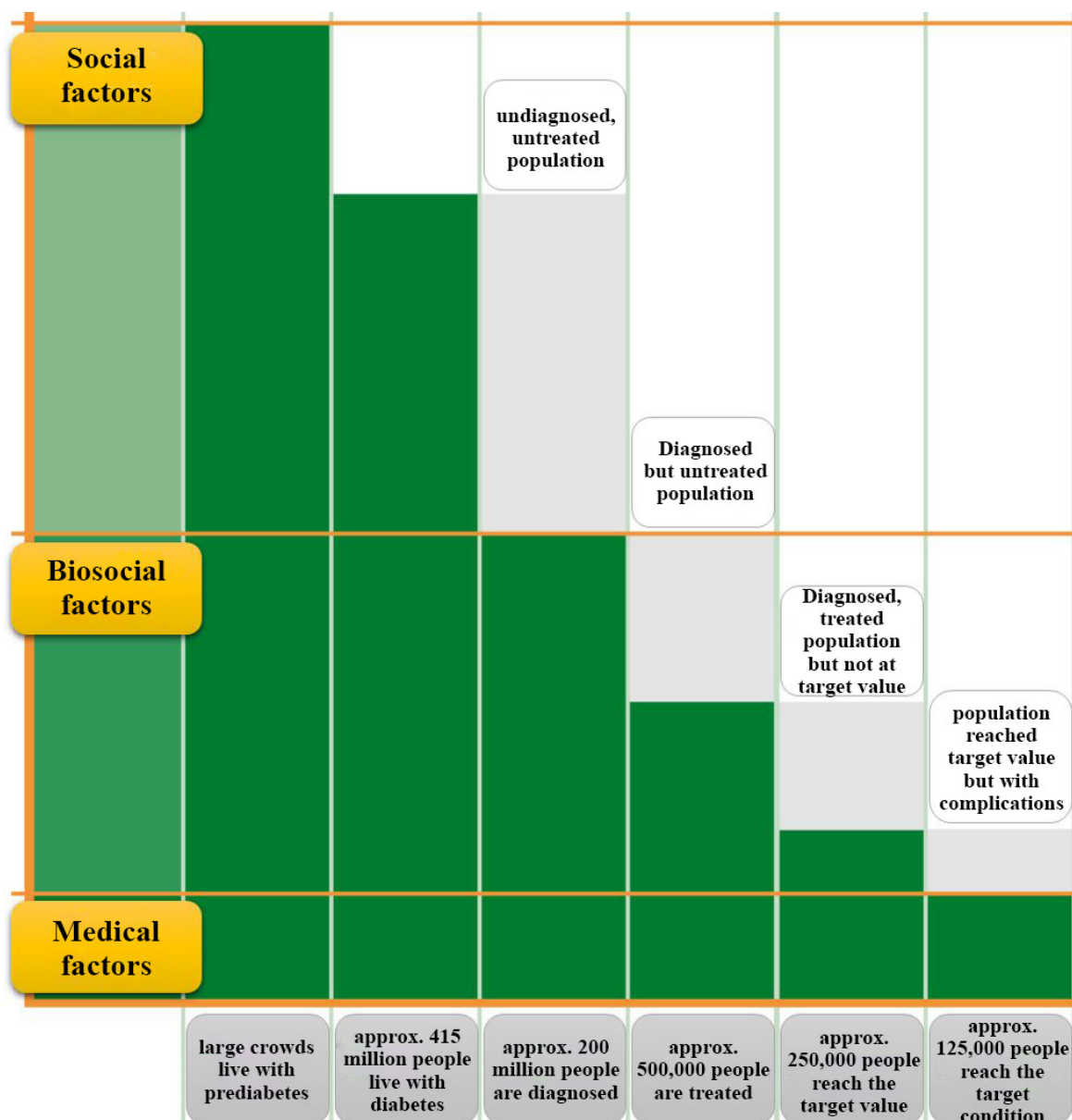
The figure shows that the proportion of those who consider their health to be very good or good and those without restrictions in their daily activities is increasing in parallel with their education. Severe disability due to a health problem shows a 7-fold difference between the lowest and the highest educated persons!

The development of health inequalities is ex-

² https://www.ted.com/talks/rishi_manchanda_what_makes_us_get_sick_look_upstream

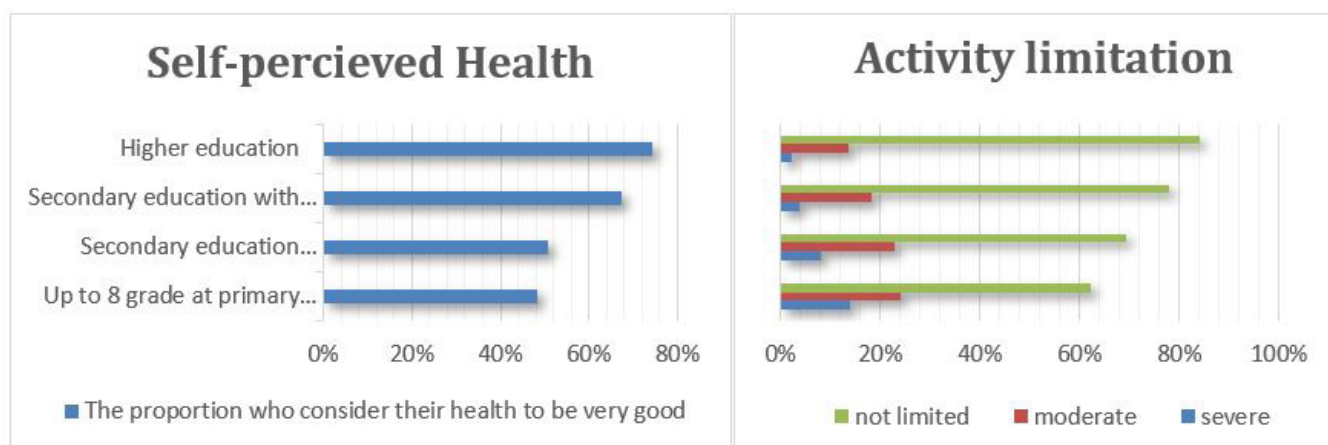
³ https://ec.europa.eu/eurostat/databrowser/view/demo_mlexpededu/default/table?lang=en

⁴ https://www.ksh.hu/docs/eng/xftp/idoszaki/elef/te_2019/index.html



III. Figure 6: “Halving rule” in the treatment of diabetes

Source: own editing [12]



III. Figure 7: Health inequalities in Hungary in 2019

Source: own editing [15]

plained by the different effects of factors influencing health on social groups. Since these factors, as we have seen in the health models, are complex determinants, identifying the causes of inequalities for a particular group is a complex task and tackling them is a major challenge. Yet if we read the 10 good pieces of advice given by the British Chief Medical Officer [16] to maintain good health, the task seems simple:

However, if we read the advice of [17], we can see that reducing inequalities is not an easy task: The following example illustrates the difficulty of reducing inequalities. A comprehensive screening study

Advices

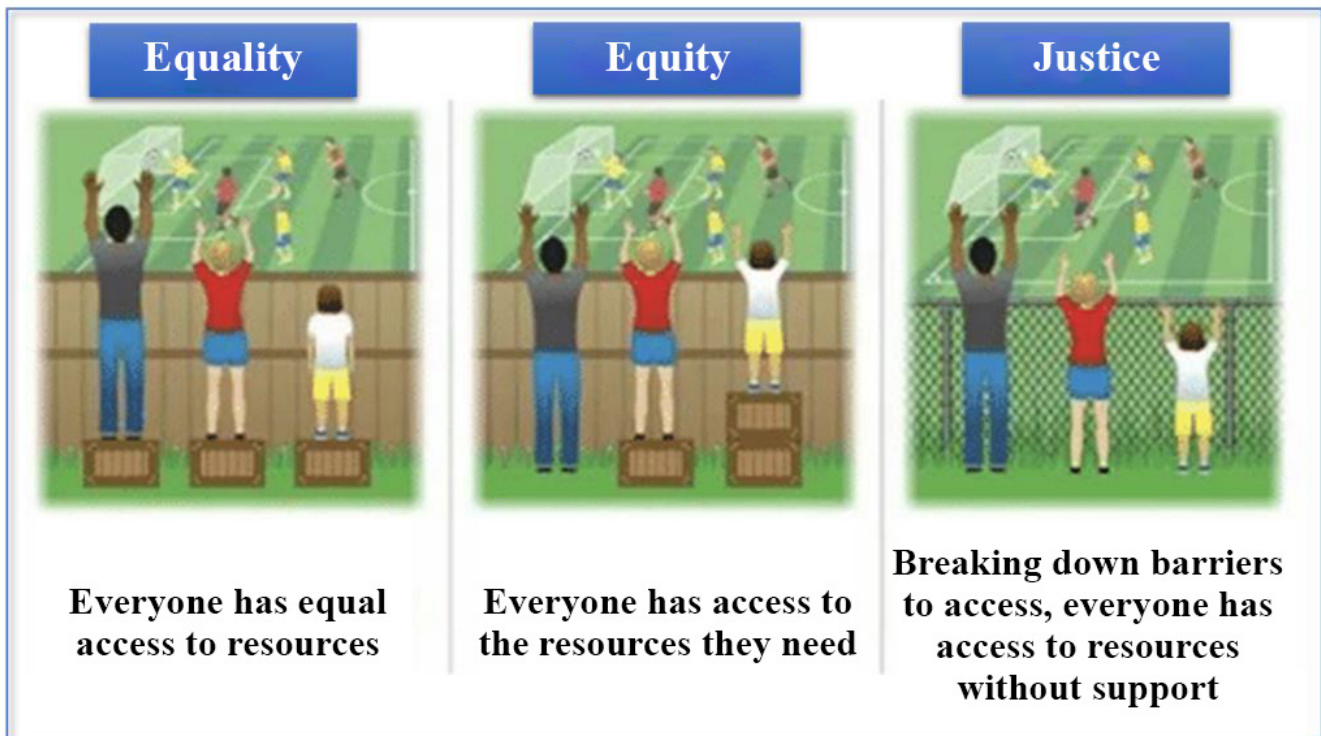
1. Don't smoke. If you can, stop. If you can't, cut down.
2. Follow a balanced diet with plenty of fruit and vegetables.
3. Keep physically active.
4. Manage stress by, for example, talking things through and making time to relax.
5. If you drink alcohol, do so in moderation.
6. Cover up in the sun, and protect children from sunburn.
7. Practice safer sex.
8. Take up cancer screening opportunities.
9. Be safe on the roads: follow the Highway Code.
10. Learn the First Aid ABC : airways, breathing, circulation.”

1. Don't be poor. If you can, stop. If you can't, try not to be poor for long.
2. Live near good supermarkets and affordable fresh produce stores.
3. Live in a safe leafy neighborhood with parks and green space nearby.
4. Work in a rewarding and respected job with good compensation, benefits and control over your work.
5. If you work, don't lose your job or get laid off.
6. Take family vacations and all the benefits you are entitled to.

7. Make sure you have wealthy parents.
8. Don't live in damp, low-quality housing, next to a busy road or near a polluting factory.
9. Be sure to own a car if you have to rely on neglected public transportation.

in a small border settlement shows a high incidence of hypertension and diabetes with a frequency well above the national average. Experts who have thoroughly analyzed the situation conclude that smoking and alcohol consumption, as well as lack of exercise, are the main causes of illness. After a thorough analysis of the situation, experts conclude that smoking and alcohol consumption, linked to the stress of unemployment, and physical inactivity are the main causes of the diseases. Unemployment is the result of the geographical location of the municipality, the low level of education of the population and the inertia caused by a lack of prospects. The causes can be further explored, the effects of various factors can be dispersed, but it can be seen from the above that a number of interrelated socio-economic characteristics play a role in the development of diseases. If they want to improve the health of the residents, it is obviously not enough to prescribe medication, because in addition to not being triggered due to lack of money, the causes of the disease will continue to work.

It is often found that due to the causes of causes given in the example, or the fundamental social causes (“money, knowledge, prestige, and beneficial social relationships” by Link and Phelan [18]) many interventions to reduce inequality — most often improving access to health-promoting products or services can even have the opposite effect. CSIZMADIA summarizes the findings of Link and Phelan as follows: “... an intervention to reduce health inequalities that presupposes the activity and / or compliance of disadvantaged groups - which in fact requires adequate skills, motivation and a supportive environment - remains ineffective, or it may even lead to an increase in inequalities instead of the expected health gains. ... In contrast, interventions that are affordable and easy to use in practice, relying primarily on regulation and



III. Figure 8: Inequalities in access to social resources

Source: own editing [20]

not directly influencing an individual's health behavior, will make it possible to reduce inequalities." [19]. Thus, the fastening of the seat belt requires, the iodination of table salt does not require activity to achieve health gains, so the former can increase while the latter reduces inequality.

Improving access to a variety of products, services and resources is a common means of reducing inequalities. But, as Figure 8 shows, depending on the implementation, whether it achieves its purpose and proves to be effective compared to the expenditure.

III.3. Behavior change

Our behavior determines our health in two ways: on the one hand, our behavior exposes us to the harmful (eg tobacco smoke) or supportive (eg friendly conversation) effects of the environment, and on the other hand, our behavior can modify our harmful (eg environmental protection) or helping (eg NGO formation) effects of the environment. Behavior change is therefore essential for health promotion intervention.

III.3.1 Theories of behavioral psychology, COMB model

Since the emergence of societies, they have been consciously seeking to change human behavior for both economic and political reasons. It is not surprising, then, that hundreds of theories on this have emerged over time [21]. Urban summarized the main explanatory models of health behavior, such as health beliefs, defense motivation, the theory of planned action, or the transtheoretic model of behavior change in Hungarian [22]. A group of renowned experts in theoretical and applied psychology undertook to review and summarize the many, mostly linear models in the early 2000s. Based on the results of their work, the COM-B model of the behavioral system was born, and the "wheel of behavior change" model of the interventions that have been proven to change behavior. [23]. According to the COM-B model, Capability, Opportunity, and Motivation together influence Behavior in such a way that it has an effect on the influencing factors on the one hand and they also interact. According to the COM-B model based on professional consensus, which summarizes 19 psychological theories, in order to do something,

we need at the same time the knowledge and skills necessary to implement it, enough motivation to carry out the action and the conditions to carry it out, i.e. to both the physical and social environment that supports our behavior [24].

For example, in order to follow a healthy diet, we need to know the principles of healthy eating, be able to prepare healthy food (skills), want to eat healthy (motivation), and have access to the necessary food, cooking facilities and a family-friendly environment that supports our determination (environment).

The “wheel of behavior change” model can be studied in Figure 9. where the two outer rings of which contain proven effective interventions and policies that can be used to change behavior. Again, some interventions and policies focus on the environment that influences behavior — outside the individual —!

III.3.2 Behavioral understanding: “nudging” and “insight”

“Nudging,” that is a magic word, a gentle urge to influence behavioral economics, political theory, and the behavioral sciences to influence behavior and decision-making with positive affirmation and implicit references. For example, if you are presented with a choice in an online store, the *default* option is usually in the best interests of the store. This encourages us to choose the one that suits them instead. At the same time, it is in the public interest that the English regulations on organ donation, which, in the absence of a prior denial of the donation, consider the use of the deceased’s organ to be consent. In 2013, the *Behavioral Insight Team of Behavioral Psychologists*⁵, which supported the English government, experimentally demonstrated that a statement about organ donation should be about refusal and not about authorization [25]. The group made a number of other recommendations for behavioral health risks, which were summarized in Hungarian [26].

Several options have been tested for the use of behavioral psychology in interventions to promote

healthy eating and reduce obesity. An example is the modification of the food selection at checkouts, which offers health-promoting products (ready-to-eat, canned fresh fruits) instead of risky products (e.g. sweets, salted crackers) [27]. An example of this is health promotion for children, which often uses game-based knowledge enhancement and motivation, for example through points-based rewards or competition.⁶

III.4. Complex interventions

The communities of living beings, such as human groups and societies, are also complex systems: the development and behavior of the individuals living in them are determined by others and the habitat environment.

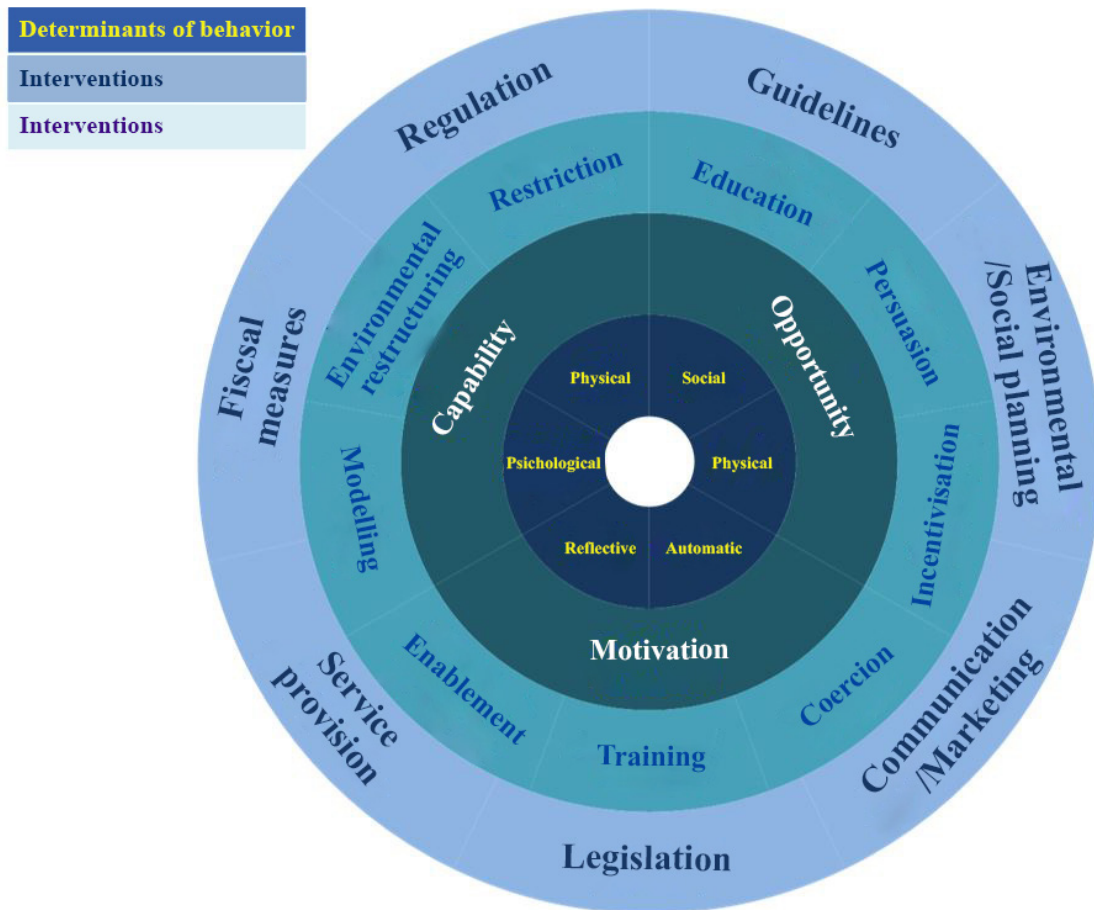
III.4.1 Complex social problems

RITTEL AND WEBBER [29] formulated nearly 50 years ago why it is devilishly difficult to solve community problems. The topic of *wicked problems* has again come into focus in recent years due to social problems such as inequalities that persist or have worsened despite efforts to address them. The reasons for the failures are easy to understand if we briefly review the thoughts of the two scholars illustrated in Figure 10 and summarized in the box below in 10 points.

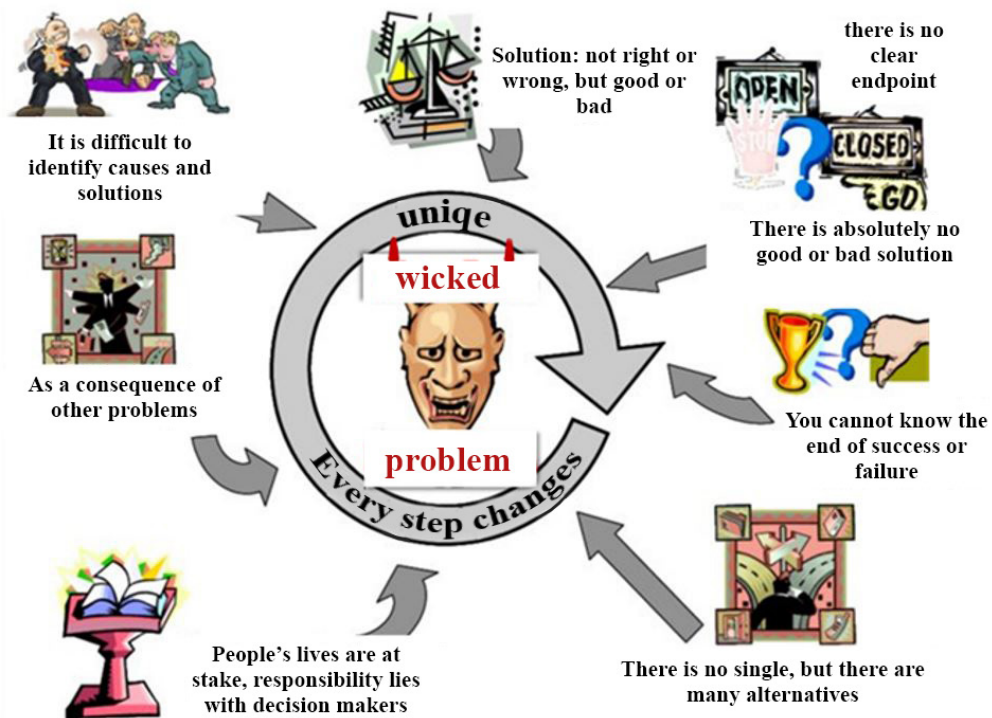
- I. It is difficult to define the wicked problem. Social problems — as opposed to tamed problems — are intertwined, interacting many times over, so causes and solutions are inseparable. The higher rates of obesity among the disadvantaged are not only due to the unaffordability of fresh fruit and vegetables, but also, for example, they are not sold nearby (there is no demand for them) or their eating habits (tradition of consuming energy-rich foods) do not make them desirable. To understand the problem and, of course, to choose a solution that promises results, therefore, a systems approach is essential.
- II. There is no definitive solution to the wicked problem. Because the problems of com-

⁵ Free Hungarian translation: Behavioral Group; <https://www.bi.team/>

⁶ <http://www.okosdoboz.hu/hu-hu/Exercises/Index?-classes=1,2,3,4&topic=830>



III. Figure 9: The “wheel of behavior change” model
Source: [24]



III. Figure 10: Characteristics of the wicked problems of societies
Source: own editing [30]

munities are related to many others, it is not possible to solve all of them at once, finding a final solution for all of them at the same time. Targeted obesity, for example, can be gradually reduced through interventions on income, education, food trade and production, and we are learning more and more about the causes that interact with each other. But there is no point where we can no longer expand our knowledge, when we can say we already know all about obesity

- III. The solution is not objectively right or wrong, but is good or bad according to those involved. As a result of the nature of social problems, there is not a single scientific aspect that can be used to state whether a solution is clearly right or wrong. Depending on their own values and needs, some groups in the community may say that the proposed solution is good, while other groups with different interests may find the same solution bad. Restricting the marketing of high-sugar soft drinks is detrimental to traders, but just as beneficial to the overweight population.
- IV. The wicked problems never go away. They just transform. This is because the attempts to solve them create new ones. Taxation of high-sugar soft drinks, for example, has led to an increase in the consumption of “zero sugar” or “light” beverages, in which sweeteners pose an unknown health risk today. The situation is similar with e-cigarettes, which replace traditional smoking.
- V. There is no trial option. Whatever we do to solve the problem, it goes “sharp”, it can even improve or worsen the situation. In fact, it changes! For example, a nutrition survey can expand knowledge: it can draw the respondent’s attention to previously unknown new concepts such as high-fiber bread or saturated fatty acids. And newly acquired knowledge can cause a change in consumption patterns. For example, an American anti-drug campaign among young people had an unexpected negative impact because trying became more common afterwards
- VI. There is no complete list of tools for solving

wicked problems. Based on our knowledge expanding with the evaluation of the experience gained, the list of available solutions is constantly expanding. Today, good practice is found to be less effective, such as one-to-one counseling, while an intervention that still seems extreme today, such as the indication of energy content in the menus in addition to food, will be disseminated later..

- VII. Each wicked problem is unique. Local characteristics make both problems and solutions unique, so there are no pre-fabricated, ubiquitous solutions. There are many tried and tested tools to increase the consumption of health-promoting foods, such as food stamps, tax breaks, prescribed supplies, community gardens, kitchen kitchens, etc., but what combination can be effective in a given municipality must be decided there, taking into account local specificities. It is possible that cooking competitions could be the trigger to change things there.
- VIII. Each diabolical problem is a symptom of another. Since the causes of a given problem are themselves diabolical problems, one solution does not solve the other. It can also be said that the problem to be solved is a cause, a symptom of the underlying cause. For example, consuming few fresh vegetables and fruits in a disadvantaged settlement is a symptom of poverty, ignorance, supply, and so on. If poverty is targeted, it is a symptom of illiteracy, lack of jobs, and so on.
- IX. There are several explanations and solutions to a wicked problem. Each of the stakeholders interprets the problem based on their own knowledge and experience and sees a solution accordingly. Because there is no easy-to-adopt solution (see statements VI and VII) and there is no opportunity to try (V), only several evaluations and solutions remain. Easy access to foods that pose a health risk is seen by some as the most important issue to address, and therefore the “thinning out” of fast food restaurants around schools. Others blame traditional eating habits, so they see improving school meals as a way to curb

obesity. The selection of interventions that lead to results can be led by a joint decision of the stakeholders through consultations.

- X. The expert has no right to be mistaken. Everyone involved in solving community problems needs to be aware that whatever solution they support affects the lives of members of the community. The views of the expert supporting the solution to the problem are as “valid” as those of the lay people (III.), especially if the expert advising is not a member of the community. Sharing responsibilities also makes participation essential in solving community problems.

Complex health problems such as solving obesity requires a complex approach that takes into account the interrelationships of the influencing factors: this is the only reason why interventions targeted the individual alone prove to be unsuccessful.

III.4.2 Partnership, participation

Due to the complexity of communities, each individual in a community plays a role in influencing the behavior of others to varying degrees. When analyzing the community relations and effects, it should be remembered that 90% of the iceberg of the culture is “under water”, i.e. it is difficult or impossible to observe. In addition to the system of relations between the members, the network of connections influencing the behavior of the community, it should be taken into account that the members of the communities judge the problems and the possibilities of implementation differently, as Figure 11 also illustrates. Different aspects are influenced by individual knowledge, experience, skills, interests, willingness to act, and resources willing to sacrifice for a common goal.

Community decisions based on a variety of approaches to problems and solutions can ensure that the majority agrees with them and partici-



III. Figure 11: From the same object, but from different point of view, different conclusions can be drawn
Source: own editing [31]

pates in their implementation. Such stakeholder⁷-based decisions, in addition to being more likely to succeed, increase community trust, coherence, a sense of belonging, enrich the community's social capital through community value creation. Due to the large number of people involved in a problem, they are often represented by a *coalition of partners*⁸ [32].

III.4.3 Complex health promotion programs

The literature treats the fact that health promotion programs that address one or a few factors cannot achieve lasting results [33,34]. It is less well known that more complex, multi-attack interventions are not always successful. Following the model of the French EPODE program launched in 2004,⁹ [35] support for the South Australian version of the Hungarian COME - Child Health Program [36] was discontinued¹⁰ [37] by the government because the program did not reduce obesity in lower grade school children [38]. It can be assumed that it was difficult to mobilize all stakeholders and involve them in joint action.

Complex, *whole-of-community* or *whole systems* health promotion programs based on partnership and participation is the so called, “Shape Up Somerville!” (SUS) [39]. The reason for the initiative was revealed that in Somerville, near Boston, 46% of 1st and 3rd graders were overweight or at risk (2003)¹¹ [40]. Recognizing that children are limited in changing food and physical activity opportunities, researchers at Tufts University have partnered with the municipality to launch a community-level, intersectoral initiative. The implemented intersectoral program is described in Figure 12. Already in the first two years, SUS resulted in a statistically significant decrease in the body mass index of elementary school students. The sustainability of the intervention is ensured by

⁷ We consider anyone to be affected by the problem or benefiting from it, or who is or may be involved in solving the problem. Taking smoking as an example, the family members, friends and employees of the smoker who “enjoy” the smoke are involved, as well as the legislator, the public health professional, but also the companies that produce and distribute tobacco products.

⁸ <https://www.euro.who.int/en/health-topics/Health-systems/public-health-services/coalition-of-partners>

⁹ <https://mdosz.hu/gyere-program-diosgyor/>

¹⁰ <https://indaily.com.au/news/local/2016/12/21/sas-35m-childhood-anti-obesity-program-to-be-abandoned/>

¹¹ <https://www.somervillema.gov/departments/health-and-human-services/shape-somerville>

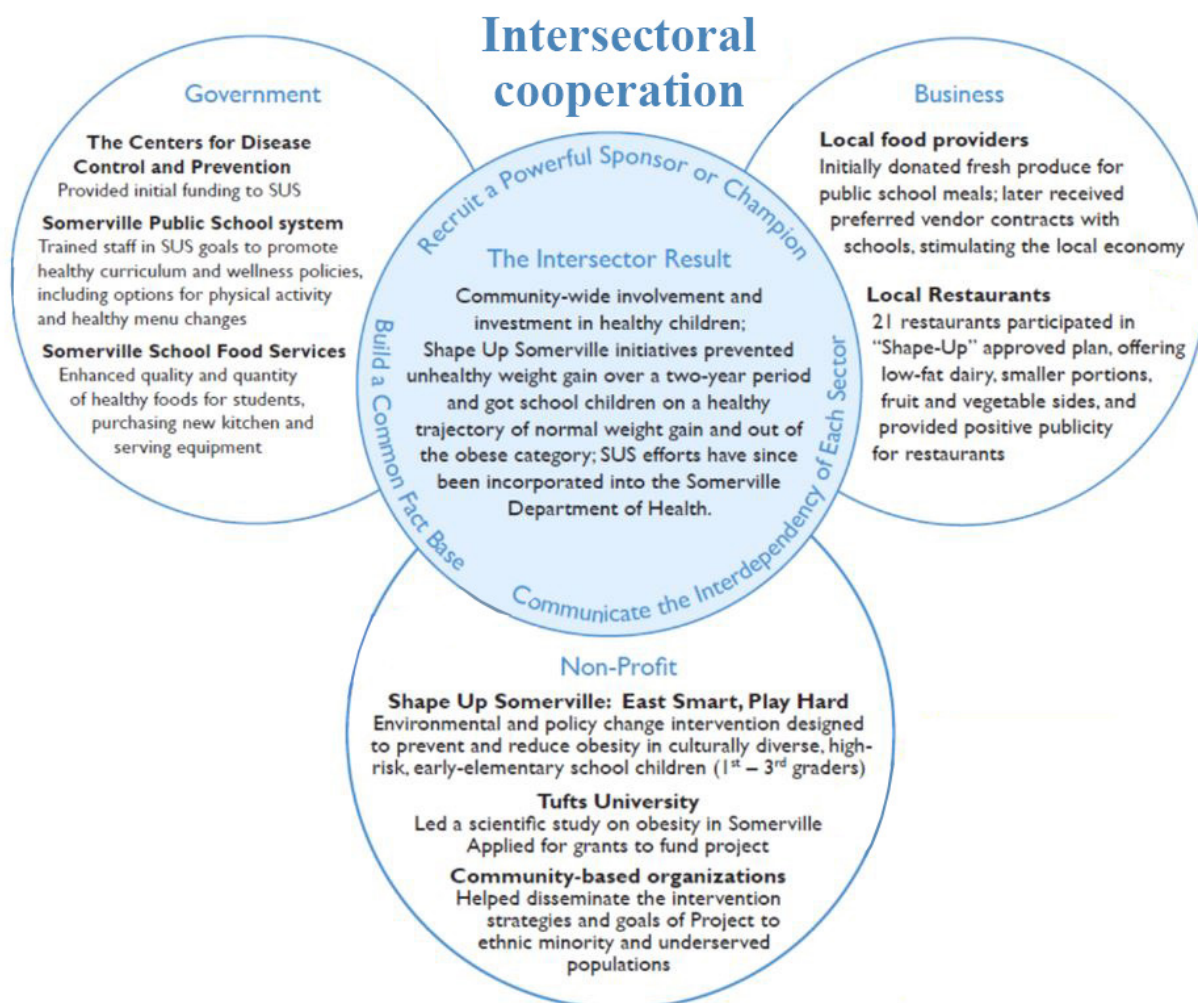
the fact that SUS became a Somerville Municipality program by 2012 and has continued ever since [41].

“People think being overweight is an abnormal individual reaction to a normal environment. This is not true at all! This is a normal reaction to an abnormal environment.” said. Seidell, a professor at the Free University of Amsterdam, is cited by Kaposvári [42]. Launched in 2013, the Amsterdam Healthy Weight Program, like SUS, is a city government program to reduce childhood obesity [43]. The interventions listed in the text box in the program have been launched, and between 2012 and 2015, the proportion of overweight or obese children fell from 21% to 18.5%, although the latest data show that by 2019 it has not changed¹² [44].

III.4.4 Community health planning and implementation

As a result of the above, only a health promotion intervention that involves all stakeholders in the planning and implementation process can achieve lasting success. The process of community health planning can provide a suitable framework for the implementation of a wide range of activities to improve the health of the community (behavior change, creating an environment conducive to a healthy lifestyle), reconciling the interests of different actors and thus involving as many community resources as possible [45]. Community planning and action supported by experts provide stakeholders with the opportunity to identify problems affecting their health, identify the causes, select appropriate solutions, and acquire the knowledge and skills needed to implement them and evaluate their activities [46]. Consistent application of the principle of participation ensures that different life situations, interests and experiences in the community do not compete with each other, but that their diversity is an advantage.

¹² <https://www.amsterdam.nl/sociaaldomein/blijven-wij-gezond/amsterdam-healthy/>



III. Figure12: “Shape Up Somerville!” sectoral participants in the program

Source: own editing [39]

Prevention

- screening for infant obesity
- counseling for mothers planning a child
- counseling for pregnant mothers on healthy eating
- breastfeeding support
- additional support for teenage and disadvantaged mothers
- creating a healthy school environment
- increase the safety of cycle paths
- ensuring that children are busy after school
- support for sports club membership fees for low-income families
- Appointment of a Community Health Ambassador
- cooperation with supermarkets and food service providers: change menus, reduce portions; improving the adequate supply of food;

creating a healthier selection of shelves near the checkout; placing traffic lights on food

- Prohibition of sponsorship of unhealthy food and drink at sporting events
- Prohibition of advertising of unhealthy food and beverages on municipal properties

Health care

- appointment of nurses
- planning care procedures
- providing care for overweight and obese children
- communication to better understand behavior

Support activities

- a fact-based approach
- monitoring of interventions ,use of novel

digital devices

- use of innovative digital devices
- introduction of digital health cash
- examining factors and interventions that influence healthy sleep

The planning, action and evaluation cycle begins with identifying community health issues and assessing the needs and requirements of those involved. Based on the needs and requirements, the community identifies and then ranks the issues to be addressed. Taking into account local possibilities, keeping in mind the criteria of feasibility, efficiency and effectiveness, the community decides what interventions it wants to implement. The community evaluates the implementation process and effectiveness from time to time and modifies the planned activities as needed based on experience. Community planning and action, supported by experts and modified based on the evaluation of experience gained during implementation, is in fact a participatory action research ¹³[47,48].

III.5. Evaluation of health promotion programs

Most of the effective health promotion interventions reported in the literature do not prove successful later, repeated elsewhere. Was not only the methodological description detailed enough in the original publications? Did they slip over important but seemingly insignificant details? What factors determine whether an intervention will be successful? What aspects need to be taken into account in order to be able to implement an intervention that has been used successfully elsewhere in the past?

When evaluating health promotion programs, it is important to emphasize that while they are clearly well-intentioned, they may not be effective, meaning that they may be a waste of scarce resources and may even cause harm. A good example of the latter is communication campaigns to prevent drug use: “*A joint analysis of the research shows*

¹³ Participatory action research aims to promote social change that increases local democracy and reduces inequalities; takes into account local specificities, often targeting the needs of a particular group; a repetitive cycle of research, action and evaluation; and often seeks to “liberate” participants so that they are more aware of their situation so that they can take action.

<https://www.participatorymethods.org/glossary/participatory-action>

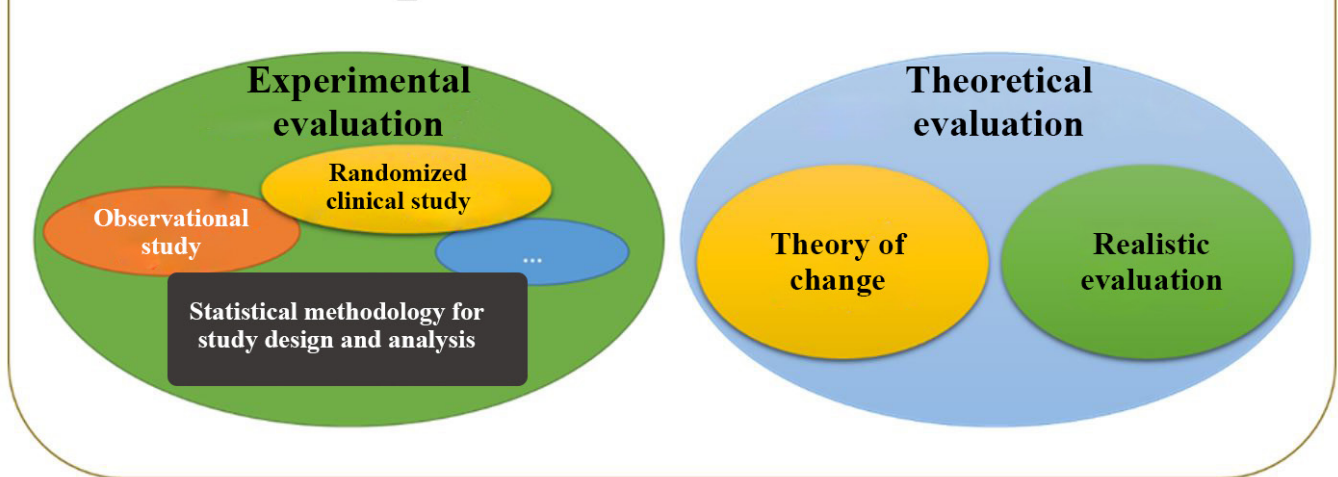
that media campaigns have not had an impact on reducing use and have had a weak impact on the use of illicit substances. Concerns about possible side effects are a cause for concern, as experience has shown that young people are more willing to try drugs after media campaigns.” [49]. Involving professionals to reduce risks is essential in both the design and implementation of health promotion programs.

Careful evaluation is needed in many ways to assess the effectiveness and applicability of health promotion programs. In addition to analyzing the impact of an intervention, evaluators should examine the implementation process, the resources used, the participants in the implementation in addition to the target group, and the possible external conditions and reasons for the changes in order to classify a health promotion activity as effective and recommended as good practice. Implementation science dealing with the implementation of programs and interventions¹⁴ [50] distinguishes between two major groups of evaluation frameworks, as described in Figure 13. One group is more characterized by an experiment-based approach, while the other is characterized by a theory-based approach.

In the experimental approach, the statistical methodology provides a framework for the evaluator to draw conclusions from this. In most cases, however, the constraints of a statistical methodology cannot be applied to reality, for example, a school health promotion program cannot be conducted as a double-blind study, therefore, this evaluation framework is ill-suited to analyzing the effectiveness of complex health promotion interventions. The framework of the evaluation based on the theory is formed by the theoretical models, which also include the previous experiences, thus they are more in line with the reality than the experimental ones. For this reason, the results of the evaluation can be better utilized in practice, and researchers

¹⁴ Implementation science is the study of methods to facilitate the introduction and integration of evidence-based practices, interventions, and policies in routine health care and public health. This science seeks to systematically bridge the gap between knowledge and action, theory and practice, by identifying barriers that slow or stop the application of best health interventions and evidence-based practices. <https://impsci.uw.org/implementation-science/learn/implementation-science-overview/>

Intervention research / Implementation-science



III. Figure 13: Evaluation frameworks
Source: own editing [50]

can further refine the applied theoretical model. In the following, we present some of the evaluation procedures that are best suited for complex health promotion interventions.

III.5.1 Evaluation for implementation

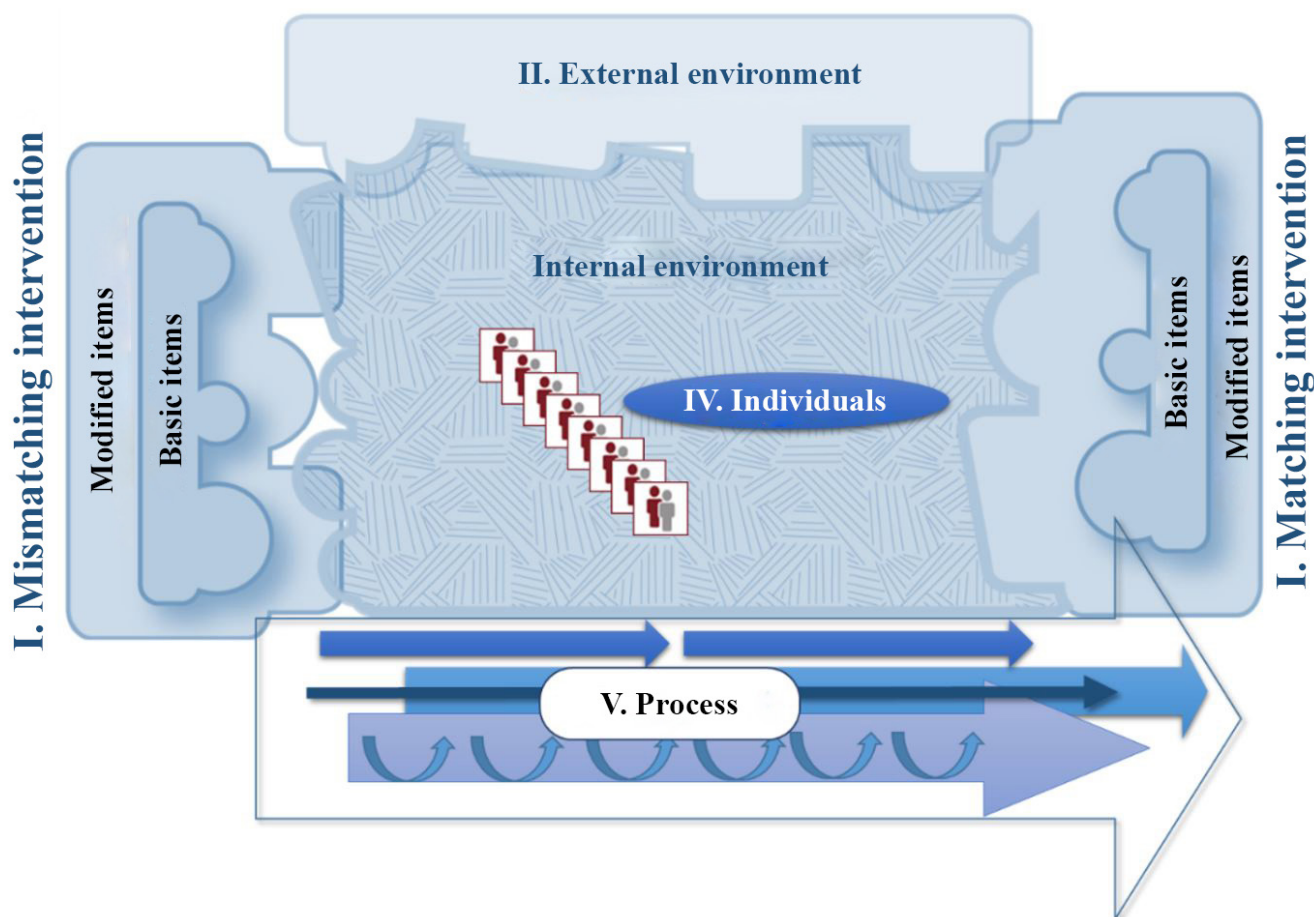
It is worth considering first the system of evaluation criteria developed by implementation science theories related to health services [51]. The application of the criteria system when adapting an intervention provides an opportunity to examine which factors may play a key role and which are worth monitoring and evaluating in order to achieve success. The criteria were developed on the basis of the theoretical model set out in Fig .14. According to the model, the implementation of an intervention¹⁵ is influenced by 4 factors in addition to the characteristics of the intervention: the external and internal environment, the characteristics of the implementing individuals, and the process of implementation.

A community can identify critical elements and develop solutions to problems that can be deduced

¹⁵ The left side of the figure also shows graphically that the intervention does not suit the local conditions, while the right side shows a matching intervention.

from them before launching an intervention that is planned to be taken over.

When planning, it is expedient to examine, for example, what is to be adhered to from the intervention to be taken over and what is worth adapting to the local conditions (Elements of Intervention I). It is also important to consider what kind of support (External Environment II) can be expected to implement the intervention, what kind of impeding and helping forces can act. As the organizational culture and mode of operation in the implementing community (III. Internal environment) is a key factor, so it is essential to prepare the community satisfactorily in many ways. Composition of the community and commitment of its members (IV. Individuals) form critical elements of successful implementation, and should be addressed during the preparation period. Finally, in order to implement the intervention as smoothly as possible (Process V), it is worth assessing in advance who can be expected to volunteer as a “front-runner” when an unexpected difficulty arises. The system of criteria can also help in the preparation of the monitoring of the intervention, as it is worth choosing a process or result indicator for the factors consid-



III. Figure14: Theoretical model of the implementation of the intervention
(Source: own editing [51] after DAMSCHRODER et al., 2009)

ered important for the given intervention, then collecting its values during the implementation and finally analyzing it.

III.5.2 Evaluation of complex interventions

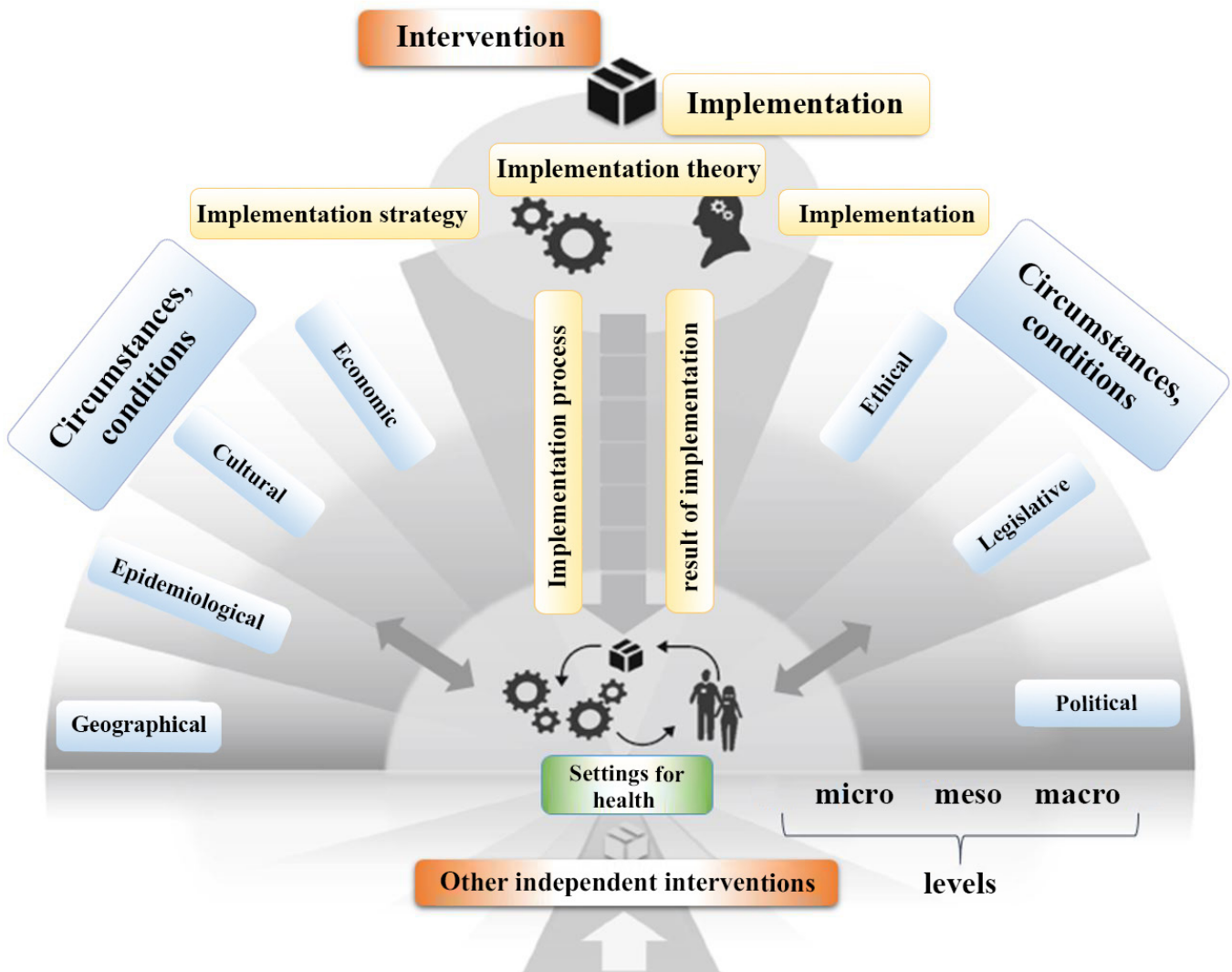
It proposes a much more complex approach to the design and successful implementation of complex interventions and programs than the system of criteria described above. To achieve their goals, communities do not, in fact, implement a “package of interventions” consisting of several elements. Complex interventions consist of several elements that can operate independently or interact in a program. When evaluating complex interventions, it is often difficult to separate the effects of different interventions and to determine the role played by the circumstances of their implementation. Whether an intervention can really bring about change requires a joint assessment of the circumstances, the conditions and the process of implementation.

The theoretical model “*Context and Implementation of Complex Interventions*” developed for this purpose [52, 53] highlights the importance of understanding and taking into account the circumstances and conditions of implementation when planning and evaluating the implementation of complex interventions.

The model helps to understand the multi-level system of factors influencing the results, and helps to determine which elements of the implementation and which factors and conditions of the environment played a critical role in the development of the results. The knowledge gained in this way also contributes to the mapping of how a complex intervention or “good practice” could be implemented on a different level, in the settings for health.

III.5.3 Realistic evaluation

The starting point of the realistic school of philos-



III. Figure 15: Elements of the theoretical model
 “Context and implementation of complex interventions”

Source: [53]

ophy is that both the material and social worlds are “real” and both can have real effects, so both need to be considered in order to understand what causes change. In the realistic evaluation introduced by PAWSON AND TILLEY are looking for answers to questions not for THE “DOES IT WORK?” But “What works, for whom, what changes, how much, under what circumstances and how?” [54,55]. To answer ¹⁶the complex question, the realistic evaluator identifies the Mechanism that created the Outcome and how it was influenced by the specific Context (CMO).

Such an evaluation begins with a theory and ends with a theory, because in the evaluation the theory

underlying the intervention is “refined” based on experience. The initial theory is based on previous research, experience, and the assumptions of the designers of the intervention. In fact, at design, all three elements, the mechanism, the outcome, and the circumstances (conditions) are considered to be known, and monitoring, i.e., data and information collection, is designed accordingly.

Realistic evaluation explains the change brought about by the intervention to those participants (including implementers and target groups) (or not) a situation under specified circumstances and under the influence of external factors (including the intervention itself) act and change (or not) a

¹⁶ Better Evaluation: Realist Evaluation. https://www.betterevaluation.org/en/approach/realist_evaluation

situation. Participants and interventions are seen as embedded in a social reality that influences the implementation of the intervention and how those respond to it (or not).

In the first stage of the analysis, in accordance with the initial theory, it is examined whether the data to be collected are related to the intervention implemented and to the circumstances, the mechanism, the results and the groups of participants. They then determine the conditions under which each mechanism operates (or not). Conditions may relate to certain groups of participants, some implementation processes, or organizational, socio-economic, cultural and political circumstances. In the final phase of the analysis, it is determined which CMO finding provides the most reliable and appropriate explanation for the pattern of observed results. The resulting CMO finding is then compared to the baseline theory, which is modified (or not) in light of the evaluation, and this will be the baseline theory for the next intervention. (Compare the planning-action evaluation cycle of participatory action research mentioned in section 4.4 Community health planning!)

III.6. Summary

The basis of a complex approach to health promotion is the recognition of the complexity of health. Therefore, the task of improving health is approached from several directions with a systems approach, using the knowledge of several disciplines.

First, health is seen as the product of a complex system that includes the individual or community. Consequently, going beyond the biomedical approach, it interprets health in its context, that is, with its environment and antecedents. Thus, it is understood that it expects results only from a wide variety of interventions aimed at the entire system that includes the individual or the community.

Second, it also perceives the natural and artificial environment, which largely determines health, as a system, and therefore argues that transforming the environment into a health-promoting one can

only be achieved through a number of coordinated actions.

Third, behavior change is seen as a key element in improving health, because behavior change can reduce exposure to health risks or increase the resilience of an individual or community, and behavior can change the environment to be health-promoting. As people's behavior is determined by a broadly understood culture, they see the role of individual decisions as limited in terms of health. This also underscores the importance of systemic, ie community, intervention.

Fourth, in complex health promotion programs, the identification of problems, the identification of appropriate solutions, and implementation are achieved with the active participation of those involved in health problems. The task of the health promotion specialists is to promote the establishment of partnerships representing the stakeholders and to prepare them for the implementation of the programs. The creation of a physical and social environment conducive to health and the spread of a healthy lifestyle within the community is a long, recurring process of planning-action-evaluation, in which the expert support of the participants is essential throughout.

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Chapter IV.

HEALTH EDUCATION (KRISZTINA DEUTSCH, HENRIETTE PUSZTAFALVI)

IV.1. Health literacy and education

The term health literacy appeared in public health and health care in the 1970s. A study that reviewed the health literacy literature identified no less than 17 different definitions, one of the most frequently cited being the WHO definition that health literacy is “people’s cognitive and social skills that determine an individual’s motivation and ability to access, understand and use information that promotes and maintains good health [1]. What we see as the success of treatment, as well as the success of preventive interventions, is determined by whether the patient / client / individual understands and uses medical information properly, and this is greatly influenced by so-called “health literacy”. According to the most common definition of health literacy, “... the ability to access, interpret and understand basic health information and services and the competence to use these information and services to improve health” [2]. The 1998 WHO definition places particular emphasis on the individual motivation to seek information and the cognitive and social skills behind it. Schulz and Nakamoto’s [3] model breaks down health literacy into three components: declarative knowledge (objective knowledge about health and its preservation); *procedural knowledge* (the ability to apply subject knowledge in health-related situations - including the operation of *basic skills* called functional in other divisions, such as speaking, numeracy, writing and reading) and *judgment* (effective assessment of new information and situations based on subject knowledge).

Research on health literacy in both the America and Europe has highlighted significant links be-

tween functional health literacy and demographic and socioeconomic variables. A 2007 study of British adults using the TOFHLA (Test of Functional Health Literacy in Adults) [4] found that people with lower levels of education, men and those on low incomes were more likely to fall into the category of limited health literacy.

On average, 47.6% of people in Europe have inadequate health literacy. Regarding the Hungarian study, the researchers obtained even worse results in 2016, examining a representative Hungarian sample in which 20% of the participants reported insufficient and 32% problematic health literacy. It should be noted that a more complex measure of health literacy is a measure of health awareness; presumably, outcomes may be influenced by a person’s self-esteem, judgment of health-related problem-solving skills, and even the patriarchal structure of a country’s health system.

Health literacy is a personal resource that enables the individual to make decisions in the areas of health services, prevention, and health promotion in everyday life [5]. Thus, low health literacy is associated with the following factors: poor health, high mortality rates, higher hospital stays, inadequate adherence to medical instructions, less effective communication with health professionals, lower participation in prevention activities, poorer health behaviors; and higher health expenditures [4, 6, 7].

In their study summarizing the review of health literacy, Sørensen et al [8] reviewed health literacy and created the integrated model because previous models were considered static that did not take

into account the process of health literacy. The integrated model includes access, understanding, and information transfer. The model developed in this way is based on the fact that “health literacy is related to education and contributes to making people’s knowledge, motivation and competence suitable for accessing, understanding, evaluating and applying health information in the formulation of opinions and decisions in the field of health care, prevention and health promotion, in order to maintain or improve the quality of life throughout our lives “ [8].

In order for health literacy to have a positive impact on health throughout life [4], the promotion and development of health literacy in childhood and adolescence is becoming increasingly important in public health efforts. [9]. In addition to measuring health behavior and health status, health literacy is playing an increasingly important role, which can provide guidance not only on the direction of deficiencies in adults, but also on improving the health literacy of adolescents and young people. The Hungarian adaptation developed for young people is available as HELMA-H [10].

An adapted questionnaire measuring the health literacy of adolescents (HELMA-H) can play an important role before the planning of intervention programs, which will enable health professionals to identify gaps and adequately define interventions and, accordingly, to develop the knowledge and skills of individuals.

IV.2. The fundamentals of group health education

First, we wish to define health education that is the focus of our chapter. Health promotion involves economic, regulatory, policy, public health, community and health prevention activities to improve the health of society. Health education is an integral part of modern health promotion, aiming to develop health-changing behaviors or change risk behaviors in a process led by a professional but at the same time based on the responsibility of the individual.

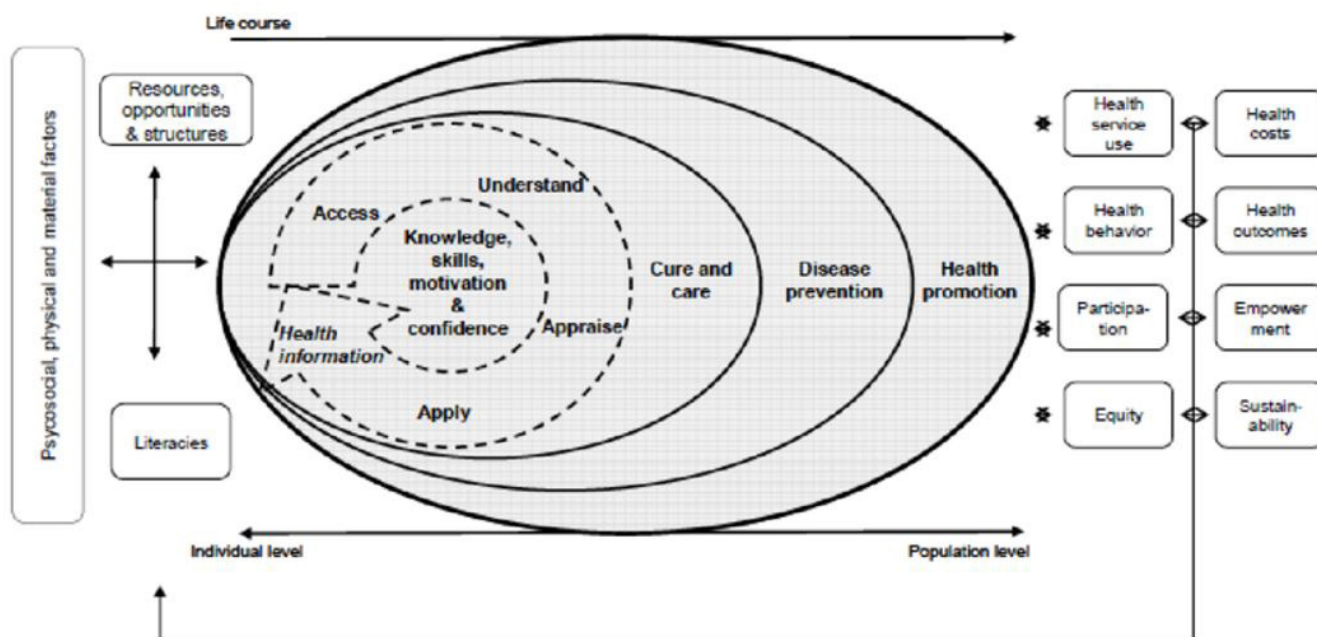
The outcome document of the WHO World Con-

ference in Shanghai identifies opportunities for action on health promotion in micro- (local small group), meso- (wider community) and macro-level (population and / or governmental) structures, focusing on professionals, settings and actors outside patient care [11]. This chapter deals with the micro-level, i.e. the fundamentals of local small group health education. The wording of Lászlóné Nagy and Katalin Barabás is the starting point in the definition of health education, according to which health education is “a set of consciously created learning opportunities using various forms of communication that expand health-related knowledge, and life skills to promote individual and community health” [12].

IV.2.1. Target groups for health education

Group (small group) health education programs are most often linked to the natural arenas of life: schools, settlements, workplaces, and most often focus on vulnerable groups identified by the WHO. The WHO places children, pregnant women and the elderly at the center of health promotion [13, 14] and, in addition to them, decides at the level of the society which other special groups are considered to be of priority - see Chapter II for details. Chapter III deals with vulnerable groups. If we want to systematically review the potential target groups of health education and accept that health promotion needs may arise for other target groups beyond the vulnerable groups, then the breakdown by age provides a possible framework for the review. According to this, the target groups of health education can be:

- *early childhood groups (0-6 years old, nursery and kindergarten),*
- *group of primary school children (6-10 years old, lower primary school children)*
- *groups of adolescents (upper primary school and secondary school students and groups of adolescents associated with the place of residence or dormitory),*
- *groups of young adults (which may be related to the educational / higher education institution, place of residence, place of work, life situation, e.g. pregnancy, childbearing),*
- *groups of mature adults (may be related to*



III. Figure 1: Onion peel model of the main determinants of health

Source : own editing [2]

place of residence, work, life situation, e.g. unemployment, raising children, involvement in chronic illness, disability),

- *groups of the ageing and the elderly (may be related to a place of residence, a residential institution, a living situation, e.g. a lonely pensioner living with a certain illness).*

When designing your target group in planning a group health education program, it is worth answering the following questions.

- In what community arena does the group appear and how does it relate to our job and professional activity?
- Along what socio-demographic characteristics can the group be described? (gender, age, education, social status, employment).
- What health promotion needs does the group have? (health status, health and risk behaviors, chronic illness, mental crisis, abuse, etc.) It is worth presenting the need, the vulnerability at the group level, but also in a broader social context. In the case of the latter, it is expedient to determine the public health severity of the problem and the possibilities for prevention.
- What are the special circumstances, needs

and expectations of the group? Are there specific risk factors? e.g. disadvantaged children, Roma people living in segregation, special dangers / difficulties related to the workplace or settlement, a program that can only be held in the evening, etc.

- In the following, we review the forms of the groups and the characteristics of their operation from a psychological point of view, without claiming completeness.

IV.2.2. Psychological characteristics of group organization and functioning

In a socio-psychological sense, a group means people who are in constant interaction with each other and who are characterized by a common goal, joint activity, cohesion, and group structure. Groups can be organized according to their size, the way they are organized and their function. Psychology defines a small group of 3 to 20 people, assuming that the members interact, have a personal relationship, and are able to work together based on mutual trust and support. Above this we are talking about a large group of up to 50 people, while over 50 people we are talking about a crowd. The members also know each other in the large group, but there is no direct connection between

them in all cases, thus they are necessarily divided into subgroups. This necessarily characterizes larger classroom communities as well. [15]. The practice of small group health education is also characterized by a group size of around 15 - 17 people in order to facilitate efficient and reflective group processes [16].

On the basis of group organization we can talk about formal and informal groups, in which the formal groups are brought together by a common goal, while the informal group is organized on the basis of sympathy or common interest and is held together by the joy of emotional attachment. [15] Based on this, the health education group is undoubtedly a formal group, as it is organized along a specific goal and task. However, due to previous or emerging emotional relationships between group members and the positive climate, the group continues to live as an informal group. There are examples, specific cases, that a pregnant group in a health education program preparing for childbirth and parental role continue to function as an informal group following the program and postpartum. All groups, including health education groups, go through five phases of group development. As a group leader, we can recognize that the group goes through three developmental stages until the actual task-focused operation, and the group must be prepared for termination. The phases of development are as follows: [17]

1. Formation: This is when the group members get to know each other, and the opportunities provided for a multifaceted introduction help them to become a community. Here, the institutional expectations and the corresponding performance are also shown. In terms of health education, this means paying attention to the simple human gestures of welcoming group members (Where to put a coat, umbrella, pram; Where to find a toilet) To reduce the initial stress of arrival and integration, efforts should be made to apply methods and games that clarify initial feelings and expectations and support both stress reduction and mutual acquaintance.
2. Storm: Most groups go through a phase of

conflict, which is usually a struggle for positions and roles. In the case of the health education group, the group leader is measured, and discussions about the working method may develop, but all this is important for the maturity of the group.

3. Stage-building phase: norms are consolidated along group-specific values and rules of conduct. It is therefore necessary to lay down the statutes at the beginning of the program, which should be discussed by the group in a democratic spirit, because consensus-based rules are the best. It is especially important to lay down confidentiality as the norm. But duration (arrival, departure, breaks), eating and drinking, other aspects of behavior and rules of communication are also important. The group should discuss the expected tasks, the way and time of the evaluation in advance.
4. Operation: the group focuses on the tasks to be performed with maximum efficiency.
5. Termination: the group completes its task, disintegrates. We have to describe the time schedule of the program at the beginning of the program, including the date of completion, the way of closing the program, to which we also refer during the program. Thus, we create an opportunity for personal preparation for separation, which already has a serious *raison d'être* in the case of a longer-term program (several months, all year).

The theory of group dynamics associated with Kurt Lewin's name serves to describe the relationship between the individual and the group, and its significance lies in the fact that its knowledge and proper application can generate more effective group functioning. According to Bagdy and Telkes, group dynamics are based on the fact that human coexistence always creates a kind of extra tension in those present [18]. During group dynamics, members interact, communicate and cooperate with each other, as a result of which both the group and the person participating in the group change [19]. Group dynamics include group cohe-

sion, the roles that develop in the group, and the influence of leadership styles on the functioning of the group.

Cohesion refers to the cohesion of the group, and strengthening cohesion in the small group in health education is also an important task because it results in a positive atmosphere, more effective collaboration, better performance, and greater satisfaction [20].

According to György Csepeli, the individual behavior in the group can be aimed at completing the task, building the group, or even solving a problem. The functioning of the group is facilitated by constructive roles, while destructive roles hinder it, but the conflicts they cause can also have a driving effect [21].

Constructive or task roles:

- Initiator: introduces changes, innovations, sets goals.
- Information seeker: asks, asks for opinions and information.
- Information provider: gives information, expresses opinions.
- Ruler: Creator and controller of group standards.
- Generalizer: summarizes, clarifies certain issues in front of the group.
- Obedient: passive audience.

Destructive roles:

- Stuttering, quiz, omniscient, news bell.

Relationship roles for the survival of the group:

- Consistent.
- Gatekeeper: helps keep communication channels open.
- Encouraging: friendly, praise, accept others.
- Compromiser: willing to compromise.
- Diagnostic: analyzes the emotional processes in the group that hinder the performance of the task.
- Tension reliever: resolves negative emotions with a joke

The third phenomenon of group dynamics is leadership style. In the health education group, the leader works between the current situation and task, and between the autocratic and democratic leadership style. Basically, both the supportive empathic atmosphere and the free assumption of opinions and skills, as well as the development of skills and abilities, are served by the methods of democratic leadership. However, there may be tasks (such as teaching a form of movement or relaxation technique) or situations that require a quick decision when the group is waiting for clear guidance - leadership, in which case autocratic, i.e. leadership, will be needed. However, successful group leadership also depends on a number of other factors, such as the personality and dominant leadership style of the leader [22].

IV.2.3. Some aspects of working with groups in health education

The following factors are favorable conditions for group health education.

- A supportive learning atmosphere in which new concepts and practices can be discussed helps you to think and develop new things in a fearless way.
- Direct feedback and reinforcement in a small group is a strong motivating factor.
- The small group promotes active participation in the learning process, giving persons the opportunity to compare new ideas with other perceptions. Motivation increases greatly when the participant feels the need for change and accepts the learning situation. The small-group method is particularly effective in reducing resistance to change by exploring alternatives.
- Experimental learning and a variety of methods provide a very realistic learning situation. Instead of the group leader is ready to communicate the information, participants experience and learn from the experiences of the exercises.

Dealing with problems and difficulties in the group
Health professionals often find group leadership daunting and feel incapable of coping with it. Progress is in acknowledging and addressing

these fears and developing strategies in the event of problems. It can be helpful to initially lead a group in pairs and create a script and also prepare for backup tasks.

If too few people show up in the program, you need to rethink your preparation, advertising, and marketing activities. For the sake of planning, the pre-application method and contacting and informing about the program through several info-communication channels will help.

Behavioral problems and group conflicts also present difficulties for the group leader. The lack of active participation and comment, but also the problem of those who talk too much and comment on everything, can be prevented by the circular question used as a method, pair and cooperative group methods, interactive tasks and other structured methods. Conflict in the group should be handled with assertive communication and, if possible, a problem-solving strategy instead of looking for those responsible.

If someone is completely withdrawn, we can also address them directly, naming the person and inviting them to comment. If all this does not help, talk to him or her about the problem in person.

IV.3. Models of individual health promotion

One of the major challenges for public health is to reduce the morbidity and mortality of lifestyle-related diseases by preventing changes in the behavior of people at risk, preventing premature death and increasing life expectancy. The task of individual health education is to use behavioral sciences to offer models that can effectively support the process of behavior change, from motivation through appropriate strategies. The theoretical framework for this is mostly offered by psychology and pedagogy. In this chapter, we first undertake to present some scientifically based models for facilitating behavior change, and then review individual health education in a client-professional relationship, identifying the range of competent professionals, the frequent needs for change, and the characteristics of a supportive relationship. Fi-

nally, we present in detail the transtheoretic behavior change model of Prochaska and DiClemente.

IV.3.1. Models of behavior change

IV.3.1.1. COM-B model

According to the modern interpretation, this is the COM-B model for the purpose of behavior change, which can help to design effective public health interventions, and for the operation of which the “wheel of behavior change” model provides an interpretive framework. This is detailed in Chapter 2, it is important to note that we currently use this model in the context of behavior change.

IV.3.1.2. HAPA model

The HAPA (Health Action Process Approach) model was developed by Ralf Schwarzer and his research team, which can be interpreted as a social - cognitive process model of health behavior. Its distinct advantage is that it incorporates an improved version of models related to previous health behaviors. Research shows that it can be used effectively to change many health behaviors, whether short-term or long-term. The model proved to be effective in terms of exercise, healthy eating, hygienic hand washing habits, and therapeutic adherence, among others. [23, 24]

“Most socio-cognitive models are designed to explain and predict the development of behavioral intent, but both ordinary experience and research suggest that developed intent does not always lead to actual behavior. The model therefore - in order to bridge the intention-behavior gap, it distinguishes between the motivational stage before the formation of intention, which (similarly to previous models) resulting in the formation of intention, and the post-formation voluntary (volitional) stage, which leads to actual health behavior. Compared to previous classical models, the HAPA model for integration places a strong emphasis on post-intentional factors, such as planning for action and overcoming obstacles, as well as the sense of self-regulatory processes and personal effectiveness that contribute to sustaining action.” [25]. This model was based on Bandura’s theory of social learning, according to which the explo-

ration and change of behavior can be explained by the same cognitive mechanisms, such as vicarious, symbolic, and self-regulating processes. Simplified, the vicarizing mechanism means that we learn from observing the behavior of others and no longer have to try everything on our own skin using social experience. Symbolism is a mental process that allows us to work out the best solution to a problem on a cognitive level and not try out possible alternatives through action. Self-regulation allows you to control your own behavior, including dealing with environmental conditions and behavioral consequences. The central category of Bandura's concept, and the HAPA model based on it, is self-efficacy, which is one of the main components of self-regulation. Based on self-efficacy, we believe in our abilities, which are necessary for the desired behavior, including emotional and cognitive processes, motivation, and personal control over the behavior. Thus, overall, self-efficacy also affects our goals, efforts, and resilience to obstacles [26]. Thus, a sense of self-efficacy is the most important predictor of behavioral intent [23].

IV.3.1.3. Prochaska and DiClemente model of transteoretic behavior change

Following the traditional health education characteristic of the second half of the 20th century, i.e. the paradigm shift based on the decades of work of psychologists, the transteoretic behavior brought about a real revolution. Although the authors gained the primary experience in constructing the model from observing the recovery process in addicts, the concept eventually proved effective in a number of other areas of behavior change. The model describes the process at which the client goes through the change of habits and behaviors, whether on his or her own or with the help of therapy, and consolidates the change. This scientific approach assumes that the client knows what stage he or she is at when it comes to the problem to be overcome, and the key to success is to apply well-timed coping skills. This is because a person is doomed to change if he or she is not yet prepared for it, or if he or she is working on a task that he or she has already achieved or exceeded. The challenge, task or coping must always be

adapted to the current stage of change [27].

In the following, we review the phases of behavior change as interpreted by the model. The IV. Figure 3 helps to understand the process.

1. The pre-contemplation stage

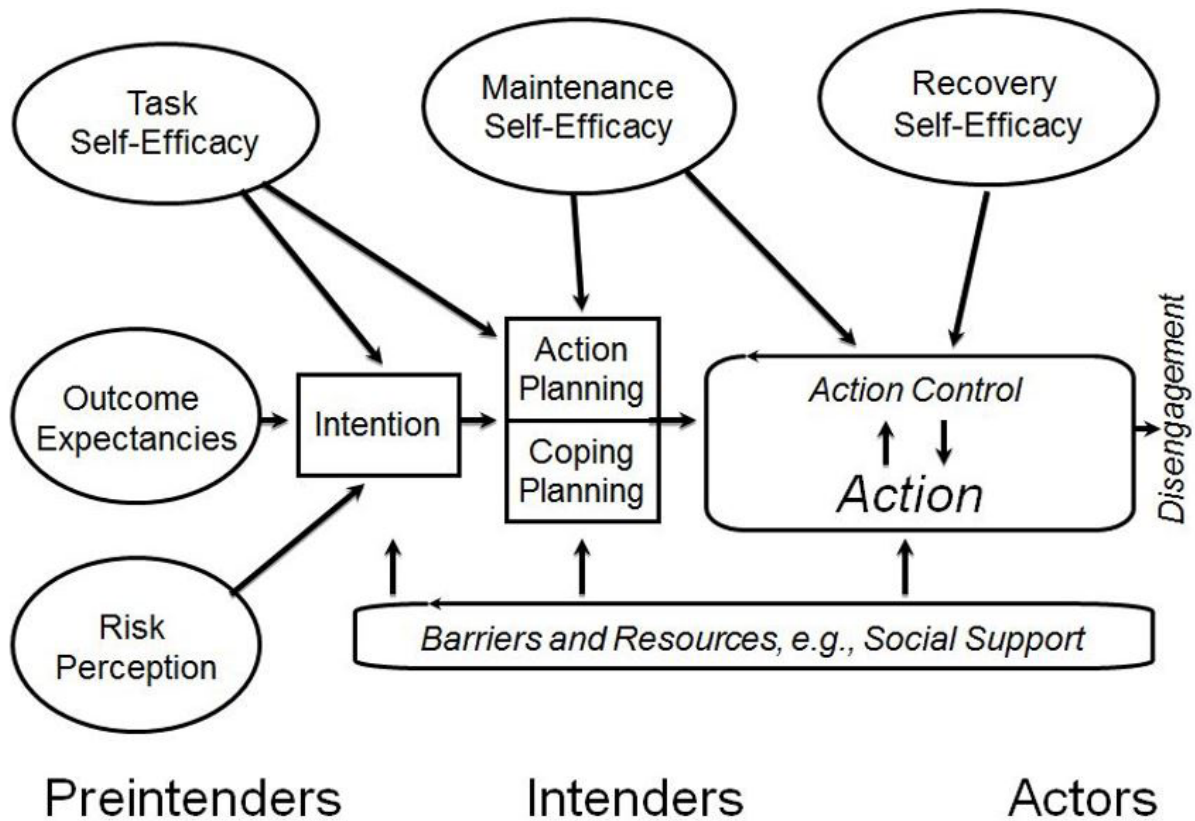
The individual is not yet aware of the need for change, i.e., either does not yet see it or intentionally corrects the problem. He employs a whole host of self-defense mechanisms to avoid having to face the need for change and is therefore not motivated to begin the process. In many cases, he or she is confident that his or her problems will be resolved by changing his or her environment, such as his or her spouse, child, boss.

At this stage, professionals can help their client to enter the reflection phase by raising awareness of the problem and overcoming it. With the method of attention and practice, maladaptive interventions can be transformed into positive behavior.

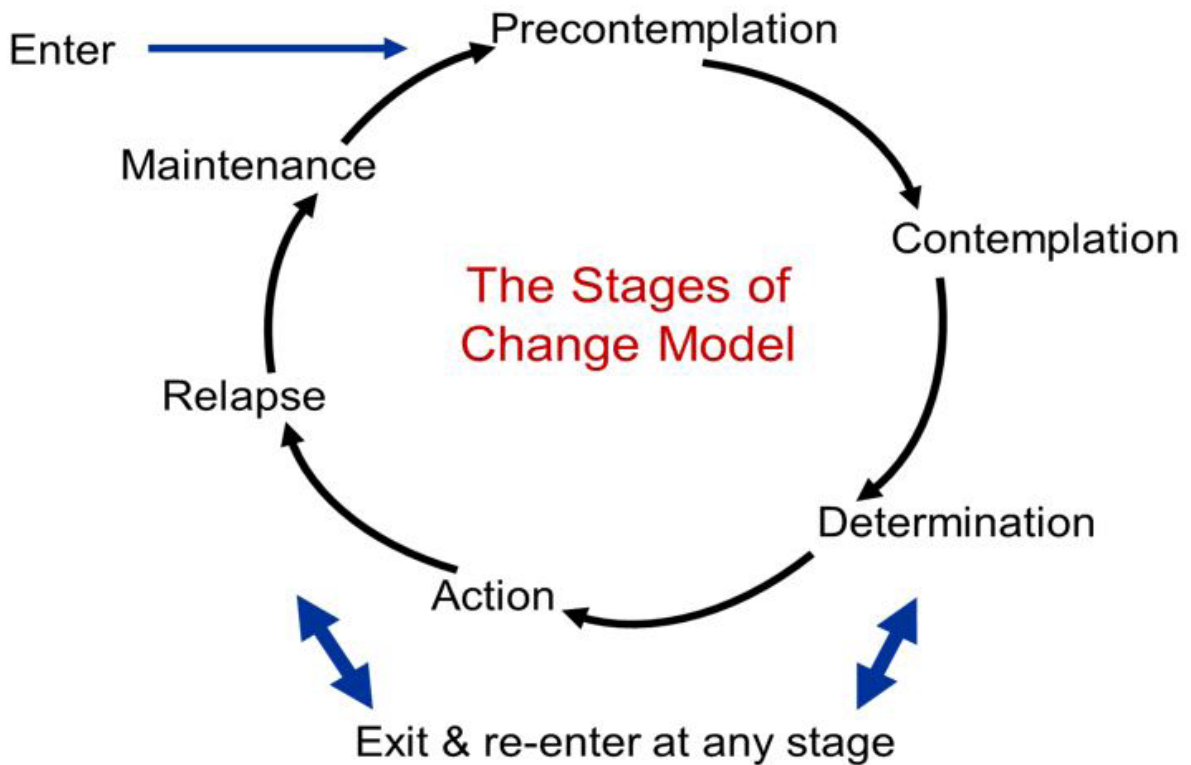
2. Stage of contemplation

The client already has enough motivation to change, and the goals need to be articulated for themselves. If the goals are too vague, the client can ask him or herself or the professional questions to clarify for the client.

The professional who appears in the role of facilitator can apply the strategies that help to clarify attitudes and values at this stage. These strategies help you think critically about the value system and beliefs. Accurate observation and analysis of the problem at this stage, whether our meals and energy intake, our alcohol consumption, or just our outbursts of anger over a cycle of one or more weeks, will also help. Functional analysis plays an important role in this phase, i.e., the observation of things that directly precede or follow problematic behavior, so that events when a person loses control can shed light on it. At the contemplation stage, we need to encourage our client to create a self-inventory. The questions are about behavior on the one hand and change on the other: It is advisable to gather all the arguments and counter-arguments about change for ourselves and our environment so that our decision is well-founded. The following methods used by a professional can help



IV. Figure 2. (Health Action Process Approach, HAPA; Schwarzer, 2011, p. 601) [25]



IV. Figure 3: Stages of change in health-related behaviors (Source: Based of Prochaska, JO, Norcross, JC, DiClemente model of transteoretic behavior change, author editing)

to clarify the problem and increase self-awareness:

- *Ranking, categorization: Suitable for clarifying values. E.g. What does it mean to you to be healthy?*
- *Value scale: This technique helps people to understand and define their own position within a given topic.*

3. *The stage of the resolution and determination*

After considering the arguments and counter-arguments, the client makes a decision to change his / her unhealthy behavior. He/she makes his or her decision public and asks his or her environment for help.

Determination support strategies

Step One: Create an accepting atmosphere in which the client can become open. We express unconditional acceptance, honesty, empathy with both our non-verbal and verbal communication.

Step Two: Help explore deeper needs and the problem with open and clarifying questions and active listening.

Step Three: We help the client identify opportunities, set realistic goals.

“How would you feel if...”

If things turned out the way you want them to, what would be different than they are now?”(22)

Step Four: We help the client to choose between the possible alternatives and ways of change, but it is very important that he / she chooses, as he / she will only be committed to the implementation along his/her own decision. The choice involves considering the pros and cons, considering the possible consequences of following each alternative, and choosing the best alternative.

Step Five: This is when the client prepares for the action we support, but also plays a key role in developing the action plan.

The action plan includes:

- The way of the change in behavior, and in some cases the extent of the change.
- The starting date of the change, in some cases the time planned for the change.
- Preparing for behavior change, spiritual preparation, rethinking coping strategies.

- The preparation of the family, co-workers and other important persons (the formulation of our intentions and requests), the preparation of the material environment in the apartment and at the workplace.
- Inventory of helping persons and groups, the ways in which you can expect help from a professional.

4. *Stage of action*

The process of change in which you are already committed begins. According to the client’s plans, he/she is active, replacing risk behavior with other activities, controlling his/her behavior, living with the supportive relationships, and trying to overcome daily difficulties. This phase usually lasts for months.

5. *Stage of maintenance*

- At this stage, people struggle to sustain change and use different coping strategies to do. The change process has been going on for at least 6 months. Initiating and maintaining the change also requires a serious effort from the client, in support of which the health professional uses and recommends the following methods to the client.
- Self-monitoring: means detailed and accurate observation of the behavior the client wants to change, even following the change in the form of a diary. This method helps people analyze their own patterns of behavior, develop self-control, and define a baseline against which to track progress.
- Sacrifices, Benefits, and Rewards: Behavioral change, sacrifices, must be consciously prepared for, which is offset by clearly defined benefits, rewards, and perseverance. The benefits can be short-term and long-term, as well as indirect (e.g., the pregnant woman should live healthy to keep her child healthy).
- Assessing objectives and progress: realistic goals are needed, and if the set progress is not achieved, the reasons for it must be explored. Recognition of the effort is also important, even the smallest results should be

rewarded and praised.

- Develop coping strategies: Change can only be sustained if appropriate coping strategies are in place to address feelings of deprivation and stress. These include self-help groups, stress-relieving methods, relaxation, developing the ability to say no, and so on [22].

6. Stage of relapse

The client cannot sustain the change, he/she returns to his/her previous behavior and habit. This is a common phenomenon, as a number of factors (e.g., overestimation of tripping, withdrawal social effects, extreme challenges and stressful situations, suffering, etc.) can hinder the process of change. However, suffering (including anxiety, loneliness, emotional problems, and depression) is the most common cause, appearing in 60-70% of relapses in both addicted and people with eating disorder. The authors observe that smokers are usually able to cope with quitting after three relapses. If this happens, the task of the specialist is to analyze with the client the causes of the relapse, the shortcomings of the preparation. Learning from these experiences they can prepare them for a change in behavior again, thus the stage of contemplation or preparation can begin again.

7. Exit stage

People have recorded a change in behavior, the new, already changed behavior is natural (they eat according to a new nutritional model, have incorporated regular exercise into their lives, quit smoking, etc.). It no longer requires effort to sustain the change, as it no longer requires sacrifices, the benefits are clear, and the client's self-knowledge is enriched and self-esteem is strengthened [27].

IV.3.2 Needs involved in individual health education, characteristics of professionals and the professional-client relationship

IV.3.2.1 The most common needs in individual health education

The following is an overview of personal health-related needs that may require a change in behavior from preschool to old age, in which the health ed-

ucation activities of a competent professional can facilitate, i.e., promote and support, a change in client behavior.

Concerning physical health: reduction of overweight and obesity, change of eating habits, introduction / increase / change of physical activity, change of hygiene habits, prevention of accidents / falls, special needs related to pregnancy (physical activity, nutrition, sexual hygiene, sexual life), sex prevention of communicable diseases (STDs), prevention of osteoporosis, elimination of chemical hazards, etc.

For mental health: development of emotional intelligence, development of coping strategies, development of communication - conflict management, development of self - knowledge - self - esteem, development of time management, need for crisis management, support for social need, etc.

Concerning mental and physical health: cessation of smoking, recognition of alcoholism / drug addiction / behavioral addiction, delegation to treatment / sobriety organizations.

However, it is important to note that in the treatment of addicts and in supporting their social reintegration, only smoking educators (physicians), addictologists and psychiatrists and psychologists, as well as the institutions they support (e.g. drug rehabilitation homes) and anonymous self-help groups (e.g. AA groups) are competent helpers.

IV.3.2.2 Professionals in individual health education

In the case of a health promotion professional, the kind of personal health-related need he or she can respond to is mostly determined by the professionalism, field of work and professional competence arising from the qualification.

- Health professionals in primary care and specialist care: general practitioners and specialists, dentists, nurses, nurses, dieticians, physiotherapists, midwives, dental hygienists, etc.
- Health developers, mental health professionals, psychologists.
- Recreation professionals, trainers, physical educators.

- Educators (health teachers) and pastors: as health educators, their role in supporting mental health in their own area of work and care is a key factor.

IV.3.2.3 Characteristics of the client-specialist relationship

In individual health education, the relationship is based on the acceptance of the professional, ensuring the independence of the client, and a partner approach. The essence of acceptance is that the professional, being aware of his/her own and his client's value system, knowledge and attitudes, the differences, does not consider himself/herself more valuable along these factors, he/she does not judge the client. The professional can help increase the client's control over health by ensuring independence by encouraging the client's own decisions, attempts, and ideas. The partnership is characterized by openness and mutual trust, where the professional builds on the client's expression, knowledge, and experience, and also acknowledges that he or she has learned from him or her [22].

IV.4. Pedagogical methods of effective health education (planning and methods) (D.K)

As group health education is also a real educational process, we basically apply the concept of pedagogical planning, which begins with the definition of goals and tasks that reflect needs. We first outline the design aspects and steps, and then we will detail them later.

1. Characterization of the target group and definition of the need and problem: Who is the program for? What deficiencies, needs, and problems do we reflect on?
2. Aim, task: What will be the aims and tasks of the group?
3. Themes: What topics does the program focus on and in what time planning?
4. Methods: In what ways are the themes developed by the goals implemented, along what specific tasks?
5. Resources, tools: What human and material resources are needed for the implementation, and what infrastructure background is

needed?

6. Evaluation: What do we evaluate and how (subject and method of evaluation)?

Richard Windsor in his work, *Planning and Evaluation*, also confirms aspects of our design, emphasizing that the health promotion and disease prevention program plan should include the program structure, process, content, methods, tools, and participating professionals. It also highlights the relationship between goals and evaluation [28].

However, already when setting goals, we need to take into account the fact that "knowledge about health, no matter how extensive, does not guarantee a healthy lifestyle. ... It should also be borne in mind that a particular form of behavior that affects health does not exist in isolation, but as part of a lifestyle in which different behavioral, social and individual factors interact in a complex way" [12, 48]. The goals can be directed to the development of knowledge, skills and abilities in the spirit of education, i.e. personality development in general, as well as to the change of attitudes and behavior [29, 30]. Accordingly, the goals of group health education can be:

- Transfer of knowledge, expansion and refinement of knowledge.
- Shaping the attitudes of clients towards need.
- Developing the skills and abilities of the clients related to the need.
- Changing the behavior and habits of clients related to need.

In health education, it is important to plan the activities and tasks precisely in order to achieve the goals, because this is the only way to achieve effectiveness.

What do we expect from all members of the group to increase knowledge or change attitudes during the program? What do we want to achieve about behavior change? Can we be satisfied if the change in behavior or habits starts in 1-2 members of the group? Or are we expecting much more than that? Do we consider it an outcome if a part of the participants becomes a consideration, or is the program effective only if a certain part of the group has already entered the stage of action? If you

think about it, these are absolutely realistic questions for a smoking cessation or weight loss program. Thus, health promotion thinks about the task to be performed in such a way that it formulates the final result to be achieved in the given time interval. Accordingly, the task must be realistic and measurable, along with the challenge for the professional and the group [22].

Going along the pedagogical thinking, we prepare topics in the knowledge of the goals and tasks, so we organize certain elements of the coherent content and topic of the program, and in the case of skills and competency development, the activities for practice in a logical system, chronology. The advantage of thematic planning is the possibility of thorough preparation in addition to seeing in the unit [31]. The planning of the topic offers an opportunity to think about the content depths of each topic, the possibilities of skills development, and as a result the structure of the program is formed: the number and duration of each health education event / session, and finally the program.

While the effectiveness of the program ultimately depends on its educational strategies, i.e. whether we can achieve the set goals with methods and tools appropriate to the target group, research related to health education in addition, outdated methodological practices, problems of adaptability, evaluation and efficiency are highlighted [16]. According to Feith et al.'s research among high school students, the majority of health promotion programs are still conducted in inefficient frontal education without the active and problem-solving participation of students [32].

Organizing the intervention for digital natives of the Z and alpha generations is a methodological challenge, as different methods and approaches are needed than for the X and Y generations. [33,34]. Somhegyi also draws attention to the fact that online information resources and tasks, such as the Smart Box Portal (Smart Box Portal) (35) with playful online tasks and animated films, can be exploited in school health education practices for comprehensive school health promotion (TIE) [36].

In terms of methodology, however, there are already good practices in school health education that point in the direction of efficiency. Launched in 2015, Learn, Teach, Know! (TANTUdSZ) The Youth Health Education Program supports the health behaviors of primary and secondary education students with the help of peer educators trained by university students. Instead of teacher-centered knowledge transfer, health education is carried out using innovative and interactive methods developed by small groups of students [37]. During the program, a complete task bank, a collection of recipes defined for each age group, was developed, which contains a complete description of the tasks, including the purpose of the application and the pedagogical methods included in the task [33]. The “Complex school health education program” based on the COM-B model in Balassagyarmat also builds on e-learning-type knowledge materials and interactive small group sessions led by peer educators [16]. Regarding the first aid education for kindergarten and school children, the methodological basis of the practice-based program developed by Bánfai et al., which activates children to the maximum, is outstanding [38,39].

The choice and application of methods requires significant training from the health care professional. In the collection of the methods we rely on didactic sources [40,41], as well as on the literary sources of health development and health education [22,42,33].

First, we review the methods used in the group *to get to know each other and to resolve tensions*: name games, icebreaking games, pair introductory games, association games based on pictures, cards, poems, songs about group members, writing a four-line poem about feelings and expectations.

In the following, we review the attunement to the topic, the orientation of the participants' knowledge and attitudes, and the methods that underpin interactivity. It should be noted that several of these methods can serve not only to tune in, but also to process the topic.

Brainstorming: a technique used to get people to think creatively without judging their thoughts. Ask a question to which quick, one-word answers can be given: E.g., “What comes to your mind when I say love?” All answers will be written on the board without comments or remarks. We can group the thoughts according to some guiding principle. Encourage the more retreating persons. E.g. “Other ideas?” “Does anyone else want to add?” Maybe address the person. “I’d be interested in your opinion too!”

Circular questions: The members of the group make a short comment in a circle, one after the other, or give a more detailed explanation of the question asked by the group leader, so that everyone has an equal opportunity to participate. There are three important rules for successful circle questions: no one should be interrupted until they have finished speaking, no comment can be made until the circle is over, and anyone can choose to be left out of a circle. This opportunity should be brought to the attention of the group leader before starting the round questions: “You can pass for each question!” Circular questions can be useful at the beginning and end of group sessions. The questions used as a concluding round can be especially useful as feedback, as a short evaluation of the daily program for the group. e.g. “What did you really like about today’s session?” “How did you feel today?” “What did you learn in today’s session, what did you filter from what happened there?”

Discussion, use of discussion materials:

The discussion can be started with a related video, poster, flyer, newspaper article, internet news, podcast, etc. that share opinions. In a divided group, it is the task of the participants to represent each other on the opposite sides of the topic, to persuade each other with arguments, according to the jointly developed rules of discussion. The method develops logical thinking skills, but also communication skills, listening to each other.

In the following, we present methods that *help to transfer knowledge, process and discuss the topic, and build consensus at some points.* Depending on

the age, the amount and depth of knowledge related to the processing of topics varies, of course, but the important features of the methods are interactivity, cooperation, creativity, playfulness, and experience-based learning.

Flash groups: small groups of three or more people within a group who discuss an issue or process a task with each other in a relatively short time, as determined by the group leader. This task is always closely related to the facts previously stated. If we want to share their ideas with the whole group, it may be written on a wrapping paper in the form of a poster.

Structured learning: When approaching a task, participants, pairs, or smaller groups of participants (e.g., three) are given a set amount of time to process a topic. After that, they discuss their own results and opinions with the other pairs or groups and form a common position.

Snowballing: Team members are individually given a task to complete within a specified time. After that, similarly to structured learning, they discuss their thoughts and results in pairs, and then the pairs connect with each other and finally, the opinion of the group is formed. This will make the “snowball” bigger and more interesting. The mobilization of one’s own prior knowledge and experience, the respect of individual opinions, and the possibility of correction are made by the individual based on the feedback of others.

Cooperative group work: Based on the activities of the participants (4-6 people) in small groups. In addition to the development of knowledge and intellectual skills, it is of paramount importance in the development of social skills and cooperation skills. There are many forms of the cooperative method, and of course new ones can be developed. It can be used in all age groups, and due to its time requirements, the method of mosaic learning or group research and countless other cooperative forms can be well integrated into health education.

Research - exploration method: the acquisition of knowledge can take place individually or through cooperative group work, either through experimentation, by collecting data from the Internet or library sources, and by developing critical thinking.

Observation: it can serve to support the knowledge expressed, but also to formulate independent conclusions through perception. Awareness of observation is ensured by observational considerations. The observation activity determined in time is followed by the discussion and evaluation of what is seen.

Discussion: A popular and common method that can be used at any stage of the health education process, where the professional guides the conversation with appropriate questions. Group members can also ask each other, it makes them think - activity. It can be a useful method for clarifying the basics, introducing it to new knowledge, but it can also serve as a summary.

Lecture is a method for conveying knowledge, for explaining a topic in a logical, detailed way. Its time frame ranges from 15-20 minutes to 1.5-2 hours, depending on the age of the participants. It usually combines elements of narration, explanation, and illustration. It consists of an introduction, an explanation, and a summary, and the greatest difficulty is maintaining attention. In health education, it is important to consider in which age group and in which topic we apply it, because it is interpreted as the least effective method.

During the *demonstration*, we present objects, phenomena and processes in order for the participants to perceive, observe and analyze them. During health education, we can directly illustrate, for example, movement, cooking techniques, and relaxation techniques. But with the help of info-communication tools, we are able to illustrate almost anything, from physiological processes to life situations to life-saving interventions.

The following are methods for applying, organizing, and recording knowledge.

Within the framework of *structured exercises*, the practical tasks related to the knowledge and factual material are practiced at the skill level in pairs or in groups of 3 people, e.g. first aid, baby care, food preparation, etc. The method ensures the safe acquisition of various practical tasks in a relaxed atmosphere compared to independent practice, without stress in the case of proper pairing and group formation.

Creating a *mind map* in small groups is a visual representation of a topic or problem, with little text and lots of graphics. It makes learning more intense and productive, yet enjoyable. The object of the mind map is always in the middle, in a central place. From this, the main topics related to the subject are branched out with key concepts and the corresponding content with the help of diagrams, pictures and colors. As the exact content of each mind map is understood only by its creator, group cohesion is also supported by joint work, common “coding”.

Other interactive tasks can be: making interviews, making posters, writing poems, making songs, making short films, online tasks, quiz games e.g. Kahoot with Mentimeter.

Questionnaire, test: it can be used as a method to start and end a group session. If used as a starting method, it can provide information about the group’s knowledge, opinion and attitude in relation to the given topic or question. If used as a closing method, we can get feedback on the knowledge we have acquired. If we use a test or a questionnaire as a method of starting and closing a program, we can find out where the group started and where they got in terms of knowledge and attitudes. In such cases, it is important to use the same test and questionnaire at the beginning and end of the program. If participants compare their opening and closing questionnaires themselves, it can be used to draw personal conclusions regarding their own development.

According to the concept of *gamification*, the efficiency of prevention activities and interventions

can also be increased by installing game elements. Games can be board games, verbal quizzes, online quizzes, e.g. Kahoot, but even crossword puzzles. The motivational power of games is huge for children, but even for adults, the method is motivatingly busy, which is why they are experiencing a renaissance in educational programs today. The VoltEgySzer prevention mobile application developed by Kapitány –Fövény et al. proved to be effective in terms of the knowledge transferred and the frequency of substance use [43]. In the Prevention Escape Room developed in recent years, the 45-minute gaming experience is followed by a nearly 30-minute small group discussion, where it is possible to deepen the information and process the gained experience [44]. An online version of all of this helps preventive sessions in an exciting way.

Project method: a common method used at school level as well as in adult health promotion, based on the interest of the group or community, the joint planning and implementation activities of the group and the professionals. It always focuses on a practical problem that the group tackles in a complex way: e.g. processed in historical, technical, economic, biological, public health contexts. It is always a joint product and evaluation that closes the work, where the acquired and systematized knowledge is almost a by-product of the program. As a final group of methods, methods for developing communication and social skills, problem solving, critical thinking, and responsible decision-making are presented.

We process a case that has occurred or is fictional during the application of the *case analysis*. The difficulties of the characters, the doubts, the decision-making process and situation, the factors that facilitate and hinder the solution, such as the factors influencing health, health beliefs, etc., can be presented by a lifelike story. It can also be a starting point for opinion formation and discussion.

In the problem-solving method, after the members of the group receive information about a given issue or situation, they first discuss in a structured

way to reach a consensus on the definition of the problem. After that, they try to develop the best solution strategy by considering the given options and alternatives. The method helps to mobilize prior knowledge and experience, open and critical thinking.

Role play: It usually means taking on the role of a person in a given situation and playing out how that character would act, what he or she would say in that situation. The method develops empathy skills, especially if we play the given situation by changing roles, so we can examine the same situation and problem from different points of view, hiding in the skin of each character.

Situation practice, simulation: A method of processing alternatives for solving a given situation. It develops problem solving, open and critical thinking. After describing the basic situation, the small groups / pairs play the situation, showing a possible solution to the problem. It is extremely important to discuss alternative solutions. Although there is a game here as well, the goal and the way of realization are different from the role-playing game.

IV.4.1. Resources, tools

In the planning of the educational strategy, in addition to the methods, the material and info-communication tools and infrastructural background necessary for their implementation must also be planned. Think of nutrition, sports, or first aid programs with special background needs. The design of the methods in this way must therefore take into account the institution, school, workplace, community house, health center, club, etc. that provided the location of the health education program. In the case of professionals representing the human resources of the programs, well-thought-out planning, organization and joint preparation are also required. However, a number of studies in the young population show that the skilled professional is not the most effective health educator. ‘Prevention can only be effective if there is a psychological meeting’ between the preventers and the host party, the prevented. National surveys and efficiency studies supported our experience. A sig-

nificant proportion, (60 percent) of young people turn to their peers with their problems, and only then to their parents, teachers, professionals. In the case of peer-to-peer programs, the effectiveness of the program in “reaching” young people far exceeds that of traditional educational programs. The mediators of the program find their way to their peers more effectively due to the similarity of their life situation, problem vision and communication style.” [45]. Thus, especially in school health promotion, effective group health education by peer educators may be one of the ways forward, which has been initiated in Hungary for several decades. Nowadays, however, there are also contemporary education programs that focus on many aspects of lifestyle and develop health awareness in a complex way, such as the TANTUdSZ program and the Complex School Health Education Program in the light of the COM-B model. [46,37,16]

IV.4.2. Assessment in health education

A common lesson from international and domestic literature is that in many cases the evaluation of the effectiveness of health promotion / health education programs is lacking or does not meet the criteria of scientific, objective measurement [47, 48]. This is even more a shortcoming in Hungary, but the TANTUdSZ program, which has already been mentioned several times in the chapter, appears as a positive example in this field as well, in which the efficiency analysis is carried out in all cases. “Based on this, knowledge, health behaviors and attitudes of the target population will be surveyed using a quantitative method (self-developed questionnaires) before the intervention and immediately after the health promotion program. Depending on the health promotion topic, we try to include other methods suitable for valid measurements in addition to the questionnaire survey” [37]. The international literature also emphasizes that evaluation should be an integral part of health promotion planning in line with objectives, but also makes evaluation recommendations, including the use of group pre- and post-tests and non-randomized controlled trials [28].

The lesson of the proposals is that an adequate assessment of the objectives must be sought. In the

case of shorter and less locally resourced municipal, school and workplace health education programs, an evaluation reflecting the goals and tasks must also be carried out. Therefore, the objectives and tasks must be considered first when planning the evaluation, as they are the subject of the evaluation of the health education program, and the valid evaluation methods must be designed accordingly. Particular care should be taken to ensure that knowledge, attitudes and health behaviors are assessed before and after the program using the same measurement tools.

The subject of the evaluation is therefore what our objective was. For example:

- expanding knowledge about the effects of alcohol,
- development of first aid skills, abilities,
- changes in contraceptive attitudes and sexual behavior,
- development of stress management methods, coping strategies,
- changes in exercise, smoking and eating habits.

The method of evaluation meets the criterion of validity if it is capable of adequately measuring the subject of the evaluation. Assessment methods in health education programs can be: circular question, interview, questionnaire, test, self-reflection, situation practice, practical presentation, preparation of a behavior inventory. While knowledge can be measured with a test and a questionnaire, the Likert-scale questionnaire and self-reflection can be used to measure attitude, and the behavioral inventory is more suitable for measuring change in behavior in the case of interviews, self-reflection and follow-up.

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Chapter V.

THE SETTING APPROACH IN HEALTH PROMOTION

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V.1. Introduction

The Ottawa Charter [1] opened a new era and new approach to health promotion. The basic document of health promotion defines the concept of health promotion, the preconditions of health, the scope of health promotion activities- emphasizing the role of public policy for health. The setting approach set out in the WHO Health for All Strategy [2] is also reflected in the Ottawa Charter, which states that health is created in the scenes of everyday life, where people learn, live, play and love.

According to the WHO definition, setting is the place or social environment in which people engage in everyday activities in which the interaction of environmental, organizational and personal factors affects health and well-being, such as schools, workplaces, hospitals, villages and cities [1].

The practical application of the scene-based approach was first realized in 1987 with the launch of the Healthy Cities program, initiated by the WHO Regional office for Europe. The success of the healthy Cities program soon led to the launch of several new setting programs in the 1990's: *Health promoting Schools, Health promoting hospitals, and Health and prisons*. The network aiming at workplaces as a setting was initiated by the European Union.

V.2. Early childhood scenes

For the upbringing of a healthy generation, the creation of an everyday living space - a healthy environment (interpreted as an everyday living space) is a basic need, as enshrined in the Ottawa Charter

(1986) at the end of the 20th century. This convention sets out the basic conditions and sources of health: peace, housing, education, food, income, a stable ecosystem, sustainable resources, social justice and equality. The healthy upbringing of children can only be ensured by having the above factors in different settings. As specific community settings provide an excellent platform for effective health promotion interventions, it is necessary to make the most of this.

The scene approach, as defined by the WHO, is the place or social environment in which people engage in everyday activities, in which the interaction of environmental, organizational and personal factors affects health and well-being, such as schools, workplaces, hospitals, villages and cities. [3].

The community scene program is a strategic plan and action program aimed at a specific living scene, e.g. improving the health of people in a municipality, school, workplace or any other community by changing the factors that affect the quality of life. The community scene program, while serving the solution of specific problems affecting the given settlement, school, workplace and other community (through the physical, mental and social well-being of the people living, studying and working there), also promotes the introduction of new social practices and their elaboration , thereby giving self-confidence and an opportunity for action [3].

Autonomously organized communities that are actively involved in solving their own problems can be treated as resources.

V.2.1. Safe Start Children's Homes Program

The original goal of the Safe Start children's homes is to promote the development of young children living in disadvantaged settlements with limited early childhood institutions and to strengthen parental competencies. In addition, the provision of a prevention service to compensate for the healthy development of children with socio-cultural disadvantages, in particular disadvantaged or multiple disadvantaged children. It should be noted that the institution does not provide a complex nursery service.

The main goal in setting up the institution was to eradicate growing deep poverty, deprived areas, segregates or parts of settlements and as many disadvantaged, low-stimulus environments as possible. The negative examples were compensating for and reducing the risk of "dropping out" of those living in "captivity" or traditions. It is a well-known fact that more children are born in poor families and that, due to the large number of children, the mother does not usually work, so the household is poor. The main goal is to ensure the optimal development of the children and to make the mothers a conscious parent, to learn community building, to learn to work with the nurse, the doctor, the social worker, the family helper, the child welfare service and other staff at the center.

The target group is primarily children aged 0-3 and their parents, mainly mothers, from the time they become pregnant. The institution provides services. The maintainer can be the state itself, the church and the foundation.

The institution, according to its principles, is accessible to all, free of charge, and is open every working day of the year. It collaborates with parents and facilitates interprofessional collaboration, supports such as early development, family assistance, etc.

The building, where the child and parents are assisted, is warm, dry, non-smoking, clean, safe (physically, emotionally), rich in stimulus (lots of

good quality toys, books) full of development tools (climbing surface, mirror), suitable for household to convey knowledge (cleaning, cooking, gardening).

The professional leader, the staff, and the professional manager of the children's house is able to perform the tasks, ensuring the appropriate selection of local human resources who will be the employee of the children's house - a helper who is preferably a local resident.

The leading tasks of the children's home include keeping records of, among other things, children (attendance, etc.), individual development plans, condition assessment, referral to a specialist, and recording of other activities such as family visits, discussions, lectures on parenting, health knowledge (family planning, childhood illnesses, healthy eating, leading a healthy lifestyle, etc.). The institution is open to children and parents at least 4 hours a day. Regarding the content of the sessions, it can be the development of creative occupations (fine motor skills, eye-hand coordination), the development of large movements (sense of balance, body scheme, movement development, etc.). - In terms of the content of the sessions, there can be developmental intervention (fine motor skills, eye-hand coordination development) and development of large movements (sense of balance, body schema, movement development, etc.).

In addition, activities that promote safe bonding, such as rhyming, fairy tales, poems, slide shows, puppetry (vocabulary development, etc.) and musical sessions, where a sense of rhythm is developed. It is also responsible for organizing community-building and educational programs aimed at parents, such as interactive lectures, gymnastics / zumba, cooking together, and volunteer activities.

The organization of human services is also a goal, such as the use of a development teacher, a physiotherapist, a speech therapist, a psychologist, etc.

It is mandatory to have two community open programs per month (holidays, excursions, etc.), at least one meeting per month with the kindergarten, child welfare service, family facilitator and

participation in “safe start” training, professional workshops and visits to other children’s houses.

The amendment to the NM Decree (Nmr.) From 1 July 2018/15/1998 on the professional duties of child welfare and child protection institutions and persons providing personal care and the conditions for their operation. (IV. 30.) contained a number of important changes for the Safe Start Children’s homes [4].

The target group of the events is specified by law, and one of the two community events must be specifically tailored to the needs of the families taking advantage of them. Under The Child protection Law (38 / A. § (1), The Safe Start Children’s Homes may also carry out activities that meet local needs and are duly justified.

Within this, they can recommend the use of nursing care, other health services and social and child welfare services, help with the transfer of family planning knowledge, prevent endangered pregnancies and help pregnant mothers prepare for having a child.

The Safe Start Children’s Home promotes the successful social integration of the child and the family in cooperation with the Family and Child Welfare Service and the Family and Child Welfare Center. The connection is also strengthened by the provision that the family and child welfare service informs the parent about the content and conditions of the services of the Safe Start Children’s Home in its area of care in order to alleviate the harmful effects of educational problems and deficiencies in the family, and assists in using these services.

In the regulation of **opening hours**, a more flexible operation that better meets local needs will be possible. The Safe Start Children’s Home must be open for an average of six hours per working day per month, with the exception that the Children’s Home must be open between 8 a.m. -12 a.m. every working day. Opening hours beyond the mandatory opening hours are determined by the person employed as a manager in the Safe Start Children’s Home based on local needs.

Holding a community event can be part of the opening hours on weekends and holidays. The **closure** of the Safe Start Children’s Home has also been regulated, based on which the Children’s Home can be closed *five working days* a year in order to carry out the tasks specified in its work plan and during the elimination of SSChH, also under *vis maior*.

A child aged 0–3 who visits the Safe Start Children’s Home with his / her parent for **at least forty percent** of the opening days of the given month is a regular user of the service provided by the Safe Start Children’s Home. At least half of the children who regularly use the service provided by the Children’s Home must be in receipt of a regular child protection allowance, together with the fact that at least half of the children receiving the regular child protection allowance must also be considered disadvantaged or cumulatively disadvantaged.

The number of children who regularly use the service provided by the Safe Start Children’s Home must **reach five children on a monthly average**. **A daily attendance sheet** must be kept for the use of the service provided by the Safe Start Children’s Home. The attendance form contains the child’s name, date of birth, and social security number (TAJ number). The identification code of the activity performed and whether the child receives a regular child protection allowance and whether he or she is considered to be disadvantaged or cumulatively disadvantaged must be indicated. The attendance sheet is signed by the child’s parent.

A person employed as a manager in the Safe Start Children’s Home must attend professional workshops organized for Safe Start Children’s Home . A person employed in a managerial position must complete the Safe Start Basic Training within one year of starting employment in a managerial position.

A person employed in a non-managerial position at the Safe Start Children’s Home must have a Nmr. Annex 2 II. Part ‘I. Basic care ’’title 2.1. with

one of the qualifications specified for the job of educating young children.

At the Safe Start Children's Home, the service is provided according to a methodology approved by the Minister. The Minister publishes the methodology on the website of the Ministry he/she leads and on the Social Sector Portal, and ensures that it is constantly updated. The administrative tasks are performed by the Directorate General for Social Opportunity (hereinafter: TEF) in the case of the Safe Start Children's Home, and by the National Institute for Social Policy (hereinafter: NSZI) for other services [5].

In 2013, 58 such institutions were established in the country, by 2020 the program was already operating in 172 settlements, where 2231 people aged 0-3 participated in classes and events based on the data of the CSO. Institutions have a very important role to play in catching up and providing child welfare services [6].

V.2.2. Opportunities for health promotion during nursery education

The nursery is part of the basic child welfare care providing day care and professional education for children raised in the family. The nursery places great emphasis on maintaining health as one of the basic tasks of nursery education. Health education is related to caring, somatic, emotional, willful, intellectual and social education. The goal of nursery education is to develop good health habits and a healthy lifestyle [7].

In the field of health care we can mark the following tasks in the nurseries: the creation and provision of personal and material conditions, compliance with epidemiological regulations, health rules for nursery workers, compliance with environmental hygiene rules (cleaning, handling dirty clothes, inspecting children's equipment, group room furniture, toys, yard toys) [8].

It is the task of the early childhood educator to create and control the personal and material conditions that help the development of the young child,

which is constantly monitored by the head of the nursery. The educator of young children is also responsible for maintaining the health of children with his or her example and personal skills, and by his or her health behavior he or she influences the education of parents and their children.

An important task of an early childhood educator is to ensure optimal conditions during the care and education program. The program will achieve its goal if: young children become trained, acquire health habits appropriate to their age, and their movements become more and more harmonious; they like to stay and work outdoors. The child learns a healthy lifestyle with the guidance of parents and early childhood educators, by making the rules internal. Imitation, the example of an adult, plays an essential role in the acquisition of hygienic operations. An age-appropriate right rhythm of life and a good agenda are essential for healthy physical and mental development.

By organizing nutrition, body care, dressing, exercise, breathing, rest and sleep, and related activities and developing habits based on them, we ensure that young children develop a proper rhythm of life [8].

V.2.2.1. Health care - epidemiology, providing cleanliness

The early childhood educator is obliged to appear for the Occupational Health and Fitness aptitude test before starting work. He/she must sign a medical declaration stating that he/she has no concealed illness and takes part in the examinations ordered by the occupational health doctor, on the basis of which his/her suitability can be assessed (Decree 33/1998 (VI.24.) NM). The head of the nursery is obliged to monitor this constantly. The employee is obliged to report to the head of the nursery if there is a change in his / her state of health that adversely affects his / her work (febrile illness of unknown origin, skin disease causing diarrhea, diarrhea and acute gastrointestinal complaints).

A record of age-related vaccinations should be kept on the medical record for nursery care. The detailed tasks related to vaccinations are defined

in the methodological letter issued annually by the National Epidemiological Center for the activities of the given vaccination year. It is the responsibility of the GP to record and report vaccinations. The vaccinated person should also be provided with individual documentation of the vaccinations.

If an infectious disease occurs or is suspected in the nursery, it shall be notified in accordance with Decree 63/1997. (XII. 21.) NM [9].

Nursery interior equipment and fixtures should be easy to clean and disinfect. Clean with a damp, disinfectant cloth. In the event of an outbreak, clean up in accordance with applicable public health regulations. Toys used in the nursery group should be washed with running warm water several times a day, if necessary. In other groups of children, children's toys should be washed weekly. It must be disinfected once a week and out of turn during an epidemic. Disinfected toys should be rinsed thoroughly several times with warm running water. Cleaning should be organized so as not to disturb children. Only rooms where children are not allowed can be cleaned during opening hours. Clean with the window open. The rooms should be tidied up after a meal and food scraps should be removed. Clean the floor with a damp, disinfectant cloth.

Nursery education has three main tasks:

1. Helping with emotional development and socialization
2. Helping the development of cognitive processes
3. Health protection, the foundation of a healthy lifestyle

Of these, the protection of health and the establishment of a healthy lifestyle are paramount. Protecting health, establishing a healthy lifestyle, creating a healthy and safe environment for harmonious physical and mental development, supporting development; meeting primary needs according to individual needs; health protection, health education, adaptation to the environment and support for the development of basic cultural hygiene habits

(agenda to help develop and maintain physical and mental harmony - including eating, washing, dressing, sleeping, housekeeping, rest, breathing, exercise); performing prevention and corrective tasks with the involvement of a specialist if necessary.

The health promotion tasks of an early childhood educator primarily concern young children, they also have an impact on parents, but they also need to pay attention to their self-education.

Parents have more options for health education, such as indirect education through children, and direct ones such as family visits, parental arrival and departure times, reception hours, parental meetings, open days. In addition, it is possible to pass on knowledge through a message board, health week and exhibition, etc. to transfer up-to-date knowledge in health education during the program.

In summary, nursery health education is the first and most suitable setting for developing healthy lifestyle habits, as the toddler is at the most receptive age stage. At this age, it is even easier for parents to form and shape because we can teach them to properly meet the basic needs of their children. We can say that a childcare professional has a great responsibility, as it is one of her tasks to make the right, healthy lifestyle and the right agenda a habit.

4.1.3. Tasks of health promotion in kindergarten

Visiting the next institutional scene of kindergarten is now mandatory for all Hungarian children over the age of three, up to the age of six. It is important to note that we are dealing with an scene for healthy lifestyle education that reinforces the process started during nursery education or, in the case of children now entering, continues or expands the activity of family education.

In any case, as one of the first elements of the public education system, it plays a key role in educating children for a healthy lifestyle.

The health care of children is regulated by the Decree (No. 26/1997 NM) 2011 law, in addition to the Public Education Act. Participation in professional, preventive screening, such as dental screening or hearing and vision screening, should be ensured during pre-school care. The kindergarten maintains a close relationship with the district nurse (although this varies from place to place) for the benefit of children, as it has a role in passing on and practicing modern health care to parents and kindergarten teachers in addition to organizing and conducting screening tests [10].

The Basic Curriculum for Preschool Education (ONAP) prescribes competency-based health education (2012) and identifies areas and related tasks that promote the healthy development of preschool children.

There are three main areas of preschool education:

- shaping a healthy lifestyle,
- emotional, moral and value-oriented community education,
- implementation of mother tongue, intellectual development and education

Healthy lifestyles cover areas such as body care, bathing, brushing teeth, eating, especially high-sugar foods and beverages, reducing the consumption of foods high in salt and unsaturated fats, and encouraging the consumption of vegetables and fruit and dairy products, and shaping habits for dressing, rest, disease prevention, and health care. **By the end of preschool**, most children will be ready to go to school. To start school, they need physical, mental and social maturity:

1. A **physically** healthy child is able to move more harmoniously by the end of preschool. He/she is able to intentionally control his/her movement, behavior and satisfaction of his/her physical needs.
2. A **mentally** healthy child is ready to go to school with an interest open to the end of preschool. His/her learning skills make you fit to start school. In addition to involuntary engraving and recall, as well as direct recall, intentional engraving and re-

call appear. The intentional attention that underlies learning appears, and elementary conceptual thinking is also emerging.) The development of spatial perception, visual and acoustic differentiation, spatial awareness, spatial movement development, body pattern development is of significant importance.

3. By the end of preschool, children are also **socially** mature for school. A socially mature child can adapt to more and more rules, be able to delay meeting his or her needs. His/her sense of duty is developing, and this is manifested in the understanding of the task, the keeping of the task, and the more and more efficient performance of the tasks. The development of your perseverance, pace of work, independence and self-discipline ensures this activity [11].

V.2.3.1. Education for a healthy lifestyle will take place in the following areas of education

Physical education

In accordance with the principles, special attention is paid to the planning, organization and provision of everyday physical education. Regular health-enhancing physical activity, movement games and tasks adapted to the individual level of development of children, and the means of developing, shaping and developing psychomotor skills and abilities. The regular use of exercise games, activities and tasks has a positive effect on the development of strength and endurance, especially among the conditioning skills, which influence the load-bearing capacity and healthy development of the children's body. Spontaneous, free-play movement activities are complemented by controlled movement activities. The kindergarten strives to make extensive use of cooperative movement games that best develop children. Daily physical education (morning and afternoon) and self-directed **exercises** in the open air, as well as physical education once a week - a compulsory activity - where the child performs controlled movements, serve his/her physical development.

Personal and environmental hygiene

The child comes to the kindergarten from the family with personal hygiene habits, which does not necessarily correspond to the daily hygiene order of the kindergarten, therefore it is very important that it is introduced tactfully, we teach the right rules and procedures. The main educational task is to develop hand washing habits (use of towels, combs, brushing teeth, handkerchiefs and the most intimate use of the toilet). They need to be careful and consistent in their design.

In the field of environmental hygiene, we primarily mean the preservation of the cleanliness of the nursery, its beautification, the ventilation of playing rooms, and the provision of heating and lighting. It includes keeping the equipment clean, cleaning the rooms, and constantly cleaning the toys. It is important that the environment is not only clean but aesthetically pleasing.

Healthy eating

It is a very important task to develop healthy eating habits (to ensure a calm, aesthetic environment) and to eat as colorful as possible, based on the principles of the SMART PLATE developed by the National Association of Hungarian Dietitians, which includes the principles of healthy eating [12]. We consider it an additional task to come to know the different natural flavors with children (salt and sugar-free foods, natural vegetables and fruits, water as the essential liquid) so that we can reduce the intake of unnecessary and harmful substances. Developed healthy eating and a weekly vegetable and fruit day make children aware of this. It is important to note that the so-called indirect education of parents should also appear as a goal. It is possible to increase the knowledge of parents during the parental meeting and during the health days. Reforming public catering also serves this purpose in order to reduce the unnecessary burden on children by giving them sugary and salty foods. Of course, the promotion of natural (tap water) forms of fluid intake is an additional task of everyday life in kindergarten.

Mental and social education

Mental health protection includes the practice of a healthy agenda, the development of appropriate behaviors, the management of emotions and moods, and the development of skills. The main tasks include the activity of social integration, helping to develop an accepting, tolerant attitude, as these are all patterns of learned behavior and record a lifelong process of adaptation in children. Patterns of integration and social relationships are the basis for personality development, so it is important to treat this sensitive period with the right weight.

Development of self-knowledge, personal skills, social interactions

The child acquires information about himself through social relationships. It is important to acquire basic knowledge during the years of pre-school that will enable the child to adequately meet his or her existing needs. He/she is aware of accident prevention and meeting your basic health needs. It is considered natural that the kindergarten teacher is a role model for maintaining and educating health.

Natural medium for integrated education - tolerance learning

Enforcing the principle of integration is becoming an increasingly important task in pre-school education. It is important for kindergarten teachers to teach to accept otherness. The aim is to establish and complete co-education as widely as possible. Only in this way can children get to know and master, that is, accept their atypically developing peers who are different from the majority society.

Summary

Kindergarten education plays a decisive role in the development of the individual in several respects, ie its later role, activity and relationship with its peers are established here and provide deeply ingrained experiences for the individual. The adaptation to a healthy lifestyle will be decided here, but the social relationships will also play a key role in the entire life.

V.3. TIE - Whole school health promotion concept (WSHPC)

Domestic health losses are mainly due to behavioral risks, as evidenced by the poor values of Hungarian health behavior indicators in the EU. Therefore, significant improvement can only be expected from changing the health behavior of the population, mostly by taking advantage of the scene approach, in the field of community health promotion, so it must be established in public education, especially in schools [13]. School health promotion seems to be more promising than interventions in other settings, as intervention in community health promotion can also lead to continuous reinforcement if school educators act in an exemplary manner.

According to Article [1] of the Basic Law of Hungary XX “Everyone has the right to physical and mental health”. The strategy entitled “Healthy Hungary 2014-2020” adopted in 2015 defines the main public health goals and tasks in accordance with the Basic Law, one of the interventions is comprehensive institutional / school health development (hereinafter: TIE/ WSHPC). WSHPC is a summary name for school activities that promote the preservation and improvement of health, the effective prevention of disease, health-conscious behavior, and a health-based approach. The implementation of comprehensive health promotion for schools was supported by several projects between 2013 and 2015. School health promotion (educating students in health) is effective when it is comprehensive. This means that all of the main health risk factors are affected; is present continuously and regularly in the daily life of the school; all students in the health promotion school participate; the entire school is involved; and involves parents and suitable NGOs working close to the school, as well as the social environment of the school [13]. According to the WHO 2020 strategic resolution, it prioritises intersectoral activity, meaning that schools need to develop healthy schools together with health care, meaning that an educational environment that supports health can help to improve learning outcomes. A child with a better learning performance is also in better health [14].

Whole school health promotion concept including the regular performance of the following four basic health promotion tasks in the day-to-day running of the school - with all students, the entire faculty and staff community, school health service professionals, parents and the school environment, with professional support and supervision:

- Implementing a **healthy diet** (preferably by linking local production to local consumption);
- **Daily physical education** for all students to meet health promotion criteria and other physical activities that complement it;
- **Promoting the transformation of children into mature personalities**, ie mental health, through person-centered pedagogical methods and the effective application of the arts in personality development (singing, dancing, drawing, storytelling, folk games and ritual games, crafts, etc.);
- Promoting the **acquisition of a wide range of health skills** at a skill level, in other words health education [15].

According to Somhegyi, comprehensive school health promotion results in better health through evidence in the following areas, according to evidence from the relevant international and domestic literature:

- improving learning outcomes;
- reduction of early school leaving;
- promoting social inclusion and equal opportunities;
- primary prevention of smoking, alcohol consumption, drug use and other passions;
- crime prevention;
- improving social relationships with peers, parents, teachers;
- improving self-knowledge and self-confidence;
- improvement of adaptability, stress management, problem solving;
- development of a mature, autonomous personality;
- primary prevention of chronic, non-communicable diseases (mental illness, cardiovas-

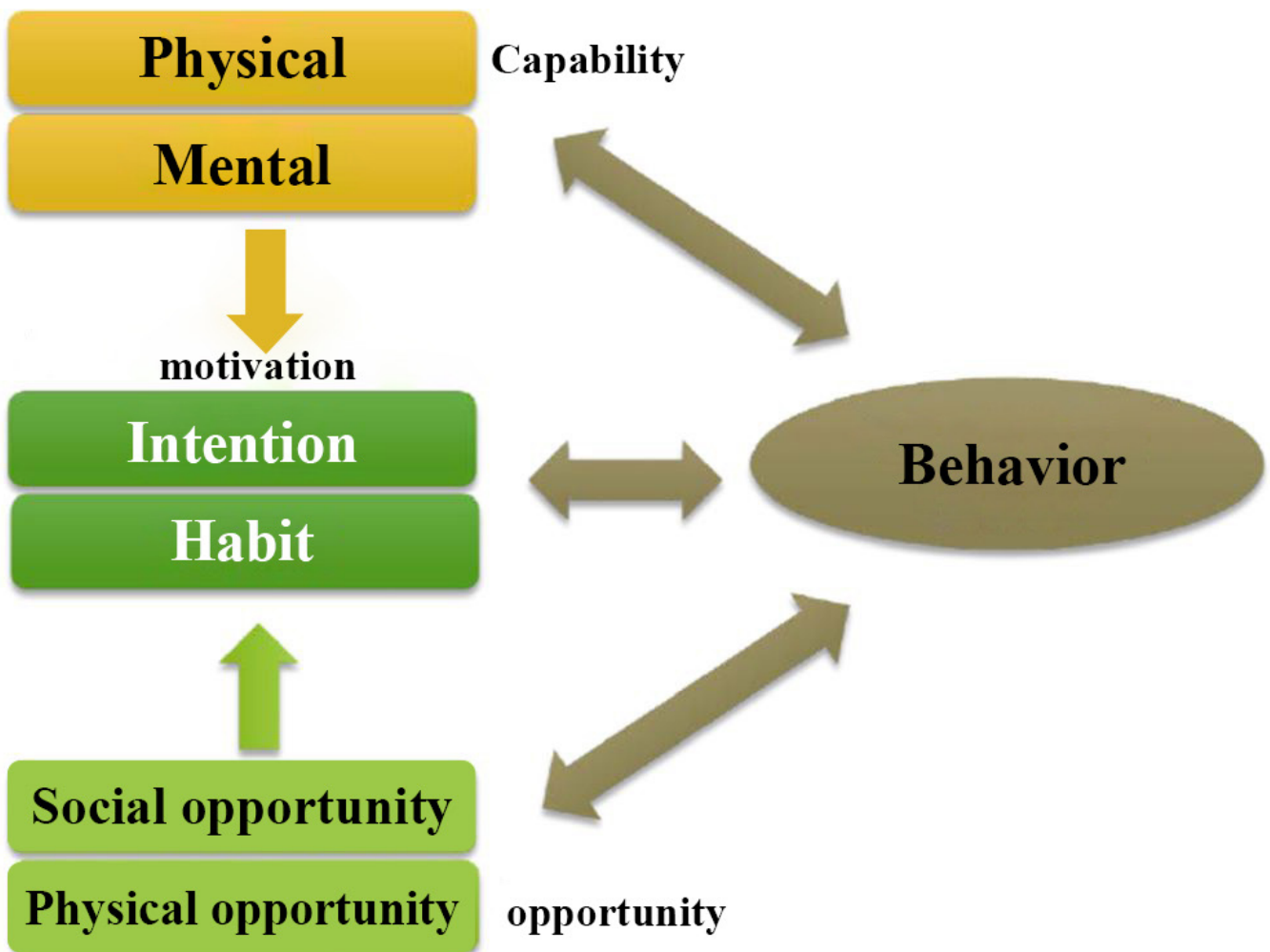
cular, musculoskeletal and cancer diseases, diabetes);

- increase social capital [15].

Based on the above, we can say that the effective implementation of comprehensive school health promotion is a public health, pedagogical and societal goal. Therefore, in March 2016, the Secretary of State for Education and the Secretary of State for Health issued a WSHPC THE Recommendation for educators, gathering where to find help for their daily WSHPC activities. This WSHPC recommendation was sent by the Office of Education to the principals of all schools on 19 April 2016 and posted on the website www.kormany.hu, since April 2018 it can also be read on the official website of the National Center for Public Health (NNK).

As we can see in the figure above, the so-called Comb-B system, the model of behavior change describing behavior change was developed by Michie et al. in 2011, synthesizing all the theories describing behavior change known at the time. The model includes three basic determinants, such as psychological and physical ability (*Capability*), social and physical environment (*Opportunity*) - which in a broader sense means the environment around the individual, and automatic and reflective motivation (*Behavior*) that influence behavior. [13].

The main direction and possible breaking point of health promotion aimed at changing health behavior is school health promotion in several respects. At school, the target group for health promotion is concentrated. In addition, children spend a signifi-



V. Figure 1: Behavior change model of the Comb-B system [13]

cant portion of their time in school, away from the environment that may mediate a negative pattern in the family. At this age, personality development is not over yet, young people are still receptive to change, to the acquisition of new thought patterns. Another advantage is that in order to change the health behavior of children, it is only necessary to change the health culture and thus the behavior of a relatively narrow group of highly qualified people (health promotion professionals, teachers). However, it is important to note that protecting the health of children for out-of-school social actors is more motivating for them than improving their own health.

McIsaac and colleagues examined the multilevel relationship between social actors and systems using an approach similar to the concept of impact networking in school health promotion. According to them, school health promotion should be seen as a complex system in which schools themselves operate as a complex system. The class communities formed by the students, the teaching staff, the parents are actors in this system. Their behavior is shaped by different interests and intricate systems of relationships. At the same time, the school, embedded in the system of local society, cooperates with quite a few socio-economic actors (eg local government, public catering, non-governmental organizations, etc.). In addition, schools are part of the national system of public education institutions, which influences the operation and infrastructure of schools through legal regulations, the provision of resources and the training of professionals.

In 2013, the Hungarian Student Sports Association launched a priority project called Strategic Measures in Physical Education in Health Development (T.E.S.I.), which focused on the only element of health development, physical activity. One of the research and development tasks of the project was to create a system for measuring and evaluating health-focused fitness that can be operated uniformly in the Hungarian school system. In the new physical fitness measurement system, physical educators use the National Unified Student Fit-

ness Test (NETFIT) to assess the fitness status of students during a specific measurement period in a given school year.

There have been several forward-looking regulatory steps related to another health behavior - healthy eating. With the EMMI Decree 37/2014 on nutritional health standards and the EMMI Decree 20/2012 restricting the supply of goods in school canteens, the legislators aimed to promote healthy eating habits among schoolchildren.

The aim of the WSHPC is to improve the health behavior of school-age children, to maintain health and to increase the number of healthy life years, ie to have independent living skills as adults, to be prepared for the considered and desired family planning. The child should be conceived and raised in a similarly healthy environment, able to handle the trials of life with love.

V.4. Occupational health promotion

V.4.1. The concept of occupational health promotion

According to the Luxembourg Declaration, “Health promotion at work is a joint effort by employers, workers and society to improve the health and well-being of workers. This can be achieved by:

- improvement and development of the workplace organization and the working environment
- encouraging active participation
- encouraging individual participation.[\[17\]](#) “

Occupational health promotion uses and blends information from many disciplines at the same time. Thus, in addition to health promotion, it also draws on the subjects of medicine (including occupational health, preventive medicine), human resource management, sociology, psychology, marketing, architecture and ergonomics.

International organizations involved in workplace health promotion:

- WHO (World Health Organization)
- NIOSH (National Institute for Occupational Safety and Health) of the CDC

V. Table 1: WSHPC concept in different countries [16]

SHE (Europe, 2011)	TIE 4 basic activity (Hungary, 2012)	WSCC (USA, 2014)	TIE concept (Hungary, 2015)
1. Individual health skills and competencies	1. Facilitating the acquisition of health skills at skill level	1. Health promotion	1- Knowledge transfer, skills development
2. Healthy School Policy	2. Everyday physical education	2. physical education and physical activity	2. Comprehensive physical activity (lifestyle, health behavior within the target area)
	3. Healthy nutrition	3. Meal conditions and services	3. Promotion of healthy nutrition (lifestyle, health behavior within the target area)
3. Health services	4. Promoting the balanced, mature personality development (ie mental health) of children	4. Health services	4. Health services (individual student support services)
		5. Counseling, spiritual and social support	3. Individual mentoring function
4. School social environment		6. Social and emotional atmosphere	5. School culture, positive atmosphere
5. Physical environment		7. Physical environment	6. Adequate physical environment
		8. Well-being of employees	7. Well-being of school employees
6. Community relations		9. Involvement of families	8. Creating a suitable family environment
			9. Community involvement
		10. Community involvement	10. Involvement of out-of-school communities

Source: SOLYMOSI J. B, (2016) Comprehensive school health development concept Health development, LVII. No.1.

- EU-OSHA (European Agency for Safety and Health at Work) - Hungary's focal point belongs to the National Inspectorate for Safety and Health at Work
- the ENWHP (European Network for Workplace Health Promotion)
- The relevant Hungarian organization is the EMEGY (Association for Healthier Workplaces).

V.4.2. Basic documents for occupational health promotion

Ottawa Charter

The 1986 conference's revolutionary document on health promotion already contained information on the workplace:

“(...) Work and rest must become a source of health for people. The way society organizes work should contribute to a healthy society. Health promotion results in living and working conditions that are safe, stimulating, rewarding and enjoyable (...)” [18].

ENWHP Statements

The basic agreements, common goals, visions and missions of the members of the European network are contained in these documents, which can form the basis and starting points for work for healthy workplaces (Luxembourg, Cardiff, Lisbon, Barcelona, Edinburgh, Brussels Declaration).

V.3.3. Scene-based approach in the workplace

“The community scene is where the person is at home, where the problem is at home, and where the intervention should be delivered” [19].

The workplace is also a special arena because individuals form a community here with the aim of generating (profit), receive salary and other benefits for their activities and work. For this reason, the primary goal of the current employer is to maximize production. If the employer is convinced that those measurements that are conducted – aiming at workplace health promotion -, do not reduce or even increase the productivity of the organization, it will only support or even initiate relevant processes. It is easy to see that if management does not see a guarantee for this (whether in the short, medium or long term), the leadership has no point in investing energy in these areas.

Today, it can be said that more and more employers (including mammoth companies like IKEA or Google) are recognizing the power of caring for the health of their employees, and in Hungary we can see more and more good practices and examples not only in the corporate sector but also in the public sector.

V.3.4. Need and demand in the workplace

When we begin to assess the needs and requirements of employees in a workplace, we need to make an important distinction between the two:

The necessity: in the case of a basic dissatisfaction, it takes the form of a feeling of lack.

Need: to meet a specific need [20].

According to some, needs should be taken into account in the development of occupational health (but these are often difficult to map, as many people find it difficult to become aware of or verbalize - even when asked), but it is also worthwhile to address the needs. If we pay attention to these well-defined needs, both at the individual and group level, it will be easier to involve employees in the health promotion processes, as in this case a kind of trust may develop, a sense of understanding in the workers.

Occupational health is intertwined with the theoretical foundations, subject matter and tasks of human resource management at several points.

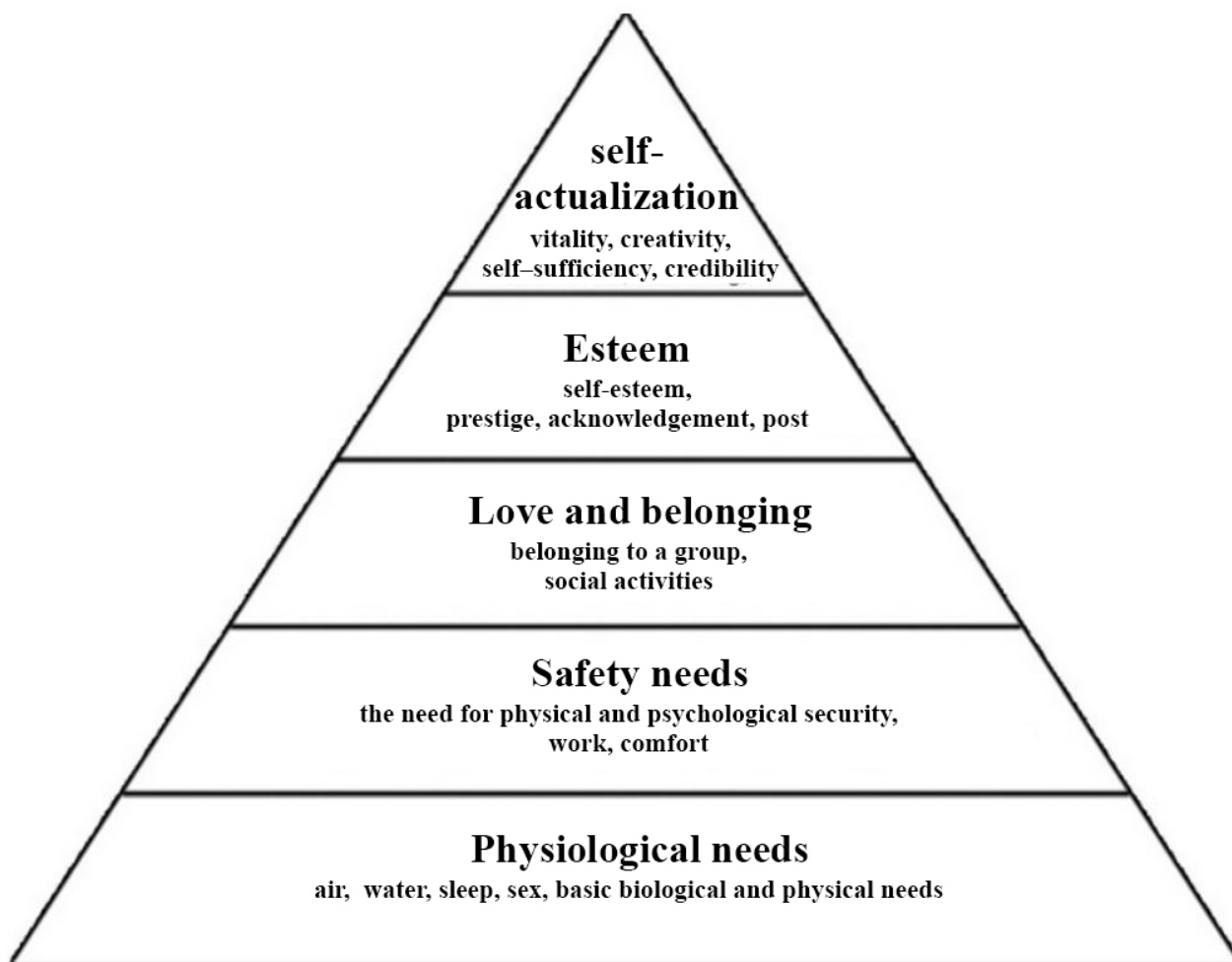
The theory of Maslow's needs hierarchy (Figure VII.2) is also widely used, and its original purpose was to motivate employees to increase productivity. However, this logic can be reversed: if a worker's basic needs at work are not met (eg meals, fluid consumption, going to the bathroom, adequate climate, clothing, etc. in case of temperature changes), it doesn't have any sense to deal with higher needs, energy and financial resources, they will not be receptive to these opportunities.

V.4.5. What makes a workplace healthy?

According to the WHO definition of a healthy workplace:

“A healthy workplace is one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and well-being of all workers and the sustainability of the workplace by considering the following, based on identified needs:

- health and safety concerns in the physical



V. Figure 2: Maslow's hierarchy of needs [21]

(Ildikó Soósné Göböly: Human Capital Management II. Károly Eszterházy College, 2014.)

- work environment;
- health, safety and well-being concerns in the psychosocial work environment, including organization of work and workplace culture;
- personal health resources in the workplace; and
- ways of participating in the community to improve the health of workers, their families and other members of the community”[22].

V.4.6. The work environment

The physical and social elements of the workplace environment intertwine to form an organic whole like physical and mental (mental) health. In organizational culture, the origins of both environmental dimensions can be found.

Elements that make up the built environment include the building (s) that make up the workplace, their style and ambiance, the color, material, condition, cleanliness, the layout of the rooms, and how they are separated (eg doors or larger American-style offices, where no more than space dividers are provided). In the case of the immediate physical environment, mention should be made of the furniture, lighting conditions (natural and artificial light), air-conditioning. Ergonomic aspects have an extraordinary effect on the health of workers and improperly selected or incorrectly adjusted furniture and equipment can also cause permanent damage to health. This is true of any activity that the employee performs in a repetitive manner, and includes activities that involve immobility for extended periods of time. Thus, it is necessary to optimize the work surface and tools not only for the

work process, but also for the physical characteristics of the employee. They often forget e.g. about left-handers who need devices and circumstances with a completely different structure.

Special mention should be made of the sedentary work and tasks with precautions in front of a monitor. (During the Covid-19 pandemic of 2019-2021, a lot of people went to home offices, which can probably last for many years in many workplaces, so it is worth dealing with this separately. Improperly adjusted / positioned chairs, tables, monitors, keyboards can cause long-term damage such as spinal hernia, various joint complaints, the so-called “pushed neck” phenomenon, or RSI syndrome (repetitive strain injury). Needless to say, if they do, they will not only cause the worker suffering and irreversible damage, but will also significantly increase the number of sick days, thereby reducing productivity. For this reason, it is no exaggeration to say that it is specifically worthwhile for the employer to pay attention to this area, resp. financial outlay. It is important to note that the appropriate material conditions are in vain if they are not

set specifically for the worker’s physical characteristics and habits. To do this, a specialist in ergonomics (occupational therapist), a physiotherapist or even a spine therapist can come in handy.

We should also mention the jobs that have a solid, built infrastructure, but a significant part of the employees / subcontractors do not spend time in these places, because a significant part of the work is done in “external” places. Construction, agriculture and certain services belong to this category. In these cases, the place of work is given a completely different interpretation. However, the lack of a built environment is important for certain basic human needs (e.g., washrooms, nutrition, extreme temperature conditions, additional aspects from physical labor, etc.).

Conditions involving health risks in the field of occupational health, which are mentioned here, can be clearly identified.

For special occupations, physical factors (eg vibration, extreme heat, solar and other radiation, dust, etc.), chemicals (carcinogenic, highly hazardous, flammable, explosive, etc.), biological risk factors (viruses, bacteria, fungi, pollen, etc.) may also occur. Adherence to occupational health and safety regulations, their consistent communication with employees, and the setting an example by managers are extremely important and essential for protecting the health of employees.

Occupational risk assessment and management is a complex task, which is a professional activity in occupational safety and health. It is also worth involving the employee in the process, and obtaining information from a number of sources.

The parts of the social environment are the direct and indirect social relations, the workplace and also the organizational culture, psychosocial factors, and (existing or missing) traditions.

It should be mentioned that the workplace is also the scene of tertiary socialization, so the social and communication norms native to the workplace (both in terms of open and hidden content) are significant in the long run. If we consider that new entrants or even “transit” trainees may be inclined to follow the standards experienced in their first job later in life, we can gain cross-generational advantages or fix disadvantages for the future.

V.4.7. Health planning or health promotion plan?

In the relevant Hungarian literature, individual and community-level planning processes are distinguished. The former is usually defined as health planning and the latter as health promotion planning, but we cannot talk about a uniform and consistent nomenclature yet. However, the workplace collective is also a set of individuals at the same time, so planning processes are relevant at both levels. This is because an occupational health promotion program is inconceivable where individual differences are not taken into account and there is no central intention to have or support personalized support services (such as an individual health plan).

The classic steps of a health promotion plan (as with other similar planning processes):

1. Description of status
2. Situational analysis
3. Strategic formulation and action planning
4. Execute programs
5. Evaluation, feedback (results, impacts, monitoring)
6. (Restarting the health promotion cycle)

It is clear that health promotion planning practically follows the principle of the public health cycle.

Another important step before developing an action plan is to conduct a SWOT and stakeholder analysis of the workplace. Only in this way, in the possession of the revealed information, can the process itself be tailored to the given workplace, resp. all its elements, the extent and pace of change, the main priorities. As with other communities, it is true in the workplace that it is only worth measuring outcomes relative to the level of development of the community, meaning we cannot talk about an “absolute zero” level. The point is to start a conscious development process.

Although Mihalic and colleagues have collected key impediments to implementation in other types of health promotion programs, one of these is insufficient organizational and managerial support. By definition, in the absence of this, we cannot talk about comprehensive workplace health promotion, at most sporadic, occasional programs and initiatives.

Some specific examples of programs and measures that can be implemented in the framework of occupational health promotion:

- action days, health days, sports days
- team building programs
- acquisition of ergonomic work equipment, checking the correct posture, practicing with an occupational therapist
- meal-related measures (lunch time, cultured dining options, microwave oven, restaurant, buffet, modification of their offer in a healthy direction, financial support of the healthy menu by the employer)

- fringe benefits: recreation, sports facilities, screening, lifestyle consultation, provision of therapy
- adequate sports infrastructure that can be used free of charge by workers
- compliance with prescribed rest periods
- establishment of a relaxation room
- identification of stress factors, development of possible solutions with the involvement of employees (this often involves the transformation of work processes)
- making communication processes more efficient
- involvement of employees in decision-making

V.4.8. A return on investment? Occupational health promotion in numbers.

In Hungary, in 2016, the Health Insurance Fund paid out HUF 89 billion in sick pay. And while the number of sick pay days has declined over the past decade, the number of sick pay cases is growing year by year. VII. Figure 3 also shows that (excluding pregnancy and childbirth sickness benefits) the first two places are tumors and diseases of the circulatory system, which are known to be preventable diseases. Approximately 2/3 of cases in this group of diseases are caused by smoking and malnutrition. Thus there is no question that the money, energy and attention invested in prevention is worthwhile for employers.

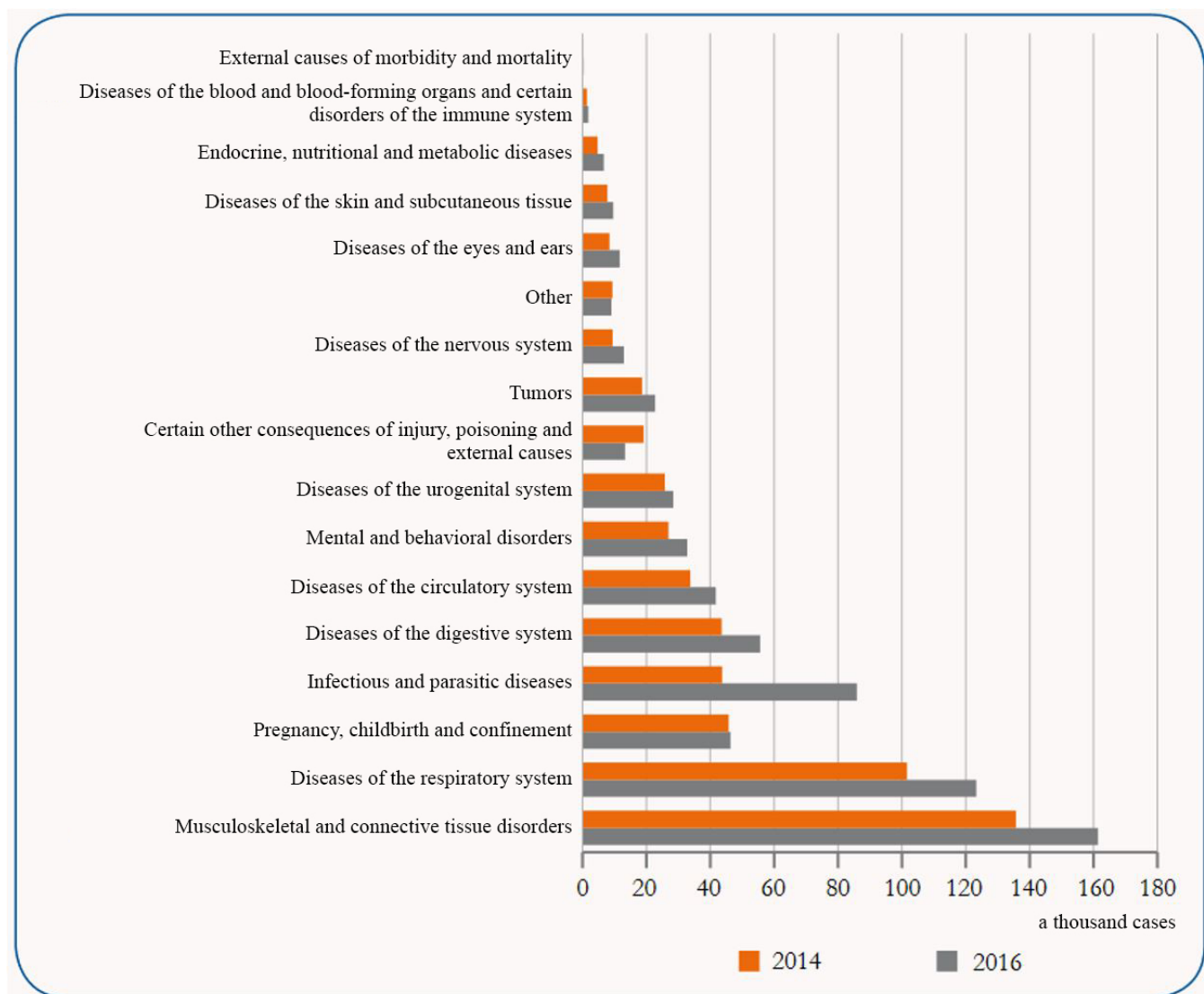
How to measure the effectiveness and efficiency of workplace health promotion?

Effectiveness: the extent to which we achieve / achieve the desired / expected result.

Efficiency: how much resources - money, human resources, time, etc. - we use to achieve the desired result.

Examples of indicators that can be used to measure effectiveness include:

- number of sick days (decreasing)
- productivity and efficiency increase
- fluctuation (decrease)
- employee satisfaction increases
- health behaviors and risk behaviors are changing favorably



V. Figure 3: Number of sick days per case by disease group [23]

Looking at the process of a complex, long-term health promotion planning, additional outcome indicators could include:

- the appearance of health and well-being measures in the strategic documents of the workplace
- the emergence of health and wellbeing (as a principle) in decision-making processes
- appearance of health and wellbeing as a value in the mission statement of the organization / workplace / organizational units, mission
- integrating health and wellbeing aspects into the organizational culture

ROI (return on investment) is a term used in economics to mean a proportionate return on investment. Understandably, employers want to know this number when different elements of occupational health promotion come up. According to a meta-study [24], examining 47 workplace health promotion programs, 46 of them saved money and 41 more than the amount invested.

Another study [25] found that the ROI of the studies examined was 138% on average, but this value depended on the quality of the study, and in some cases negative ROIs were found (meaning that in some cases, the amount invested was not reimbursed). All in all, it can be said that the pay-back of workplace health promotion programs and

methods depends on many factors, and further research is needed in this regard.

V.4.9. Good practices

Google

In the case of Google, we now highlight some elements of the organizational culture, which also has a tremendous impact on the physical environment.

It reveals a lot that the founders of Google grew up following the philosophical principle of Montessori pedagogy, which means questioning everything instead of “lining up” according to the rules. This spirituality permeates the entire organization, and so it is understandable why the following principles are most important: an inspiring work environment, freedom, an ownership approach instead of an employee, satisfaction, play and fun.

It would probably be an astonishing experience for socialized workers in the domestic public sector to step into a Google “office” full of bean bags, colorful slides and bicycles. A fun environment favors creativity and work can become a real source of joy. The management of the company is done with the active involvement of the employees, the opinion of the employees really matters and is important, and experience has shown that the introduction of some small measures and changes reduces the frustration to an extraordinary extent [26].

PTE MSc YourLife @ MSc program (higher education institution as a special workplace)

The initiative, launched by the Institute of Public Health, based on the principles of Health Promoting Universities, was approved in January 2018 by the then dean’s leadership. One of the basic theses is that a substantial change in the health status of the citizens of the Faculty can only be achieved if we treat students and staff as one community.

Following lengthy consultations and the surveys, the program managers organized their activities and communication around four pillars (nutrition, exercise, mental health, smoking). The YourLife team is a multidisciplinary team: not just doctors, dieticians, physiotherapists, but also marketing

and communications professionals, IT professionals, administrative staff and even students.

The program not only launched consultations under the four pillars, but continues to support the integration of health as a value into relevant processes in major decisions, infrastructural and other changes.

They also have a mission to coordinate the Faculty’s ongoing research and info-communication on lifestyle issues not only at the university level but also among lay-minded audiences.

V.5. The program and the methods of WHO European Healthy Cities

V.5.1. Setting programs in the activities of the World Health Organization (WHO)

The Ottawa Charter [1] brought in a new era and new approach to health promotion. The basic document of health promotion defines the concept of health promotion, the preconditions of health, the scope of health promotion activities - emphasizing the role of public policy for health. The setting approach to WHO’s Health for All Strategy [2] was also fulfilled in the Ottawa Charter, which states that health is created in the settings of everyday life where people learn, live, play, and love.

The concept of settings: The place or social environment in which people engage in everyday activities in which the interaction of environmental, organizational, and personal factors influences health and well-being, such as schools, workplaces, hospitals, villages, and cities. (WHO, 1998)

The practical application of setting approach was first realized in 1987 with the launch of the Healthy Cities program, initiated by the WHO Regional Office for Europe. The success of the *Healthy Cities* program soon led to the launch of several new setting programs in the 1990s: Health Promoting Schools, *Health Promoting Hospitals*, and *Health and Prisons*. The network aiming at workplaces as a setting was initiated by the European Union.

V.5.2. Introduction of the Healthy Cities program

In 1987, the WHO Regional Office for Europe de-

cided to launch a demonstration project to involve non-health sectors, municipalities and communities in health promotion. The program works according to the following principles:

- Multisectorality - *involving and bringing together non-health sectors to contribute to health promotion.*
- Commitment of urban decision-makers to health - *municipal decisions have a significant impact on the factors that affect the health of the population (e.g. environment, housing, social factors).*
- Partnership - *Extensive collaboration with other organizations in the implementation of the Healthy Cities program*
- Community Involvement - *Involving communities in decision-making mechanisms that shape their health*
- The principle of providing equal opportunities - *not primarily treated as a separate matter, but integrated into each program element, applying a horizontal approach*
- Providing sustainable development - *not just by organizing isolated programs, but by applying a system-wide approach*

The Healthy Cities program started as a demo project with 6 European cities (including the city of Pécs), but after the first few years it had 35 member cities, and in a short time it has grown into a worldwide movement. Currently, more than 1,500 cities in the European Region are part of the program as members of nearly 100 project cities and 30 national networks [27].

From the beginning, the WHO European Network of Healthy Cities sets its objectives for five-year phases. In each phase, the member cities work along specific themes and priorities. Phase VII began in 2019.

Hungary has been an active participant in the European network since the launch of the Healthy Cities program. The Hungarian national network is the Healthy Cities Association in the Carpathian basin, which currently has 24 member cities with 8 member cities across the border [28]. The main areas of activity of the Association are:

Preparing health plans for cities and institutions
Health impact assessment of local government strategic documents

Health promotion programs in different settings (school, workplace, neighborhood), for different social groups (women, men, children and youth, the elderly)

Providing information, raising awareness – improving health literacy

Networking, cooperation to promote health – organization of conferences, professional forums

V.5.3. The role of settings and that of the local governments in health development

Settings of everyday life play an important role in shaping health – the decisions of local governments, educational institutions, workplaces, and the social and physical environment they influence all have an impact on the health of individuals. Setting approach not only provides an opportunity to reach a specific group of the population in a targeted way (e.g. children, youth, adults) with a message, a knowledge transfer program, a health promotion activity, a project, nevertheless it allows us to transform the setting itself in a way that promotes the development of the health of individuals and communities that make up the setting, the ability to make healthy choices, whether through organizational change, organizational culture, or a change in the specific physical environment [29].

Development and improvement of the health and well-being of the population is in the interest and responsibility of both the individual and the society. In addition to the individual's abilities and way of life, health is influenced by a wide range of social, economic and environmental factors [30], therefore health development, improving the health and well-being of the citizens needs intersectoral cooperation which can be achieved with systematic planning. One of the tools in this complex decision-making process is health planning.

Regarding local health planning tasks, local governments have a key role to play, as their decisions have a major impact on the health and well-being of the population. In this way, it is important for

decision-makers to be aware of the effects of their decisions on health and how they can positively affect the health of the population and how they can reduce or eliminate factors that adversely affect health.

In many cases, the decisions of the local government are based on the medium- and long-term concepts and programs of the settlement, so it is especially important that the principles and values supporting health appear in these documents. The method of health impact assessment and city health plan helps to achieve this.

V.5.4. Summary of the method of preparing a health plan

The method of preparing a city health plan was developed jointly by the cities participating in the WHO European Network of Healthy Cities and WHO experts, based on their decades of work and experience, adapted by the Healthy Cities Association in the Carpathian basin, and the Association distributed this method among its member cities, and collaborating organizations and professionals.

A city health plan is a strategic planning document that sets out the city's lines of action for health and health promotion over a period of time [31]. The primary role of health plans is to provide cities or organizations with the means to build and maintain strategic partnerships to protect health and to create a common approach that can inform all sectors and stakeholders that: where health and quality of life can appear in their work. At the same time, they are aware of the impact of their activities on health, so the success of health planning is not only the content of the completed document, but also the collaborations established during the process and their future utilization for health.

A health plan can be prepared for a settlement or its different settings (workplaces, schools), or other institutions can also have a health plan (e.g. hospitals, prisons). The principles of the health plans prepared in each area do not differ from each other, they are the same as the method of the city health plan (adapted to the specifics of the given organization or institution).

A brief outline of the process of preparing a city health plan is provided in Section V. Table 2.

If you are planning to prepare a health plan it is inevitable that the health plan has its client who is also responsible for its implementation, so a health plan can only be prepared for the area within its own decision-making competence, which will be implemented.

It is important to note that the organization of community health promotion programs is not health planning in itself. The health plan of a given community (settlement, school, workplace, other organization) serves the purpose that the health promotion activities to be implemented should be based on the priorities set out in the health plan and the needs of the stakeholders. Thus, the use of existing resources (material, human, etc.) can be done in a planned and more efficient way. The health plan is not the same as the strategies for the operation and transformation of the health care system, which are often mistakenly called health plans.

A V. Table 3 presents some practical examples, with the help of the "Health Development Plan 2019-2024 of the City of Pécs" [33], that the solution of a problem area revealed on the basis of the research of the situation survey, how it appears in the health plan, illustrating the causal relationship between the health picture and the health plan.

V.6. Programs for active aging

V.6.1. An aging society. The place of the elderly in society.

The aging of the population (increase in life expectancy at birth, average age and the proportion of the elderly) has been a headache and a challenge for public health, population policy professionals and politicians for decades. An even more serious problem is the gap between life expectancy in health (without disability or chronic illness) and average life expectancy (years of ill-health). This period places a serious financial and other burden on society, families and the individual. Mentioned as a classic example, when a man in his 50s who is still in their active and productive years suffers from stroke, become paralyzed and as a conse-

V. Table 2: Outline of the process of preparing a municipal health plan

Preparation	Establishment of a working group, professional consultation, definition of working methods, and schedule
Developing health profile	Population-based survey Analysis of local government strategic documents using the method of health impact assessment Structured interviews with decision makers Assessing the state of the city using the WHO European Healthy Cities Indicator System
Developing health plan	Evaluating the results of the health profile Defining the principles, and priorities and goals Professional, political, and social consultation of the draft health plan
Health plan implementation	Implementation on the basis of annual action plans, with the allocation of the necessary resources
Monitoring	At the earliest after 3-5 years, with an update of the health profile

(Source: own editing)

quence needs chronic care. He can still live for many years as a result of modern treatments, but he will not be able to work and he will be placed in a chronic care facility or a family member will take care of them, leaving them out of work - thus increasing indirect costs.

Among the many aspects of aging, we must also mention the cultural background and embeddedness of this topic. Unfortunately, not only in the case of consumer goods, consumer societies do not strive to preserve and respect obsolete goods, but unfortunately this is also the case for our senior citizens. In our accelerated world, older workers (such as those about to retire) have a harder time keeping up with new technological and IT solutions, their workloads are decreasing and their reflex time is increasing, which in many cases leads to job losses. Although policymakers try to moderate these processes (e.g., incentives to hire a worker over the age of 55), but only shifting paradigm in this area can bring about long-term improvement. Think of societies where the elderly are really respected (eg Japan) and where citizens experience their own aging more peacefully (and

at the same time more actively) with a much more positive outlook on life. The experiences of the elderly can and should be exploited, both in the workplace and in family life.

We must also mention the changing roles in old age. With the fact that childbearing is postponed to a later age in Hungary (many women give birth to their first child after the age of 30), becoming a grandparent is also delayed. What was formerly common in Hungary, such as the coexistence of multi-generational families, the division of tasks in the family (eg while the parents work, the grandparents take care of the children, the grandparents also live with the family, their care is solved within the family, in fact, everyday) is now less and less found.

Families have become atomized, and we know of more than one million single-person households in Hungary, the vast majority of whom is elderly.

V.6.2. Healthy lifestyle in old age

The origins of many chronic diseases (causing death or destroying quality of life) can be attribut-

V. Table 3: Causal relationship between the health picture and the health plan based on the “Health Development Plan of the City of Pécs 2019-2024”

Research material (Health profile)	Finding (Health profile)	Proposed action (Health plan)
<i>Population-based survey</i>	Respondents were least satisfied with the size of the cycle path network when assessing factors related to everyday life	Further development of the cycle path network and the community cycle network is needed
<i>Health impact assessment of local government strategic documents</i>	Health impact assessment of local government strategic documents has been ongoing since 2011, which contributed to the fact that all documents examined during the research of the health profile included the principles of public policy supporting health	Based on the positive experience, it is important to analyze the strategy documents in this direction in the future as well
<i>Structured interviews with decision-makers</i>	Respondents need more opportunities supporting active lifestyle, adapted to the specifics of a given age group	Sports programs for the over-30s and the elderly; Complex health education programs for children and youth; Prevention and awareness raising programs should also be provided at city events; Increase the knowledge related to international health promotion days
<i>Assessing the state of the city using the WHO European Healthy Cities Indicator System</i>	79% of the homeless have a chronic illness that is one and a half times the average population; The estimated number of homeless people in Pécs is higher than the national average	Developing an action program to prevent the development of chronic diseases and reduce lifestyle health risks for homeless people

(Source: own editing)

ed to risk behaviors and bad habits that have accompanied individuals entering old age throughout their lives. It is not easy to develop new, healthier

habits, to leave bad habits at this age (neither). It is worth noting, therefore, that the prevention of diseases that cause problems in old age must be-

gin much earlier, in childhood and even in fetal age (e.g., caries prevention). Although they are important, we don't believe that programs aiming at exclusively the elderly would achieve real results at the level of the population or in the long run.

V. Table 4: Illustrates who is called elderly.

WHO classification of life stages	
50 to 60 ys	the age of deflection
60 to 75 ys	the age of aging
75 – 90 ys	old age
90 – 100 ys	very old age
100 y <	methuselah age

(Source: own editing)

A significant period of life is the period around retirement or when someone quits their job. This period involves the restructuring of everyday life, so with some awareness, favorable habits and a healthy lifestyle can be developed. While this is a natural change in the lives of many, it can also play a role for the employer, in recent years it can support (health) conscious planning for its pre-retirement employees.

V.6.3. Move

“(...) For motion is life, and life is motion. (...)”
 (Ron Fletscher)

With regard to ‘active’ aging, many are likely to be the first to associate with physical activity. And indeed, perhaps one of the most important elements of active aging is movement. Regular and well-chosen physical activity not only helps maintain muscle strength and the musculoskeletal system, but also reduces the chances of developing mental illness such as depression and dementia. If one chooses group exercise, the additional benefit is to maintain social relationships. The risk of falls in old age (and the serious consequences that re-

sult from them, such as pathological fractures, surgical complications, pneumonia, decubitus, sepsis, etc.) can be significantly reduced by regular exercise that develops a sense of balance, such as yoga, tai chi, the dance. At this age, it is also important to spare the joints, so swimming and walking are much more recommended, as opposed to forms of movement that suddenly affect the joints (eg running, especially on a concrete surface). Basically, just like in childhood, the grassroots approach (= love of play, experience and sports instead of results) would be desirable for the elderly.

In connection with the development of osteoporosis, it is important to mention that those who regularly performed antigravity-type movements, running and jumping in their childhood and adolescence, and their diet also contributed to an ideal maximum bone mass and density, have a lower risk of osteoporosis.

V.6.4. Nutrition

Losing a previously active everyday life can upset the balance of energy intake and use in many people. This can lead to overweight and obesity, which can be a precursor to many chronic diseases (diabetes, heart attack, stroke, joint disease), which is a very serious challenge to get out of this vicious circle at this age.

As in any other age, it is important to consume adequate amounts of vegetables and fruits in old age, not only to get fiber, but also to get important micronutrients into the body. This is not always easy, especially when you consider that many people are forced to eat with or without a prosthesis due to the loss of their teeth. Loss of appetite, decreased saliva production, decreased fluid intake and dehydration can be serious problems.

V.6.5. Mental health

As we age, we most often see a decline in cognitive abilities, which has a major impact on daily living, self-sufficiency and social relationships. The most common mental problems are dementia, depression and we should also mention the increased risk of suicide.

In the case of dementia and depression, it has al-

ready been shown that the Mediterranean diet reduces the incidence of these diseases [34], thus not only the beneficial aspect of cardiovascular disease should be considered.

Games, the player development activities, play an important role in the work related to the elderly. Many people try to maintain their memory with crossword puzzles, but cognitive abilities are also positively affected by solving simple puzzles or even math problems in a playful way for the elderly.

Hobby activities also play an important role. They are both joyful activities and structure time as regular and predictable parts of everyday life. Many older people do gardening, which contributes to physical activity, outdoor time, hobbies and even livelihoods. It requires planning, and means a goal from year to year, and it is not a negligible consideration that it also means a sense of usefulness at this age (just as at an earlier age, daily work did this).

Social relationships, within and outside the family, have significant protective effects on the elderly. Their close relationship not only with their children but also with their grandchildren has a beneficial effect on the mental health of the elderly, and it has been shown that this relationship has a positive effect on the (mental) well-being of their grandchildren [35].

V.6.6. Tools for active aging

Many seniors live alone in their homes, and the supplements, minor considerations that can either save their lives or protect them from falling, are especially important to them. These include handrails installed in appropriate places (next to stairs, bathroom), removal of thresholds, use of fixed mats instead of treadmills, proper crutches, walking frames, other walking aids. By using them, the elderly person can maintain their autonomy for a long time, which can also be important for self-esteem.

Technological solutions for active aging

A number of applications are available on smart-

phones to help the elderly improve their daily lives, including fall monitors, medication dispensers, heart rate monitors and magnifiers [36].

We must also mention here the ever-evolving distance diagnostic solutions that are slowly becoming a reality today and can truly save lives, make the efficiency of the traditional care system more efficient and complementary [37].

V.6.7. Good practices

Senior Dance of Joy

Senior dance (and even sitting dancing) [38] has been around in Western Europe for almost five decades, but has only recently become established in Hungary. It is a gentle sport that requires neither prior dance knowledge nor a dance partner. Its effects on depression and anxiety have been shown to be beneficial, with improvements in self-sufficiency, family and social roles [39].

Religious communities

It means a lot to those who practice religion a lot that they can meet other believers from time to time and attend various community events on a regular basis. These communities have a very strong sustaining power and, along with faith, being an important handhold, perhaps most for single seniors.

Home help with signaling system and further measures in Zalaegerszeg

An example is the Elderly Care Concept developed by the Zalaegerszeg (a Hungarian town) local government for 2020-23 (we believe that they deservedly won the Elderly-Friendly Local Government Award a few years ago) [40].

Older people are seen as a value, they support the employment and lifelong learning of older people, and they regularly organize awareness-raising programs to bridge the gap between the generations. The Concept not only deals with socially based benefits, but also provides services such as e.g. day care for the elderly with dementia, resp. if an elderly person needs temporary accommodation. Social workers regularly visit elderly people in need in their own homes and help them with

whatever they need, even to buying medicines or during the Covid-19 pandemic, even in shopping or other things to deal with.

They are also constantly working to make the environment safer, which is not only reflected in the investment in transport, but also in the growing number of emergency call devices that can be installed in their homes, thus prolong the time of self-sufficiency to avoid these people getting into nursing homes.

Providence Mount St. Vincent

An obvious solution to today's demographic challenge is the idea implemented in Canada [\[41\]](#) that preschool children attended as regular visitors a nursing home with 400 residents. Playing together, exercising, and eating have an extremely good effect on the mental health of program participants.

“Rent a grandma”

Instead of a babysitter, seniors who have a lot of free time and are in good physical and mental condition can be hired for childcare. It can be a service that works well in a voluntary or paid version.

“Click on it, Granny!”

At the beginning of the 2010s, seniors who were happy to learn the tricks of computer management took part in courses organized in Hungary from European Union funds.

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Chapter VI.

THE ROLE OF HEALTH POLICY AND THE HEALTH ECONOMY IN HEALTH PROMOTION (IMRE BONCZ - TÍMEA CSÁKVÁRI)

VI.1. Introduction

According to the *World Health Organization* (WHO), health promotion is a process that enables members of a population to improve their own health [1]. However, in addition to so-called individual responsibility-based health promotion, the health status of individuals can be maintained or improved at the societal level through political decisions, reorganization of health care or community activities. According to Table 1, health promotion is now not only a means of preventing healthy individuals, but can also appear at several points in an individual's life (possibly illness) depending on the severity of different health conditions.

In recent decades, critical appraisal of various health care services has become particularly important. One of the major challenges for developed countries in the health sector today is no longer just to ensure the efficiency and effectiveness of care and services. Every year, a number of new, advanced health technologies appear on the market, along which hitherto incurable diseases become curable, life expectancy and the number of healthy life years in the population increase. (Medical technology is any device or procedure that is intended to improve / maintain a state of health, be it a drug, medical device, surgical procedure, vaccine, screening program, etc.) The problem is that the growing public demand for these advanced technologies is difficult to meet and is often ex-

VI. Table 1: Strategies for health promotion in the population

Strategies for health promotion in the population			
Healthy population	Individuals at risk	Patients (showing symptoms)	Patients (diagnosed, identified disease)
Promoting a healthy lifestyle	Promoting a healthy lifestyle	Promoting a healthy lifestyle	Promoting a healthy lifestyle
Primordial Prevention	Organization of Screening Programs	Treatment	Treatment
Primary prevention	Reduction and elimination of risk factors	Disability prevention, rehabilitation	Disability prevention, , rehabilitation
	Development of resilience	Early detection	

Source: own editing based on a figure by Kumar and Preetha [2]

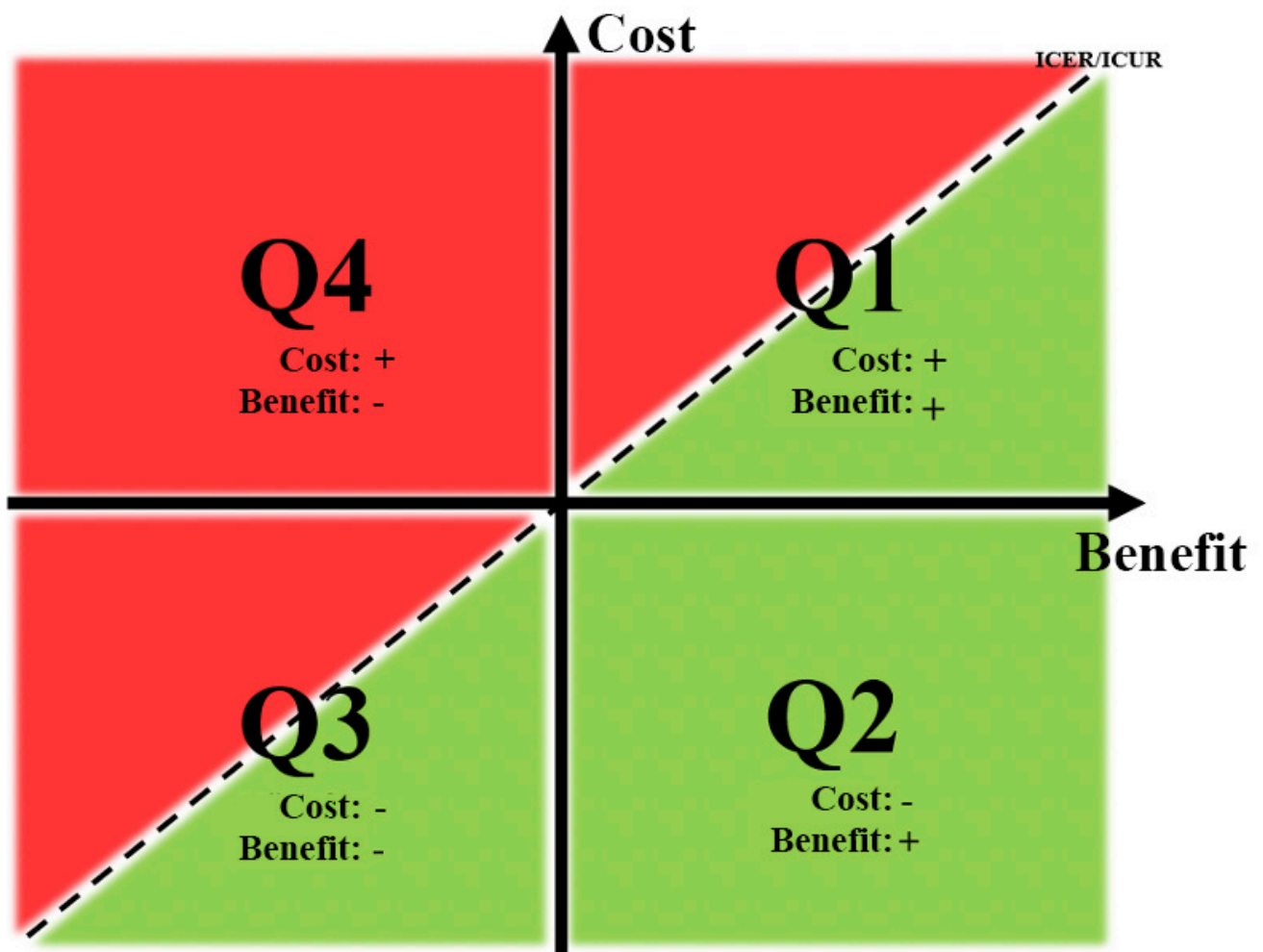
tremely costly. However, with the increase in life expectancy at birth, the number and proportion of the elderly in the population is on the rise, thus the proportion of chronic patients and the number of years spent in chronic illness are rising, which also increases health expenditure. However, it is impossible to increase the financial resources available for this expenditure at a pace that meets the needs of the population. This challenge has given birth to the era of efficiency in health care as well as health economics as a new, interdisciplinary discipline. It is a generally accepted view in economics that resources are always scarce in relation to the demands placed on their use. It is essential to know whether programs supported by the health budget are actually making the best use of the limited resources available to them. This is the most important question to be answered by health-economic

analysis. The results should facilitate the choice between each alternative, taking into account existing budgetary constraints [3].

In the rest of this chapter, we briefly present the basics of health economics analysis. The individual forms of analysis are also presented through practical examples, focusing on the examination of a preventive health promotion program in each case, in accordance with the topic of the chapter. Finally, we discuss how the results of such analyses can be communicated as effectively as possible to society and decision-makers, and how and in what fields they can be utilized through health policy decisions.

VI.2. Fundamentals of health economics analysis

In recent decades, in addition to clinical efficacy



VI. Figure 1: Possible outcomes of cost-effectiveness analyzes (red areas: rejection, green areas: inclusion) Source: own editing

in health care, the study of cost-effectiveness has become an increasingly important and unavoidable factor. Whether a particular medicine, medical device or even procedure is allowed to appear on the market or included in the social security-funded group depends on the coexistence of several factors [4]. When a new health technology emerges on the health market, its safety (guarantee that any side effects are rare and / or dwarfed with the expected health gains) and efficacy (evidence that the technology is indeed capable of curing the disease,) its cost implications need to be examined in detail. Is the new drug more expensive than the currently used (comparator) alternative? If it is more expensive, will it bring you so much more health gain over the comparator that it is worth switching to? The so-called **health economics analyzes** examine these issues.

A WHO work team outlined the essence of the analysis as “a systematic examination of an initiative and its effects to provide information to those interested in using it” [5].

Health economics analyzes can be incomplete and comprehensive. Incomplete analyzes examine only one technology in some respects (e.g., disease burden analysis, budgetary impact analysis). Comprehensive analyzes are used to compare two or more health technology alternatives, a new one that is awaiting inclusion or funding, and one that is typically already authorized and widely used (comparator) [6]. Here, basically, two factors are compared: the health benefits of the technologies / interventions studied, and the costs of using them. The possible results of the comprehensive analyzes are presented in Section VI. Figure 1.

To use the chart, you must first place the comparator technology at the origin of the coordinate axis, and then specify the location of the new technology on the chart, which can be one of the four “quadrants” (Q1, Q2, Q3, Q4). If the intervention is less effective and more expensive than the comparator, it falls into Q4. In this case, the decision is simple, we prefer the comparator. It is similarly easy to decide for Q2, when the new technology is not only more efficient but also cheaper with the procedure used so far (dominant). In the case of a new technology falling into quadrant Q1 or Q3, its

inclusion should be considered. In practice, the results for Q1 are most often obtained, meaning that the new alternative has higher benefits but also higher costs than the comparator.

Depending on what exactly we mean by health gains, we distinguish the following health economics analyzes:

- cost minimization analysis,
- cost-effectiveness analysis,
- cost-benefit analysis,
- cost-benefit analysis.

The essence of the four forms of analysis and its most important indicators are briefly presented below. In addition, for each type, we present a study in which a health economics analysis was performed for a health promotion program.

VI.2.1. Cost-minimization analysis (CMA)

This form of analysis compares at least two interventions with the same benefit in all cases. In that case, the only question is, if both alternatives result in the same output, which one will cost less? Its advantage is that it is the simplest to perform of the four health economics analyzes, as we do not measure the benefits, we only prove their equality, and it is enough to examine only the difference between the costs. The disadvantage is that if the consistency of the outputs is not checked, the result can be misleading.

Example: In their study, Tzeng et al compared two vaccination programs in a cost minimization analysis. Prior to 2005, members of the U.S. Army were also vaccinated against hepatitis A, hepatitis B, chickenpox, measles, and rubella. *The Accession Screening and Immunization Program (ASIP)* was introduced in 2005, the essence of which was to subject soldiers to serological testing before vaccination. The purpose of the test was to screen individuals who were immune to the disease and no longer need to be vaccinated. Nothing better justifies the need for ASIP, as 43.37% of the sample tested was immune to hepatitis B and 63.3% to measles and rubella combined! The effect was therefore the same for both programs (complete

protection against the listed infections) but their cost was different due to their method. But what costs less: to vaccinate everyone without a serological test, or to test everyone and vaccinate only those who are exposed to the infection? The authors examined the extent to which the two programs generated expenditure over a two-year period. Health costs due to vaccines, diagnostic tools, and side effects were assessed. It was found that the “general” screening program cost \$ 410,561 more than ASIP, which also used serological testing, so the latter was definitely worth using in the long run [7].

VI.2.2. Cost-effectiveness analysis (CEA)

In the course of cost-effectiveness analyzes, in addition to costs, health benefits are also assessed. The latter is usually shown by some natural indicator (e.g., number of seizures, blood sugar levels, etc.), while the former is also expressed in money. The advantage is that it is able to compare interventions with different degrees of benefit; the disadvantage is that we can only examine those with an output measured in the same dimension. Its main result is the *incremental cost effectiveness ratio* (ICER), which gives the unit cost of living when a new technology is adopted.

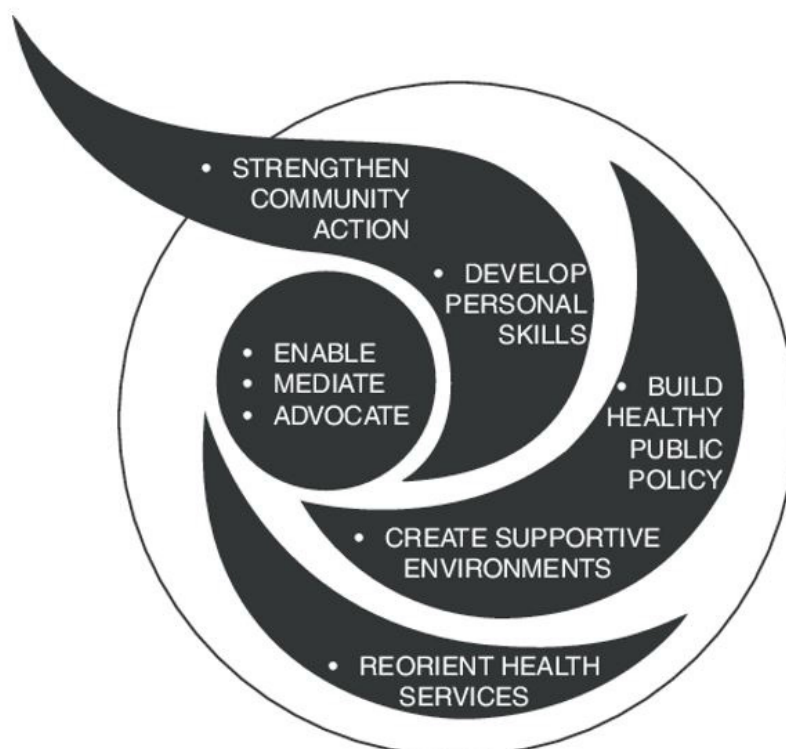
Example: Vijgen et al examined the effectiveness of an anti-smoking school program in a cost-effectiveness analysis. They formed three groups: the first (SI group) took part in a timed but “normal” anti-smoking program, the second received other leaflets and listened to a 45-minute lecture once a week for five weeks (SI + group), and the third was uneducated (control group). Regarding that their program focused specifically on repressing regular smoking, the output was the proportion of students who occasionally smoked. Based on this, a model was used to calculate how many years participation in the program would prolong the life of the participants (*life-year gained, LYG*). The cost analysis took into account the production of the leaflets, the salaries of the lecturers and the possible health costs of later smoking. During the one-year period of the survey, it was estimated that the proportion of smokers in the SI + group in-

creased by 5.6% compared to the control group (+ 12.6%), so the proportion of smokers in the study population decreased by 7% as a result of the program within the population. It has also been found that using the SI + program costs an LYG € 11,200 and a life expectancy in perfect health € 19,900 (ICER), making it more expensive but also more healthy. The study looked at students in the Netherlands, the Health Economics Analysis Directive states in Netherlands that any new intervention with a lifetime (adjusted for quality of life) of less than € 20,000 is considered cost-effective [8].

VI.3. Cost-utility analysis (CUA)

Cost-benefit analyzes differ from cost-effectiveness analyzes in that health benefits are typically expressed in terms of a *quality-adjusted life years (QALY)*. This indicator expresses how many years of a perfect quality of life a given intervention results in a patient. This eliminates the disadvantages of cost-effectiveness analysis, as this indicator can even be calculated for health technologies designed for different purposes (diseases). Thus, the effects of a drug can even be compared with a health promotion program as needed. Its main result is the *incremental cost utility ratio (ICUR)*, which indicates how much an acquired QALY will cost if the new technology is adopted.

Example: Hagberg et al aimed to investigate the cost-effectiveness of a comprehensive nutrition program among breastfeeding, overweight mothers. Between 2007 and 2010, 68 women were surveyed in two groups: the members of the case group were the subjects of a 12-week lifestyle change program to change their eating habits, and a control group was formed. Subjects in the case group initially underwent an hour-and-a-half consultation and underwent another one-hour follow-up examination at their home six weeks later. The control group received ‘general care’ during the investigation period. The cost per capita in the case group was \$ 583.8 per person, compared to \$ 281.3 per person in the control group. Quality-adjusted life years were also calculated, resulting in a total excess of 0.184 QALYs in the case group over the four years after the program compared to the control group (change in quality of life was meas-



VI. Figure 2: The “emblem” of the Ottawa Charter (1986) on the arenas of health promotion
Source: own editing based on the figure [15] Su et al.

ured using EQ-5D-3L and SF-6D questionnaires). Finally, it was found that the estimated cost per ICAL (ICUR) ranged from \$ 8,643 to \$ 9,758, depending on which quality of life questionnaire was calculated. If we know that the willingness to pay to finance a new, more expensive but more useful intervention in Sweden is \$ 50,000 / QALY, the cost-effectiveness rate for this program is 87-93% [9].

VI.3.1. Cost-benefit analysis (CBA)

Cost-benefit analyzes allow for the widest comparability of different technologies and interventions by expressing both health gains and costs in monetary terms. These studies have a clear set of criteria. If the monetary value of the benefits outweighs the costs, a positive decision must be made about the new technology. This is defined as either the difference between the two values (*net benefit*, *NB* where $\text{benefit} - \text{cost} > 0$) or the quotient (*benefit-cost ratio*, *BCR* where $\text{benefit} / \text{cost} > 1$). The subject of the study is considered to be profitable and useful if this indicator is positive and as high as possible. Although it is an indisputable advantage that even

completely different programs in different sectors become comparable, in Hungary it is not recommended to use it in healthcare. The reason for this - and the biggest disadvantage of this - is that in most cases it is difficult to quantify the health benefits (LYG, QALY, number of avoidable deaths, etc.) [10].

Example: In their study, Ichihasi et al examined an occupational oral health program with a cost-benefit analysis. The analysis compared three health promotion programs: one in the first, 2-4 in the second, and 5-6 in the third, and a control group was established. The analysis was carried out from an employer perspective, so a comparison was made between the costs incurred and avoided in the workplace, and it was also expressed which program precedes or generates what expenditure until the seventh year after its introduction. In determining the costs of the program, the following were taken into account: the wages of the health care workers, the cost of the equipment used, and, as an indirect factor, the cost of the employee's absence from work during the training / visit. The es-

timated cost of dental care incurred during the seven years following the introduction of the program was measured by benefit. The authors showed that the control group would incur \$ 645.82 in dental costs over seven years, with \$ 719.84 in the first group, \$ 522.14 in the second, and \$ 528.65 in the third. Based on these, the most effective oral health program was the version in which workers participated 2-4 times. The cost / benefit ratio (BCR) here was 1.46, compared to the first (-2.45) and third (0.73) groups [11].

VI.4. How is the health economics analysis of a health promotion intervention different?

The health economics analyzes described above are most commonly used to examine drugs, medical aids, or medical devices. In 1995, the WHO set up a working group, in collaboration with three government agencies (Canada, the United States, and the United Kingdom), with the goal of assisting decision-makers and practitioners in conducting health promotion analyzes. Although there has been a growing interest in analyzes of preventive measures in recent years, there are still relatively few examples in the international literature compared to health technologies [5]. A possible reason for this is that such assessments need to take into account greater attention and compliance with other criteria.

In addition to cost-effectiveness, efficiency and safety, the effectiveness of a health-promoting intervention is also guaranteed by its **applicability** (the joint fulfillment of the following three points), therefore it is worth examining these factors before implementing it.

- **Technical applicability.** It specifies whether sufficient resources (human resources, tools, capacity) are available for implementation.
- **Financial applicability.** It shows whether the program is feasible depending on the amount of money available
- **Social applicability.** Does it indicate whether the intervention is acceptable to the target population, is there a tendency to apply it widely among the population, thus guaranteeing its effectiveness? [3] Also referred to as the “capacity” of society.

In the case of health promotion programs, the examination of the fulfillment of the third point and its consideration by decision-makers is especially important. An intervention can be positive in all other ways, but if it is not accepted by the population for some reason, it will not be effective either [12]. For example, in the case of a special tax on unhealthy foods, it has been shown that if tax revenue is used specifically for health purposes, such as health promotion or screening programs, consumers will even accept a higher tax rate [13]. In a survey by Brownell and Frieden, the tax on sugary drinks received much more support from the public if they knew that the tax paid in this way would help fight obesity.

VI.5. The relationship between health policy and health promotion

If the effectiveness of a health promotion program is demonstrated through one of the above analyzes, it is more likely to be achieved through public funding. After that, decision-makers can apply health promotion and health awareness measures in several fields. The WHO defines the following levels through which interventions to address the health status of society can be implemented (VI. Figure 2).

VI.5.1. Developing individual skills

This includes all activities by which individuals can take control of their own health and acquire knowledge and skills (e.g. through education, advertising) that consciously change their immediate environment and lifestyle in the hope of a healthy life. This includes increasing the level of *health literacy*, which has become increasingly important in recent years and decades.

VI.5.2. Support for community actions

Community health promotion relies on existing human and material resources in the community to increase the public’s “capacity” and willingness to participate in health promotion processes. This requires full and ongoing access to information, health-related learning opportunities, and funding support.

A good example of individual and community

health promotion is a lifestyle change program for children in the Mohawk community in Canada (*Kahnawake School's Diabetes Prevention Project, KSDPP*). The beauty of the KSDPP is that cultural specificities have been taken into account in the organization of the project, thus increasing the willingness to participate. The program involved community-initiated local health care providers as well as researchers to create a long-term, sustainable program. In addition to the short-term goals (weight loss, increasing physical activity), the prevalence of type 2 diabetes has also been reduced [2].

VI.5.3. Creating a supportive environment

Living and working conditions have a significant impact on health. Basically, both the work environment and leisure time should serve people's health. At this level of health promotion, the main goal is to create safe, stimulating, satisfying and enjoyable living and working conditions.

WHO has created a guide that focuses on making the workplace healthier. They aim to provide practical assistance to employers and employees in implementing a healthy workplace framework. According to this study, "a healthy workplace is one where employees and managers work together to apply a process of continuous improvement for the health, safety and well-being of employees and the sustainability of the workplace, taking into account the needs identified:

- health and safety concerns in the physical work environment;
- health, safety and welfare concerns in the psychosocial work environment, including work organization and workplace culture;
- personal health resources in the workplace; and
- ways to participate in the community to improve the health of workers, their families and other members of the community" [16].

VI.5.4. Reorganization of the health care system

Responsibility for health promotion is shared between individuals, community groups, health professionals, health care institutions, and governments. They need to work together for a health

system that contributes to achieving the longest possible health. The reorganization of health services is primarily about the health sector focusing more and more on health promotion and prevention, not only on clinical and curative services.

An example is the work of the *Royal Australian College of General Practitioners (RACGP)*. Emphasizing preventive work, they have developed clinical guidelines for health professionals to help them play a role in supporting smoking cessation. This shift in emphasis in the workplace of Australian GPs means that health professionals are focusing more on disease and disease prevention measures [17].

VI.5.5. Public health policy

Health policy efforts to prevent, promote and improve the health of society can take many forms, including legislation (e.g. limiting salt consumption in schools, introducing daily physical education, benefits related to screening programs), fiscal measures (e.g. special taxes on tobacco, alcohol, high sugar beverages, etc.) and organizational changes (such as the creation of health promotion offices). The key is based on the coordinated operation of different sectors (health, income and social policy). Joint action will contribute to safer and healthier goods and services, healthier public services and a cleaner, healthier environment [18].

VI.6. Summary

In summary, in addition to efficacy and safety, it is important to demonstrate cost-effectiveness in health promotion interventions. In this way, we can be sure to select and finance the most profitable alternative from the available framework. In addition, it is a characteristic of primary prevention activities that the capacity of individuals (willingness to participate, change, etc.) should be taken into account in planning, so the introduction of such projects and the proper communication of results to participants and decision-makers are of paramount importance. Programs supporting health promotion and health education must be implemented at the individual, community and national levels. Last but not least, a healthy society will boost the economy, as its members can contin-

ue to work, take less time off work, so that overall, more resources are allocated to public tasks, including health care, in the long run.

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Chapter VII.

VII. COMMUNICATION (ORSOLYA MÁTÉ)

VII.1. Characteristics of health communication

In addition to examination, diagnosis, and treatment, health communication is one of the most notable tools for recognizing and treating health problems [1]. Listening to and understanding verbal complaints allows the caregiver to explain the information received in the light of the patient's mental and social characteristics, giving a more complete picture of the origin of the complaints [2]. Healthcare communication is the basis of the caregiver-patient relationship. With the help of communication, the caregiver and the patient can establish a relationship that can help achieve therapeutic goals. However, using it in everyday life is not always problem free: "*The gap between the physician and the patient is gradually widening first due to the rapid development of scientific knowledge and secondly, the diagnostic process based on these principles, and thirdly, doctors are less motivated to understand why the patient is asking them assistance*" [3]. Health communication is extremely affected by comprehension problems thus the patient rarely leaves his or her doctor satisfied [4]. Patients' low satisfaction is not due to feelings of professional incompetence, but is often due to unsatisfactory health communication [2]. Studies have shown that patient satisfaction is highly dependent on the quality of communication experienced during the diagnostic and therapeutic procedures [5].

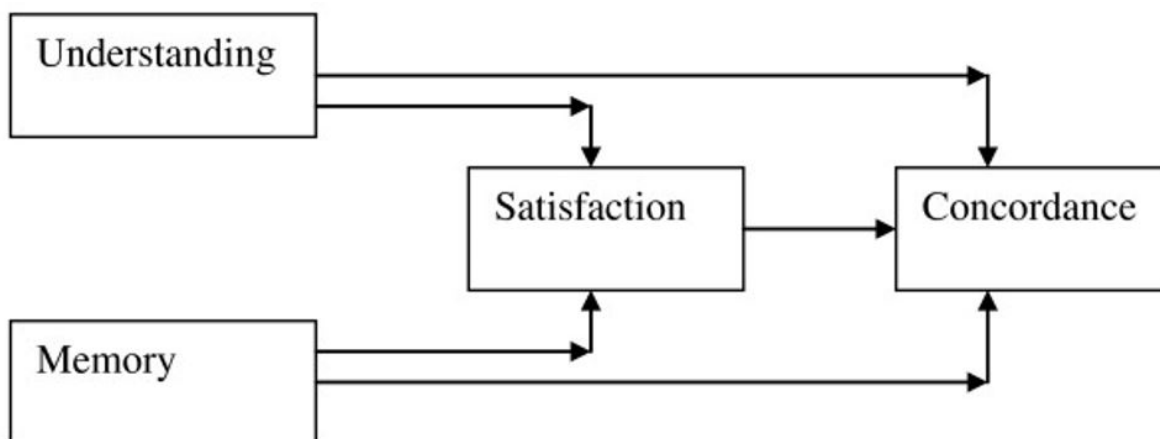
There are concrete benefits to good health communication. Effective communication also influences the outcome of therapy, which can be measured through the experiences of emotions, symptoms, and pain [6]. Overcoming difficulties in a healthcare caregiver's communication skills can be addressed through appropriate training. A doctor's practice typically involves more than 150,000

health appointments, yet health communication is generally not a mandatory part of medical training [2]. Most healthcare workers try to acquire these skills in a self-educated way [7]. As communication is an interactive process, patients also need some expertise to be able to participate in decision-making [5].

Models of health communication

The relationship between healthcare workers and patients worldwide has undergone significant changes since the 1960s [8]. This development is primarily facilitated by the personalities, experience and professionalism of the caregivers and the patient. Other determinants play a role in the process, such as the current spirituality of the age, the advancement of technology and the concomitant expansion of material knowledge, the growing recognition of the right to self-determination, ethical constraints, legal provisions and changed medical possibilities themselves [9]. Research on health communication has had recurring findings. Many patients were dissatisfied with the way caregivers communicated with them and many caregivers complained that patients did not follow their advice and did not follow treatment instructions [10]. One of the most influential models of health communication was Ley's cognitive model. (VII. Figure 1)

Patient satisfaction and cooperation are strongly related to the understanding of what is provided by caregivers and the extent to which the informed person can recall the information understood. Patient satisfaction can be increased by raising the level of understanding and exercising the retrieval of understood information [11], although the satisfied patient shows much greater cooperation.



VII. Figure 1: Communication model of satisfaction and collaboration
(Ley et al, 1976)

The other important model in this field is hall-marked after Korsch [12]. After analyzing 800 consultations conducted in children’s hospitals, he concluded that patient satisfaction depends on the affective behavior of the caregiver. When empathy, the patient’s acceptance of emotions is absent in communication, patient satisfaction is reduced. While Ley focuses primarily on cognition, Korsch builds on the determinants of successful communication on affectivity and social interactions. During the encounter between the health care provider and the patient, two groups of patient needs can be distinguished [6]: the cognitive need for information (to know and understand) and the emotional need to feel “taken seriously” (to know and understand) [6]: In response, the provider also considers two different patterns of behavior, that is instrumental behavior and affective or socio-emotional behavior. The first involves competencies such as asking questions and giving information, while the second provides answers to expressions of emotion, such as expressing empathy and interest [13, 14].

Disorders in health communication

Communication conflicts not only make the transfer of information more difficult, but also potentially impossible [15].

VII.2. Possible causes of communication problems

The depersonalization of healing

In the twentieth century, the medical diagnostic

technique and imaging procedures underwent an incredibly rapid development and expansion that greatly held back the motto of “the doctor, the best medicine” [16]. The focus is no longer on the patient but on the disease as a challenge to overcome. Von Uexküll, the founder of psychosomatic medicine, calls today’s technically advanced but non-patient centered medicine as the silent treatment of disembodied souls and soulless bodies (stumme Medizin) [18]. Although patients acknowledge and appreciate the importance of scientific methods in care, they are nevertheless more dissatisfied and critical of care than ever before [5]- it is thus the spread of the biomedical model, which has been undermined since the end of the twentieth century by the rise of the bio-psychosocial model and holistic healing.

VII.3. Insufficient communication training for health care providers

As a result of the spread of technology and science, medical and health science training is strongly science-based. In addition to processing a large amount of scientific material, there is often not enough time left to master the basics of communication and conversation management techniques [18]. Even possible knowledge of communication theory has no opportunity to be incorporated into practice, as students have relatively few opportunities to come close to a patient. Although they have the material knowledge, due to the shortcomings of communication training, they start their

careers with very little practical experience in the psychological management of patients. The shortcomings of communication training are then soon revealed [19]. In addition to a depressing sense of responsibility, a compulsion to perform, and an initial sense of professional insecurity, beginning health professionals are even struggled that they have not had the opportunity to learn and practice how to communicate with patients. According to Herschbach (1991), 90% of physicians are touched by “*possible long-term suffering of patients*”, “*the crying patient*” if “*the patient does not realistically see his/her chances of recovery*”. Difficulties in starting a career can lead a doctor to try to move emotionally away from patients, raise a wall and keep a distance, and try to keep communication to a minimum [20]. The doctor defends himself against mental burdens by avoiding communication [1].

VII.4. Communication gaps in the interaction between healthcare providers and patients

Patients usually complain that their health professionals communicate little with them, focusing mainly on problems and information, are not friendly, smile little, do not greet them, hold hands, and do not listen if they want to tell what they think about treating their illness [21]. The study showed when a patient starts talking or asks a question, the doctor usually interrupts him or her after 18 seconds. According to Waitzkin [22], in a 20-minute physician-patient consultation, physicians spent just over one minute per patient to inform them, although physicians considered this 60–70 seconds to be 9 minutes. Tuckett [23] also describes in his study that 36% of patients with whom their doctor made a diagnosis and outlined the significance of the illness did not understand what the doctor had told them. Communication disorders may also be due to the patient’s lack of understanding of the terms used by the physician. According to a study in Basel, where 88 patients were asked immediately after detailed medical information if they understood the nature of their disease, only 55% were fully aware of their disease, 29% understood about what the doctor said, and 19% understood less and 14% of patients did not understand at all what the

doctor said and the nature of the illness was not revealed to him or her. Although patients have the right to information, they are still overly inhibited to ask back [1]. However, according to a study published by Fallowfield [24], responding physicians identified cultural and ethnic differences, generational problems, patient emotional responses, and patient projections as the major causes of communication difficulties.

VII.5. Consequences of communication disorders

Impacts on caregivers

Burn Out Syndrome

Ramirez et al [25] describe that providing health care providers with the opportunity to develop their communication skills to meet their patients’ information and emotional needs more confidently [11, 6] could reduce the psychological burden on caregivers and their daily stress and would have a much lower risk of burnout.

VII.6. Effects on the patient

Patient dissatisfaction can negatively affect consultation with a physician [27]. It can range from medical malpractice or the use of alternative therapies.

Non compliance

Of all the factors that may affect compliance, factors attributable to deficiencies in health communication predominate. Only in a caregiver-patient relationship characterized by proper communication can a caregiver achieve that his or her patient is so confident that he or she is willing to believe that the therapy the caregiver is proposing will use and the patients behave accordingly [27]. According to studies published by LEY [1] and LAZARE [21], 50% of patients do not take prescription medications properly because they are not aware of their significance. Patients’ non-follow-up behavior plays a major role in the patient’s eventual hospitalization, and this has negative effects on the economy.

Initiation of malpractice lawsuits

In the event of treatment failure, patients who were dissatisfied with their physician’s communication

are much more likely to launch a revenge campaign against the physician, which may take the form of initiating malpractice lawsuits [5; 28]

VII.7. Models of the relationship in health care

There are basically three models in the literature, each with a different caregiver-patient relationship and a different way of decision-making. From Schofield's [29] research, we can also get an idea of which model information is preferred by patients: He asked 2,000 incurable patients about the amount of information they wanted. Nearly 60% of patients said they expected immediate and complete information from their doctors, 16% did not want to be informed, and a quarter of patients voted in favor of gradual disclosure.

1. The non-communicating (paternalistic) model

The oldest model, its roots originate from Hippocrates. The role of the father (patron) refers to the doctor / health care provider, the patient is the child who owes him unconditional obedience. According to the model, the caregiver, as an expert, is best placed to decide what is in the patient's best interest. Based on his or her expertise, the patient is able to choose the treatment that seems most effective. Its temporary advantage, according to Donovan, is that the patient is not confronted with the facts immediately and irrevocably. "Non-confrontation" as an individual coping strategy may be temporarily important to the patient.

Disadvantages include that the lack of honesty and openness places a significant strain on the caregiver-patient relationship and the patient may feel that he or she has lost control of his or her own life, on the one hand, and that the patient and their relatives do not have room to deal with problems and losses on the other. The temporary relief for the caregiver lies in the fact that he or she does not have to communicate bad news to the patient, which usually places a mental burden on caregivers [30].

2. An all-encompassing model

The model is primarily based on the fact that the patient has the right to all information about him or her so that he or she can then make responsible

decisions about his or her treatment. However, the patient has the inviolable right to make decisions about matters affecting his or her own body, but it is ethically correct for decisions to be made with the fullest medical advice available [30]. One of its benefits is that it helps build a caregiver-patient relationship because the caregiver treats the patient as a partner here. But there is a small group of patients who do not want information about their condition [31]. For these patients, this model offers no alternative.

3. Personalized communication

According to this model, the amount of information provided and the level of information is determined by the needs of the patient. This process presupposes a certain level of mutual trust and communication, the development of which takes a lot of time and work [32]. Decisions are made by the partners (caregiver and patient) together, so the caregiver's expertise and the patient's knowledge of his or her own needs and values prevail [32]. Optimal communication is a time-consuming process in which the provider constantly monitors the patient's need for and receptivity to new information, and also checks the degree of processing of previously received messages [33]. *"Although the model of personalized communication takes time and skills - and the busy doctor may feel that he or she does not have them - it is still the best model, as the underlying assumptions are supported by data from the literature. Furthermore, in today's consumer world, the emphasis here is on consensus, so that the patient's quality of life can be made the best"* [30]. Nevertheless, for a long time, the university did not teach the delivery of bad news that it is medical competence to decide how much fact to confront a patient at once, and all of this affects the quality of communication.

In the late 1990s, however, the previously paternalistic approach was gradually replaced in Anglo-Saxon countries by a different approach, personalized communication. 96-98% of patients with a life-threatening illness expect to be informed about their illness [34]. Although the patient has the right to know about problems affecting his or

her health and life, it is not his or her duty to be informed about the nature of his or her illness. This basically means that the patient has the right to decide how much they want to know. As the aging of society, the health status of the population, the growing cost requirements of the health care system, waiting lists and the shortage of doctors are serious challenges in Hungary as well. In most OECD countries, Advanced Practice Nurse (APN MSc) training and careers have been introduced to address these issues. According to the definition of the International Council of Nurses (ICN), this MSc nurse has specialized decision-making skills and a wide range of competencies in clinical practice. The MSc nurse with extended competence is able to provide a service equivalent to a doctor in a number of areas, as well as to establish a directional diagnosis and develop a treatment plan in a regulated manner (Enabling the extension of competence EMMI Decree 18/2016 (VIII.5.) [35]. Given that a job development and regulatory framework for expanded MSc nursing training is expected in the near future, nurses with extended competence will soon be in positions where they will need to communicate the diagnosis and share the treatment plan similar to a physician's competencies. After all, as a first step in providing information about the diagnosis, the caregiver should assess how much the patient wants to know about his or her own condition and shape the conversation accordingly [8].

VII.8. Situations requiring special communication

Communication with people with disabilities

Disability is a long-term physical, intellectual, psychosocial or sensory impairment that, together with a number of other barriers, can limit a person's full, effective and equal participation in society. Disability is a changing concept; anyone can become disabled at any time. Disability does not exclude health: it is not a disease but a condition that results from the consequences of the interaction between people with disabilities and attitudinal and environmental barriers. These barriers prevent a person with a disability from participating fully and effectively in society on an equal basis

with others [36]. Ministry of Social Affairs and Labor Convention on the Rights of Persons with Disabilities and its Optional Protocol. The fact of disability in communication with people with disabilities is often easy, but can be even more difficult barrier to overcome in everyday communication. However, it is essential to bridge it [37] as the right to satisfactory communication also applies to people with disabilities.

The use of special communication methods and tools can significantly improve the quality of life, independent living and social inclusion of people with disabilities, including in the field of communication. Among the sources of frustration for people with disabilities, it is worth highlighting communication difficulties. An essential condition for the survival of every living being is to be able to communicate adequately with its environment. If communication with the environment is hindered for any reason, the individual may be severely damaged as a result. In a non-accepting environment, a person with a disability is expected to communicate at a higher level than he or she can do with all his or her strength. Although it brings out the maximum in himself or herself, the environment does not understand him or her; people are dissatisfied with the person, and they give innumerable signs of their dissatisfaction, which can be a raised eyebrow, a clenched mouth, a wave, or even a depressing remark [38]. However, it is also worth considering people with disabilities as a homogeneous group, as the nature and types of disability strongly determine the characteristics of the communication with them. In the following, we will try to provide some important guidelines on the communication corner points that may affect the success of communication based on the nature of the injury or disability.

VII.9. The role of health communication in prevention

Properly implemented health communication is essential in disease prevention. Through communication, patient education, and counseling techniques in patient care, you can increase the effectiveness of a caregiver in preventing and

VII. Table 1: List of terms recommended and avoided when communicating with people with disabilities

Term to avoid	Suggested term	Meaning, Note
Sick, crippled	injured, in need of help	
Sick, crippled	injured, in need of help, Disability	
disabled, injured, blind, deaf as a noun	human, person with visual, hearing impairment	its extensive use makes the style difficult
Disabled, lame, crippled	Person with disability, person with paralysis	the word lame means only in slang: clumsy, dull, stupid. originally and fundamentally impaired in movement (paresis, plegia)
forced into a wheelchair	Person with wheelchair	
sightless	Visually impaired person	the blind interpret the sightless as deprived of the world in Hungarian
deaf	Hearing impaired person	for the deaf, the word deaf means loss of hearing or stupid in Hungarian
pointing	To sign, sign language	Use of sign language
Sign language	Sign language	Independent language
dwarf, dwarf growth	person with achondroplasia	

(Sérültek.hu, 2020)

recognizing health problems and illnesses early. Appropriate communication techniques, as seen in a number of examples in the literature in the previous chapter, increase the satisfaction of both caregivers and patients and, last but not least, improve the health outlook. If you think about it, primary prevention is essentially a communication task. Guides, patient information, and risk reduction for behavior change rely heavily on sophisticated counseling techniques.

In the future, caregivers at all levels of prevention must also be prepared to make effective use of patient education techniques under the auspices of

prevention and to come to terms with their patients in the further process of treatment according to a common decision-making model. A wide range of secondary prevention interventions require us to use the right counseling and patient information techniques and to communicate effectively, as well as the need to adhere to the potentially small elements of lifestyle change. Complex and / or controversial screening tests (eg PSA test) explicitly require the caregiver to be involved in informing patients and co-deciding why the patient needs this screening test and whether he or she really needs it. [39]. Invasive screening procedures (e.g.,

VII. Table 2

The nature of the disability	Proposed means of communication	
Mentally handicapped persons	Different skills and needs require different communication	
	even in the presence of an attendant, talk to the communication partner	
	clear, concise wording of the instructions	
	Don't be frustrated if you have to repeat yourself.	
	Don't end his or her words or sentences instead.	
Pszichiátriai és szenvedélybetegek	Symptom	Proposed means of communication
	disturbance of reality perception	Be simple and purposeful
	difficulty concentrating	Be short, repeat yourself.
	Stressful condition	Do not force the conversation, limit the information
	poor judgment	Don't expect rational conversation
	dominance of the inner world	Gain the client's attention first.
	Restlessness	Recognize the restlessness, the cause, and find a way out.
	mood swings	Don't take words to heart.
	fluctuations in plans	Stick to the justification of the original plan, the reasons can be reconsidered
	little empathy for others	To be interpreted as a symptom, do not classify the person
	Retreat	Start a conversation
	belief in delusions	Don't argue.
	Fear	Stay calm
	lack of security	the client should feel the acceptance
low self-esteem	Stay positive and respectful	

VII. Table 3

The nature of the disability	Proposed means of communication
Blind and visually impaired	avoid shouting
	verbal introduction
	in the case of a group conversation, name the participant
	to activate the attention by naming the addressee, offering assistance, only in specific situations, upon request
	avoidance of terms that are related to vision (there, here) in guidance. Correct: to the right, left, in front of, behind, etc. in relation to the blind or / visually impaired person, offering an arm, avoiding revolving doors, showing a handrail, giving attention on an escalator when stepping on, specifying a waypoint in open terrain
	providing information when an object is moved by the interlocutor
	recommended: Arial 18 bold, optimal brightness, shape for printed text
	direct your communication to the disabled person, ask him / her questions, feel free to use words to see and watch
Deaf and hard of hearing	seeing position when contacting
	visibility is important when reading from the mouth: illuminating the room, avoiding excessive lip movement, covering the mouth
	written communication is preferred, it is important to reduce background noise
	avoid shouting, communicate with concise questions
	even in the presence of a sign language interpreter, speak to the communication partner
	distinguish between deaf and deaf-mute
People with speech and language disorders	avoid presuppositions, gain certainty about the possibility of understanding speech
	shouting is not an option, it is not about deafness
	patience, don't take the speech, don't pretend to understand if you don't understand something
	in case of misunderstanding, ask him/her to say it in other words
	Accept it if, despite all your efforts, you still don't understand what you want to say.
	Never assume that someone with a speech impediment does not understand what you are saying, although he/she may need some means of communication (a communication board, a speech device).
People with reduced mobility	aligning gazes is important, sitting position, eye level communication
	even in the presence of an attendant, talk to the communication partner
	shouting is not an option, it is not about deafness
	avoid paternalistic gestures (head slapping or shrugging)
	simplification is unnecessary
	in the case of transport, there must be an empty route to the destination and there must be an empty seat without a chair in the meeting and in the restaurant
	push the wheelchair only on request, avoid leaning on the chair

cervical cancer screening) and physical examinations (e.g., pelvic, prostate, rectal, and testicular examinations) require explanations and empathic responses to relieve the patient's anxiety or discomfort [40]. Finally, self-examination techniques for early detection (e.g., breast, testes, and skin) require effective demonstration and educational skills. [41, 42] Tertiary prevention to reduce disease complications using only appropriate patient educational communication techniques can be really effective.

End-of-life prevention (treatment of avoidable symptoms and suffering) is one of the most complex tasks in health communication [43].

Regarding prevention counseling, three main categories of communication tasks can be distinguished: (1) information tasks and counseling, (2) improving compliance with healthy lifestyle recommendations, and (3) communicating with patients about screening and other procedures performed under the auspices of care. It is important to consider the social and organizational environment in which these services operate because they can have a positive or negative impact on preventive care and patient openness. Systemic effects on patient openness may include the patient's cultural and living conditions, personal values and barriers to accessing health care, physical and emotional barriers, and general societal norms and expectations. Impacts on the provider include difficulties and motivational factors in the health care system (e.g. reimbursement, availability of prevention procedures, available resources and other incentives or disincentives for providers), generally accepted standards of care and the cultural living conditions of the provider, working environment and personal values. The quality of the physical environment during care can have a positive effect on the atmosphere of preventive care. Reminders for caregivers and patients can encourage discussion and appropriate follow-up of prevention interventions. Health promotion posters carry positive prevention messages, contribute to patient education, and can serve as a reference for discussion. Patient education materials available in a health-care setting are tools for patients to take with them to carry out prevention tasks at home. Together,

these approaches form reinforcing messages in a prevention-friendly outpatient setting, conveying the message that health promotion and disease prevention are important priorities and topics for discussion, e.g. within the community of practice.

Information tasks and prevention advice

Information and patient information tasks related to prevention counseling can be divided into five categories:

- (1) Information leaflets for the detection of certain anomalies,
- (2) Risk assessment through medical history and assessment of risk behavior;
- (3) primary prevention messages to patients to avoid risk, exposure, or disease;
- (4) Counseling to change unhealthy / risky behaviors and / or introducing healthy behaviors,
- (5) Teaching patients about self-examination techniques. In some areas, information on the use of special information or screening protocols, and the use of behavioral and motivational information techniques are important.

VII.10. Screening

In the Anglo-Saxon countries, the use of so-called filter scales is extremely common, e.g. to screen for mental health problems (depression) or addiction problems (alcohol, drug smoking). The CAGE mosaic questionnaire contains [45] 4 validated, simple and straightforward items, and is widely used to screen for alcohol-related problems:

C— Have you ever tried to reduce your alcohol consumption?

A — Have you had a problem with your drinking habits in your family?

G— Have you ever felt guilty for something you did under the influence of alcohol?

E— Has it ever happened that you started drinking alcohol in the morning to calm your nerves or because you felt “weak”?

Gaining patient co-operation is crucial, thus given the sensitivity of patients, it is worth considering the design of screening questions that, for example, questions about alcohol consumption may follow questions about nutrition.

The questions can be introduced in a non-judgmental way if we say, “I ask these questions to all my patients.” Asking screening questions to all patients gives the impression of routine. The answers to the questions to be decided must always be neutral and impartial; the answer cannot be “great” or “correct,” because a different answer to another question may raise a patient’s suspicion that something is wrong with their answer. The patient should receive accurate, objective feedback on their results: “What you told me seems to be (you have a memory problem; you would feel a little depressed, etc.)” The patient’s feelings about the accuracy of the feedback should be checked and the rationale for the patient’s situation revealed.

VII.11. Risk assessment

The risk assessment is based on the entire medical history, and thus the provider’s communication competencies play a crucial role in how exploratory it can be. In order to assess the risk, it is important to assess the level of relevant risk behavior and to assess the potential environmental exposure to hazardous substances. The discussion about risk and risk quantification uses complex and abstract concepts and is influenced by the communication attitude and possible bias (both positive and negative) of the doctor and the patient. For example, patients have been shown to overestimate the risk of developing breast cancer or dying from breast cancer. When asked, 37% of women overestimated the risk of developing breast cancer and 77% overestimated the risk of death from breast cancer by 10 or more [45.]. Too much information provided at one time can also result in patients not being able to interpret it correctly [46].

The concepts of absolute and relative risk are difficult to understand and even more difficult to communicate. The risk should be accurately assessed and communicated correctly without unduly intimidating or conveying a false sense of security to the patient. This requires expertise and experience. The “ask back” technique assesses both interpretation and response, asking the patient to respond to what is said. This allows the physician to correct inaccuracies or misconceptions, and reflection is helpful in clarifying and treating fears and anx-

eties.

VII.12. Primary prevention advice

The objectives of primary prevention counseling focus on avoiding the onset of lifestyle risk behaviors or avoiding possible active intervention in the prevention of pregnancy. In pediatrics, practical guidelines for parents help with primary prevention, predicting the developmental milestones a child is likely to show at a particular stage of development, and providing guidance and support to parents [47].

Such guidelines can be used at any stage of a patient’s life, especially when the risk of initiating unhealthy behaviors increases. For example, older adults on the verge of retirement may be at risk of returning to unhealthy drinking habits, while those experiencing divorce may be at higher risk for STDs. Thorough psychosocial data are needed to determine the factors that may predict the possibility of unhealthy lifestyle changes. Prior guidance and other primary prevention messages should be tailored to the patient’s level of development, social and cultural background, and family and societal risk factors.

Suggestions for primary prevention counseling:

- Ask the patient to express his or her feelings and thoughts about the risk behavior (“what do you think about everyday alcohol consumption?”)
- Ask the patient to take a position on how he/she want to avoid the risk behavior
- Ask the patient to identify any inhibitory or supportive factors that may influence him/her to avoid or try a particular risk-taking behavior (“What would make you try (the behavior)? What is the reason for not trying it?”)

Find out the patient’s current avoidance strategy

- Reinforcing positive behaviors, feelings, values, beliefs, and strategies
- Propose additional / alternative strategies
- Discuss a mutually acceptable plan
- Strengthening partnership and support
- Planning for follow-up and control.

Health - related behavior change

The U.S. Prevention Services Task Force [48] recommends counseling about health behaviors if there is a strong link between behavior and exposure to the disease or risk.

It is advisable to advise patients to change existing health behaviors that could lead to serious illness and death. In earlier chapters of this book, Prochaska and DiClemente [49] have already discussed the transtheoretic model of behavior change, and Miller and Rollnick [5] have demonstrated the effectiveness of motivational briefings. Other counseling protocols, such as 4As - Ask, Evaluate, Advise, and Help [51] also provide a useful framework for planning counseling messages. Counseling methods that help patients change their health behaviors to promote prevention have the same basic elements: assessment, feedback, counseling, assistance, and follow-up.

The process of assessment: Determining the severity of the problem, the patient's perception of the problem, how the behavior has affected the patient's life, what they have tried to do in the past, what worked and what did not, and how the patient currently wants to change the behavior. Evaluation is effective when it is done in a supportive way and without judgment. The use of open questions and active facilitation is a key element.

- Feedback is important to clarify the issue to be addressed and to verify the accuracy of the data previously collected during the assessment phase and to confirm the consequences of the patient's behavior. An important element of effective feedback is the establishment of an explicit link between the behavior of interest and the perceived problems and / or personal goals of the patient.
- Counseling allows the doctor to make clear recommendations for changing behavior. Counseling should be tailored to the patient's health and personal goals, the patient's available resources, and their willingness to change. A list of options or alternatives for the patient to choose from facilitates the partnership between physician and patient.
- Assistance includes both informing patients

and problem-solving for the next step toward behavior change. Alternative strategies, an interactive discussion of ways to overcome obstacles, pre-targeting, clear and comprehensible instructions, and guidance on how to implement the next steps are part of the process.

- Follow-up is often a neglected key element during a short outpatient consultation. Time follow-up would allow the caregiver to evaluate the successes and setbacks of the behavior change process, provide positive reinforcement in effective strategies, and help the patient address challenges and frustrations.

VII.13. Self-examination

Teaching self-assessment methodology requires both knowledge of testing techniques and its limitations and a practical understanding of effective teaching strategies. Self-examinations — examination of the breast, testicles, and skin — require proper technique, tactile and visual skills from the patient. This can be done through demonstration, practice (on its own and on demonstration tools) and the use of additional educational materials to help patients. The patient should always be given the opportunity to present the examination procedure to the physician so that erroneous techniques and misunderstandings can be corrected.

VII.14. Adherence to lifestyle advice

Adherence to lifestyle changes, risk reduction, self-assessment, self-monitoring protocols, and chemoprophylaxis or chemoprevention, they all play important roles in prevention counseling. Emphasis on adherence to lifestyle advice is needed at all levels of prevention, not only in primary prevention (avoiding risk and / or disease) but also in secondary (early detection) and tertiary prevention (reducing complications by adhering to treatment).

Compliance with lifestyle advice is monitored to determine if the patient is successfully on the path assigned to him or her. The easiest way is to interview the patient. Further information can be obtained from laboratory or radiological findings.

For the patient, feedback in the event of failure should be non-judgmental and understanding. We also need to give the patient feedback on where he or she may be wrong in his or her argument for giving up his or her commitment to a healthy lifestyle. Empathy, legitimacy, respect, support, and partnership are especially important to make the patient feel that they understand, accept, and to avoid the patient's defensive attitude.

VII.15. Referral for screening

Several studies have shown that the recommendation of health professionals is one of the most important factors influencing a patient's decision to go for a screening test. It may be successful to recommend a screening test to a patient if he or she understands the importance and effectiveness of the screening test in prevention. The following communication elements can help in this situation:

- Inform the patient about the purpose of the procedure, what to expect, how to make the necessary preparations (e.g. colonoscopy). Information about possible side effects, pain, or discomfort will help the patient prepare.
- Knowing a patient's biases about the test can help us dispel their fears and convince him or her of the need for the test.
- Leaflets and patient education information materials can be an effective help, as these materials "accompany" the patient home, in calm conditions at home, regardless of the time factor, it is possible to review the description several times, which is an important step in coping.
- Discussing the results of the screening test is an important step in treating the patient, even if the finding is negative. In this case, talk about the date of the next test, what risk behaviors He/she should avoid in his/her lifestyle to be negative again. Partnership and support, positive feedback, they are also important here in the doctor-patient relationship [74].

VII.16. Communication in primary care

There are also quite a few screening tests in primary care that require proper preventive communi-

cation. This includes vaccination, blood pressure, blood sugar, but even body weight or abdominal volume measurement. These screenings also require the same communication technique as a screening that seems more serious to the patient, e.g. colonoscopy. It is also necessary to describe the course of the examination and to explain the results.

VII.17. Communication in specialist care

The communication tasks in specialist care for screening tests also depend on the patient's knowledge or previous experience of the procedure. It is important to assess the degree of prior knowledge e.g. with a simple question: "What is your opinion on e.g. Influenza vaccination?" At the same time, the caregiver is given a chance to learn and improve the patient's information, possible little information and misunderstandings. It is also important to review any past unpleasant experiences so that the patient can calm down or the doctor may suggest behavioral strategies that may help overcome fear or discomfort during the examination. If the patient has not yet taken part in such an examination (e.g. first pelvic examination, cervical cancer screening, rectoscopy), the caregiver may ask what the patient has heard about the procedure and clear up any misunderstandings. The presentation of the instruments and additional information using demonstration tools and / or simple diagrams will help the patient to understand the procedure. Dealing with any discomfort and pain during the examination is a complex communication task. It is also important to gain the trust of the patient that each manual step of the examination should be preceded by an explanation of what is going on, what and why the doctor is doing, and what it will feel like. Patients should be encouraged to let their doctor know if they are in pain or uncomfortable. Also for the aforementioned reason, it is often necessary to ask how patients feel and their efforts need to be perceived and evaluated. If an examination is inevitably uncomfortable, patients should be reassured that what they feel is normal, it is necessary to pay attention to and respond to the patient's facial expression. The patient should be treated empathetically if he or she is embar-

rassed or feels humiliated by the test.

The explanation of the test results depends on whether or not the results support this pathological process. If there is no abnormality, “everything is fine”, “normal” and “healthy” are good words to communicate the results of the tests. However, if there is a suspicion that everything is not right, it is important to communicate with the patient that the results are ambiguous for the time being.

When a problem is detected, adequate time should be allowed for the patient to understand the meaning of the findings, his or her feelings and concerns should be addressed, and he/she should be given the opportunity to ask questions or raise concerns. These should then be answered empathetically, using appropriate communication techniques, providing the patient with relevant information about additional screening methods, possible outcomes, and therapy for any disease [52].

VII.18. The role of mass communication in maintaining health

There has been tremendous progress in recent years in the innovative use of communication to address public health issues. Public health communication is defined as “the application of communication techniques and technologies to (positively) influence individuals, populations and organizations to promote conditions conducive to human and environmental health” [53]. The development of health education can be achieved mostly through health communication or public health communication.

According to AWHO’s European Regional Committee in 2011, EPHO (Essential Public Health Operation) [54] considers communication as:

“Public health communication aims to improve the basic health knowledge and health status of individuals and populations.”

People with inadequate health education spend more time in hospital and use the health care system more often than patients with high health education, and have more difficulty following medical instructions and judging the authenticity of health information [55]. Influencing health education can

also be part of the task of public health communication. One of the most effective means of public health communication is mass communication, which is realized through the media. The media generally means television, radio, newspapers and magazines. Their effectiveness lies precisely in their ability to deliver messages to large masses simultaneously. Their weakness is caused by the same mass use that the audience they reach is diverse and largely undifferentiated. This diversity is problematic in that in order for media messages to be effective, the messages must be designed specifically for that target audience. To put it simply, what is for everyone is not really for anyone.

The second, somewhat more specific group of media (targeted messages) is the means by which we can send messages to a specific group, which are in the form of newsletters, booklets, self-help guides, pamphlets, but which, due to their individualized nature, target a limited number of people.

However, there are overlaps between the two groups, as the distinction between mass and targeted media messages is partly artificial in that even mass messages can be made to some degree customized. The use of the media by the target audience is called “narrowcasting”, which can best be defined as “reaching a specific audience through a special medium” and involves selecting media channels and designing media content to meet the needs of a specific target group. A good example of this is e.g. a television channel for viewers of the same interest ”[53], e.g. Paprika TV or LifeNetwork.

Use of mass communication in public health communication

Basically, we distinguish the following uses of mass communication in relation to preventive health communication.

It can work:

1. in the instructor function,
2. in support function,
3. in promotional function,
4. in additional function.

1. In its function as an instructor, it is the primary and only means of achieving certain health promotion goals. There is already ample evidence that some messages in the media alone can effectively change harmful health behaviors or be a good tool in prevention. During 1984 and 1985, the Kellogg Company developed a nationwide media campaign to promote high-fiber cereal consumption and the NCI Cancer Information Service toll-free number. The campaign consisted of seven 30-second television commercials, public relations materials and special cereal boxes. NCI's recommendation to consume a high-fiber / low-fat diet was also highlighted on the boxes and in advertisements. Every element of the campaign has had a huge exposure. During these two years, the number of people who claimed to eat a high-fiber diet to reduce their risk more than doubled (from 2 to 5%). The prevalence of information related to the relationship between fiber content and cancer prevention has more than tripled (from 9 to 32%). Sales of cereal flakes also jumped, with more than 50,000 people contacting NCI for more information [56].
2. In the supportive role, it can reinforce knowledge of health behaviors that have previously been communicated in other ways, support changes in health behaviors, encourage people to sustain changes, or simply focus on issues related to healthy living. In the Five Cities project [57], information was provided in the form of social advertisements because their audience data showed that many relapsed smokers were so afraid of another failure to smoke that they would rather not try to quit again, as they would not. During the project, social advertisements spoke to local residents who had already successfully quit, who talked about their motivations, how they coped with the relapses, and how they started the program again after a relapse.
3. It is used to promote existing health promotion programs in its promotional role, to

introduce products and services that change health behaviors to members of the community, and to encourage the audience to call, write, or participate in programs. This is perhaps the most common role of the media in health promotion and is probably best known to the public. Regarding a smoking cessation program, King et al. [58] examined how participants learned about the campaign with the help of television advertisements for social purposes, newspaper advertisements, leaflets (in schools, libraries, workplaces, GP surgeries). Access via TV was the most expedient.

4. In its additional function, it effectively helps and supports personal, individual presence programs. In her research, Flay [59] examined 40 smoking cessation programs and found that almost all of them achieved a change in knowledge, attitudes, and changes in smoking habits. However, programs were more effective in which, in addition to a personal presence, handouts were distributed. In addition, smoking cessation clinics that provide printed materials were more effective than those that did not.

Facilitating changes in communication behavior in social media can be another important function. Media strategies and messages can be developed that try to engage family members, friends, co-workers and others in a shared conversation about health issues. Changes in this communication behavior can affect an individual's health behavior.

VII.19. Mass communication in the event of a crisis

A key advantage, especially in the event of an acute crisis, is that information can be delivered to users extremely quickly via the Internet. Through the Internet, health-related information can be made available faster (more up-to-date) through regular updates than traditional information materials such as brochures, posters, and encyclopedias allow [60, 61]. The Internet has developed into one of the most important sources of health information [62, 63], but it also presents difficulties and chal-

lenges. The current example of COVID-19 shows how the immediate availability of information on the Internet reduces the delay between the occurrence of an event and public attention and allows for timely crisis communication. However, it has already been shown in previous crises that behavior and media interest are not necessarily in sync with each other and therefore do not necessarily reflect the real risk situation [65]. In addition, the Internet offers an additional, versatile opportunity for innovative healthcare communication. As a result, the often one-way communication situation has become increasingly dynamic and multi-directional. Social networks such as Facebook, Twitter, Instagram or Pinterest allow individual people to network, allowing users to search for, provide, share, but also comment on and discuss (health-related) information. This means that recipients can no longer only “passively” consume information, but can themselves “actively” produce and disseminate it [61, 62, 63]. For example, personal anecdotes and experience accounts (narrative information) that are highly persuasive, mostly because of their high emotionality, can be shared [60, 63, 67-69]. However, as this information is not subject to peer review, its validity and reliability may be questioned in some cases.

However, health communication is changing not only through the growing importance of the Internet and social media, but also through technological advances. There are promising opportunities in health that can be used successfully for prevention and health promotion. In the U.S., 80% of people have a smartphone, making access to a wide range of the population relatively easy and inexpensive [70]. In particular, smartphone-based applications are evolving into a much-and-more widely used strategy for health communication. Various studies have shown that health applications can indeed be used to change health behavior [71 - 73]. The results of a comprehensive meta-analysis show that nutritional applications induce nutritional health indicators, such as body mass index, that are effective in both improving and altering eating habits [73]. Compared to traditional strategies for health communication, the use of applications allows

health communication to take place instantly, at any point in time, and in the natural environment, that is, in everyday life. In this way, the information can be made available when needed.

In summary, the benefits of traditional mass media communication in the field of health communication, such as long range and high cost-effectiveness, can be effectively combined with the benefits of interpersonal communication (directness and personalization of information) when using the Internet, social media or application.

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Chapter VIII.

PREVENTION OF MAJOR CHRONIC NON-INFECTIOUS AND INFECTIOUS DISEASES (ISTVÁN KISS, ZSUZSANNA ORSÓS, KATALIN NÉMETH)

VIII.1. Introduction

Despite the fact that the Covid pandemic, which has recently haunted the world, is still here with us, the leading causes of death in the 21st century are clearly chronic non-communicable diseases. The classic major causes of death in most of human history, such as communicable diseases, infant mortality and malnutrition, are declining even in most developing countries (although they are still a major public health priority in many countries), and incidence of tumors, cardiovascular diseases and other non-communicable diseases increase. In developed countries, the leading causes of death today are exclusively chronic non-communicable diseases.

It would be difficult to talk about health promotion without knowing the diseases that threaten our health and what are the risk factors that increase the risk of developing these diseases, or what are the protective factors that reduce the risks. Health is more than just the absence of disease, but the health status of a population cannot be characterized by ignoring the burden of disease. It is therefore necessary to talk briefly about some of the epidemiological features of the major diseases and, in particular, about the possibilities for their prevention. As this work is basically not about detailed epidemiology, the analysis of the risk factors and prevention options of all significant diseases would have far exceeded the scope limits. Rather than speaking briefly about all diseases at the level of mention - and therefore superficially - we aim to write about selected diseases or groups of diseases that are of outstanding importance in terms of mortality or disease burden.

VIII.2. The public health significance and main categories of cardiovascular diseases

VIII.2.1. Significance for public health

Cardiovascular diseases belong to the leading causes of deaths worldwide. According to the WHO estimates for 2019 that the most important cause of death was ischemic heart disease: 16.0% of all deaths were due to ischemic heart disease (coronary heart disease). Cerebrovascular diseases, the second leading cause of death, accounted for 11.2% of all deaths. While globally these proportions have shown an increasing trend over the last 20 years (2000: IHD: 13.2%, cerebrovascular disease: 10.7%), in high-income countries the trends have been exactly the opposite: 2019: IHD: 16.1 %, CVD: 7.4%; 2000: IHD: 22.5%, CVD: 10.9%. In developed countries, these two diseases are also the leading ones, not only in terms of mortality but also in terms of disease burden (as measured by the disability-adjusted loss of life years indicator, for example).

In Hungary, cardiovascular diseases account for about half of all deaths (49.4% in 2018; 14,587 people died of ischemic heart disease this year, and 4,981 from cerebrovascular disease). Unfortunately, we are in a very bad position in international comparison with these data. According to Eurostat's comparative statistics for 2017, Hungary ranked second in the EU after Lithuania in the standardized deaths for ischemic heart disease (1732/1000000). In order to manage this value in place, it should be noted that in that year it was below 300/1000000 in six EU countries and below 700/1000000 in 20 countries. It is interesting, that

at that time, after Latvia and Lithuania, there was the third largest difference between male and female deaths in Hungary.

VIII.2.2. Major cardiovascular diseases

As has been discussed above, the two most important groups of cardiovascular diseases are ischemic heart disease and cerebrovascular disease. These two diseases account for more than three-quarters of cardiovascular deaths (VIII. Figure 1).

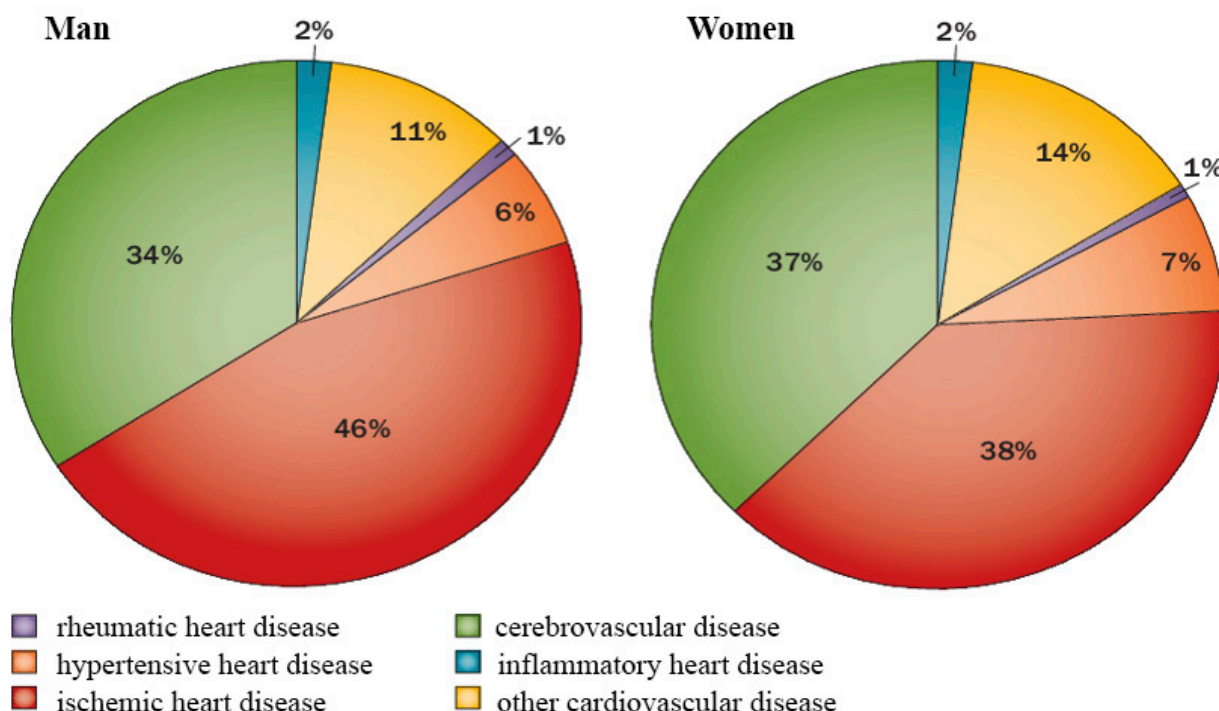
Eleven percent of “other” cardiovascular disease includes a variety of conditions, such as peripheral vascular disease, aortic aneurysm, cardiomyopathy, heart failure, various arrhythmias, valvular heart disease, and congenital disorders. These are diseases with a rather heterogeneous etiology, and in some of them the possibilities for prevention are very limited. However, it is very important for the prevention and therefore for the present chapter that the risk factors for coronary artery disease, the vast majority of cerebrovascular diseases, and

significantly hypertension are the same. Thus, with a well-designed prevention program, we can effectively fight diseases that account for more than 80% of cardiovascular deaths. Risk factors are presented for coronary artery disease, along with a discussion of hypertension, followed by a brief supplement on cerebrovascular disease.

VIII.3. A Risk factors for coronary artery disease, classification, effects, risk factor-specific prevention

VIII.3.1. Overview, classification

Since ischemic heart disease is the leading cause of death within the group, risk factors are discussed through this disease and, where necessary, supplements are added for other cardiovascular diseases. There are several risk factors for coronary heart disease, so these are usually organized into groups. Of the simpler and more complex grouping options, we describe the simplest possible and another, a bit more complex one. The simple solution is to talk about risk factors that can be modified (influenced) and not modified (not affected).



VIII. Figure 1. Mortality rates of major types of cardiovascular disease in men (a) and women (b) (WONG et al, Nature Reviews Cardiology 2014 11: 276–289)[1]

Uncontrollable risk factors include age, gender, race, burdensome family history, and other genetic factors. The other risk factors belong to the other group, as they are environmental, lifestyle or the resulting risk factors, as well as those that can be influenced by lifestyle changes and medication. There are a number of risk factors in this group, such as physical inactivity, obesity, smoking, and inadequate lipid levels.

A slightly more complicated categorization is the modification of the grouping published at the 5th Prevention Conference of the American Heart Association by Mayo Clinic staff (VIII. Table 1).

According to the original wording, traditional / conventional risk factors are those that are the direct causal factors of atherogenesis. The increase in risk caused by predisposing factors is partly due to conventional factors, but may also have independent effects. Conditional risk factors may increase the risk of coronary artery disease in the

presence of conventional factors (hence the term “conditional”). As our knowledge of cardiovascular disease continues to grow, the table is not “perpetual,” some factors may change or new ones may appear.

VIII.3.1.1. Risk factors

In the course of the discussion, we proceed in the order of Table I, but there are also risk factors that are not included in the table.

VIII.3.1.1.1. Smoking

The cardiovascular risk-increasing effect of smoking has long been known. One of the first and very important findings of the Framingham Heart Study (one of the first major prospective studies in the United States to examine the risk factors for cardiovascular disease - a milestone in the history of cardiovascular prevention) in 1962 was that smoking increased the risk of heart disease [2].

Smoking is one of the leading health damaging

VIII. Table I. Classification of cardiovascular risk factors

Conventional	Predisposing	Conditional	Novel
Smoking	Overweight or obesity	Homocysteine	Lipoprotein-associated phospholipase A2
Hypertension	Physical inactivity	Fibrinogen	Pregnancy-associated plasma protein A
Elevated serum cholesterol	Male gender	Lipoprotein (a)	Asymmetric dimethylarginine
Low HDL cholesterol	Family history of early coronary artery disease	Small LDL particles	Myeloperoxidase
Diabetes	Socio-economic factors	C-reactive protein	Nitrotyrosine
	Lifestyle / behavioral factors		Oxidative-stress markers
	Insulin resistance		Allelic variants of some candidate genes

source: American Heart Association

agent, an addictive disorder which may cause fatal consequences. Lifetime smokers will have a 50% chance of dying from smoking. Smokers lose about 10 years of their life because of this habit - compared to 3 years for severely hypertensive patients and one year for mild hypertensive patients. According to the INTERHEART study, smoking was responsible for 36% of the population's additional risk of a first heart attack. The 10-year fatal cardiovascular risk of smokers is twice that of non-smokers [3].

We know of a number of mechanisms that explain the health-damaging effects of smoking on cardiovascular risk; some of them are:

- The sympathetic activity-enhancing effect of nicotine leads to an increase in blood pressure, an accelerated heartbeat, and increases the oxygen demand of the heart muscle. Nicotine also plays a crucial role in the development of addiction. Narrowing of the coronaries reduces the oxygen supply to the heart muscle.
- The carbon monoxide in cigarette smoke reduces the oxygen-carrying capacity of the blood, so meeting the oxygen needs of the organs can only be achieved by pumping more blood, which puts a significant amount of extra work on the heart.
- Oxidative damage, free radicals. Free radicals contribute to the formation and maintenance of oxidative stress, the oxidation of lipids. As a result, nitric oxide production (a molecule with a strong vasodilatory effect) is reduced, vasoconstrictive effects are further enhanced, and free radicals also activate coagulation factors and platelets, leading to a prothrombotic state. All of these, in combination with the increased likelihood of developing insulin resistance due to oxidative stress and the inflammatory processes induced by other toxic substances in cigarette smoke, increase the risk of developing endothelial dysfunction. The direct toxic effects of many compounds in cigarette smoke on endothelial cells also contribute to this.
- Carcinogenic substances in cigarette smoke can also increase the proliferation of smooth

muscle cells in the vessel wall, which also promotes the formation of atherosclerotic plaque.

- Smokers have worse lipid parameters than non-smokers, such as lower HDL cholesterol. The exact mechanism of this is unknown, but it may be due to inhibition of lecithin-cholesterol acetyltransferase, which is responsible for the esterification of free cholesterol, or lower levels of cholesterol ester transfer protein.

In previous years, tobacco companies have sought to reduce the amount of harmful substances in cigarette smoke through various solutions called "harm reduction". To date, all of these factors have proven to be of no real use, and some studies suggest that they may even be harmful. The main problem is that skillfully communicated "low risk", "minimal danger" and the like give smokers false security, which contributes globally to the persistence of smoking as an addictive habit, and downplays the real risks of smoking (including lower-risk products which have a slightly lower but still significant risk-increasing effect). It gives the false impression that it is possible to deviate from the only truly effective solution, which is the persistent fight against smoking, until it is completely eradicated.

Some thoughts on smoke-free tobacco products are worth sharing. In e-cigarettes, an aerosol formed by evaporating a nicotine-containing liquid (and containing many other ingredients) is inhaled by users, and in the case of heated tobacco products, a real tobacco-containing charge is heated so that it does not reach the combustion temperature (instead of 800 ° C only 350 ° C) to eliminate the formation of combustion products. In addition, there are other smokeless forms, of which snus ('snu' - a tobacco product made from steamed tobacco leaves with a special technology and placed in the mouth) is perhaps most noteworthy in Europe, as it is quite widespread, especially in the Nordic countries. What these tobacco products have in common is that they definitely pose a cardiovascular risk because of their nicotine content, and we know less about their other ingredients and the

health effects of compounds formed during heating, compared to traditional smoking, which has been studied for almost a century. Taking advantage of this, tobacco companies have gone so far as to try to set them up as a “healthy alternative” and, on the other hand, recommend it instead of cigarettes to those who want to quit smoking. The problem is that more and more research shows that these alternative forms of smoking also pose significant risks, with more and more studies studying pathophysiological processes and epidemiological studies showing their harmful effects on health. And a significant part of those who want to quit stop at using heated tobacco products, which means that the advertised goal (helping at quitting smoking) will not be achieved. In addition, new tobacco products unfortunately seem attractive to young people, so more and more people are getting used to these products without any history of smoking. Overall, alternative experiments currently seem to be a dead end, as the professional organizations and institutions dealing with the harmful effects of smoking say. Among other things, the Department of Pulmonary Medicine of the Professional College of Health clearly states that “Advertising, promotion and sponsorship of heated tobacco products should be restricted, as this may promote the social acceptance of smoking.” and “Traditional, heated and smokeless tobacco products (chewing tobacco, nasal, or oral tobacco products) are both addictive and carcinogenic. Only the use of proven methods in smoking cessation and cessation support shall be justified“ [4].

Finally, passive smoking or other exposure to environmental tobacco smoke should be mentioned. Passive smoking clearly carries all the risks that come with active smoking. It should be emphasized that vulnerable groups, such as children and pregnant women, may also be affected by second-hand smoke - so its health effects at the societal level are very significant.

The second chapter deals with the strategy to combat smoking, the practicalities to be done, the protection of non-smokers, cessation and cessation support. Quitting smoking is never too late, the

risk decreases steadily over time as a non-smoker: the cardiovascular risk of ex-smokers approaches the risk of non-smokers in 10-15 years.

VIII.3.1.1.2. Hypertension

Hypertension, in addition to being an independent disease with a very significant morbidity and an independent cause of death, is a significant risk factor for coronary heart disease and cerebrovascular disease [4]. Increase in blood pressure of 20 mmHg systolic and 10 mmHg diastolic raises the risk of death from stroke, heart disease, and other vascular diseases by approximately twofold. As hypertension is a very common disease worldwide and thus in Hungary as well, it is a serious public health problem. Hypertension is defined as 140/90 mmHg (grade 1 hypertension), with 120/80 mmHg being considered optimal. In Hungary, approx. 40% of the adult population have high blood pressure, which about 3.5 million people. Male-to-female ratios show a predominance of males below the age of 55, which changes with age and the disease is more common in women over the age of 65. As we age, the prevalence also increases, over the age of 60 we can count on 60%. Nevertheless, the increase in blood pressure with age cannot be considered a physiological process, which is also supported by the fact that this phenomenon does not occur in natural peoples (although there are now few people truly excluded from civilization in the world).

Hypertension can occur as a result of an illness or medication (secondary hypertension) or without a clearly identifiable cause (primary hypertension). The vast majority (80-95%) of those with hypertension have primary hypertension. In case of secondary hypertension, the solution is to cure the underlying disease (eg pheochromocytoma) or to omit the drug that causes hypertension (e.g. steroids) or to reduce the dose. The rest of this chapter on risk factors applies to primary hypertension. The coronary artery risk-enhancing effect of hypertension is primarily due to the increased intramural pressure that promotes lipid deposition by increasing mechanical stress and shear forces in the vessel wall, thereby increasing endothelial per-

meability and contributing to endothelial dysfunction (a key factor in atherosclerosis). Coronary insufficiency is enhanced by frequent left ventricular hypertrophy, increasing resistance at the microvascular level, and remodeling of coronaries.

Elimination of hypertension as a risk factor means an effective reduction in blood pressure. From the point of view of drug therapy, it is not primarily the combination of drugs in the group that matters, but that the blood pressure is properly controlled. In milder cases, this can be achieved without medication, with lifestyle interventions, and it is crucial that lifestyle recommendations are followed by those receiving medication. It is not the task of this chapter to describe drug therapy. According to current guidelines, lifestyle therapy alone should be attempted for “elevated blood pressure” (130-139 / 85-89 mmHg) or grade 1 hypertension (140-159 / 90-99 mmHg) if the subjects do not belong to high cardiovascular disease risk group (cardiovascular risk assessment will be discussed later). The most important options in the lifestyle therapy and prevention of hypertension and the strength of their effect are described in VIII. Table II.

Other risk factors for hypertension include:

- Stress (reduction with relaxation methods, meditation, proper lifestyle, and if necessary with the help of a specialist)
- Economic and social situation. Hypertension is more common in lower-income social groups. This acts through complex and indirect mechanisms (e.g., stress, smoking, alcohol, nutrition, etc.). One of the main tasks of the state is to protect vulnerable social groups, to provide adequate security of life and to effectively guarantee the right to health to its citizens.
- Low calcium and magnesium intake. These minerals also help lower blood pressure.
- Sleep apnea, sleep disorders - borderline case between primary and secondary hypertension (anatomical disorders leading to sleep disorders, elimination of factors leading to snoring, consultation with a specialist if necessary).
- Familial accumulation, genetic factors (as

with all diseases, certain genetic factors and allelic variants may increase the risk of hypertension).

VIII.3.1.1.3. Elevated serum cholesterol, low HDL cholesterol

Disorders of lipid metabolism and inadequate lipid parameters have long been known to be strong risk factors for atherosclerotic diseases. This is obviously not surprising, as cholesterol plays a key role in the formation of atherosclerotic plaques. Of course, we have already moved away from the initial, mechanical model, which states that if there is too much cholesterol in the blood, it initiates plaque formation by sticking to the vessel walls. Now we know that plaque formation is the result of a complex process involving many factors, including many cell types (e.g. macrophages that later develop into foamy cells, endothelial cells, smooth muscle cells, lymphocytes, dendritic cells), lipoproteins, matrix proteins, enzymes, antibodies, inflammatory and other cytokines, adhesion molecules, antibodies, free radicals are involved. A description of the pathomechanism and a detailed description of the role of lipid, or rather lipoprotein, particles would go far beyond the limits of size in the chapter, so we will mention only a few important facts:

High concentrations of apoB-containing lipoprotein particles (eg, LDL-cholesterol) increase the likelihood of these particles reaching the endothelium. ApoB-containing lipoproteins have a high affinity for proteoglycans in the vessel wall, and LDL particles become more sensitive to oxidative effects as a result of the interaction. Oxidized LDL is able to effectively initiate the processes that lead to the transformation of macrophages into foam cells and the release of inflammatory mediators. Small particles (below 70 nm) pass more easily through the endothelium and are more retained in the vessel wall, so their atherogenic potential is also higher. HDL particles exert protective, risk-reducing effects through a number of mechanisms (e.g. transport of cholesterol molecules, reduction of inflammatory processes, stabilization of plaques, inhibition of platelet activation in plaque rupture).

VIII. Table II.: Strong risk factors for hypertension

Intervention	Aim	To reduce systolic blood pressure in hypertension
Weight Loss	Achieving or approaching an ideal BMI. For every kg of weight loss, approx. a decrease in blood pressure of 1 mm Hg can be expected.	5 Hgmm
Healthy eating (DASH diet is especially recommended in hypertension)	Eating a lot of vegetables, fruits, whole grains, low-fat dairy products, keeping red meat to a minimum, keeping total fat intake and saturated fat intake low. Maintaining an adequate level of energy intake (control: BMI).	11 Hgmm
Reduction of salt intake	Less than 5 g NaCl	5-6 mm Hg per day
Abundant potassium intake	3.5-5 g of potassium per day, with food	4-5 Hgmm
Aerobic physical activity	At least 150 minutes per week, at 65-75% of maximum heart rate	5-8 Hgmm
Dynamic resistance training	90-150 minutes / week, 50% -80% of maximum effort, 6 exercises / week, 3 sets / exercise, 10 repetitions / set	4 Hgmm
Isometric resistance training	4 × 2 min, 1 minute rest between exercises, 30% –40% of intentional maximum contraction, 3 times / week	5 Hgmm
Reducing alcohol consumption	Reducing intake to 2 drinks / day for men and 1 drink / day for women drinking	4 Hgmm
Smoking cessation	Quit smoking	4-5 Hgmm

Source: [https://hypertension.hu/upload/hypertension/document/mht_szakmai_iranyelv_2018_20190312.pdf?web_id=\[5\]](https://hypertension.hu/upload/hypertension/document/mht_szakmai_iranyelv_2018_20190312.pdf?web_id=[5])

The association between total cholesterol or LDL cholesterol and cardiovascular risk has been clearly demonstrated in a large number of observational epidemiological studies and in randomized controlled intervention studies. The latter demonstrated a risk-lowering effect of lowering cholesterol (by administering statins). According to this, a 1 mmol / L decrease in LDL cholesterol leads to a 20-25% reduction in cardiovascular mortality and the incidence of non-fatal myocardial infarction. High lipoprotein (a) levels (Lp (a) or a combination of elevated triglyceride levels and low HDL levels, which usually occur in diabetic patients, abdominal obesity, insulin resistance, or the physically inactive, are considered to be particularly atherogenic.

Medication or lifestyle therapy, or a combination of the two, may be used to treat dyslipidaemia (which is the primary prevention of atherosclerotic cardiovascular disease). There are two main principles: 1. In the case of milder abnormalities, lifestyle changes alone should only be attempted, and in the case of more severe lipid disorders, medication is required as well. 2. A complex cardiovascular risk assessment should be performed to select a treatment modality (this will be discussed soon), and lifestyle therapy may be sufficient for lower risk individuals, and pharmacotherapy should be considered for higher risk individuals.

How can lifestyle interventions improve the lipid profile?

- Reducing the intake of saturated fats and trans fats
- Increasing the consumption of monounsaturated and polyunsaturated fatty acids (ie replacing saturated fats with unsaturated fats)
- Increase awareness of water-soluble dietary fiber
- Regular consumption of nuts (4-5 dkg / day, but preferably the energy intake should not change)
- Increasing soy protein consumption (instead of soy products, even meat)
- Increasing the intake of phytosterols and phytostanols (even in the form of functional

foods)

- Consumption of ω -3 series polyunsaturated fatty acids from marine fish
- Aerobic physical activity (at least 150 minutes per week)
- Mediterranean diet
- TLC diet. The Therapeutic Lifestyle Changes system was developed in the US specifically to normalize lipid levels and reduce the risks associated with them. This method, based on nutritional and physical activity advice, is now also recommended for healthy people for cardiovascular prevention purposes. Among the dietary recommendations, fats should be 25-35% of the total energy intake, with a maximum of 7% saturated fat, and the cholesterol intake should be below 200 mg / day (other directives are more permissive, and 300 mg per day is allowed for healthy people) [6].

VIII.3.1.1.4. Diabetes

The risk of cardiovascular disease in diabetics is on average twice as high as in non-diabetics, so diabetes is also a prominent risk factor. Cardiovascular prevention in diabetics is essentially the same as in non-diabetics, completed with control of blood glucose level (although due to the interaction between the three risk conditions / diseases, increased care should be taken to control lipid levels and blood pressure). The prevention bases for diabetes and blood sugar levels are as follows:

- The well-known principle that we start with lifestyle interventions in milder cases and use medication only in more serious cases is also true for diabetes.
- Lifestyle factors focus on smoking cessation, low fat intake, high dietary fiber intake, regular aerobic physical activity, and complementary muscle training.
- Carbohydrate intake should focus on quality: aim to consume whole grain products containing dietary fiber and minimize intake of refined white flour products.
- Care should be taken to reduce salt intake, alcohol consumption, and intake of saturated and trans fatty acids, the use of low-fat pro-

tein sources, and the consumption of copious amounts of fruit and vegetables.

- A significant proportion of diabetic patients are obese. Reducing energy intake is recommended to achieve / maintain optimal body weight.
- In terms of cardiovascular risk, the target HbA1c target is <7%, which may be milder in some groups (e.g. long-term diabetics, the elderly, the weak, and those with cardiovascular disease). In non-cardiovascular patients with a diagnosis of diabetes or early stage of onset, the target may be 6.5%.
- Complex nutritional suggestions such as a Mediterranean diet, DASH diet, or vegetarian diet will help manage body weight (control is essential in diabetic patients) and blood sugar levels.
- The starting medicine is usually metformin, which helps to control your blood sugar and body weight and reduces your cardiovascular risk.
- What has been said about diabetes also applies to prediabetes and insulin resistance, with some increase in cardiovascular risk.

VIII.3.1.1.5. Overweight, obesity

An ideal body weight is when the body mass index (BMI; body weight in kilograms divided by the height of the body in meters) is in the range of 20-25 (or 18.5-25 according to other recommendations). Overweight (BMI \geq 25) and obesity (BMI \geq 30) are risk factors for a number of cardiovascular diseases (e.g. coronary heart disease, cerebrovascular disease, hypertension) and are also positively correlated with overall mortality. Substantial (up to 5%) weight loss in overweight or obese people has been shown to reduce blood pressure, LDL cholesterol and triglycerides, and blood sugar levels. In addition to the degree of obesity, its type (abdominal / visceral / obesity carries a much higher risk than localization to the extremities) is also indicated by abdominal circumference, which is an excellent marker of cardiovascular risk. In Europe, the limit is 94 cm for men and 80 cm for women, above which it is important to ensure that no further weight gain is

made, and reaching 102/88 cm is an indication of weight loss. Therefore, the combined use of body mass index and abdominal circumference should be considered when assessing obesity [7]. The issue of so-called “metabolically healthy obesity” has long been debated. Some studies have shown that certain obese people do not develop metabolic complications such as hypertension or insulin resistance. It is possible that in their case, obesity alone is not associated with significantly increased cardiovascular risk. Examining the phenomenon at the level of epidemiological and pathophysiological mechanisms may even result in a change of attitude in this area. Another, but somewhat similar, phenomenon was that several studies in patients with coronary artery disease or heart failure found that those with a higher body weight had a lower risk of death than patients with a normal body weight. In our present view, this is not necessarily a causal relationship, but rather a reverse causality. The effect of cardiorespiratory fitness appears to be more important than body weight. To the best of our knowledge, the risk-increasing effect of physical inactivity is stronger than that of BMI-based obesity. The latter facts call attention to the fact that physical activity is absolutely important and has a preventive effect even if the desired degree of weight loss is not achieved.

Obesity is a function of the amount of energy ingested / used. The former is determined by diet and the latter by physical activity - a rare situation where obesity is specifically the result of a metabolic disease. This is why population-level prevention strategies are based on proper nutrition and physical activity. The goals are clear, keep both body mass index and abdominal circumference below the limits mentioned above. It is often the case that weight loss has been achieved, but in the long run it will disappear and even weight gain will occur again. Thus, it is important not to try a short, intense diet, but to achieve the desired weight - possibly in the slightly longer term - by making a sustainable change in lifestyle and diet. In addition, great care must be taken to maintain the results obtained, especially given that the intensity of metabolism may vary. For example, the

ACC / AHA (American College of Cardiology / American Heart Association) recommends that you spend at least 150 minutes of physical activity a week during weight loss and at least 2-300 minutes / week of physical activity after a year to avoid regaining weight [8].

VIII.3.1.1.6. Physical inactivity

The disease-preventing effects of physical activity (for many diseases) have long been known. This is also the case in the cardiovascular system, where physical activity can be considered the basis of cardiovascular health. There is a strong, consistent, inverse dose-response relationship between moderate to intense physical activity and ischemic heart disease and cerebrovascular disease. Physical activity has beneficial effects on many of the cardiovascular risk factors, such as lowering blood pressure, LDL and non-HDL cholesterol levels, weight, and the risk and severity of type 2 diabetes. Physical activity recommendations for adults suggest at least 150 minutes of moderate aerobic activity per week or 75 minutes of intensive aerobic physical activity per week, or an equivalent combination (eg, 100 minutes of moderate to 25 minutes of intensive activity). For optimal protective effect, it is recommended to apply twice this, ie 300 minutes of medium or 150 minutes of intensive exercise per week. This period is preferably distributed evenly over the week, although the rules are not as rigid as in previous recommendations when e.g. 5x30 minutes were prescribed. The weekly duration can be completed by assembling any number and length of units, the only criterion being that only activities that are at least 10 minutes in length can be counted. Intensity can be measured in so-called metabolic equivalents (MET), which shows how many times our energy consumption during a given activity is the resting energy consumption, which is defined as O₂ consumption per kilogram of body weight and per minute. Obviously, this is not easy to measure during a given activity, so we use simpler, approximate options to describe the activity. The heart rate is a good approximation, more precisely, what percentage of the the theoretical maximum heart rate the person's heartbeat reaches - this is easy to measure and the maximum

heart rate can be calculated using the approximate formula for approximating 220 minus age. Another option is to use the so-called Borg scale, which is a scale from 6 to 20 and is based on a subjective sense of intensity. An even simpler (but obviously only approximate) solution is given in the speech test described in VIII. Table III.

In addition to the above, it is recommended to perform muscle strengthening training twice a week, using the main muscle groups.

The principles described here also apply to older people (over 65). If someone's state of health does not allow it, it is recommended that they move as much as their abilities and state of health allow.

Children and adolescents (5 to 17 years of age) should have at least one hour of moderate or intense physical activity per day, and the number of muscle strengthening exercises should be 3 per week [9].

VIII.3.1.1.7. Nutrition

In addition to cardiovascular disease, diet also has a significant impact on the risk of tumors and several other chronic diseases, making it a very important determinant of our health. In addition to observational epidemiological studies in recent decades, large intervention studies have provided valuable data on the role of nutrition (e.g. PREDIMED, TOHP). The importance of energy intake has been discussed before, let's look at the other essential elements now [10]. The consumption of fat has an effect partly through energy intake (since fats are our most energy-dense nutrients), and we also have to reckon with other specific effects. For this reason, we have recently become more and more convinced that what fats we consume are more important than the amount we consume. Although more and more data, results, and theories are emerging about the role of fats, leading professional societies agree that it is advisable to limit the intake of saturated fats to as low as 10% energy. Trans fatty acids are particularly high risk, raise LDL and lower HDL cholesterol, promote endothelial dysfunction, lead to insulin resistance, inflammatory conditions, and arrhythmias. Some processed foods (e.g., chips and other

VIII. Table III. Physical activity categories and their measurement and estimation possibilities

Intensity (absolute)			Intensity (relative)		
Category	MET	Example	Percentage of maximum heart rate	Perceived effort rate (Borg scale)	Speech test
Easy	1,1-2,9	Walking (<4.7 km / h)	50-63	10-11	
Medium	3-5,9	Pace walking (4.7-6.5 km / h), slower cycling (15 km / h), vacuuming, gardening (eg mowing the lawn), tennis (in pairs), dancing	64-76	12-13	Breathing is faster, but you can speak in full sentences (but no longer sing)
Intensive	≥6	Competitive walking, running, cycling (Y15 km / h), heavy gardening (eg continuous digging or hoeing), speed swimming, tennis (some)	77-93	14-16	Breathing is very difficult, incompatible with normal speech

products fried in partially hydrogenated vegetable oil) are particularly dangerous because of this, but fortunately, regulations on trans fats have become much stricter in developed countries. Monounsaturated fatty acids (good sources such as olive oil and rapeseed oil) and polyunsaturated fatty acids are considered healthy, and from the latter group omega-3 fatty acids must be emphasized, especially eicosapentaenoic acid and docosahexaenoic acid.

Regarding carbohydrates, a number of studies have shown an increased cardiovascular risk with refined carbohydrates and sugary foods (mainly beverages, sugary soft drinks) - in brackets, some studies have found that even the consumption of sodas made with sweeteners increases risk. The protective effect of dietary fiber against both

coronary heart disease and cerebrovascular disease has also been demonstrated. A meta-analysis of major studies has shown that a 7 g / day increase in fiber intake reduces the risk of coronary heart disease by about 9%, and a 10 g / day increase results in a 16% lower risk of stroke and a 6% risk of type 2 diabetes.

There is a clear inverse relationship between salt intake and cardiovascular mortality, which is mainly explained by the hypertensive risk-increasing effect of salt intake. It should be noted that, on average, about 80% of salt intake comes from processed foods that contain salt, so their consumption should be significantly limited.

Among the vitamins, vitamin D is noteworthy, and several recent studies have found a negative association between serum vitamin D levels and cardiovascular mortality.

In addition to examining each ingredient, there is a wealth of information available about the effects of different foods and complex dietary patterns. Consuming 30 g of nuts (eg walnuts, hazelnuts, almonds) daily reduces the risk of cardiovascular disease by about 30% (!).

Consumption of vegetables and fruits has a very strong protective effect. In this regard, it is also worth noting that several studies have demonstrated the risk-reducing effect of plant-based nutrition. An analysis of one of these studies found that the smallest increase in risk compared to a diet containing only vegetable protein was found in white meat, about three times as much in red meat, and meat products doubled.

The beneficial effects of fish consumption are supported by a number of studies. The risk is particularly high in those who do not consume fish at all (or very rarely), which is significant from a public health point of view, because a relatively small change in populations that consume fish in very small quantities (eg the Hungarian population) could have a significant preventive effect. However, following previous optimism about omega-3 fatty acid supplementation, recent studies suggest that the usual daily intake of 500-1000 mg may not even have a significant protective effect.

By taking plant sterols and stanols, a reduction in LDL cholesterol levels of about 10% can be achieved with a daily intake of 2 g. This amount is no longer very easy to consume, so functional foods fortified with phytosterols are now recommended.

VIII.3.1.1.8. Alcohol consumption

The relationship between alcohol consumption and chronic non-communicable diseases has twice changed in recent decades. The earliest position was that alcohol consumption increases the risk of cardiovascular disease. This is definitely unquestionably true for excessive alcohol consumption. However, the phenomenon of the so-called French paradox and the explanation for this (that in France the mortality is lower than expected based on the total energy / fat intake due to regular con-

sumption of red wine and the phytochemicals in it are protective) have changed for a long time, and moderate alcohol consumption was considered the most optimal. This meant drinking 2 drinks a day for men and 1 drink a day for women, most preferably red wine. Recently, however, many have questioned the beneficial effects of moderate alcohol consumption, not least because there have been a large number of sponsored studies among the studies supporting the hypothesis. Currently, most professional societies recommend that we should avoid drinking alcohol, and if we still do, the amount mentioned above should not be exceeded. It can be added that it is important to avoid consuming larger amounts of alcohol (3 drinks or more a day), consuming concentrated spirits, and occasional binge-drinking.

VIII.3.1.1.9. Personality traits, mental factors, stress

Chronic stress - be it e.g. work or family-related - increases the risk of coronary heart disease, and acute stressors can act as triggers in triggering a heart attack, for example. Some mental illnesses are also associated with coronary heart disease, such as depression, post-traumatic stress disorder, anxiety disorders, schizophrenia. People with aggressive, hostile, and irritable personalities also have higher-than-average risks. Some of the factors related to stress and personality traits can be changed by learning and applying appropriate stress management and relaxation methods. Unfortunately, these opportunities do not receive the attention they deserve in the prevention of cardiovascular disease in everyday practice.

VIII.3.1.1.10. Economic and social status

In developed countries, there is a clear link between low socioeconomic status and increased cardiovascular risk. This relationship is extremely complex and is due to a number of factors, some of which are examples: People with lower levels of education have less knowledge of health damaging risk factors; alcohol and smoking may be more prevalent instead of appropriate stress management mechanisms; they consume unhealthy foods for financial reasons; worse, unhealthier,

more stressful working conditions; worse housing conditions, more unfavorable environment; limited recreational opportunities; access to the health care system is more limited.

VIII.3.1.1.11. Additional risk factors

In addition to what has been discussed so far, a number of other risk factors for coronary artery disease are known. However, a detailed discussion of these is less important from a main and practical point of view and is not possible due to their limited scope.

It is clear that, as with all diseases, hereditary / genetic factors can play a major role in the development of cardiovascular disease, but we cannot change them at present. The increased risk is due to the higher number of cardiovascular diseases in the family and at a young age. Assessing the risk and determining what needs to be done is a medical task. It is also the physician's responsibility to consider whether certain conditions increase cardiovascular risk (e.g., chronic kidney disease, periodontitis, sleep apnea) or are predictive (e.g., erectile dysfunction). The situation is similar with conditional and recent risk factors according to the Mayo grouping.

VIII.3.2. Cerebrovascular diseases

When cerebrovascular disease develops, due to insufficient blood supply to the brain, temporary and later permanent damage to the brain develops, leading to changes in brain function. The disease occurs acutely in the form of a transient ischemic attack (TIA) or, in the most severe case, a stroke (a rapidly developing clinical syndrome caused by a disorder of the blood supply to the brain that is commonly referred to as a stroke or stroke). Cerebrovascular disease can lead to further illnesses (e.g., dementia) and stroke is a serious cause of death. Stroke is ischemic in most cases with vascular occlusion and about 20% is due to bleeding. Bleeding strokes are approximately three-quarters occur in the brainstem and a quarter in subarachnoid hemorrhage due to rupture of cerebral vascular aneurysms. Ischemic strokes are mainly due to cerebral vascular thrombosis (approximately 50%) or embolization. Regarding the epidemiological

features and risk factors, subarachnoid hemorrhage differs from the other types, as it is a rupture of the congenitally weaker section of the vessel wall. Risk factors for ischemic and other hemorrhagic strokes, on the other hand, are classical atherosclerotic and hypertensive risk factors. Thus, in the prevention of cerebrovascular disease, we need to address the risk factors listed in the section on coronary heart disease, especially hypertension, which has a strong association with the risk of stroke. The importance of common roots is indicated by the increasing use of the term "vascular prevention" today, which refers to the prevention of ischemic and atherosclerotic diseases, whether of cardiac or cerebral manifestation.

However, another type of relatively common risk factor, atrial fibrillation, should be mentioned in connection with vascular occlusions due to embolization. Atrial fibrillation causes haemostasis and significantly slowed blood flow, making the risk of blood clots in the atrium very high. Small pieces of the resulting atrial blood clot can rupture, causing brain embolization and stroke. Atrial fibrillation is the most common serious arrhythmia, occurring in 3-5% over the age of 65 and up to 8% over the age of 80.

VIII.3.3. Cardiovascular risk assessment

On the one hand, cardiovascular prevention is particularly important for everyone, but on the other hand, it has a prominent and direct role in high-risk individuals. For this reason, risk assessment systems that attempt to quantify vulnerability have long been known in cardiovascular medicine and prevention. On the one hand, they set prevention strategies and priorities, and on the other hand, they make the degree of vulnerability tangible and understandable for those involved. A limitation of risk assessment systems (but also a practical advantage) is that they focus on some key risk factors rather than accurately considering the system of many risk factors and the complex interactions between them.

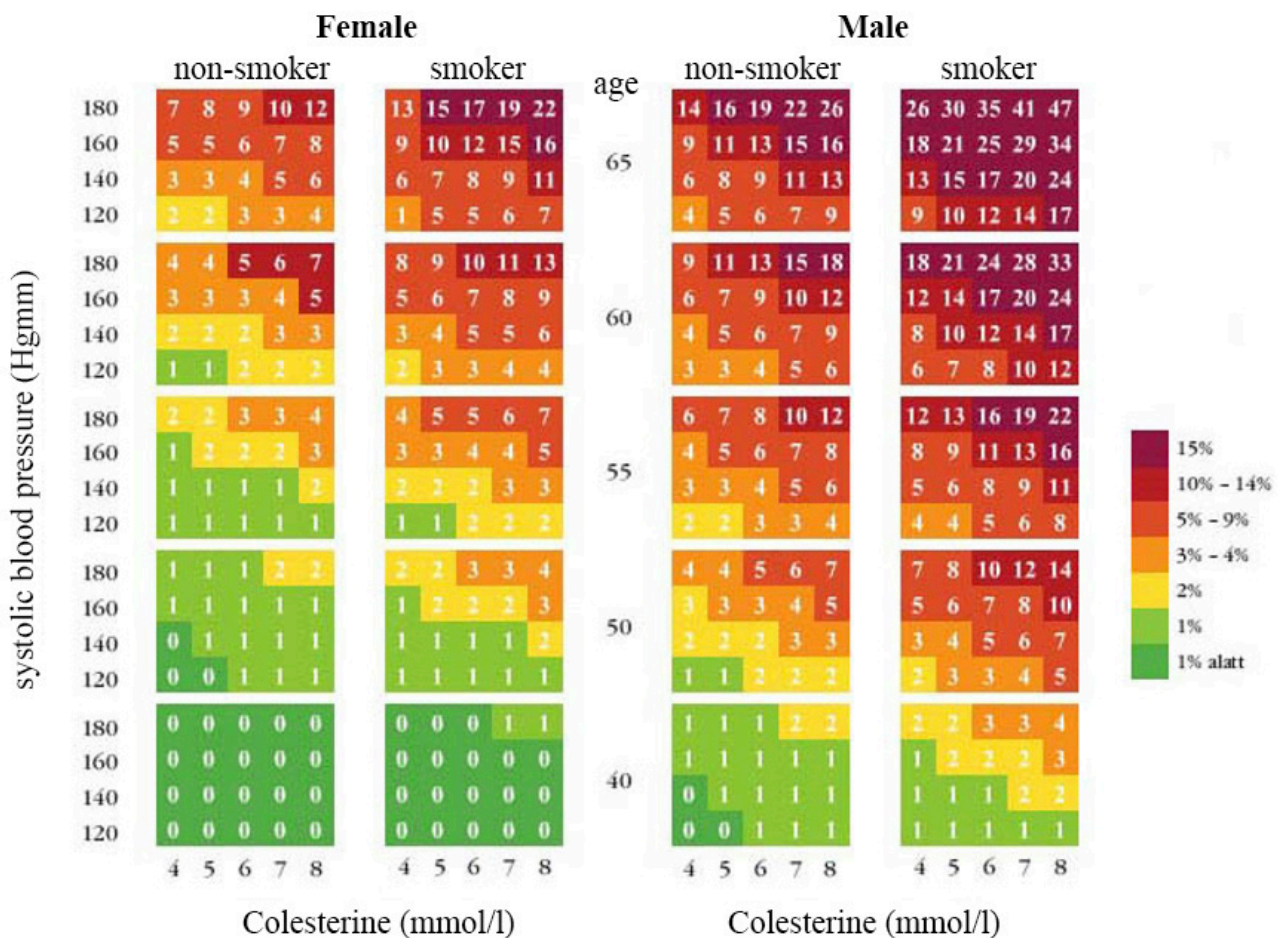
The first large and well-known risk scoring system was the Framingham Risk Scoring System. This was developed in the US, primarily based on data from the Framingham Heart Study [11].

Later, a more accurate SCORE risk assessment system was born in Europe. There were originally two versions of this (one for high cardiovascular risk countries and the other for low-risk ones), but many countries now have their own country-specific SCORE tables. In Hungary, we use a table for high-risk regions (VIII. Figure 2).

The SCORE system estimates risk based on age, systolic blood pressure, total cholesterol, gender, and smoking status. [13]It should be noted that factors not listed in the table (e.g., obesity, HDL cholesterol, triglyceride, etc.) may further modify this risk.

From a practical point of view, based on cardiovascular risk, people are usually divided into 4 groups: Low risk (SCORE <1%), Medium risk (1≤SCORE <5%), High risk (5≤SCORE <10%) or certain diseases or severe risk factors), very high

risk (SCORE≥10% or previous / pre-existing cardiovascular disease or some serious disease) - see PADOS et al [14]. The essence of risk assessment is to show how and how intensively it is necessary to carry out preventive / therapeutic activities in those involved. While lifestyle maintenance / elimination of risk factors is the main strategy in the first two groups, in the high and very high risk groups it is / may be supplemented with medication, and there are additional differences (eg other lipid targets, some screening tests / frequency). Finally, the latest developments in cardiovascular risk assessment in Europe should be mentioned: announced in 2021, the development of the SCORE2 risk assessment system, which includes the incidence of cardiovascular events in addition to deaths, was completed in four groups of countries at different risk levels.



VIII. Figure 2: SCORE risk assessment system. The table shows the 10-year risk of fatal cardiovascular events. Source: <http://www.mnsza.hu/szivbeteg/adattar/rizikotabla.htm> [12]

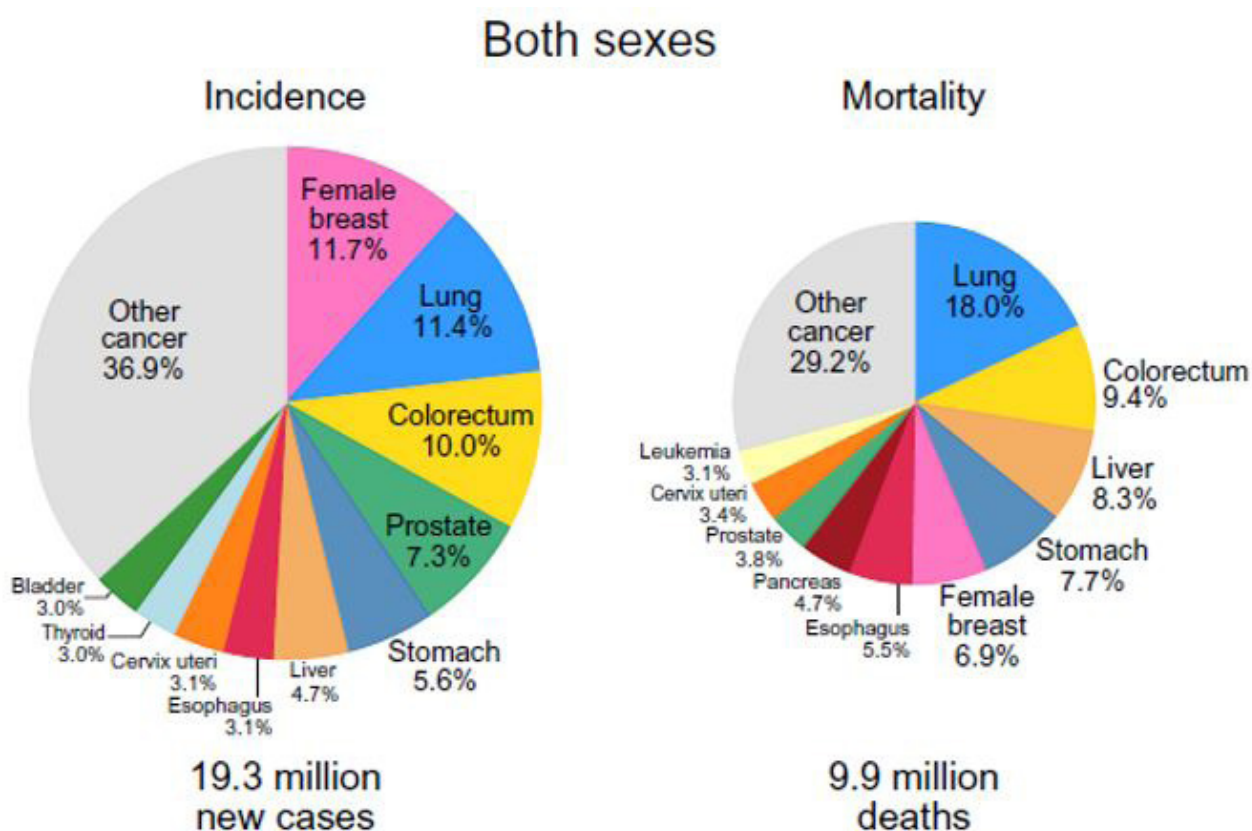
VIII.4. Epidemiology and prevention of cancers

The importance of cancer to public health deserves increasing attention. Both the number of illnesses and deaths have risen in recent decades and it is estimated that this will continue in the future. Globocan estimates that there were 18.1 million new cases and 9.9 million deaths globally in 2020. [15]. A significant change in the incidence of cancer is that, breaking the trend of many years, breast cancer has now become the most commonly diagnosed cancer, ahead of lung cancer, which has been the number one tumor for decades. Thus, the order for both sexes by 2020 is as follows: breast cancer, lung cancer, colorectal cancer, prostate cancer, stomach cancer and liver cancer. The severity and curability of these diseases are not the same, so we experience a different order in terms of mortality. In terms of mortality, lung cancer has been leading for many years, decades, followed by colorectal cancer, followed by liver cancer with much higher lethality, gastric cancer in fourth place, and the most common breast cancer in fifth

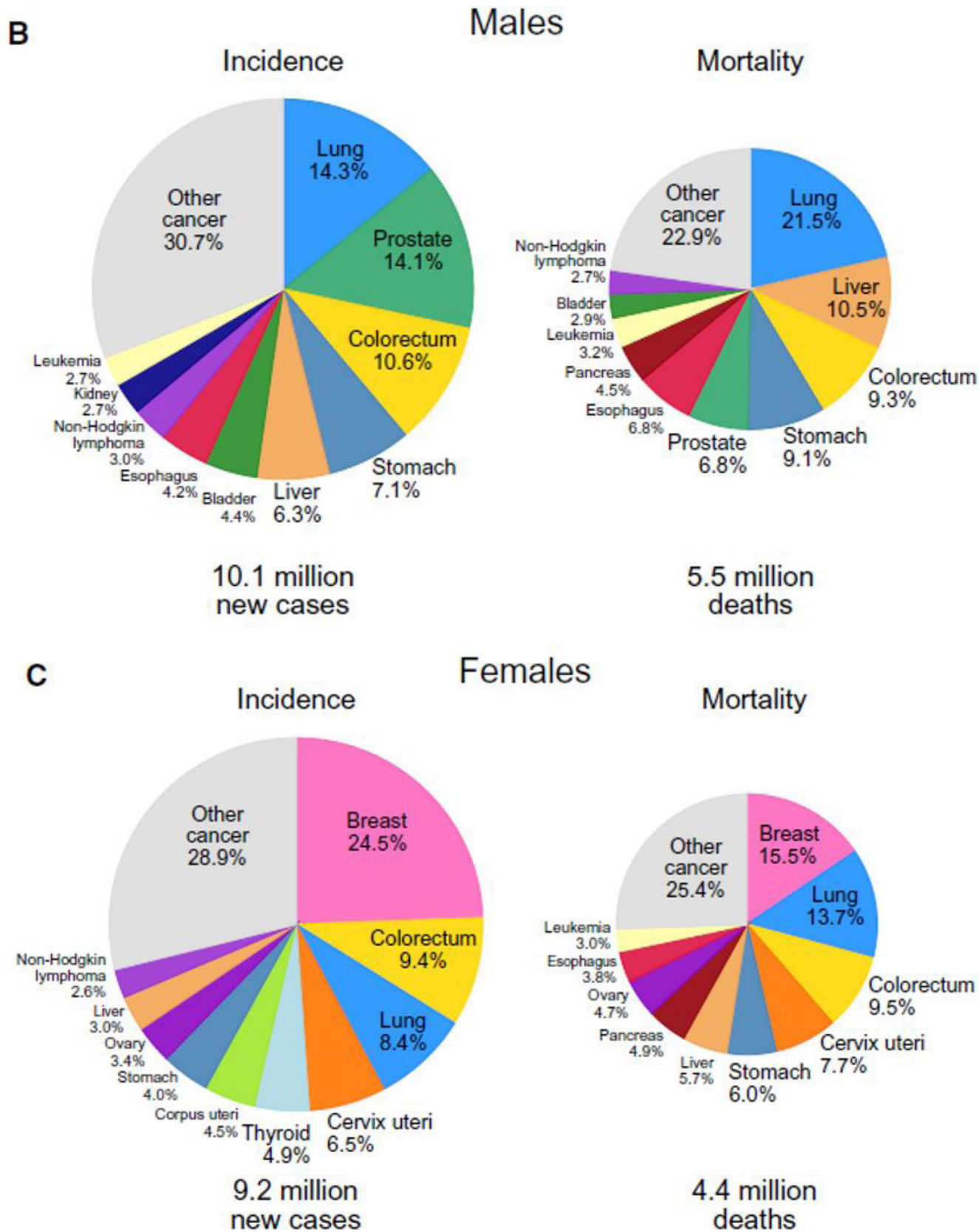
and esophageal cancer occurs in the sixth place. (VIII. Figure 3).

If we look at the incidence of tumors in terms of gender, it is important to note that among men - with almost the same number of cases as lung cancer - the second place is prostate cancer, which is fortunately less severe in terms of mortality, so in the mortality list it is only the fifth in a row. At the same time, liver cancer is much more severe in terms of lethality, so it is already ranked second in terms of mortality. (Fig.4/B) A change among women is that cervical cancer is the fourth most common and fourth most important cause of death. Globally, approximately 600,000 women become ill and more than 300,000 women die each year from this fundamentally completely preventable type of cancer (VIII. Figure 4/C).

Regarding the spatial distribution of the incidence of tumors, we can say that the incidence of new cases and the mortality rate are not geographical-



VIII. Figure 3: Global distribution of incidence and mortality from cancer, both sexes, 2020. Source: Global Cancer Statistics 2020. [16]



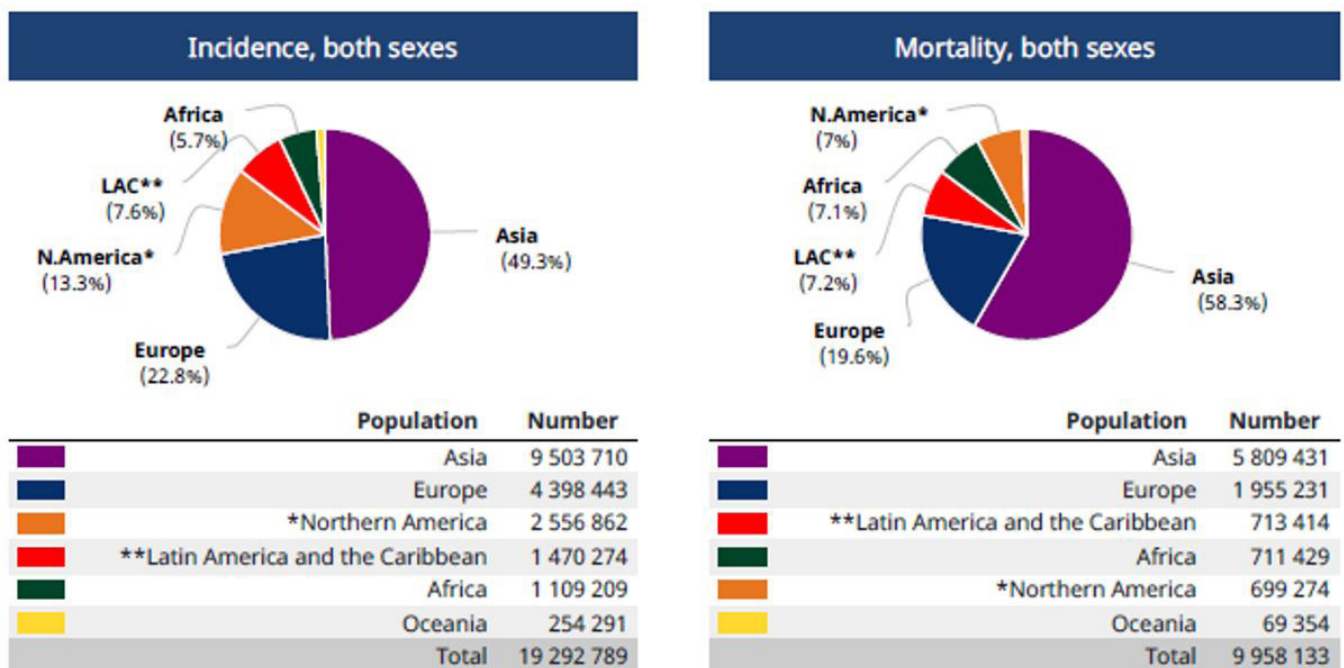
VIII. Figure 4: Tumor incidence and mortality distribution in men and women worldwide, 2020. Source: Global Cancer Statistics 2020.[16]

ly uniform. 50% of newly diagnosed cases come from Asian and Latin American countries, and this high rate is also reflected in mortality rates (VIII. Figure 5).

The pattern of cancer shows a strong correlation with the Human Development Index (HDI), which is calculated on the basis of life expectancy at birth, time spent in education and living standards in a given country. For HDI, there are also significant differences in the cumulative incidence of tumor development and age-specific cancer mortality between countries generally classified into 4 groups (very high, high, medium, and low). While the total population of the countries with the highest and lowest HDI values is about the same size, the incidence of tumors is significantly higher in countries with high HDI values (41%) than in countries with low HDI values (5.9%). The pattern of leading tumor types also differs significantly in these two groups. [17]In the high HDI countries, the five most common tumors are breast cancer, prostate cancer, lung cancer, colorectal cancer and gastric cancer, while in the low HDI countries, breast cancer, cervical cancer, liver cancer, prostate cancer and colorectal cancer. (VIII. Figure 6)

The International Agency for Research on Cancer (IARC) estimates that by 2040, the number of new cases will increase by 50% worldwide, reaching 30 million a year, and the death toll is expected to rise to 16.3 million. It is estimated that the changes expected in the next decade will affect the people of the third world and developing countries to a much greater extent than the industrialized countries. The situation may be exacerbated by demographic change, the risks associated with globalization and a growing economy, and an inadequate (unsustainable) industrial environment.

Their public health significance is further enhanced by the fact that cancer has become the leading cause of death among under-70s in many countries around the world, ahead of cardiovascular disease. The Disability-adjusted life years (DALYs) indicator, developed to quantify the global burden of disease, illustrates somewhat the burden of the disease on the population, the severity of the disease and the probability of survival. With regard to cancer, the value of DALY is the second highest (Figure 7), exceeding 233 million years, and in terms of its distribution, it can be said that it imposes a much greater burden on the population in less economically developed countries.



VIII. Figure 5. Spatial distribution of cancer (incidence and mortality) worldwide, 2020. Source: Global Cancer Statistics 2020 [16]

Cancer profile by HDI

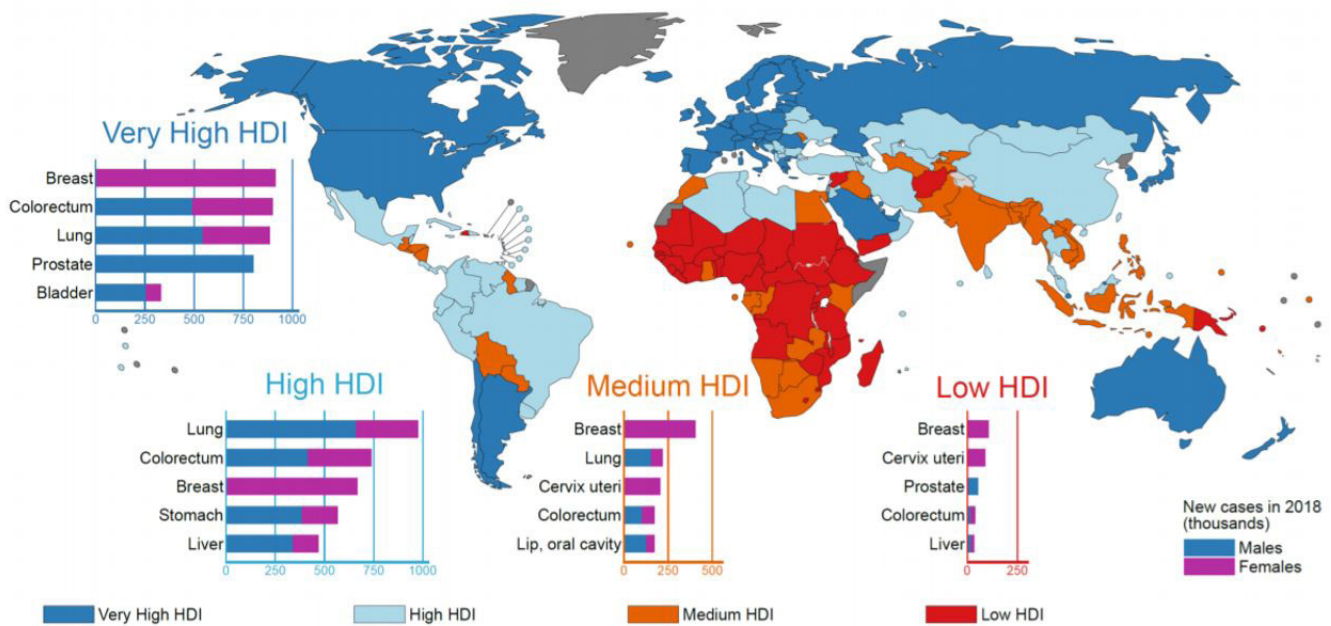


Figure 6: Different patterns of cancer as a function of HDI values

Source: <https://www.worldcancercongress.org/sites/congress/files/atoms/files/T3-121.pdf> [18]

In Hungary, 49,803 men and 53,402 women became ill with cancer in 2017, and 17,716 men and 15,128 women died of malignancy in the same year.

In terms of cancer, the following seven types of cancer are responsible for more than 50% of all cases, so these types of cancer are described in more detail below:

Breast cancer

As we have read before, the most commonly diagnosed type of cancer today is breast cancer. Its incidence is growing strongly in developing countries. The incidence of breast tumors is increasing, especially in developing countries, with the spread of urbanization and Western-type lifestyles. Although mammography is an excellent option for early diagnosis of breast cancer, it is unfortunately not sufficiently available to the population in low- and middle-income countries, so most of the disease can only be diagnosed at a late stage. As with all tumors, the likelihood of survival depends largely on the stage at which the disease is diagnosed. The 5-year survival of asymptomatic breast cancer detected by mammography is 93%, while the likelihood of survival is reduced to 22% in the

presence of late-onset, already palpable and painful nodules in the breast and in metastatic breast cancer. In developed countries, there is a free screening program for the affected population for women over 40 or in some places over 45 years of age. Unfortunately, the uptake of screening tests is quite low even in this case.

The American Cancer Society recommends that mammography be performed annually on request for women between the ages of 40 and 45. It is recommended to take part in screening every year between the ages of 45-54 and every 2 years over the age of 55. In Hungary, organized breast cancer screening covers the examination of women aged 45-65 every two years. Early detection can also be promoted by regular breast self-examination, but this is in no way a substitute for regular mammographic screening.

The most important genetic risk factor for the development of breast cancer is the BRCA1 and BRCA2 genes. These tumor suppressor genes are likely to induce the development of the disease through their germ cell mutations. Inherited breast cancer manifests itself at a much earlier age and,

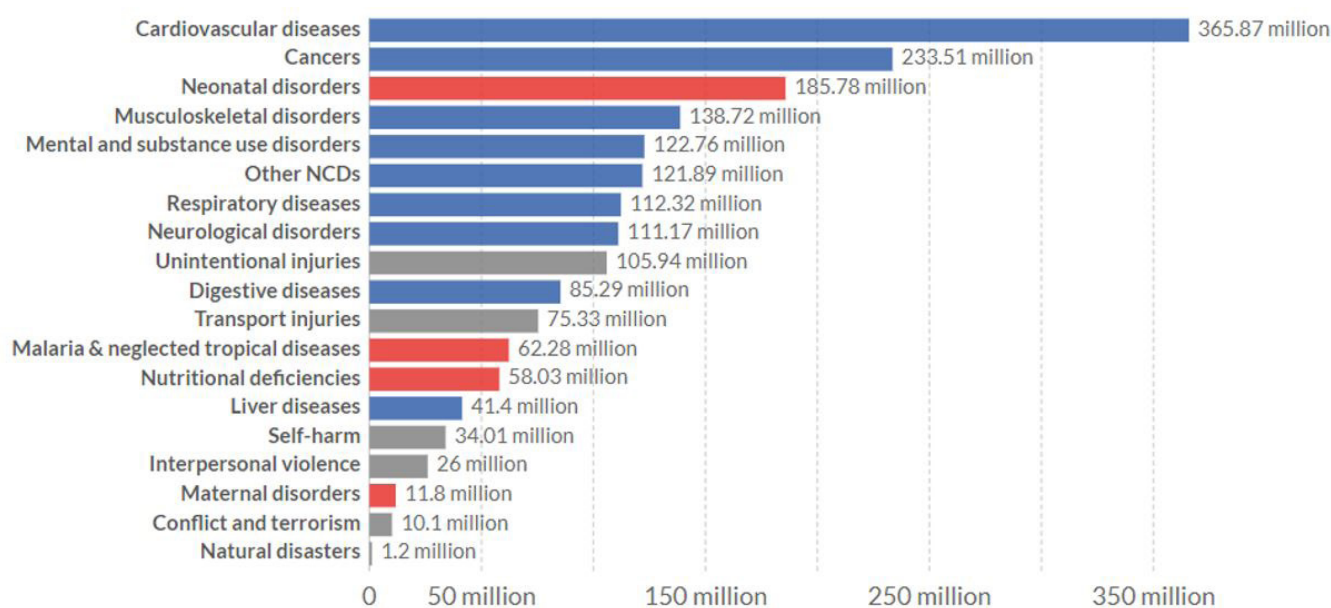


Figure 7: Distribution of disability-adjusted life years by main groups of deaths.

Source: <https://ourworldindata.org/burden-of-disease> [19]

generally, in case of BRCA1 mutation, not only breast cancer but also ovarian cancer, and in case of BRCA2 gene mutation prostate and pancreatic cancers are more common. BRCA genes can also be damaged by external influences, in which case we are talking about a somatic mutation, in which case the tumor usually appears at an older age. It is important that women with a family history of breast, ovarian, fallopian tube, or peritoneal cancer are considered to be at increased risk and should definitely be screened or have genetic counseling. Several risk factors are known for the development of breast cancer. These can also be hormonal, lifestyle and environmental factors [20].

Prevention:

It is important to learn a proper, balanced diet as early as possible. Adequate vegetable intake is not just necessary for vitamin and fiber content. The incidence of breast cancer in Asian women is quite low. Research has shown that this is due to the high soy intake that underlies Asian cuisine. Soybeans and foods made from them (such as tofu, miso, soy milk, soy yogurt, or tempeh) are excellent sources of vegetable protein. In addition, soybean protein contains all the essential amino acids, which is why it is also recommended for vegetarians. Soy is also uniquely rich in phytoestrogens, which have

been proven to have anticarcinogenic (anti-cancer) effects. 1 g of soy protein contains 3.5 mg of isoflavones. Plant phytoestrogens are natural estrogen receptor modulators that have both estrogen-like and antiestrogen properties. High soy intake has been shown to reduce the incidence of breast cancer and has also had a beneficial effect on survival. Numerous studies have shown that a soy-rich diet has a beneficial effect on LDL-cholesterol levels, which is why its consumption is also recommended from a cardiovascular point of view.

It is important to emphasize that the protective effect of soy has been demonstrated for soy-containing foods and not with dietary supplements of artificial origin, which is why experts are cautionary about supplementation. In Western countries, soybean intake is extremely low among the general population. According to a US survey, isoflavone intake was 2.5 mg / day. For comparison, a serving (250 ml) of soy milk contains approximately 25 mg of isoflavones. In the Western world, soy is added to foods in minimal amounts as an additive due to its functional properties (stability enhancement, texture improvement), so its excellent anti-carcinogenic properties do not prevail.

Health-conscious nutrition is placing increasing emphasis on soy-based nutrition, and it is recommended to consume 2 servings of soy-based food

VIII. Table IV. Risk factors affecting the development of breast cancer

Hormonal risk factors: (associated with increased estrogen exposure)	Life style factors	Environmental factors
Early menarche	Smoking	Ionizing radiation (X-rays, MRI)
Late menopause	Obesity	
Childlessness	Low physical activity	
Having a child at a later age (over 30)	High ω -6 fat intake	
Having few children	Low phytoestrogen intake	
Not breastfeeding	Alcohol consumption	
Post-menopausal hormone therapy	Vitamin D deficiency	

Source: https://www.cdc.gov/cancer/breast/basic_info/risk_factors.htm [2021.04.20.]

per day. However, it is important to know that 80 percent of the isoflavone content of soy products is inadvertently removed during processing, so try to buy traditional, low-processed soy products. For soy, the Chinese and Japanese recommendations recommend 15 g of soy protein and 50 mg of isoflavonoids per day, the U.S. dietary recommendations, as well as the Eastern countries to recommend 25 g / day of soy protein to lower LDL cholesterol.

Lung cancer

Lung cancer has been the leading cause of cancer deaths in industrialized countries for many years and, unfortunately, Hungary has the highest incidence and mortality on the world (Table V). The number of new diseases has been on a declining trend since the 1990s, probably due to rules restricting smoking. The 5-year median survival is very low, at only 13% based on EURO-CARE-5 data [21].

Risk factors:

- Smoking: The most important risk factor for developing the disease is smoking. In men,

the role of smoking in the development of the disease is put at 90%. With regard to smoking, it is important to emphasize that secondary or environmental exposure to cigarette smoke is similarly harmful to the body.

- Radon: Radon is a colorless, odorless radioactive noble gas found in small amounts in nature in uranium-containing rocks and in soil and river water. During its natural decay, radioactive isotopes (polonium 218, polonium 214, lead 214) are formed, which can be added to airborne dust or smaller particles, e.g. they enter the body in connection with the components of tobacco smoke. Inhaled radon-containing air enters the air sacs in the lungs, where it exerts its DNA-damaging effects with direct alpha radiation. The concentration of radon in the open air is negligible, it is not a problem, but in buildings built of such rock, the concentration of radon indoors can be harmful to health, which can be reduced by frequent, regular ventilation.
- Asbestos: Asbestos was a widely used building material due to its excellent thermal and

VIII. Table V: Age-standardized mortality data, lung cancer, men.

Lung cancer			
Rank	Country	Mortality	Age-standardised rate per 100,000
	World	1.796.144	18,0
1.	Hungary	8.920	42,4
2.	Serbia	7.084	40,0
3.	Frenc polinesia	129	36,0
4.	Turkey	37.070	35,9
5.	Guam	86	35,1

Source: <https://www.wcrf.org/cancer-trends/lung-cancer-statistics/> [22]

sound insulation properties, while inhalation of airborne asbestos dust after decades of latency has been shown to cause severe lung damage, most commonly mesothelioma. According to the WHO, asbestos exposure is also observed in half of lung cancer patients. The use of asbestos in the construction industry has been banned in Hungary since 2005, and all construction waste generated during the demolition of old buildings is considered hazardous waste.

Prevention:

In order to prevent the development of lung cancer, the most important thing is to quit smoking and create a smoke-free environment.

One of the pivotal points in the treatment of lung cancer is the early detection of the disease. Effective, organized screening for high-risk individuals (smokers with a construction background) is not yet available. Low-dose CT scans capable of early detection of lung cancer show very promising results. Unfortunately, these investigations are quite

costly, so they are unlikely to be introduced as an organized screening.

Colon and rectal cancer

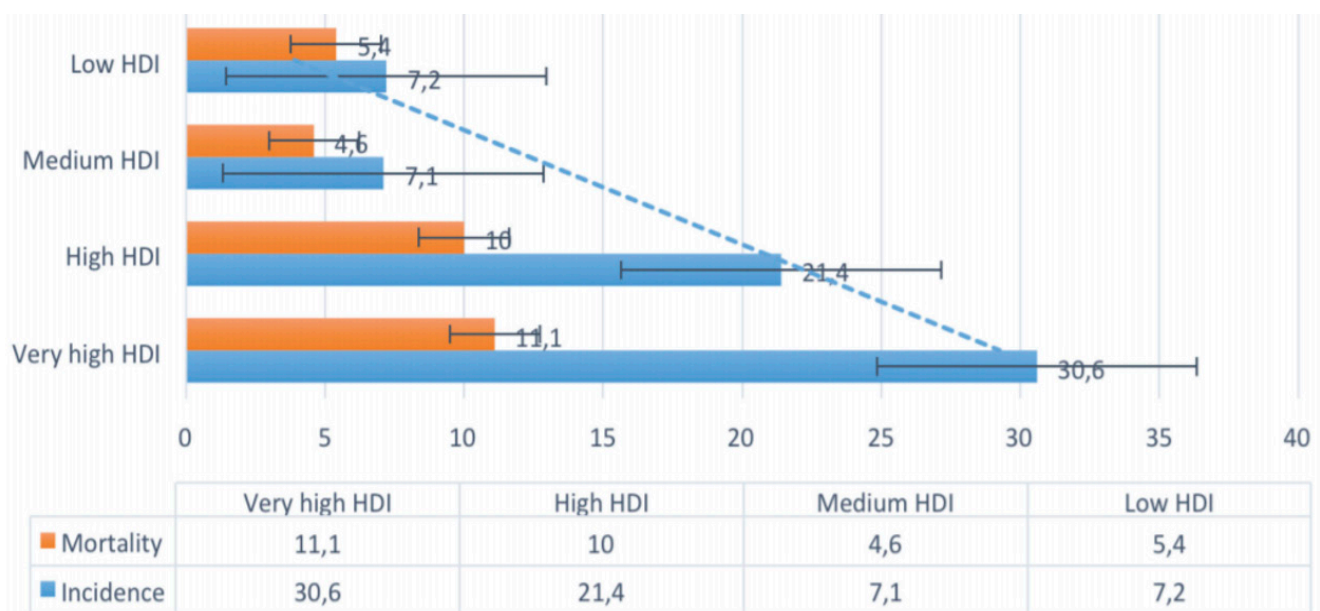
Significant differences in the incidence of colorectal tumors can be observed globally. Developed countries have the highest values, while in Africa and South Asia the weight of the disease is not as high. Hungary is also among the leading European countries in terms of incidence and mortality, and unfortunately we are world leaders in terms of age-standardized mortality (VIII. Table VI).

Approximately 30% of colorectal tumors show familial accumulation. Some of these cases (approximately 5% of all colorectal tumors) are caused by congenital mutations. Among the genetic factors, germ cell mutations in the mismatch repair (MMR) genes and the APC tumor suppressor gene are noteworthy. MMR gene mutations are more likely to induce hereditary nonpolyposis colorectal cancer (HNPCC) at a young age, also known as Lynch syndrome. Germ cell mutations in the APC tumor suppressor gene leads to the development

VIII. Table VI: Age-standardized mortality rates, colorectal tumors, both sexes

Colorectal tumors			
Rank	Country	Mortality	Age-standardised rate per 100,000
	World	935.173	9,0
1.	Slovákia	2.584	21,0
2.	Hungary	4.880	20,2
3.	Croatia	2.320	19,6
4.	Moldova	1.187	17,6
5.	Serbia	3.356	16,7

Source: <https://www.wcrf.org/cancer-trends/colorectal-cancer-statistics/> [23]



VIII. Figure 8.: Distribution of incidence and mortality of colorectal tumors in different HDI populations.

Source: <https://www.wcrj.net/wp-content/uploads/sites/5/2019/11/e1433-Worldwide-incidence-and-mortality-of-colorectal-cancer-and-Human-Development-Index- HDI-an-ecological-study.pdf>

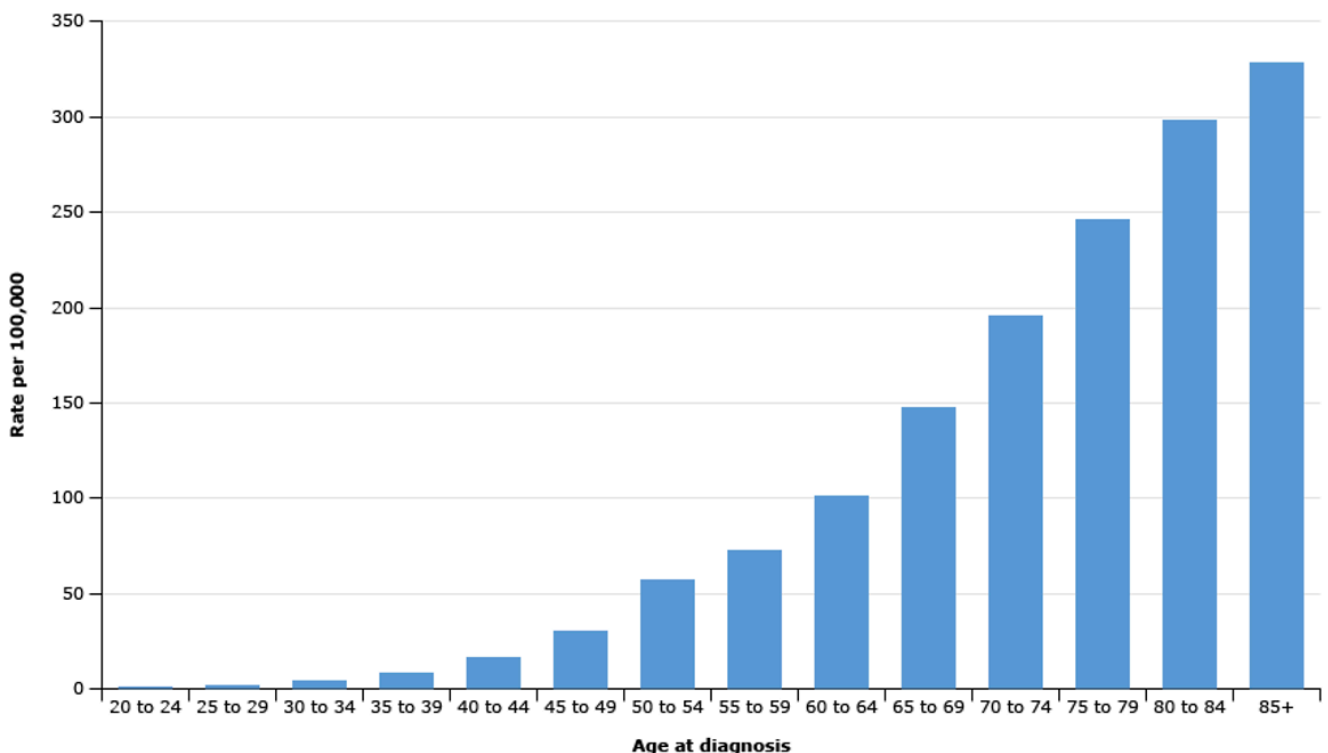
[24]

of familial adenomatous polyposis (FAP) disease, which, like Lynch syndrome, exhibits autosomal dominant inheritance. The disease, which is associated with the development of hundreds of adenomatous polyps, can manifest as early as the 1930s, so colonoscopy is recommended every 1-3 years in these cases. Among those who have inherited the APC mutation, the lifetime prevalence of colorectal tumor development is 100%.

Approximately 70% of colorectal tumors are sporadic, and lifestyle factors are mainly responsible for their development. In addition to age (Figure 9), the most important risk factor is overweight and the closely related physical inactivity.

Risk factors:

- Age: The incidence of colorectal cancer in those over 40 years of age is gradually increasing, affecting men and women to almost the same extent. (Below 40 years, its development is typical only with hereditary factors).
- Family history of colorectal cancer
- Obesity: Overweight and obesity are common in welfare societies. This is due to high energy intake and physical inactivity. In terms of energy intake, fat intake (including saturated fat intake) and alcohol consumption should be emphasized. According to the latest nutritional recommendation, saturated fats can give max. 10% of the daily energy intake (Dietary Guidelines for Americans, 2020-2025). Typical foods high in saturated fatty acids are lard, butter, fatty cheeses and red meats. In terms of energy intake, alcohol consumption should also be considered. Breaking down 1 g of alcohol releases 7 calories. Due to its high energy content, moderate consumption of 100% fibrous soft drinks is recommended, and similarly, reduction of daily consumption of sports and energy drinks without physical activity should be considered, and the consumption of sugary soft drinks should be limited.
- Excessive consumption of meat products



VIII. Figure 9: Rate of colorectal disease by age based on US data from 2004-2013.

Source: https://www.uptodate.com/contents/image?imageKey=ONC%2F111996&topicKey=ON-C%2F2606&source=see_link [25]

and red meat: Consumption of ham, salami, sausages, hot dogs, cold cuts or canned meat is also a risk for the development of tumors. These products are smoked, salted, fermented or pickled for preservation, improvement or flavor enhancement. During these procedures, the nitrite content of meat products increases, which may be responsible for the development of colon tumors. In 2014, the IARC classified meat products as proven to be carcinogenic (1A), while red meat (beef, veal, lamb, pork) was classified as a potential carcinogen (2A). Recent recommendations limit red meat consumption to a maximum of 70 grams per day.

- Low dietary fiber intake: Consumption of adequate amounts of vegetables, which covers a daily intake of 25-30 g of dietary fiber, is of paramount importance for colorectal tumors. This amount is necessary to help the intestinal tract function by shortening the passage time, thus not only promoting the rapid binding and excretion of harmful substances, but also reducing intestinal wall irritation. Plant fibers also have a protective effect on blood fat composition and increase the feeling of fullness, so it is really important to consume at least daily 400 g, preferably as many fresh vegetables as possible.
- Inadequate fat intake: Nutrition plays a key role in the development of colorectal tumors. In a proper, balanced diet, the ratio of polyunsaturated omega-6 series to omega-3 fatty acids is 4: 1. Unfortunately, the Western-type diet is significantly different. Omega-3 fatty acids are found almost exclusively in cold sea fish, with the exception of flaxseed oil, which is a very good alternative for those on a plant diet.
- Physical inactivity
- Smoking
- In case of inflammatory bowel diseases such as Crohn's disease or ulcerative colitis, chronic inflammation of the colon may increase the chances of developing colon cancer.
- Vitamin D deficiency

Prevention:

Screening plays an extremely important role in the prevention of colorectal tumors. The most effective way to do this is colonoscopy, which involves a full instrumental examination of the intestines. With the help of an endoscope, the specialist can also take a tissue sample for further examination, or even remove the polyps on the intestinal wall immediately. Unfortunately, the advantages of colonoscopy are associated with the relatively high cost of training, which is due to the need for a qualified specialist and the need for a properly equipped surgery.

In Hungary, according to Decree 51/1997 (XII.18.) NM, the organized, targeted public health population colon screening covers men and women aged 50-70 with an average risk. The first step in the screening is a blood test on the stool using an immunological stool blood test for hemoglobin (iFOBT or FIT), followed by a colonoscopy as a second step. The downside of this method is that if sampling does not occur when the tumor is bleeding, a false negative result is obtained, which provides false safety for an asymptomatic but already sick person [26].

Liver cancer

The incidence of primary liver cancer is on the rise, with its average 5-year survival, although much improved in recent decades, still only 20% today. [27]). In the presence of distant metastasis, survival is critically low at around 3%. The problem is exacerbated by the fact that liver damage and liver cancer have been extremely asymptomatic for a long time, and the diagnosis is mostly due to tests for other diseases. Hepatitis virus infections and high alcohol consumption should be considered in the development of primary liver cancer. About 80% of all liver cancers occur in Asian and African countries, and their high incidence is clearly due to a lack of hepatitis vaccination. Liver cancer is three times more common in men than in women.

Risk factors:

- Hepatitis B virus infection: Hepatitis B virus that enters the body causes death of liver

cells or chronic hepatitis. After infection, the pathogen is present in all body fluids, so the infection can be spread through sexual contact, blood and blood products, medical devices contaminated with tissue fluid, intravenous drug use, and the infected mother can pass it on to her baby during childbirth. Due to the screening of blood products, infection in healthcare facilities can be ruled out.

- Hepatitis C virus infection: The most common transmission is intravenous drug use.
- Alcohol: Alcohol is the most important risk factor for liver cancer in industrialized countries. Although acetaldehyde formed during its metabolism is a definite carcinogen, its consumption is still acceptable to humans. As alcohol is broken down mainly in the liver, so this is the primary location of damage, and alcohol consumed over the years induces cirrhosis over time, which is found in two-thirds of hepatocellular tumors and contributes greatly to the development of primary liver cancer. According to the dietary recommendations, alcohol consumption should be limited to 1 drink per day for women and 2 drinks per day for men (1 drink corresponds to about 14 g of pure alcohol) (V.Figure.10). Unfortunately, the average per capita alcohol consumption in Hungary is much higher

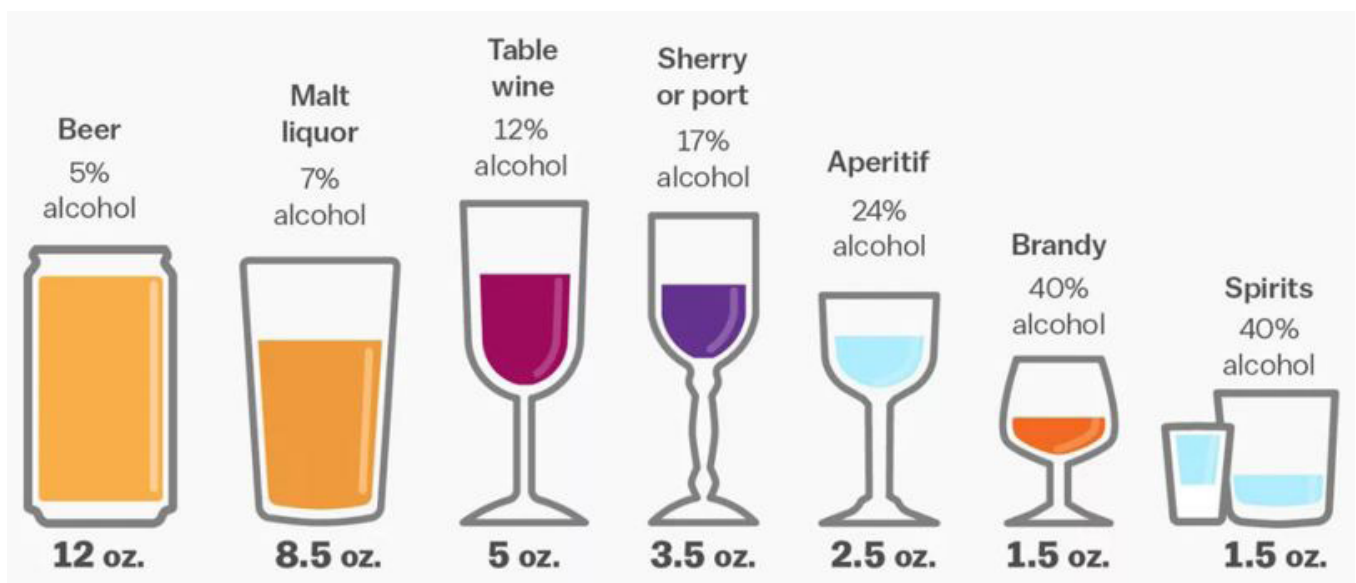
and occasional heavy drinking is especially dangerous when more than 6 drinks are consumed at one time. Incidentally, this pattern is typical of young people who do not regularly drink alcohol.

Prevention:

Hepatitis B vaccination plays a key role in prevention. It has been mandatory age related vaccine in Hungary since 1999. Occupational vaccination for healthcare workers and students is mandatory. Hepatitis B vaccination is recommended for those living in promiscuity. In Hungary, the problem is rather the high alcohol consumption.

Stomach cancer

Gastric cancer was the leading cause of cancer deaths in the 20th century until it was preceded by lung cancer in the 1980s. The most important risk factor is *Helicobacter pylori*. With the discovery of its etiological role, serious efforts have been made to eradicate the pathogen, resulting in a significant reduction in the incidence of gastric cancer, but still one of the leading causes of cancer deaths. Half of the development of stomach cancer is mostly due to lifestyle and nutritional factors. 5-year survival is between 20-30%, for late diagnosis the median survival is 1 year. The prognosis depends on age, pre-existing diseases, localization, and stage. The



VIII. Figure 10: Alcoholic beverages corresponding to 1 unit of beverage.

Source: <https://www.vox.com/2018/4/24/17242720/alcohol-health-risks-facts> [28]

disease is twice as common in men as in women [29]. Familial accumulation is observed in 10% of gastric cancers, in which case mutations in the Cadherin genes (CDH1) are observed.

Known risk factors for the disease:

- *Helicobacter pylori* infection: *Helicobacter pylori* is a feco-oral bacterium that enters the body through foods contaminated with feces. Thanks to improved hygienic conditions, *Helicobacter* transfection is now much lower. The International Agency for Research on Cancer has classified *Helicobacter pylori* as a proven carcinogen since 1994.
- Epstein-Barr virus (EBV): The etiological role of EBV has been demonstrated in a number of human tumors, as it has also been described in Hodgkin's lymphoma, Burkitt's lymphoma and nasopharyngeal carcinomas, but its exact role in carcinogenesis is not yet known. 10% of gastric cancers are EBV positive. Although the prevalence of EBV is higher in men, EBV-positive gastric cancer is more common in women.

Nutrition: Smoked and salted foods are known to increase the risk of gastric cancer.

- Alcohol consumption
- Smoking

Prevention:

Although *Helicobacter* infection has decreased significantly in developed countries, the bacterium has not disappeared from natural waters and soil. Raw vegetables, especially leeks, various salads and cabbages, should always be eaten after washing, thus reducing the risk of infection.

Appropriate antibiotic treatment of pre-existing *Helicobacter* infection is necessary even if we have no symptoms. Nutrition plays an extremely important role in prevention. In the past, the only way to preserve and store food was by salting and smoking, which resulted in a very high salt intake of the population, which is an important factor in stomach cancer. With the advent and spread of refrigerators, they have replaced salt-based preservation and also reduced the possibility of bacterial and fungal infections in food. In addition,

they have helped to increase the consumption of fresh fruit and vegetables, so that the consumption of canned foods was significantly reduced. Proper consumption of fresh vegetables and fruits, consumption of whole grains provides the right source of vitamins and minerals for the proper functioning of the body. In addition, proper fiber intake contributes to the development of proper body weight by creating a feeling of fullness, which is also extremely important for stomach cancer. Several studies have shown a positive correlation with the rate of green tea consumption.

Prostate cancer

The incidence of prostate cancer is increasing in proportion to the increase in life expectancy at birth. Abnormal prostate enlargement and malignancy are typical diseases of old age; the mean age of the patients at the time of diagnosis was 66 years. The 5-year survival of the disease is over 80%. The number of prostate cancers in developed countries has virtually doubled in the last 20 years, largely related to the two most important risk factors in Western life, nutrition and physical inactivity [30, 31].

Risk factors:

- Nutrition: In addition to the aspects already well known, it should be emphasized
 - High saturated fat intake
 - Low intake of polyunsaturated omega-3 fatty acids
 - high red meat consumption
 - Calcium intake or supplementation above 2000 mg / day
- Physical inactivity
- Smoking
- Alcohol consumption
- Chronic inflammation of the prostate, presence of prostatitis
- Male sex hormones
- Sexually transmitted diseases
- Certain occupations (e.g. battery production, soldering, rubber production)

Prevention:

Regarding the prevention of prostate cancer, it

has been debated for years whether prostate-specific antigen (PSA) produced by the prostate can be used as a tumor marker for early screening for prostate cancer. The problem is that elevated PSA levels are not a specific marker of prostate cancer. Elevated PSA levels can be measured after active exercise (eg, cycling), inflammation of the prostate, or benign prostate tumor. Recent recommendations suggest that PSA screening, with a few exceptions, has fewer benefits for most men than the number of adverse side effects and complaints associated with mistreatment of men with a positive PSA result. The few exceptions apply to men who have a family history of prostate cancer or are of the African American race. However, over 70 years of age, PSA screening is by no means recommended [32].

Cervical cancer

Today, it is still the fourth most common female cancer in the world, killing more than 300,000 women each year. The WHO aims to eliminate cervical cancer deaths from 21st century public health problems. Regular screening, introduced in developed countries as early as the 1960s, has led to a significant reduction in cervical cancer deaths. The number of cervical cancer deaths in Hungary is high, with more than 400 deaths per year. Its main risk factor is Human Papillomavirus (HPV), which is a necessary but not sufficient risk factor for cervical cancer [33]. The sexually transmitted virus is encountered at a young age, it enters the body through microinjuries, where it lurks for decades, and then it is not known exactly under what conditions, but it activates and leads to cervical cancer under various pre-cancer conditions. Factors that increase the risk of HPV infection contribute to the development of the disease:

- Sexual activity started at a young age
- Multiple partners
- A partner who is infected with HPV or who has had multiple sexual partners in the past
- First childbirth / childbirth at a young age (before 18 years)
- Childbirth of 3 or more children (probably due to hormonal changes, the immune system becomes weaker during childbirth, and

the female reproductive system is thought to become more susceptible to HPV, so having more children is at risk for developing cervical cancer.

Additional risk factors:

- Smoking
- Weakened immune system (because a well-functioning immune system is needed to eliminate HVPV infection, thus any disease that weakens the immune system, such as AIDS, increases the incidence of cervical cancer.
- Chlamydia infection
- Taking birth control pills for a long time

Prevention:

One of the most effective ways to prevent the development of cervical cancer is to avoid HPV infection. The HPV vaccine was introduced in Hungary in September 2014, which, when used before the start of sexual life, protects against HPV infection with 93% effectiveness. Vaccination is age-related but not mandatory. Parents can apply for free for girls over the age of 12. From 2020, free vaccinations will be available for boys. There are 3 registered vaccinations available in Hungary, all of which can be given from the age of 9. [34, 35]. Gardasil, which can be given to boys, protects against HPV serotype 9, which protects not only against cervical cancer but also against genital warts. Using the vaccine before having sex, it protects against HPV infection with 93% effectiveness. To offer the vaccination is mandatory for primary school children, but is the parents can decide whether or not to vaccinate their child. It is important to emphasize that vaccination does not replaces cervical cancer screening.

Cervical cancer develops over many decades. Smear tests performed during this period are able to detect morphological changes in the cells, so the development of cervical cancer can be prevented by early intervention even in the pre-cancerous stage. Since 2003, cervical cancer screening of women aged 25-65 has been mandatory in Hungary every 3 years during a gynecological visit [36]. Due to the very low participation, cervical cancer

screening for nurses has also been introduced in recent years. The advantage of this is that there are nurses in almost all settlements, and the acceptance of nurses is generally higher than that of mostly male gynecologists.

Head and neck tumors:

Malignant tumor types of various origins in the head and neck region are collectively referred to as head and neck tumors. Tumors of the oral cavity, oropharynx, hypopharynx and larynx give 90% of cases. Less common tumors are of the nasopharynx, nasal cavity, paranasal sinuses, and small and large salivary glands. Early diagnosis is complicated by the lack of specific symptoms. The primary reason for this is that the lesions in the region can have a wide variety of localizations. The largest group of head and neck tumors is oral tumors, so we will focus on these tumors in the following.

Tumors of the lips and mouth

A tumor of the lips and oral cavity is defined as a pathological change in the lips, mouth, tongue, palate, gums, salivary glands, sublingual area, pharynx, or mucous membranes covering the mouth. Unfortunately, Hungary is also at the forefront of mortality statistics in Europe and the world.

The most important risk factors are smoking and alcohol consumption. When these two factors occur together, a synergistic effect occurs and the risk of developing the disease is significantly increased. Heavy smoking and increased regular alcohol intake increase the risk of developing the disease by 35-40%. It is estimated that the combined occurrence of these two factors is responsible for almost 75% of tumors in the lips and mouth [37].

Additional risk factors:

- Smoke-free tobacco products: Applying tobacco directly to the mucous membranes (snus, snuff) is very popular in North America or the Scandinavian country. Chewing tobacco is mainly used in India. These forms of smoking also increase the development of oral cancers.
- Betel nut chewing: We are probably talking about one of the oldest psychoactive sub-

stance use patterns, particularly in South Asia and the Pacific. Betel nuts are most often consumed alone, but sometimes with tobacco. In both cases, there is an increased risk.

- Ultraviolet radiation: Due to the harmful effects of UV-B exposure, attention should be paid to the time spent in the open air. This is especially important for white skinned people who are more sensitive to light. Sunlight poses a serious risk to agricultural workers and fishermen, with a much more frequent diagnosis of lip cancer.
- Human Papillomavirus (HPV): Of the human papillomavirus with hundreds of serotypes, serotype 16 is detected in 75% of oral tumors. The most common transmission is oro-genital.
- Herpes virus
- Epstein-Barr virus
- Oral hygiene: Unfortunately, we do not pay proper attention to oral hygiene. Perforated or broken teeth, untreated periodontitis are at increased risk. In Hungary, a habits of dental visits are not very encouraging, which would be important for early diagnosis.
- Occupational exposures: Occupational exposure to dust and chemicals may occur, especially in the textile, wood and metal industries, as well as in the construction industry.
- Low socio-economic status

Prevention:

First and foremost, it is essential to reduce or eliminate the use of smoking in all its forms. Regarding alcohol consumption, follow the international recommendations to not consume more than 14 units of alcohol per week (max. 2 units of drink per day) and also avoid the occasional heavy drinking category (6 or more drinks / occasion). Unfortunately, this is a very typical pattern of young people's drinking habits.

Improving habits related to the visits of dentists cannot be overemphasized, but it is especially important to see a doctor immediately if you experience any abnormalities in the head and neck, even a painless little swelling. Important signs may be

vocal cords, persistent hoarseness for no reason, a white or red spot in the mouth, or pain or numbness during chewing or swallowing.

Adequate antioxidant and vitamin intake and green tea intake can be important protective factors.

Skin cancer

Although mortality from skin cancer is negligible, it is important to know that it is the most common cancer in the Caucasian white population and its incidence is steadily rising. The cause of this that the ozone layer around the Earth is getting thinner, thus the exposure to the sun's harmful rays is greater. Among the skin cancers, melanoma malignum should be highlighted. Melanoma is an abnormal cell proliferation that originates primarily from melanocytes in the skin, sometimes the eyes, meninges, or other mucous membranes. Early detection is difficult because it does not cause a complaint, and itching is also rare. It most often develops from pre-existing skin lesions, moles and freckles, but it can quickly appear on a skin surface free of visible lesions. In terms of localization, it usually occurs on the back in men and on the legs in women.

Risk factors:

- High ultraviolet radiation: Sunlight contains varying degrees of ultraviolet rays that can damage DNA, depending on the season, the weather, the altitude, and the distance from the Equator. UV radiation also depends on cloud cover and topography. So the higher

we are, the better our skin needs to be protected. Snow and the surface of the water reflect UV rays, so in such an environment we have to reckon with even higher radiation. During the summer, we should limit or avoid being in the open air from 11 a.m. to 3 p.m.

- Light skin type, blue or green eyes, blonde or red hair, freckled skin: People with these marks should pay close attention to protect their skin and avoid sunburn.
- Solarium: Solariums mostly tan the skin with the help of UVA rays, which is less harmful than UVB radiation, but damages the deeper layers of the skin, thus contributing to skin aging.
- Atypical moles (moles of abnormal shape or color, often larger):
- Many moles: Most moles are never a problem, but those who have many moles are more likely to develop melanoma. In all cases where a birthmark changes, see a dermatologist immediately!
- The so-called ABCDE rule, often supplemented by the letter F, makes it easy to check our moles. In the event of a change in the shape (A: asymmetry), boundaries (B: border), color (C: color), diameter (D: diameter) or any evolution (E: evolving) of the mole, plus if the moles have any unusual, new (burning), itchy, painful (F: feeling), contact a specialist immediately. (Figure 11).

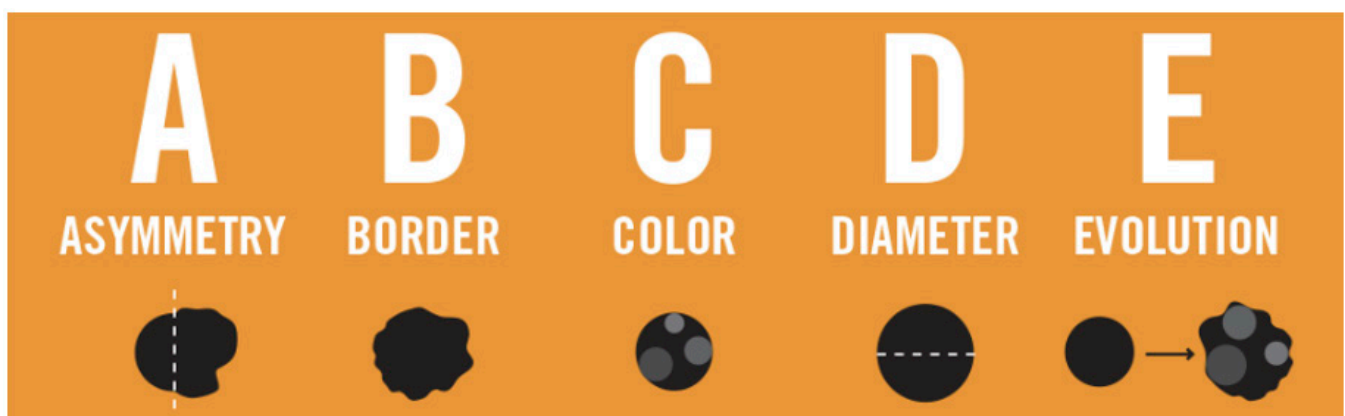


Figure 11: ABCDE rule for early detection of melanoma malignum.

Source: <https://www.skinvision.com/articles/abcde-melanoma-self-check/> [38]

Prevention:

There are many ways to protect against UVA and UVB radiation today. For those with more sensitive skin, it is also recommended to use a wide range of sunscreens in winter. When buying our glasses, look for a version with a UV filter. In summer it is worth wearing a hat and umbrella. We can also buy window protection film for our home and car windows.

In addition to the above, regular and thorough self-examination is important. Melanoma can not only develop on the surface of the skin exposed to the sun. It can often form on the scalp, under the nail or on the sole, or even between the fingers [39].

VIII.5. Respiratory diseases

Chronic respiratory diseases have become more common in the past 50 years, along with industrialization and urbanization, and are now one of the most important public health issues. Respiratory illness can be caused by infections, smoking, including exposure to ambient smoke, and air pollution. In terms of quality-corrected life years, respiratory diseases include asthma, chronic obstructive pulmonary disease (COPD), pulmonary fibrosis, pneumonia, and lung cancer.

Chronic Obstructive Pulmonary Disease (COPD)

Chronic obstructive pulmonary disease, or COPD, is the third leading cause of death worldwide. In 2019, more than 3 million people died from the disease associated with airway obstruction and parenchyma destruction due to airway inflammation. Incidence and prevalence have also risen sharply over the past 30 years, with further increases likely to occur in the next decade. The number of patients with chronic obstructive pulmonary disease worldwide is approx. 300 million people, that number is important not only for morbidity and prevalence, but also for health expenditure [40].

Eighty percent of COPD patients live in 80% of low- and middle-income countries, and the disease very often remains undiagnosed. It is one of the

most important factors in premature death and disability-adjusted life years.

Chronic inflammation of the airways is caused by inhaling some irritative particle. This results in chronic bronchitis with bronchoconstriction and increased secretion. At the same time, the walls of the air sacs involved in the gas exchange gradually snap, causing the respiratory surface to shrink and emphysema to develop. These events do not cause typical complaints for a long time, most of the time we only notice a decrease in our physical endurance. The progress of lung damage is well indicated by the characteristic shortness of breath that occurs with less and less physical exertion. The disease rarely affects children and adolescents, more so in middle-aged people. The disease is most often diagnosed at a late stage. This is due to the fact that the appearance of symptoms indicating the early stage is considered by those concerned to be the natural consequences of smoking, the most important risk factor for the disease. The symptoms are as follows:

- Cough after waking up, which occurs more and more often during the day and later becomes a chronic cough
- Increased mucus production (often spit)
- Shortness of breath (during sports, work, physical activity)

The disease is associated with irreversible damage to the airways, and is an incurable disease with significant mortality. The presence of COPD doubles the risk of lung cancer, in which case the chances of lung cancer survival are significantly worse. With proper treatment, the quality of life of COPD patients can be improved, and oxygen therapy is often used to reduce shortness of breath.

Key risk factors:

- Smoking (active and passive): Smoking is undoubtedly the most important and common cause of COPD. 85-90% of patients are smokers or ex-smokers. Thousands of chemicals found in tobacco smoke weaken the lungs' resistance to infections, narrowing the airways and destroying the air sacs. These processes contribute to the develop-

ment of COPD. A smoker has more than ten times the chance of developing the disease than a non-smoker.

- Passive smoking / environmental smoke exposure: Smoking during pregnancy increases the risk of preterm birth. A child born with a lower body weight in a more immature state has a worse life expectancy and is more likely to develop COPD in their lifetime. If people smoke in the children's environment, they are more likely to become smokers and probably at a much earlier age, which is more likely to lead to the disease later on - in addition to the consequences of direct lung damage from passive smoking.
- Outdoor air pollution from wood and coal fuels and other biomass fuels
- Indoor air pollution is a very significant risk factor, especially in developing countries where open stoves are used.
- Indoor and outdoor air pollutants: chemicals, smoke and dust exposure
- Certain occupations (miners, asphalt workers).

Asthma

- Respiratory infections in childhood. Pneumococcal vaccination and optional influenza vaccination are extremely important in preventing these infections.
- Genetic predisposition: In rare cases, due to a deficiency of the alpha-1-antitrypsin gene in the background of COPD, a functional alpha-1 antitrypsin protein is not synthesized to protect the air sacs in the lungs, in which case emphysema is caused by the hereditary genetic factor.
- Age
- Low socio-economic status

The key factor in preventing the disease is clearly the avoidance of smoking and second-hand smoke. Appropriate protective equipment can be used to reduce exposure to respiratory irritation. Vaccines for the prevention of respiratory diseases, such as annual influenza vaccinations also help control the disease. "COPD awareness" is also important for both potential stakeholders and the medical com-

munity, allowing for early diagnosis of the disease despite the rather nonspecific early symptoms. This is because treatment initiated at an early stage can significantly slow down the progression of the disease compared to untreated cases.

Asthma

The incidence and prevalence of asthma have increased exponentially in recent decades and have become the most common chronic non-communicable respiratory disease to date. Its global prevalence is in excess of 250 million, although the disease is often underdiagnosed in low- and middle-income countries [41].

Asthma is a chronic inflammation of the airways that causes hyperactive mucus production and bronchoconstriction. Fluid from the bronchi narrows the lumen, the air is difficult or impossible to reach the air sacs in the lungs. Due to chronic inflammation, the airways undergo smooth muscle structural changes, and the epithelium may be damaged. As the process progresses, the air flowing out of the increasingly narrowed airways makes a characteristic whistling sound. Then the changes that have been reversible for a long time become irreversible.

Very often, no specific allergen can be detected in the background of asthma. [42] Often, cold air, physical exertion, or stress trigger an increased reaction in the body and causes inflammation. Probably of great importance in the development of asthma is the fact that in recent decades we have used antibacterial cleansers too often to protect our children, and with these efforts we inhibit the development of a normal immune system. In order for children to develop a healthy immune system, it is necessary for the body to be exposed to the right amount of antigen at an early age. Therefore, the current recommendations suggest a close-to-nature lifestyle for children rather than an overly clean, sterile environment. It is also important to mention the proper use of antibiotics. Antibiotics, which we unfortunately use quite often today, also destroy the bacterial flora that is essential for the efficient functioning of our body. For the proper functioning of the immune system, the microbi-

ome composition of our body must also be preserved, in which the suppression of unnecessary / excessive use of antibiotics can play an important role.

Asthma is the most common chronic disease in children. It is more common in boys, but as the age progresses, gender differences level off and may reverse. We also distinguish allergic asthma, in which case pollens and allergens cause inflammatory obstruction of the bronchi.

Risk factors:

- Asthmatic disease of family members (parents, siblings)
- Allergy in the family (allergic rhinitis or eczema)
- Low birth weight, preterm birth, cesarean birth, maternal stress, and some other perinatal factors
- Exposure to tobacco smoke and use of e-cigarettes
- Air pollution / exhaust exposure
- Common respiratory viral infections in childhood
- Environmental allergens (indoor and outdoor air pollutants: house dust mites, mold, smoke, dust, chemicals, animal hair, wood dust, flour)
- Strong scents (perfumes, chemicals)
- Cold air
- Strong emotions / stress
- Overweight, obesity
- Reflux disease
- Certain occupations (hairdresser, painter, agricultural work)
- Genetic factors that increase sensitivity to the above external factors

Asthma is not curable, but it can be treated very well. Asthma attacks can be reduced by avoiding irritants or by using different steroid or bronchodilator inhalers.

The risk of developing asthma can be reduced by eliminating the listed risk factors or reducing their incidence / level. Several studies have shown a clear negative association between breastfeeding and the incidence of childhood asthma. Also a

strong protective factor is the rural environment, encounters with a wide variety of animals, and multiple microbial exposures. In addition to the direct effect on the immune system, the above also enhances the diversity of the intestinal microbiota, and other factors with similar effects (e.g. dietary fiber intake, consumption of fermented foods) also have a protective effect.

Allergic rhinitis (hay fever):

Although it is not an important cause of death, the disease makes the lives of many people permanently bitter, so we talk about it differently in this chapter. Allergic rhinitis is one of the most common respiratory diseases. Its prevalence is rising year by year. In industrialized countries, nearly 40% of children under the age of 18 suffer from the disease. As you age, the disease gets better. Excessive immunoglobulin E (IgE) -mediated immune responses to otherwise harmless environmental allergens, leading to inflammation of the mucous membranes and nasal mucosa, can often disappear in adulthood. Its prevalence in adults is similar in different geographical regions, ranging from 15 to 25%, but it should be noted that allergic rhinitis is not diagnosed in cases with a milder course, and there are large differences in the diagnosis of the disease. Typical symptoms of the disease are sneezing, runny nose, nasal congestion, tearing, itchy eyes, conjunctivitis, sore throat, itchy throat.[43]). Two types of allergic rhinitis are distinguished according to whether the symptoms occur continuously or only intermittently.

1. We talk about perennial allergies, i.e. those that last all year round, if the triggers that cause the allergy are constantly present in our environment. This type accounts for about 40% of cases.

House dust mite allergy: Perennial allergies are most often caused by the presence of house dust mites. The trigger is not caused by the animal itself, but by its microscopic-sized feces. The house dust mite *Dermatophagoides pteronyssus* and *Dermatophagoides farinae* feed on dead human epithelial cells and therefore accumulate in places where you can find large amounts of epithelial cells (bedding, pillows, mattress pads, upholstery, carpets).

To prevent the disease, we need to pay attention to:

- In case of allergies, it is advisable to switch to anti-allergenic bedding. If this is not possible, it is recommended to wash the bedding and pillows in water at least 60°C at least once a week.
- Exposure can also be reduced by replacing carpets.
- Reduce the number of objects that can be good sources of dust (e.g. plush toys).
- Vacuum cleaners with HEPA filters and air conditioners / air filters can reduce the number of airborne particles (e.g. animal hair). materials
- By using air conditioners, the humidity in the apartment can also be reduced, which reduces mold
- Regular cleaning, preferably not by the person suffering in allergy to dust. If so, use a nasal mask!
- Always use wet dusting in the apartment
- Ventilate regularly
- Do not comb in the bedroom

Pet hair and feather allergy: Contrary to its name, allergic reactions are caused not only by the hair and feathers of pets, but also by the saliva and urine. By caressing the pets kept in the apartment, we can easily carry these allergens on, so we wash our hands after touching and caressing the animals. Avoiding carpets is also important in case of pet hair allergies. If you stick to a rug, it is important that your pet is not in a room that is covered with a rug. The HEPA filter vacuum cleaner, air conditioner, effectively reduces pet hair exposure.

Mold allergy: Molds often settle in wet areas. The kitchen and bathroom provide an excellent living space for mold. In addition to wet blocks, they also settle behind wet walls, wallpapers and textiles. Sometimes the spores spread through the apartment as black spots, and sometimes invisibly, just causing a musty smell.

In terms of prevention, monitor the humidity in the apartment, it should stay between 40 and 60 percent. High humidity can be effectively reduced

by ventilating several times a day, even just a few minutes, possibly with a crossover. To reduce high humidity, it is advisable to use a tumble dryer to prevent moisture from drying clothes from entering the air. By the way, molds also occur outdoors. Concentrations of mold spores increase in summer and autumn, especially in wet, changeable weather. In compost, collected firewood, under dead leaves we can almost always count on it.

2. A seasonal or intermittent allergy is when triggers that elicit an enhanced immune response occur only intermittently, exclusively during the pollen season. Seasonal allergies account for about 20% of all allergic rhinitises. In the remaining 40%, seasonal and perennial rhinitis occur together.

The first pollens appear in early spring and we can find high concentrations of pollen in the air until late autumn - you can find out about these periods from pollen calendars on many places on the Internet. Today, we can easily find out about the current pollen exposure, as it is part of almost every weather report. Ragweed (*Ambrosia artemisiifolia*) is of the greatest importance in Hungary. The European Food Safety Authority (EFSA) classified ragweed as one of the world's first 100 invasive, harmful and dangerous plants in 2010. In Hungary, the 221/2008. (VIII. 30.) prescribes the eradication of ragweed indoors and outdoors, thus contributing to the suppression of ragweed allergy [44].

In the case of seasonal allergies, we can improve our well-being by reducing pollen exposure.

- Observe the pollen concentration! In case of high pollen concentration it is better to stay indoors.
- After the appearance of pollen, keep the windows closed, if possible, ventilate using air conditioners to remove pollen from the living space
- When you return home, change your clothes, as pollen inevitably sticks to them in the open air and is a constant exposure for us indoors as well.
- Wash your hair before going to bed every night
- Ventilate in the evening or after rain when

the pollen concentration is lowest

- Try to schedule your vacation and travel for a period when the pollen concentration in your place of residence is high
- There is no proper way to prevent the development of allergic rhinitis, as the immune system responds incorrectly to completely ordinary things. The risk of developing the disease is increased by the following factors:
- Genetic predisposition: If a parent is involved, the child is much more likely to become allergic. If one of the parents is allergic, the children should be approx. by 25%, if both parents are allergic, children are 50% more likely to develop an allergy than if neither parent is involved.
- Lack of breastfeeding
- Excessive use of cleaning products in the environment of infants and young children (see hygiene theory)
- Smoking

It is important to draw attention to the phenomenon of **cross-allergy**. The body of an allergic person produces antibodies to protect against the pollen of the allergenic plant. Unfortunately, in many cases, the consumption of foods containing similar antigens also triggers the immune response and triggers an inflammatory reaction to the histamine released from the body (such combinations can be listed, for example [45]).

VIII.6. Gastrointestinal disorders

Diseases of the gastrointestinal tract include a number of diseases of various organs with different etiologies, symptoms and prognoses. It would be pointless to summarize or attempt to summarize the epidemiology and prevention of all this, given the size limits, because it would not be possible to explain the relevant information. Instead, we confine ourselves to the more important, relevant diseases selected taking into account the domestic conditions.

Cirrhosis of the liver

Cirrhosis of the liver is a progressive disease that develops slowly over many years. According to the latest data from Eurostat, Hungary's involve-

ment is extremely high. In Hungary, about twice as many people die from cirrhosis of the liver as on average in the EU-27. [46]. Patients are 3: 1 male. It requires long-term, continuous liver damage. When healthy liver cells are damaged, the structure of the liver is rebuilt and connective tissue-scar tissue develops, which inhibits blood flow in the liver. Although the amount of functional liver tissue is constantly decreasing (as the name of the disease suggests, the number of functional liver cells is decreasing, i.e. shrinking), the disease is asymptomatic for a long time or produces only general symptoms: fatigue, loss of appetite, abdominal pain. Later, when the liver damage becomes much greater, the characteristic symptoms appear: jaundice, itchy skin, bleeding in the skin (ascites), ankle edema, dilated veins that can also penetrate the skin, abdominal varicose veins, reminiscent of capuchin (caput medusae).

The liver has an extraordinary reserve capacity. It is practically able to perform its function even when only 10% of the liver cells are functioning. Thus, when symptoms appear, the increase in dysfunctional lobular scar tissue may be so great that the liver becomes palpable. There is currently no way to reverse the structure of the liver, and only liver transplantation can solve the patient's survival. According to the factors responsible for the development of liver cirrhosis, we distinguish 3 types of the disease:

Alcohol-induced liver cirrhosis: Prolonged, regular, and significant alcohol consumption is the leading cause of liver cirrhosis in industrialized countries. The first stage of alcohol-induced liver cirrhosis is fatty liver, when the liver accumulates significant amounts of fat, causing liver enlargement. This process can be reversed even without alcohol, without medical intervention. The second stage is hepatitis, the prognosis of which depends on the degree of liver damage. The third stage is cirrhosis hepatis, when the death of liver cells leads to such a degree of liver failure that survival without liver transplantation can be up to 3-5 years. The stage of cirrhosis of the liver develops in about 10-15% of cases due to long-term and regular alcohol consumption.

It is very difficult to define who is considered to be at high risk for alcohol consumption. Alcohol consumption is part of our daily lives, so we are often not aware of the danger of drinking some alcohol on a weekly or daily basis, even though experts say this habit is also a risk for liver damage. As real alcohol consumption remains hidden in many cases, it is only possible to estimate how many people consume alcohol on a regular basis. According to some estimates, the number of alcoholics in Hungary (who have already developed physical addiction) is about 1 million, while the number of heavy drinkers is 2.5 million. According to the latest survey in 2019, 20.2% of the Hungarian adult population are moderate drinkers and 5.2% are heavy drinkers. Binge drinking is more common in men; 9.3% of men and 1.5% of women are heavy drinkers in Hungary [47].

Hepatitis virus-induced liver cirrhosis: Hepatitis B vaccination has been mandatory in Hungary since 1999, depending on age. Thus, this method is no longer typical of us or in industrialized countries. However, there is no vaccine against Hepatitis C infection. The most common transmission is intravenous drug use.

Non-alcoholic steatohepatitis: The most important risk factor for its development is obesity. Obesity is a common disease in developed countries. According to the latest survey, 34.3% of the adult population is overweight and 23.9% are obese [48]. With a lifestyle change, the process can even be completely reversed.

Additional risk factors for liver damage:

- Fungal poisoning: The most significant fungal poisoning is caused by the alpha-amanitine toxin of the killer agaric (*Amanita phalloides*), which is primarily responsible for lethal liver and kidney damage. Fortunately, there are only few deaths in Hungary each year. The toxin of the killer agaric cannot be neutralized in any way, there is no antidote to poisoning.
- Medicines
- Prevention of the disease is possible by

eliminating the relevant risk factors. In domestic context, this means fighting alcoholism in particular, which is a societal task. Combating obesity is also a complex activity - discussed in detail in other chapters. In the prevention of hepatitis, the fight against intravenous drug use (e.g. needle exchange programs) and appropriate (safe) sexual behavior are of paramount importance.

Inflammatory Bowel Disease (IBD)

The two main types of inflammatory bowel disease are:

- **Ulcerative colitis (ulcerative colitis):** It is considered by many to be an autoimmune disease because it is caused by an overactivity (disorder) of the immune system. The exact mechanism is still unknown today; but the immune system does not recognize and attack the bacteria that improve digestion in its own gut flora. Other hypotheses suggest that a real infection occurs that activates the immune system, failing to turn it off on just one fault, so it continues to overactively function after infection. The disease can develop at any age. It is characterized by chronic inflammation of the colonic mucosa, which causes small wounds and ulcers. It usually affects the surface of the colonic mucosa in a contiguous area starting from the rectum. This is the main difference from Crohn's disease, where inflammation affects not only the surface of the mucosa but its entire thickness. There is currently no known cure for the disease, the symptoms can be controlled somewhat.
- **Crohn's disease:** In Crohn's disease, the inflammation extends to the entire thickness of the intestinal wall. Intact and diseased intestinal sections alternate (segmental inflammation). Inflammation can occur anywhere in the entire intestinal tract, from the oral cavity to the anus, but is often localized to the appendix, where the small and large intestines meet. The symptoms then resemble appendicitis, often recognizing the disease. Inflammatory abscesses, ulcers and perfora-

tion are common.

The incidence of ulcerative colitis and Crohn's disease has increased exponentially in recent decades.

Risk factors may include:

- Genetic factors, hereditary predisposition
- Immune system dysfunction (hygiene theory)
- Inadequate nutrition (low fiber diet, consumption of finished products)
- Stress
- Smoking
- Changes in microbiota composition e.g. due to frequent use of antibiotics
- Environmental factors (chemical compounds from plant protection products, various infections)
- Unfortunately, the possibilities for specific prevention of inflammatory bowel disease are quite limited. What we can do is avoid the known risk factors (listed above) that can reduce the risk somewhat [49].

Irritable bowel syndrome.

It is considered one of the most common gastrointestinal diseases, a disease of civilization. Its incidence is 10-15%. It usually appears in early adulthood. The exact cause of the disease is not known, no specific organ change can be detected, but it is almost always associated with some kind of psychological problem. Known risk factors include stress, mental health problems (past trauma), malnutrition, certain risk behaviors (smoking, alcohol, drugs, lack of exercise), and poor bowel habits. According to some hypotheses disorders of nerves that regulate sensation and muscle contraction in the intestinal wall and hormonal effects also cause the characteristic symptoms: abdominal cramps, diarrhea, or constipation. These symptoms occur regularly or recur from time to time. Irritable bowel syndrome is twice as common in women as it is in men. Stressful situations usually cause or exacerbate symptoms. For prevention, proper nutrition is recommended, especially for fiber intake. Frequent but small meals are recommended. You have to learn to live with the disease, which may reduce

the severity of the symptoms, and it is definitely recommended to learn some stress management technique.

Ulcer disease

The prevalence of ulcer disease varies worldwide. In recent decades, the incidence of the disease has decreased significantly due to the identification of its most important etiological factor, *Helicobacter pylori*. In a healthy body, the gastric juice produced by the gastric mucosa and the pancreatic juice produced by the pancreas protect the mucosa from the corrosive effects of acidic digestive enzymes needed for digestion. If, for whatever reason, this protective mechanism does not work perfectly, small, difficult-to-heal sores and ulcers will form.

Peptic ulcers can occur mainly in the esophagus, stomach, or proximal duodenum. The incidence of feco-oral *Helicobacter pylori* infections has been significantly reduced with improved hygiene, although *Helicobacter* infestation is relatively high even in industrialized countries. Ulcer diseases occur in about 10 percent of the adult population in industrialized countries, most commonly between the ages of 20 and 50, and affect men twice as often as women. Symptoms of peptic ulcer include abdominal pain around the pylorus, which is often exacerbated by eating. Anorexia, weight loss, nausea, vomiting may occur. Bleeding ulcers may include regular dizziness, bloody vomiting, or black stools [50].

Untreated ulcer disease can cause severe perforation with acute pain on the one hand, and severe blood loss due to continuous internal bleeding on the other. Scar tissue is often formed along micro-injuries, making it difficult for food to pass through the digestive system.

Important risk factors:

- *Helicobacter pylori*: It settles on the surface mucosal layers of the gastric mucosa. It is most often a mild problem, but can also cause inflammation of the deeper layer of the gastric mucosa. Through its urease activity, it produces ammonia, which neutralizes gastric hydrochloric acid, allowing it to live in the gastric mucosa for many decades. Its

metabolites and toxins are responsible for damage and inflammation of the gastrointestinal mucosa. It spreads from person to person through food contaminated with the pathogen or through contact infection. In most cases, we overcome *Helicobacter* infection in early childhood with insignificant symptoms, while in a small number of people it causes chronic gastritis, ulcer disease or stomach cancer [51].

- Aspirin, ibuprofen and other non-steroidal anti-inflammatory drugs: their use has increased significantly in recent decades, partly due to the fact that some of them are available without a prescription.
- Other medicines, e.g. steroids, anticoagulants
- Smoking
- Significant alcohol consumption
- Blood type 0
- In the past, stress and spicy foods were also thought to be risk factors, but epidemiological studies in recent years / decades have not confirmed this. However, in ulcer patients, increased stress can worsen the condition and increase the pain.

Thus, the most important lifestyle prevention options are to reduce the overuse of NSAIDs, to quit smoking, and to avoid excessive alcohol consumption. In the field of unnecessary medication, the health care system also has a job to do. The need for possible *Helicobacter* eradication (with an appropriate antibiotic) will also be decided by a specialist.

Lactose intolerance:

Lactose sensitivity develops when someone is unable to digest the milk sugar in milk, i.e. lactose. This is because he/she does not have the functional lactase enzyme needed for this. The enzyme lactase produced in the small intestine is vital during breastfeeding, as it breaks down lactose in breast milk into D-galactose and D-glucose, making it useful for the baby. In mammals and 65-70% of humans, the LCT gene on the long arm of chromosome 2 is inactivated a few years after breastfeeding, thus minimizing lactase enzyme produc-

tion. Lactose intolerance affects the population of Asian and African countries the most. In the absence of lactase, lactose is no longer broken down from the milk and milk products consumed. Undigested lactose enters the colon, where bacteria in the intestinal flora produce lactic acid, methane, and hydrogen to cause unpleasant gastrointestinal symptoms (bloating, diarrhea, nausea, stomach cramps). Adult milk consumption is not typical in these societies [52].

While the lactase gene is inactive in 90% of adults in African and Asian countries, the LCT gene remains active for a lifetime in a significant proportion of European and Western populations, and these people are able to utilize lactose without complaint, so these countries have become milk-consuming societies [53]. There are two types of lactose sensitivity:

Primary lactose intolerance: The most common form in which the lactase gene is genetically inactivated at 2-5 years of age, as described above. As the level of the enzyme lactase decreases, it becomes more and more difficult to digest milk, and the unpleasant symptoms only appear in adulthood.

Secondary lactose intolerance is caused by another disease (e.g. Crohn's disease, celiac disease) or impairment (surgery, chemotherapy).

Prevention: Although the genetic cause itself cannot be eliminated, fortunately there are particularly effective options for preventing the symptoms of lactose intolerance. Fermented dairy products can be consumed because they have a minimal lactose content. It is also possible to take lactase-containing tablets when lactose-intolerant people consume dairy products - so digestion is carried out by an enzyme ingested from the outside.

Gastroesophageal Reflux Disease (GERD):

Gastroesophageal reflux disease, or GERD for short, is the most common gastrointestinal disorder that occurs when acidic stomach juice (possibly stomach contents) flows back from the stomach into the esophagus. GERD can occur in all ages. It is caused by weakness and inadequate peristaltic of the lower esophageal sphincter, and increased abdominal pressure. The typical symptoms of re-

flux disease are:

- Acid bloating of stomach juice or stomach contents, which can cause bad breath, mouthfeel and cough
- Heartburn
- Increased salivation
- Corrosive, burning sensation in the esophagus
- Painful swallowing due to inflammation of the esophagus
- Oesophageal stenosis, feeling lumpy

The following factors contribute to the development of the disease and the maintenance of symptoms:

- Overweight, obesity (due to increased abdominal pressure)
- Pregnancy
- Smoking
- Some medicines (e.g. due to their irritation to the gastric mucosa or through the relaxation of the sphincter)
- Nutritional factors, e.g. too spicy or acidic food and drink, too big meals, bigger meal just before bed. In some individuals, certain foods and beverages may trigger reflux based on individual sensitivity (e.g., chocolate, coffee, alcohol, fatty, or fried foods).
- Slower than average gastric emptying
- Some diseases, mainly of the connective tissue (e.g. scleroderma, rheumatoid arthritis)
- Hiatus hernia

Based on the above, lifestyle changes can be used to prevent the disease and reduce the symptoms (however, medication is often needed, which typically means antacids, H₂-receptor blockers and proton pump inhibitors):

- Nutrition
- Take fewer portions several times
- Main meals should not be shifted late into the evening, meals should be smaller
- Evening meals close to bedtime should be smaller
- Last meal should be taken at least 2 hours before bedtime
- Avoid irritating foods and beverages
- Adequate posture after eating to prevent /

reduce reflux (lying worsens the symptoms in many people, while standing usually improves them)

- Creating the right body weight (if necessary, weight loss)
- Regular exercise (but exercising too hard can make complaints worse)
- Reducing smoking and alcohol consumption

VIII.7. Infectious diseases and their prevention

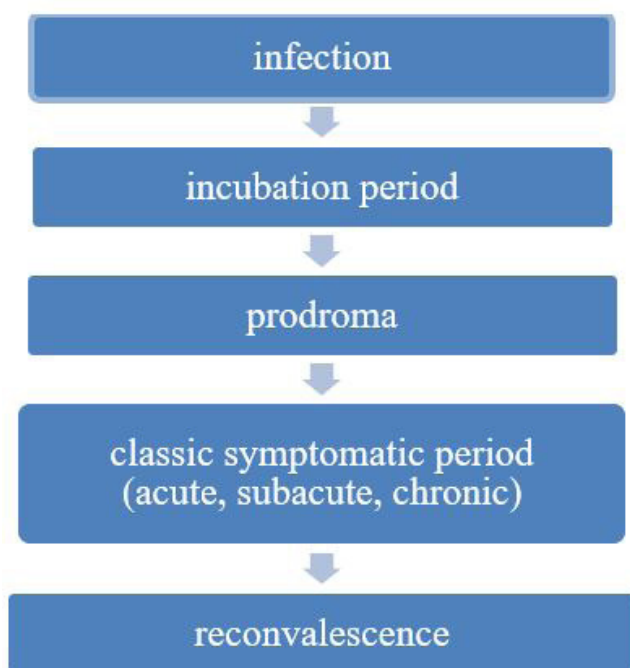
Infectious diseases and epidemics have always played a significant role in human history. A more accurate understanding of infectious diseases and the fight against them led to significant successes in the 18-19th centuries for the first time. As a result of advances in public health, hygiene, microbiology, and medicine, infectious diseases have declined. The greatest success of mankind in the fight against infectious diseases is the eradication of smallpox. Although classical infectious diseases have receded, the changes of the 20th-21st century (globalization, technical and technological development, migration, pollution, climate change, etc.) promote the re-emergence of infectious diseases already believed to have been defeated and the emergence and spread of new infectious diseases.

VIII.7.1. Basic epidemiological concepts

Epidemiology is the science of the laws of the epidemic process, the emergence and cessation of diseases and epidemics. It researches and analyzes the causes of the epidemic, examines the factors that sustain the epidemic process, the course and cessation of the disease. Based on this knowledge, it is responsible for developing procedures that are suitable for the prevention, control and eradication of certain communicable diseases.

VIII.7.1.1. The course and types of infectious diseases

An infectious disease is a disease caused by a specific infectious agent or its toxic products. The disease can spread directly or indirectly from person to person, from animal to human or from animal to animal. An infection is the penetration of a pathogen into the body, but it does not always cause illness. The host's response to infection is high-



VIII. Figure 12: Different stages of infectious diseases

Source: own editing

ly variable, with a number of factors influencing whether the disease develops. It depends, among other things, on the virulence of the pathogen, the mode of penetration, the condition of the body and its resistance.

Clinical manifestations of the infection:

inapparent infection: the infection is asymptomatic.

aborted infection: mild, asymptomatic course

manifest / symptomatic infection: the infection produces classic clinical signs characteristic of the infectious disease

Incubation time: the time between the entry of the pathogen into the body (infection) and the onset of the first clinical symptoms. During this time, the pathogen multiplies in the body and spreads (possibly producing toxins). The length of the incubation time varies, data specific to the infectious disease (Table VIII.7). Knowledge of the incubation time is important for contact detection during epidemic investigation and for determining the duration of epidemiological surveillance.

Prodroma: Introduction of general symptoms that

are not specific to the disease (eg fever, headache, loss of appetite, lethargy, etc.)

Period of classic clinical symptoms: disease-specific symptoms (eg, typical rash in chickenpox) appear. In terms of duration, the disease can be acute, subacute, or chronic.

Reconvalescence: The period of recovery.

The outcome of the disease can be complete recovery, the disease can be cured with complications (e.g., orchitis associated with mumps), permanent consequences (e.g., paralysis of the limbs following poliomyelitis), and finally, the disease can be fatal. (1,2)

Latency: from the time of infection to the development of infectivity (VIII. Figure 13)

Spatial and temporal types of infectious diseases

The occurrence is *sporadic* if the individual cases are scattered in space and time.

Outbreak (epidemic): the occurrence of a particular infectious disease in a given area significantly more frequently than expected or above a certain threshold level. In an epidemiological sense, two related cases are also considered epidemic if the link can be substantiated by epidemiological evidence.

An infectious disease is *endemic* if it occurs regularly and permanently in a defined geographical area or population with a high incidence and prevalence (e.g. malaria).

Pandemic: an epidemic that spans several countries, continents, or the world.

Seasonality: some infectious diseases occur in greater numbers during certain seasons (e.g. influenza in the winter-early spring months).

Cyclicality: Some infectious diseases cause higher incidence at regular intervals over several years when a sufficient number of susceptible individuals are found in the population (e.g., diphtheria every 12 years) [54, 55].

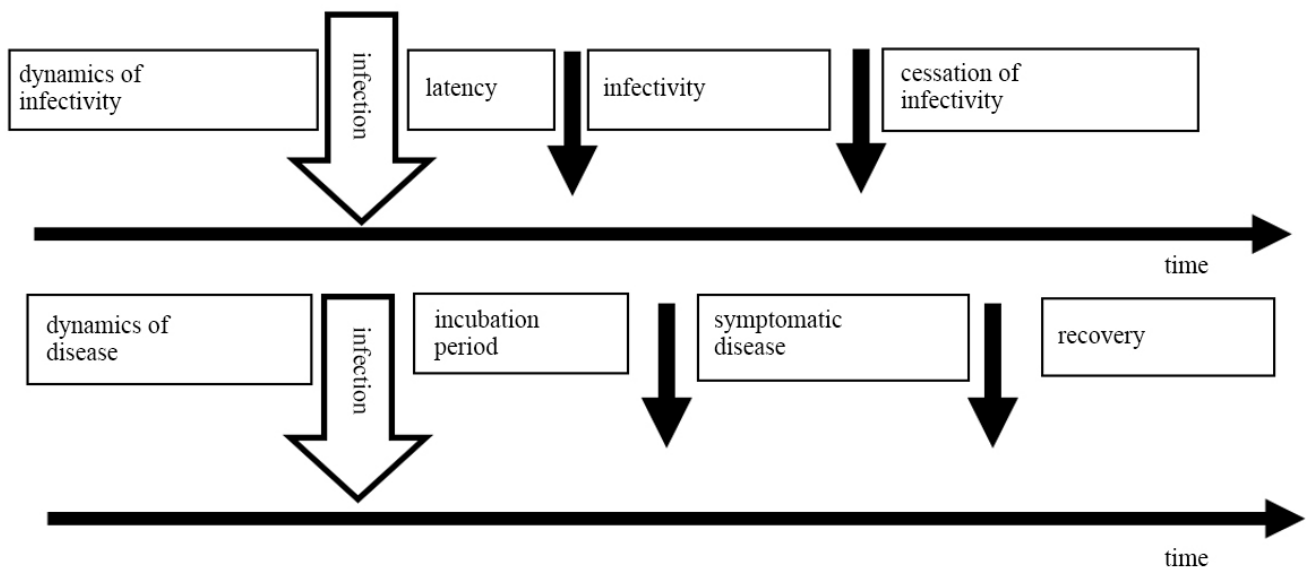
Epidemic curve

Graphical representation of the appearance of cases in a coordinate system where the number of cas-

VIII.Table 7: Incubation time for some infectious diseases

Pathogen	Clinical picture	Incubation time
Salmonella	fever, abdominal cramps	usually 6 to 48 hours
Varicella zoster virus	chickenpox	10 to 21 days, usually 14 to 16 days
Treponema pallidum	Syphilis	10 to 90 days, usually 3 weeks
Hepatitis A virus	Hepatitis	14 to 50 days, with an average of 4 weeks
Hepatitis B virus	Hepatitis	50 to 180 days, usually 2 to 3 months
HIV	AIDS	<1 - 15+ years

Source: own editing



VIII.Figure 13. Dynamics of infectivity and disease

Source: Principles of Infectious Disease Epidemiology Epidemiology Notes [M.Tevfik DORAK] [56]

es is plotted on the y-axis and the detection time is plotted on the x-axis. It provides information on e.g. the time course of the epidemic, the time distribution of the cases, the size and spread of the epidemic, the time of exposure [57].

There are three main types:

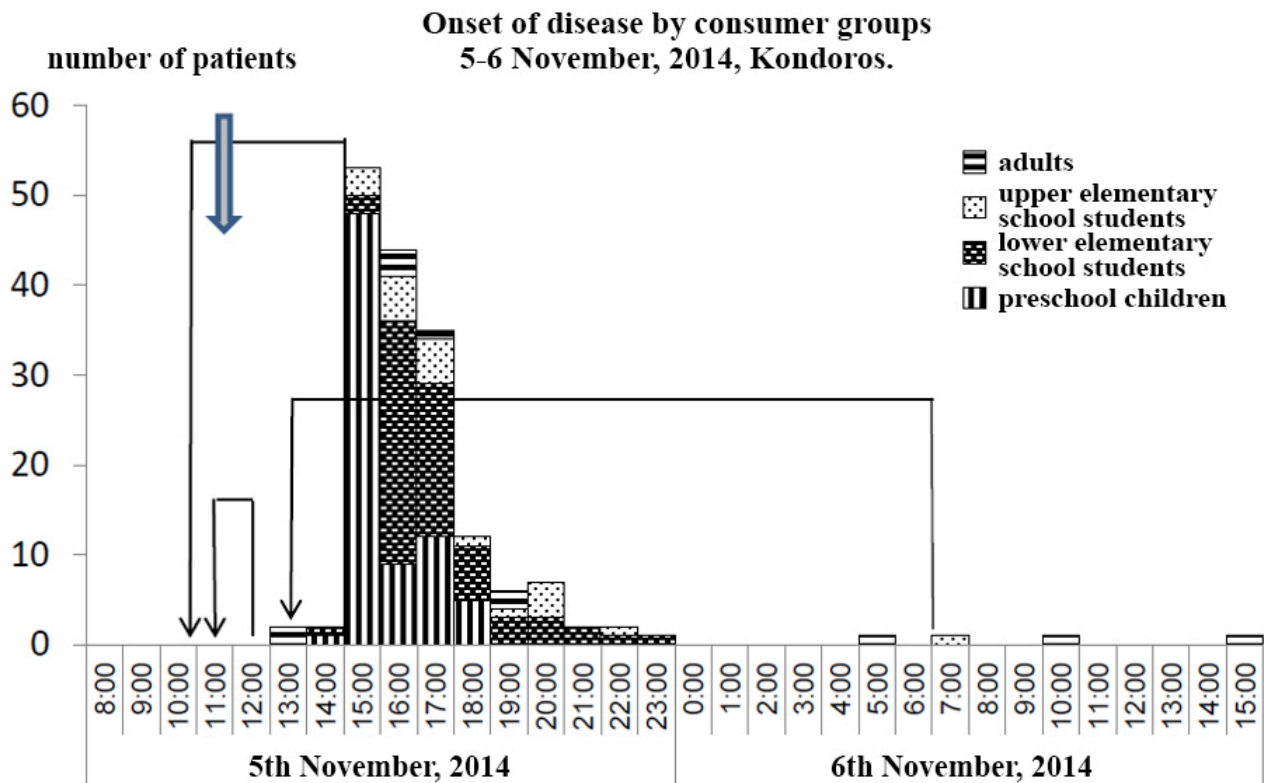
Point source:

All of the cases became infected at almost the same time as a common source (e.g.,

food). The number of cases increases rapidly, reaches a peak and then gradually decreases. The majority of cases occur within the incubation period of the disease. (e.g. food poisoning, VIII.Figure.14):

Extended source:

In the event of an outbreak from a continuous common source, exposure may last for days, weeks, or even longer. Not all cases occur within a sin-

VIII. Figure 14: Outbreak graph of *Bacillus cereus*

Source: Epiinfo Volume 22 No. 9 [58]

gle incubation period. The curve is steadily rising, relatively flat, (suggesting no human-to-human spread) and may show a characteristic plateau, the number of cases may decrease rapidly if the common source is removed [56] (VIII. Figure 17).

Propagated outbreak:

There is no common source because the epidemic is spread from person to person. The starting point for the outbreak is the index case (first identified, identified case). The epidemic curve shows gradually increasing peaks, each peak being one incubation time apart. (e.g. measles outbreak in closed communities. V. Figure 18) [57, 62]

V.7.1.2. Driving forces of the epidemic process

The simultaneous presence of three factors is required for the establishment, survival and spread of the epidemic process:

1. source of infection
2. the possibility of the infection spreading
3. susceptible organism

If any of these three factors are missing, neither

an infectious disease nor an epidemic can develop. These are called the primary (or direct) driving forces of the epidemic process (VIII. Figure 19). However, there are also factors that greatly influence the frequency and severity of infectious diseases, the extent and duration of epidemics, but do not play a role in their occurrence and maintenance. These natural and social influencing factors are called the secondary (or indirect) driving forces of the epidemic process [54].

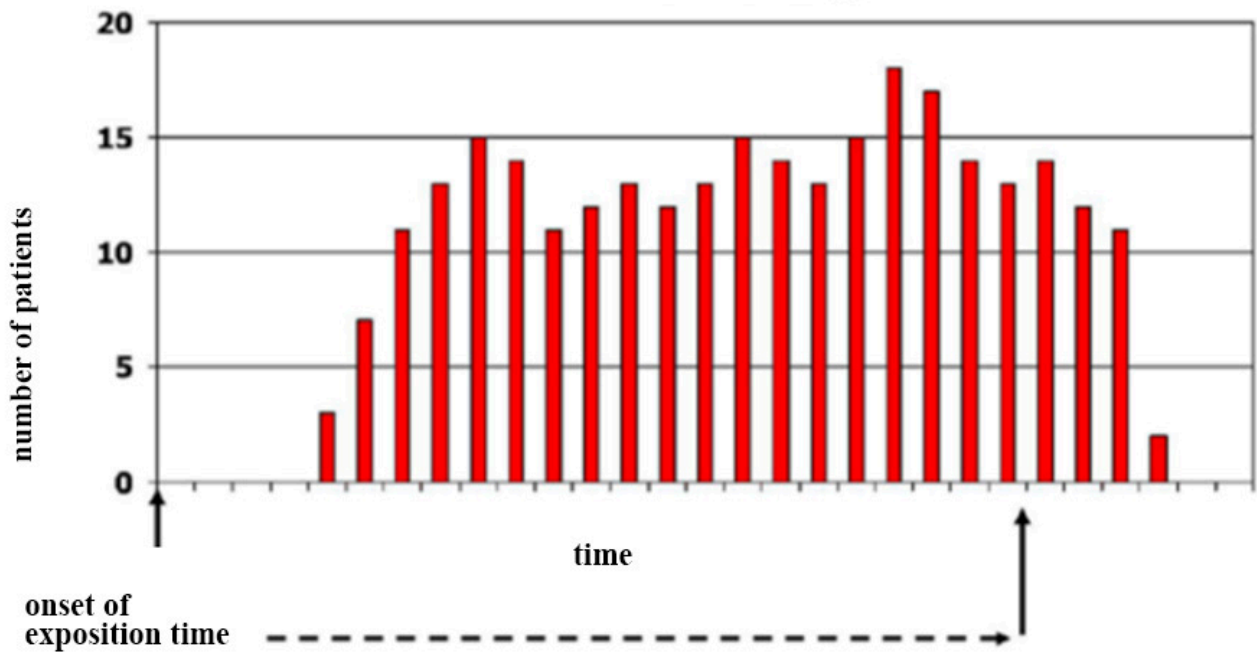
V.7.1.2.1. The primary driving forces of the epidemic process

Reservoir: the living or non-living medium in which the pathogen lives and multiplies and from which it can infect healthy individuals.

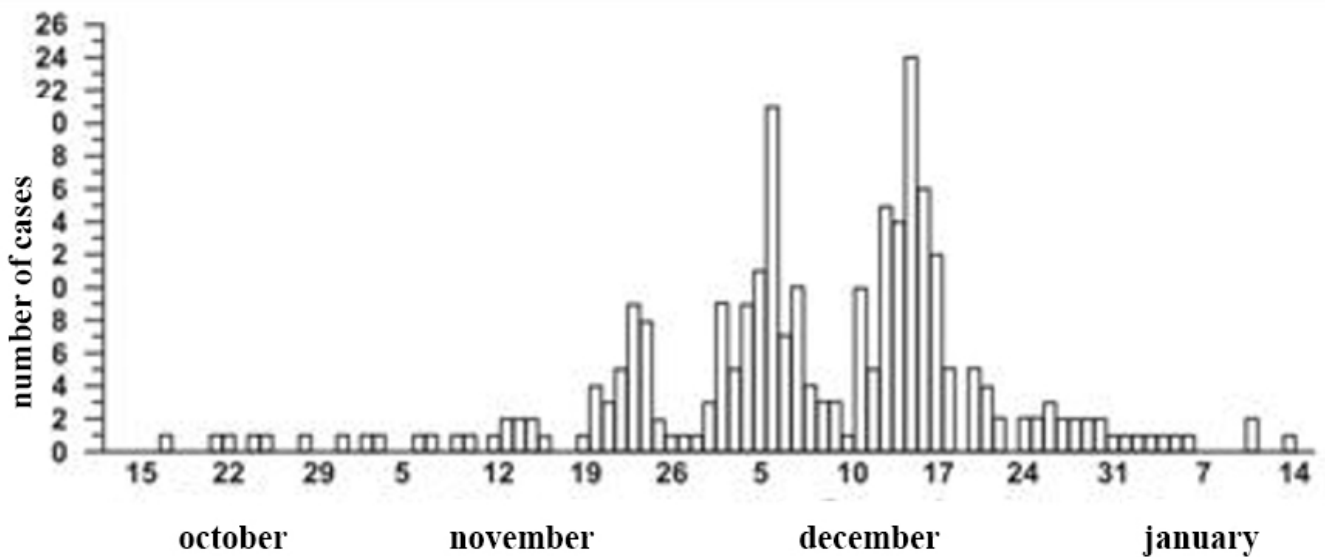
The source of infection can be:

- The sick person
- The person carrying the pathogen:
 - A healthy pathogen carrier that has undergone an infectious disease without clinical signs.
 - An incubation carrier that discharges

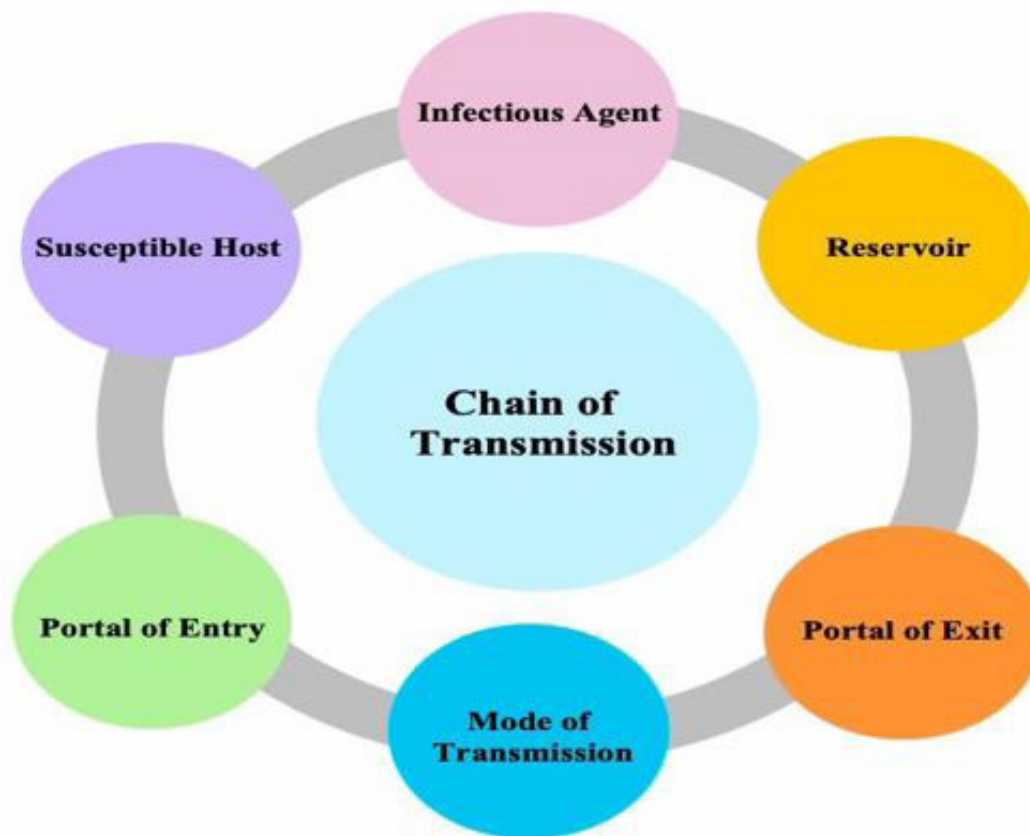
Extended source graph



VIII. Figure 15: Extended source
 (source: <https://sciencecases.lib.buffalo.edu>) [59]



VIII. Figure 16: Propagating epidemic (source: Centers for Disease Control and Prevention. Measles outbreak — Aberdeen, S.D. MMWR 1971; 20:26.) [60]



VIII. Figure 17. Chain of Transmission

Source: Introduction to Infection Prevention and Control (IPC) | OpenWHO www.openwho.org [61]

pathogens during the latent phase of the disease.

- A reconvalescent pathogen carrier that has recovered clinically but is still excreting pathogens.
- The infected (sick or pathogenic) animal
- Inanimate medium (e.g. air conditioning - legionellosis)

Ways of spreading the infection

Direct spread: the pathogen enters the susceptible organism directly from the infectious source

- contact e.g.: sex, kiss, handshake
- direct droplet infection: coughing, sneezing, etc. Saliva droplets ($> 5 \mu\text{m}$) containing the exiting pathogen enter the susceptible organism over a short distance (before settling) (e.g. pertussis, meningococcus) [56].
- transplacental transmission

Indirect spread: the pathogen enters the susceptible organism indirectly, using some living or in-

animate medium. The medium may be living or inanimate.

Inanimate mediator:

- air: by inhalation of aerosols ($\leq 5 \mu\text{m}$) containing pathogen
- water: drinking water, bathing water, sewage
- food
- soil
- objects: utensils, medical devices

Live mediators: vectors

- mechanical transmission: the vector as a passive means of transport (e.g. housefly)
- biological transmission: the pathogen multiplies or develops in the vector (e.g. malaria - mosquito)

The susceptible organism

An organism which does not have effective protection against a given pathogen is susceptible. We can distinguish between individual and pop-

ulation susceptibility. The former depends on the individual's defenses and the factors influencing it (e.g. age, underlying disease, immunosuppression, etc.), the latter depends on the proportion of protected and unprotected individuals in the community and their random distribution [54, 55].

Indicators used to characterize susceptibility:

Infectivity index: shows the number of infected individuals in 100 susceptible individuals exposed to the infection.

Contagiosity Index: Shows the number of patients who become ill out of 100 susceptible individuals exposed to infection (e.g., measles: 95%, polio: 1-2%) [54].

Elemental Reproduction Number (R0): shows the average number of times a person passes the infection on to others (susceptible individuals) over the course of their infection. (R0 is an average value, so it is not necessarily an integer.) If $R0 > 1$, the number of infections multiplies quickly and an epidemic develops. If $R0 < 1$ the epidemic goes out. The value of R0 also depends on the characteristics of the disease and the current social conditions in society. Its value can be reduced by a number of epidemiological measures (e.g. vaccinations, closure of schools, restaurants, etc.). The resulting value is called the *effective reproduction number* [63].

VIII.7.1.2.2. Secondary driving forces of the epidemic process

They can generally be divided into two groups:

Environmental factors: weather, climate, temperature, natural disasters

Social factors: housing conditions, work environment, quality of health care, unemployment, migration, etc.

VIII. 7.2. PREVENTION OF INFECTIOUS DISEASES

Looking back at Figure 2, we can see that the development of the epidemic process can be prevented primarily by interrupting the chain at any point, eliminating any of the primary driving forces from the process.

Primary task:

- isolation of the source of infection,
- non-transmission,
- reducing the susceptibility of the individual / population

VIII.7.2.1 Epidemiological measures in the event of an infectious disease:

In Hungary, legislation prescribes the epidemiological tasks to be followed after the detection of an infectious patient:

- 18/1998. (VI.3.) NM Decree on the epidemiological measures necessary for the prevention of communicable diseases and epidemics

“In the event of an outbreak, the doctor who detects this must take the necessary immediate measures to prevent the spread of the infection and inform the district office immediately of the measures taken.”

- 1/2014. (I. 16.) EMMI Decree on the reporting system for communicable diseases

VIII.7.2.2 Epidemiological measures to be taken with the patient:

Reporting: by law the healthcare provider is obliged to report and register infectious patients and persons suspected of having an infectious disease.

Isolation: The purpose of isolation is to allow the patient to come into contact with as few susceptible individuals as possible during the period of infectivity. Highlighting and isolating the infectious source from the epidemic process is the fastest, most effective, cheapest way to prevent the spread of the epidemic.

Microbiological examination: It may be used to:

- Clinical microbiological diagnostic test: to determine and apply appropriate individual therapy based on individual diagnosis
- Microbiological diagnostic testing in the interest of epidemiology: the aim is to identify and analyze population-level risks as early as possible and to establish population-level interventions for prevention purposes;
- Release test: a microbiological screening test to determine the infectivity of a person recovering from a disease;

Disinfection: any procedure used to destroy or eliminate infectious pathogens released into the environment.

- Preventive disinfection: disinfection of places and objects that are particularly dangerous for the spread of the infection, regardless of whether there is an infectious patient at the given place and time.
- Continuous disinfection: must be carried out continuously throughout the period of infectivity, with the aim of destroying pathogens that are continuously or intermittently removed from the body of the infectious patient.
- Final disinfection: used to kill pathogens left in the environment after the infected patient has recovered (removed, died) [64].

VIII.7.2.3. Epidemiological measures in the patient's environment:

Searching for contact with the patient: In some cases, it is mandatory to search for people who have been in direct contact with the patient (e.g. COVID-19, syphilis, meningitis epidemica) or to search for people exposed from a common source (eg dengue fever, viral haemorrhagic fever).

Microbiological screening for epidemiological purposes: screening of persons who have been in contact with an infected patient during the incubation period or who are asymptomatic;

Epidemiological surveillance: When required by law for a given communicable disease, persons who come into contact with an infectious disease should be placed under epidemiological surveillance to prevent the transmission of the infection. The duration of observation is the same as the incubation time of the given disease. The competent public health authority shall prohibit a person placed under epidemiological surveillance from engaging in occupations specified in special legislation and from visiting places where it may cause a mass infection for the duration of the surveillance. In some cases, stricter epidemiological surveillance (short-circuiting) may be ordered.

Post-exposure prophylaxis: In some cases, persons under epidemiological surveillance should receive antibiotic prevention (e.g. diphtheria, meningitis epidemica), chemoprophylaxis (e.g. avian influenza), active / passive vaccination (e.g. hepatitis A,

hepatitis B).

Infection source research: Mandatory in some cases. (e.g. in case of iatrogenic exposure, cumulative occurrence or epidemic)

Detection of the distribution medium: Mandatory for certain infectious diseases (e.g. if the distribution medium is food for human consumption, the competent food chain inspection body must be notified in order to take the necessary measures) [64]

Epidemiological surveillance

It synthesizes the task of epidemiological surveillance, prevention, and control at a higher level. It monitors the morbidity and mortality of infectious diseases, the circulation of pathogens in the population, and monitors the immune status of the population. It uses various epidemiological methods and GIS to analyze the factors that may contribute to the spread of infections. It examines ecological, environmental and demographic conditions on site. In possession of this data, he outlines the situation of the infectious disease, develops, implements and evaluates preventive measures.

VIII.7.3. VACCINATIONS

The most important factor in reducing susceptibility is to increase defenses. Defenses can be non-specific and specific.

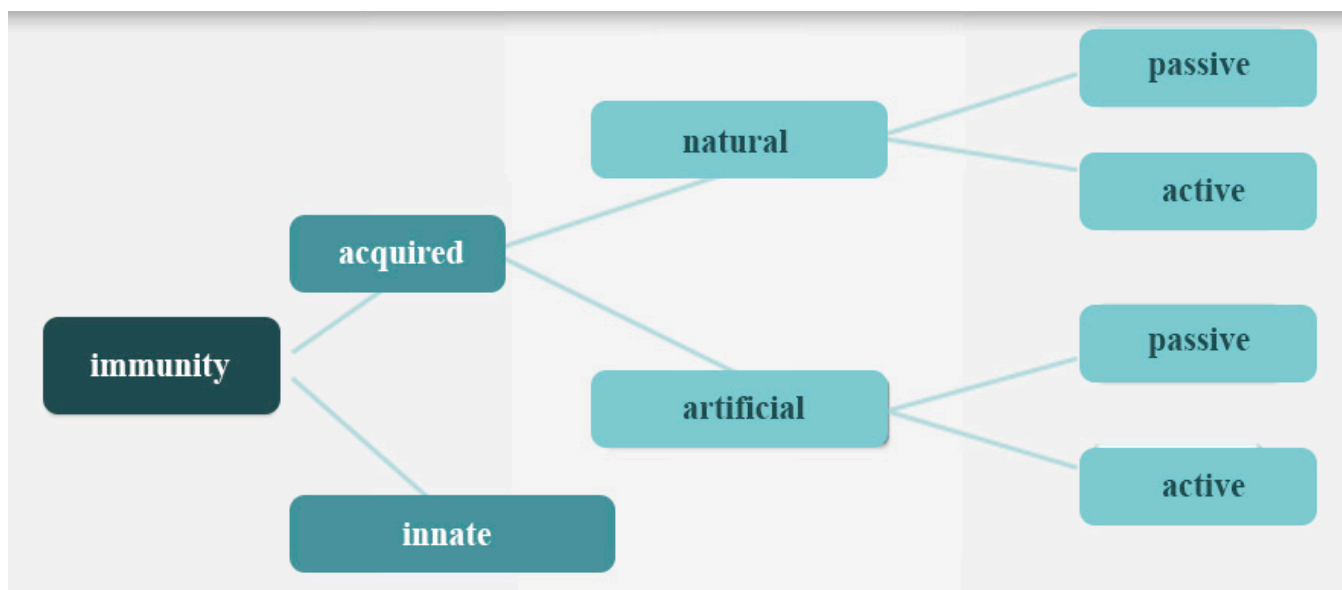
Aspecific defense: the sum of all the mechanisms that inhibit the growth and invasion of a pathogen.

Specific defense: means the body's resistance to a particular pathogen.

It can be congenital or acquired. Both can be passive or active.

During passive immunity, ready antibodies are delivered to the body. Natural passive immunity is maternal immunity when immunoglobulins enter the fetus or infant transplacentally or during breastfeeding. Artificial passive immunity is the administration of immunoglobulins.

Active immunity is the body's own immune response to a given antigen. Its natural form is an immunity developed during infection, its artificial form can be created with an antigen-containing vaccine, which causes the body to produce its own immune response and antibodies (VIII. Figure 20).



VIII. Figure 18: Types of immunity

Source: <https://commons.wikimedia.org/wiki/File:Immunity.svg>

In Hungary, the knowledge required for the practical implementation of vaccinations in the given year is determined by the methodological letter issued by the national chief medical officer for the vaccination activities of the given year [65].

Grouping of vaccinations

1. Compulsory age-related vaccinations: At present (2022) in Hungary, children are vaccinated free of charge against 13 communicable diseases within the framework of continuous and campaign vaccinations:

- - tuberculosis,
- - pertussis,
- - diphtheria,
- - tetanus,
- - poliomyelitis,
- - Haemophilus influenzae B - mumps
- - rubella,
- - Morbilli
- - hepatitis B
- - Pneumococcus
- - HPV
- - varicella

2. Mandatory vaccination in case of disease: In case of acute risk of infection, vaccination should

be given as soon as possible:

- those belonging to the environment of a patient with typhoid fever;
- those living in the vicinity of a diphtheria patient;
- those living in the vicinity of a patient with pertussis
- in the environment of a measles patient;
- rubella in the patient's environment;
- those at risk living in the vicinity of the mumps patient;
- persons at risk of tetanus infection;
- persons exposed to rabies;
- hepatitis A specific group of vulnerable people living in the patient's environment.

3. Free unpaid immunizations to prevent the risk of disease:

- Influenza vaccinations
- Vaccination against hepatitis B.
- Vaccination against human papillomavirus (HPV)

4. Job-related vaccinations: In order to reduce the risk of illness, the employer must provide vaccinations for workers in the endangered job as a condition of employment.

- influenza,

- typhoid fever,
- tick-borne encephalitis,
- hepatitis A and B respectively
- rabies,
- varicella,
- meningococcal disease,
- diphtheria
- immunization against tetanus

5. Vaccinations related to travel abroad: Vaccinations for travelers abroad, including yellow fever, are provided by health care providers maintained by county government offices and licensed to perform international vaccinations. Proof of vaccination against yellow fever is compulsory on entry into a country where there is a risk of yellow fever or if that country requires such vaccination. [65]

6. Recommended vaccinations

- Pneumococcal vaccines
- Meningococcal vaccines
- Vaccines against tick-borne encephalitis
- Rotavirus vaccines
- Varicella vaccines
- RSV vaccine
- Human Papilloma virus vaccines
- COVID-19 vaccinations

VIII.7.4. Classification of infectious diseases and main preventive measures

Infectious diseases that spread through the airways: the pathogen leaves the body when you exhale (cough, sneeze, talk) and is inhaled into the other person's airways. These infections are extremely easy to spread, common, and difficult to control [54]. Vaccination is the most effective means of control.

Major respiratory infectious diseases:

- *Bacterial infections*
- Diphtheria
- Haemophilus influenzae meningitis
- Pertussis
- Tuberculosis
- Scarletina
- Legionellosis
- Meningitis epidemica

- Streptococcus-pneumonia
- *Viral infections*
- Influenza
- Avian Influenza
- Varicella
- Mononucleosis infectiosa
- Respiratory Giant Cell Virus (RSV)
- Coronavirus (SARS-coronavirus)
- Morbilli
- Mumps
- Rubella

General precautions:

- regular, thorough handwashing with soap or alcoholic hand sanitizer for at least 20 seconds
- wearing a mask in crowded places where protective distance cannot be maintained or in places required by law
- keep a protective distance of at least 1.5-2 m from others
- avoid contact with face, eyes, mouth
- regular ventilation
- adherence to cough and sneezing etiquette (use of paper handkerchief, elbow bend)
- routine cleaning and disinfection of frequently touched areas

Enteral infectious diseases: pathogens are transmitted by the feco-oral route, through inadequately heat-treated food of animal origin (milk, eggs, meat) or contaminated food, but flies can also be included in the transmission as passive carriers [54].

Several pathogens can cause enteric infections:

- *Bacterial infections*
- Campylobacter enteritis
- Salmonellosis
- Coli enteritis (EPEC, ETEC, EHEC, etc.)
- Yersiniosis
- Dysentery
- Cholera
- Typhus
- Paratyphus
- *Viral infections*
- Norovirus infections

- Rotavirus infections
- Hepatitis A and E
- Adenoviruses
- Poliovirus
- *Worm infections*
- Ascariasis
- Enterobiasis
- Hymenolepiasis
- Trichuriasis
- *Protozoon infections*
- Ameobiasis
- Giardiasis

General preventive measures:

- Adherence to personal and food hygiene regulations
- Appropriate kitchen technology
- Proper storage and heat treatment of food
- Adherence to occupational hygiene regulations: health, hygiene, protective clothing, safety shoes, safety regulations, correct technology
- Expanding knowledge, health education
- Vaccination (e.g. typhus, rotavirus)

Haematogenic Infectious Diseases: These infectious diseases enter the body mostly through blood-sucking vectors. They are endemic in the areas where the vector needed to spread them lives. Also included in this group are diseases that enter the body through blood, blood products, medical interventions, or intravenous drug use. [54]

Bacterial infections

Lyme disease

Febris recurrens

Pest

Viral infections

Tick - borne encephalitis

West Nile fever

Crimean Congo hemorrhagic fever

Dengue fever

Yellow fever

Hepatitis B, C, D

Worm infections

Filariasis

Onchocerciasis

Protozoon infections

Malaria

Leishmaniasis

Prevention:

- vector control
- personal protection (use of appropriate clothing, repellents)
- screening of blood products and organ donors
- screening of individuals at increased risk (e.g. IV drug users, prostitutes)
- safe sex
- vaccination (e.g. tick-borne encephalitis)

Infectious diseases that spread through the outer covering: There are many diseases in this group. In some diseases, the pathogen penetrates the body through the skin, but the actual disease process is created in an internal organ. [54]Main diseases:

- Bacterial: Tetanus, Edema malignum, Toxic shock syndrome
- Protozoan infections: Trichomoniasis
- Worm infections: Ancylostomiasis, Schistosomiasis, Strongyloidosis
- Arthropods: Pediculosis, Scabies

Prevention:

- compliance with hospital hygiene rules
- Adequate wound care
- Observe personal hygiene rules
- Vaccination

Zoonoses (animal-to-human diseases): These infections can be spread through direct contact with infected animals, their secretions, bites from animals, consumption of milk and meat from infected animals, vectors, or airway transmission [54]

- Bacterial infections: Anthrax, Brucellosis, Ornithosis, Q fever, Tularaemia
- Viral infections: Rabies, Hanta virus infections, Lassa disease
- Protozoa: Toxoplasmosis
- Worm infections: Echinococcosis, Taeniasis, Trichinellosis

Prevention:

- compliance with veterinary, occupational health and nutrition measures and regulations
- personal hygiene,
- vaccination against certain zoonoses

Sexually Transmitted Infections: Close physical contact is required for infection. Mixed infections are common. Through vertical transmission, a pregnant woman infects / may infect her fetus during intrauterine life or during childbirth. Its complications pose significant health, epidemiological, economic, and population policy issues [\[54\]](#).

It can be caused by:

- Bacteria: *Neisseria gonorrhoeae*, *Treponema pallidum*, *Chlamydia trachomatis*
- Viruses: Herpes genitalis. Human papilloma virus, Hepatitis B, HIV
- Protozoa: *Trichomonas vaginalis*
- Ectoparasites: *Phthirus pubis*, *Sarcoptes scabiei*
- Fungi: *Candida albicans*

Prevention:

- Health education, information, counseling
- Improving personal hygiene and sexual hygiene
- Condom use
- Early diagnosis and treatment
- Finding, informing and, if necessary, treating sexual partners
- Pre-exposure prophylaxis (PrEP) to reduce the risk of HIV infection
- Vaccination (HPV, HBV)

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IX. GLOSSARY

IX.1. Basic concepts

Public health

Public health is the organized activity of society to develop, protect, improve and, where necessary, restore the health of individuals, specific groups or the population as a whole. It is a combination of sciences, skills, and values that operates through collective social activities and includes programs, services, and institutions designed to protect and improve human health.

Public health is a social and political concept that aims to improve health, prolong life, and improve the quality of life of the entire population through health promotion, disease prevention, and other forms of health intervention. The Ottawa Charter supports significantly different approaches to describing and analyzing health determinants and ways to address public health issues. These methods include the strategies and areas for action of the Ottawa Charter [\[1\]](#).

Health

Health is a state of complete physical, social, and mental well-being, not merely the absence of disease or weakness. The WHO considers health to be a fundamental human right. Accordingly, all people should have access to basic health resources. In the context of health promotion, health is seen as a resource that enables people to live productive lives individually, socially and economically. The Ottawa Charter for Health Promotion defines health as a resource for everyday life, not an object of life. It is a positive concept that emphasizes social and personal resources as well as physical abilities.

In line with the concept of health as a fundamental human right, the Ottawa Charter emphasizes certain preconditions for health, which include peace, adequate economic resources, food and shelter, education and social justice, and a stable ecosystem, sustainable development and resource usage. Recognition of these preconditions highlights the

inextricable link between social and economic conditions, the physical and social environment, individual health behaviors and skills, and health. These relationships provide the key to a holistic understanding of health, which is central to the definition of health promotion. A comprehensive understanding of health means that all systems and structures that manage the determinants of health must take into account the impact of their activities on individual and collective health and well-being. This increasingly includes concerns about the health of the planet - this is called planetary health [\[1\]](#).

Health determinants

Health determinants are the range of personal, social, economic, and environmental factors that affect the healthy life expectancy of individuals and the population.

Conditions that affect health are diverse and interactive. Some determinants of health cannot be modified (e.g., age, place of birth, and inherited traits). Health promotion is fundamentally about measures to address the full range of determinants of potential health modification, not only those related to the actions of individuals, but also those factors that are largely beyond the control of individuals and groups. These include, for example, income and access to resources, education, employment and working conditions (often referred to as social determinants of health), access to adequate health services, and environmental determinants of health. Health promotion addresses this wide range of determinants through a combination of strategies, including the promotion of Health in All Policies and the creation of a supportive environment for health; and strengthening personal health literacy and skills. Measures to address health determinants are inextricably linked to health inequalities and fundamentally address the distribution of power and resources within the population [\[1\]](#).

Health promotion

Health promotion is the process that allows people to increase control over and improve their health. Health promotion is a comprehensive social and political process. It includes not only measures to strengthen the skills and abilities of individuals, but also measures to change the social, environmental and economic determinants of health in order to optimize their positive impact on public and personal health. Health promotion is the process of enabling people to individually and collectively increase control over the determinants of health and thereby improve their health.

The Ottawa Charter sets out three basic strategies for health promotion. These are the following:

- advocating for health in order to create the above-mentioned basic conditions for health;
- enabling all people to reach their full health potential;
- mediation between the different interests of society in the pursuit of health.
- The Ottawa Charter identified five priority areas for action:
 - developing a healthy public policy;
 - creating a supportive environment for health;
 - strengthening community action for health;
 - developing personal skills;
 - reorganization of health services [\[1, 2\]](#).

Health education

According to the WHO definition, health education is a set of consciously created learning opportunities that help the individual and the community to promote their health by expanding their knowledge, shaping their lifestyles and behaviors.

Health education covers several disciplines: medicine, pedagogy, psychology, education and sociology. The scope (content) of health education thus expands significantly: it takes into account a person's biological condition (physical, organizational health) as well as his or her mental (mental, emotional, aspiring) characteristics and social status resulting from social coexistence (material-economic situation, family harmony), social integration disorders) and judges what needs to be done in their combined system of effects.

The aim of health education is to promote the de-

velopment and maintenance of health and the prevention of diseases, on the one hand, and to restore the health status of patients as soon as possible, by raising the level of health culture and shaping lifestyles [\[3, 5\]](#).

Well-being

Well-being is a positive state experienced by individuals and societies. Like health, it is a necessary resource for everyday life, determined by social, economic and environmental conditions.

Well-being includes the quality of life and the ability of people and societies to contribute to the world according to their worldview and goals. Focusing on well-being supports the monitoring of a fair distribution of resources, overall well-being and sustainability. The well-being of a society can be observed in terms of its resilience, its ability to act and its readiness to overcome challenges [\[1, 2, 6\]](#).

Quality of life

Quality of life is a set of conditions that contribute to the well-being of individuals and the exploitation of their potential in social life. Quality of life includes both subjective and objective factors. Subjective factors include perceptions of the physical, psychological, and social well-being of individuals. Objective factors involve material well-being, health and a harmonious relationship with the physical and social environment [\[4, 5, 6\]](#).

Equity

The term fairness is used as a specific concept - not as a principle - by social security in the event that a senior official of the insurer authorized by law authorizes an additional benefit based on an individual fairness assessment. Health equity is the absence of unfair, avoidable or remediable differences in health status between socially, economically, demographically or geographically defined populations.

Health equity means that everyone must have a fair chance of achieving full health and that no one should be disadvantaged in achieving those opportunities. Health equity is fundamentally influenced by the social determinants of health.

Approaches to addressing social determinants of health and promoting health consistently and sustainably focus on health equity and social justice. Health promotion is a comprehensive and adaptive response to the unfair distribution of opportunities in societies and supports measures that address the determinants of health that cause this distribution of inequality. A fundamental strategy for health promotion is to enable all people to reach their full health potential through fair and equitable access to health resources.

Similar concepts are health difference (disparity) and health inequality. Health inequality refers to actual differences, health inequality to avoidable differences, and health inequity to unfair differences. Deciding what is fair and what is not is extremely difficult and definitely requires judgment. Theories of social justice, such as egalitarianism, utilitarianism, etc., may provide some clues to this [1, 7].

Adherence

The WHO definition of adherence is “the behavior of an individual in accordance with recommendations agreed with a health professional in the areas of medication, diet, and lifestyle change”. The word adherence comes from the English word ‘Adherence’ (adherence, strict adherence) and shows how well the patient interacts with the healthcare professional. It has three components: starting, taking / continuing and stopping medication. This approach assigns an active role to the patient and is an important part of self-motivation and self-regulation to adhere to treatment. Lack of adherence negatively affects both mortality and hospital costs in a society [3].

Health Literacy

Health literacy is crucial to making informed decisions and empowering people and communities. It is based on inclusive and equitable access to quality education and lifelong learning. It is the observable result of the part of health promotion, health education. Health education is mediated by cultural and situational needs of people, organizations, and society. It is not the sole responsibility of individuals. All information providers, including gov-

ernment, civil society and health services, must provide access to reliable information in a form that is understandable and usable by all people.

These social resources for health education include the regulation of the information environment and media (oral, print, broadcast, and digital) in which people access and use health information. Health literacy means more than being able to access websites, read brochures, and follow prescribed health-seeking behaviors. It includes the ability to critically evaluate health information and resources, and the ability to express and act on personal and social health promotion needs by improving people’s access to understandable and reliable health information and their ability to use it effectively. Health literacy is crucial both in enabling people to make decisions about their personal health and in participating in collective health promotion activities that address health determinants. According to the Integrated Model, we interpret the concept of health education based on the following definition:

At the heart of the design is the process of health education, which requires four competencies:

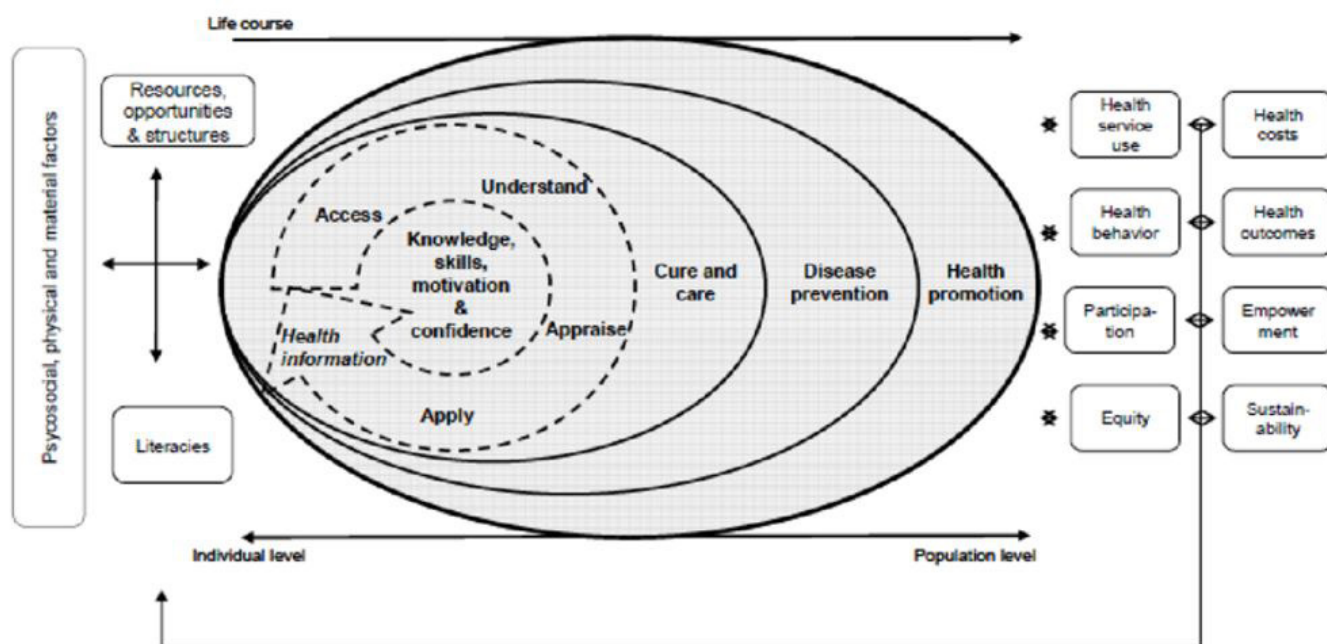
1. Access refers to the ability to request, search for and access health information.
2. Comprehension covers the ability to understand the health information we receive.
3. Assessment is the ability to interpret, filter, judge, and evaluate the health information received.
4. The application refers to the ability to communicate and use information to make decisions in order to maintain or improve our health [1, 8, 10, 11].

Health gains

Health gains are changes in health status, which may lead to

- prolongation of life-span, and / or
- may cause an improvement in the quality of life.

Intervention that triggers change can be the use of health technologies and changing the external environment affecting health for health purposes.



An integrated model of health literacy

Source: CSIZMADIA P , (2016) Health Education, Health Development, LVII. year, / 3.

Disease burden

Disease burden is a measure of the difference between the current state of health of a population and the optimal state when all people reach full life expectancy without suffering from a serious illness.

Disease burden analysis is an important and widely used tool that allows decision makers to identify the most severe health problems in the population at present and the burdens expected in the future. This can be expressed in lost healthy life years (HeaLY), disability-adjusted life years (or lost healthy life years) (DALYs), quality-adjusted life years (QALYs), or adjusted combinations of these metrics. Disease burden data also provide a basis for determining the relative contribution of different risk factors and may be useful in determining the relative importance of health determinants in the broader general health of the population. Disease burden data can be used to clarify the unequal effects of risk factors and health determinants and can be used to highlight measures needed to achieve greater health equity. These data and analyzes can be used to prioritize health promotion measures within countries [1, 3].

Premature death

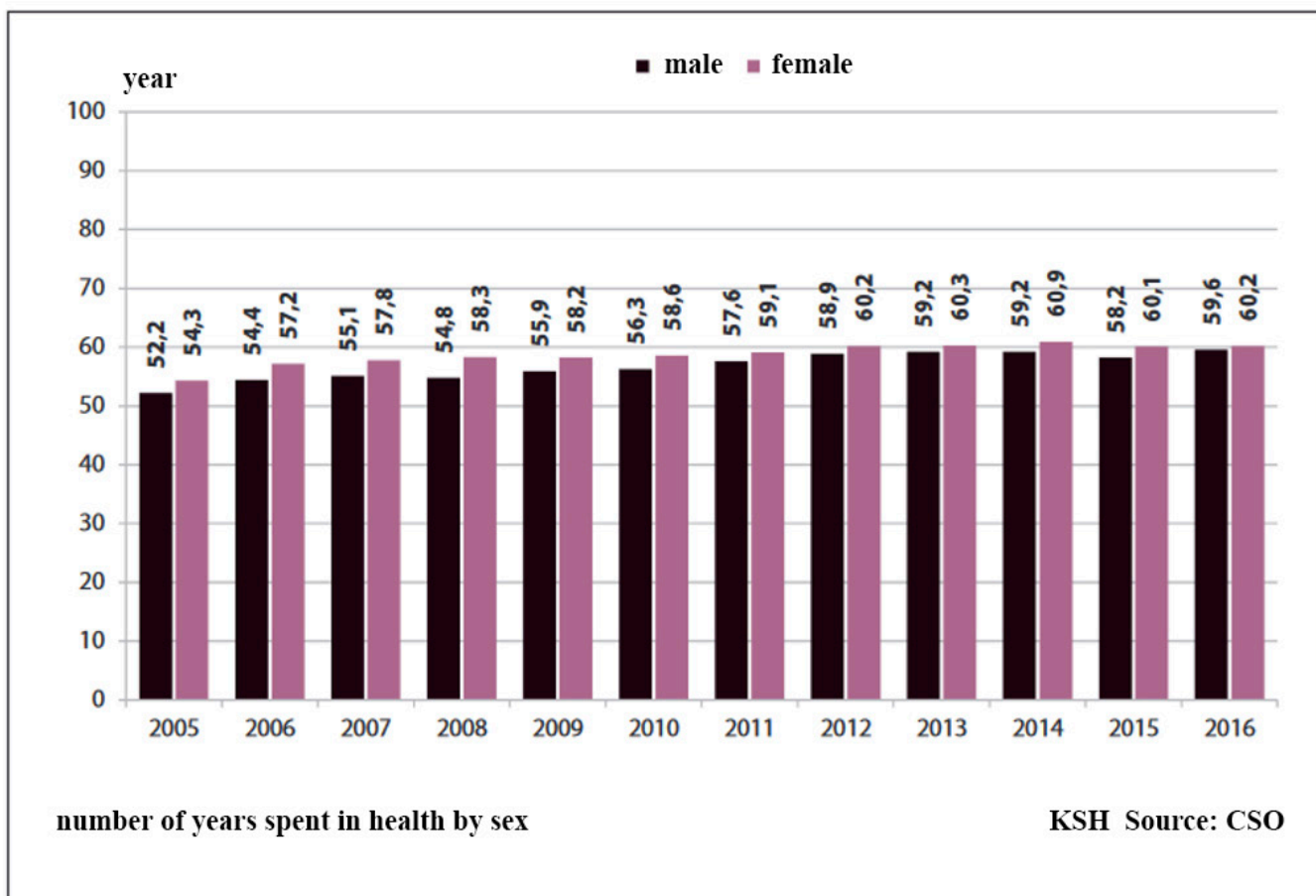
One measure of premature mortality is the number of years of life potentially lost, which is the number of years not lived out of the life expectancy determined by mutual agreement in 70/75 years. **Manageable mortality** includes death that can be prevented with appropriate treatment. **Preventable mortality** means the type of mortality that could be avoided with proper prevention [3].

Number of years of life in health:

The number of years of life spent in health takes into account not only life expectancy but also quality of life, making it one of the key measures of well-being. The value of the indicator expresses the average number of years of healthy life expectancy that a newborn can expect in a given year (with age-specific probabilities of death). It is calculated on the basis of the CSO's demographic data on the total population and its definition based on the collection of representative health data. Hungary is 3 years behind the EU average and the regional differences are much larger [3].

Health value

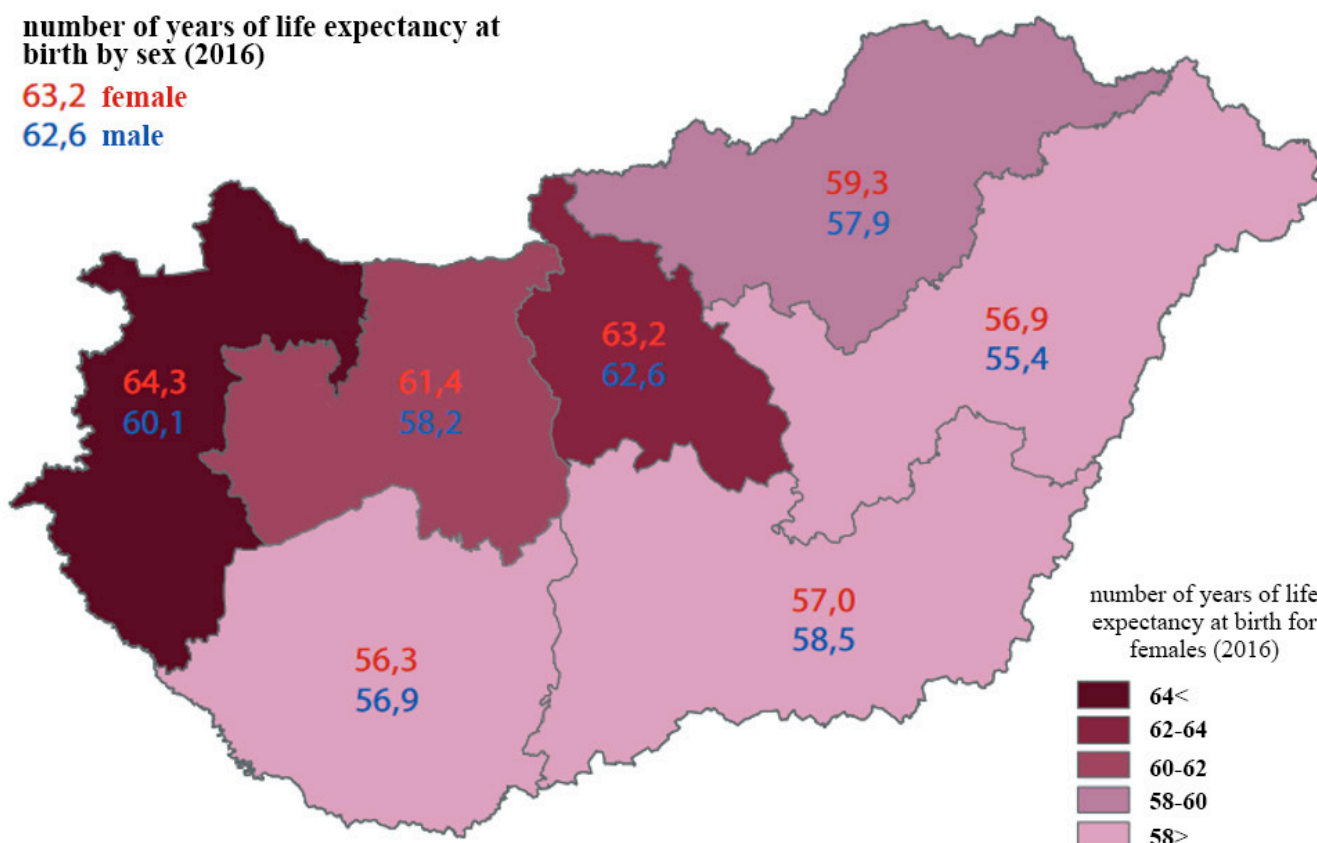
The process of our daily life is given by the fact that we separate essential and insignificant tasks



Regarding the territorial distribution, the figure below shows the significant difference, Source CSO

number of years of life expectancy at birth by sex (2016)

63,2 female
62,6 male



Number of years of life expectancy at birth for females (2016)

from each other and perform our tasks based on it. We distinguish between good and bad, which plays a role in shaping our opinions. It becomes clear to our decisions, choices and others what is of value to us and what is not. So there are values behind people's activities. In the light of the results of the research, health is among the core values. This makes our lifestyle healthy or unhealthy. Defining the concept of value is not easy, as there is no uniform consensus on its definition [12, 13, 14, 15], and its connection to different disciplines also justifies the difficulty of defining it.

Health as a value has also emerged in the minds of members of primitive human communities, as evidenced by early lifestyle research. In general, it refers to the factors and operations that appear as asset values in achieving, maintaining, and restoring health. By asset value is meant the desired behaviors that serve to achieve the target value. According to current government documents, health as a value is paramount. The Basic Law clearly states that everyone has the right to physical and mental health. The law interprets that achieving this basic value can be achieved with the right environment, health care, sports, food, drinking water, and public health. In addition to work, home, family and order, health is also a goal in the National Cooperation Program, just as the "Healthy Hungary 2014-2020" program also confirms the government's commitment to the value of health [12, 15].

Disease

A disease is a deviation from a socially accepted picture of health

- that reduces life expectancy or impairs quality of life (ie causes death or dysfunction and / or pain), and
- that is perceived by the individual or their environment (including the perception of the care system, diagnostic tools).

According to this definition, what is considered a disease and what is not may vary from culture to culture. Deviating from the accepted picture of health also means that the individual or society wants to do something about it. In this sense, a disease is a condition that has the ability to initiate

some kind of health activity for cure or prevention [1, 3, 16].

IX.2. Activities

Community health promotion

By communities we mean connected networks of people based on their place of residence (settlement, neighborhood), their occupation (educational institutions), their work (workplace), their age (children), their demographic characteristics (women) and their common problems. they "organize" along dimensions seeking common answers (self-help groups). The existence of these communities is, on the one hand, a gift (for example, in the scenes where people live their daily lives), and, on the other hand, they are really organized voluntarily or externally for the sake of some interests and goals [5, 17].

The scene-based approach

The arena is the place or social environment in which people engage in everyday activities in which the interaction of environmental, organizational, and personal factors affects health and well-being, such as schools, workplaces, hospitals, villages, and cities (WHO, 1998) [17].

TIE - Whole school health promotion concept (WSHPC)

The strategy, entitled "Healthy Hungary 2014-2020" adopted in 2015 defines the main public health goals and tasks in accordance with the Basic Law, among which one of the most important interventions is comprehensive institutional / school health development (hereinafter: TIE). TIE is a summary of institutional / school activities that promote the preservation and development of health, the effective prevention of disease, health-conscious behavior, and a health-based approach. TIE has been a requirement in public education legislation since 2012 for all public education institutions (in addition to school, kindergarten and college), but is also supported by a number of other relevant legislation.

Workplace health promotion - the joint efforts of employers, employees and society to improve

the health and well-being of workers, which can be achieved by improving and developing the workplace organization and working environment by encouraging active and individual participation [17].

Active Aging / Healthy Aging

People are living longer across Europe. It is beneficial for both the individual and society to ensure that these years can be spent actively and in good health by the elderly. To promote healthy aging, EU-funded projects support the maintenance of health and activity in old age and ensure that health care is tailored to the needs of an increasing number of older people. Healthy aging has a positive impact not only on individuals but also on society, as health care spending is reduced and people can remain economically active. There are also new opportunities for innovation to meet the health and well-being needs of a growing group in society [19].

Health-conscious behavior

Health-conscious behavior is the totality of an individual's attitude, behavior and activities in order to stay healthy as long as possible. In doing so: he/she considers the health aspects important in the decisions and actively participates in his/her own and - in his/her narrower and wider - environment, by consciously controlling his/her habits (e.g.: proper nutrition, exercise, sexual habits; avoiding unhealthy behaviors, etc.) participates in the development of their health, acquires the skills of lay help and self-help, develops and applies informed consumer behavior in relation to health care system:

- the knowledge of his/her disease and its possible outcomes,
- knowledge of the care system and access possibilities,
- knowledge of patients' rights
- health consumer protection knowledge [6].

Primary prevention

It focuses on the general protection and promotion of health, with the aim of preventing the develop-

ment of the disease:

- usually by non-medical means (elimination of adverse health effects, development of a health-conscious lifestyle, etc.)
- based specifically on medical activity (eg vaccination).

Its activities cover all areas of health education (health pedagogy) and health education.

Secondary prevention

Its aim is to detect diseases at an early, hidden stage that has not yet caused a complaint. In this way, the patient has a good chance of being treated with less damage and a lower cost. Secondary prevention is typically done through medical devices (see screening) but also includes self-monitoring by lay people.

Tertiary prevention

Its aim is to prevent damage caused by diseases, causing a permanent health deficit - deteriorating the quality of life; prevention of conditions causing dysfunction, lasting pain, long - term care. Its tools include effective, up-to-date, uncomplicated treatment and early rehabilitation to prevent the development of definitive injuries [3, 6, 17].

Disease

A disease is a deviation from a socially accepted picture of health that

- which reduces life expectancy or impairs quality of life (i.e. causes death or dysfunction and / or pain), and
- what the individual or their environment perceives (including the perception of the care system, diagnostic tools).

According to this definition, what is considered a disease and what is not may vary from culture to culture. Deviating from the accepted picture of health also means that the individual or society wants to do something about it. In this sense, a disease is a condition that has the ability to initiate some kind of health activity for cure and prevention [3, 6].

Vaccination

Vaccination is a health activity in which a vaccine

is given to the body for active or passive immunization to develop and enhance specific protection against a given disease.

In the case of active immunization, the vaccine contains either non-infectious bacterial or viral components or whole pathogens, but is so attenuated that they cannot cause infection. The body's defense system responds to the vaccine by producing substances (antibodies and white blood cells) that recognize and attack the bacteria or virus in the vaccine. From then on, these antibodies and other substances are produced naturally whenever an individual encounters the same bacterium or virus.

In the case of passive immunization, there are specific antibodies against a certain pathogen (the already finished antibody) in the vaccine. Passive immune protection is given to people whose immune systems are unable to respond adequately to the infection or who are not vaccinated when they get the infection (for example, when they come across the rabies virus). Passive immunization can also be used to prevent illness when exposure to the pathogen is expected but there is no time to administer the full series (eg when traveling to distant countries). Passive immune protection lasts only a few days or weeks until the vaccinated antibodies are cleared from the body.

Vaccines play a major role in the prevention of infectious diseases worldwide. The goal of each country is to have a favorable epidemiological situation, and to this end, it will adapt its vaccination system (vaccination schedule, vaccination calendar) taking into account the epidemiological situation.

18/1998 (VI. 3.) NM Decree on epidemiological measures necessary for the prevention of communicable diseases and epidemics [3, 20].

IX.3. Organizations

EU Directorate-General for Health and Consumer Protection (DG SANCO)

The activities of the EU's Directorate-General for Health and Consumer Protection cover health and well-being activities that directly affect the daily lives of European citizens. Their job is to ensure

that food and consumer goods, goods and services placed on the EU market are safe, that the EU's internal market works to protect consumers' interests, and that the EU supports projects that protect and improve the health of its citizens.

It aims to protect and improve the general health of people, to ensure the safe and wholesome nature of food, to protect animal and plant health, to promote animal welfare and to promote the interests of consumers, within the general objectives of the European Commission.

OECD

The OECD, the Organization for Economic Co-operation and Development, began its work in 1961 under the OECD Convention, the legal successor to the OEEC (Organization for European Economic Co-operation), which was originally established in 1948 as Marshall Aid to facilitate post-war economic consolidation.

It has now, since September 2010, brought together thirty-three countries committed to democracy and a market economy. Hungary became a full member of the OECD in 1996.

The OECD is based in Paris.

Its main objectives are to promote economic growth, a high level of employment, a higher standard of living and financial stability in the Member States. Its main activity is the collection of comparable statistics, the publication of analyzes and forecasts. The OECD Health Data database is about the health care and health systems of OECD member countries. It analyzes the financial sustainability of health care systems, the efficiency and quality of health care systems in the member states, and examines the environmental conditions affecting health care.

WHO

The World Health **Organization (WHO)** is the UN's specialized governing and coordinating body for health.

The main goal of the WHO is to provide for all people the highest possible level of health. According to the WHO Constitution, health is a state

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

There are 6 main areas in the WHO program:

1. Promoting health promotion: improving the health of poor, vulnerable groups in society, preventing and treating chronic diseases, and combating neglected tropical diseases.
2. Improving health security: tackling health threats and risks originating from, for example, urbanization, pollution, food production and trade, and the misuse of antibiotics.
3. Strengthening health systems: improving access to health care in particular . Target areas: Ensuring a sufficient number of suitably qualified medical staff , sufficient funding, a system for collecting vital statistics, access to appropriate technologies and essential medicines .
4. Promoting research, information, and evidence-based health policy: WHO provides credible health information for setting norms and standards, making evidence-based health policy decisions, and monitoring the global health situation.
5. Strengthening partnerships: with other UN bodies and other international organizations, donors, civil society and the private sector.
6. Improving performance: WHO is involved in reforms to improve efficiency and effectiveness , both internationally and within countries.

The WHO is based in Geneva. WHO has *6 regional offices* that deal with health problems in a given region.

European Health Observatory

The European Health Observatory is a partnership organization that brings together different policy perspectives to identify the health systems and policies that European decision-makers need. The center then produces and shares the evidence in printed, ‘personal’ and online form, meaning that it acts as a mediator of knowledge as it seeks to bridge the gap between theory and practice. [24]

Centers for Disease Control and Prevention (CDC)

The primary purpose of the Center is to protect public health and safety through the prevention of illness, injury, and disability in the United States and worldwide. The CDC focuses its attention on the development and application of disease control and prevention. It pays special attention to communicable diseases, foodborne pathogens, environmental health, occupational safety and health, health promotion, and injury prevention mainly for educational activities to improve the health of U.S. citizens. The CDC also conducts research and provides information on non-communicable diseases such as obesity and diabetes and is a founding member of the International Association of National Institutes of Public Health. [25]

IX.4. Persons

Ferenc Pápai Páriz (Deés, May 10, 1649 - Nagy-Enyed, September 10, 1716)

He was a doctor of philosophy and medicine at the Bethlen College in Nagyenyed, where he was admitted to the toga students and, under the careful guidance of the eminent teachers of the time, made such a considerable progress in the sciences that he was sent to foreign universities. March 1672 he set out for Boroslo, Leipzig, where he studied medical sciences; thence to Oder-Frankfurt, where he spent the longest time, and then moved to Heidelberg via Marburg, where he was inaugurated as a doctor of philosophy; he modestly rejected the teaching of the philosophical sciences with which he was offered at the Heidelberg Academy. In 1673 he traveled from Heidelberg to Basel, where he spent two years. He was promoted to the rank of doctor of medicine, and at the same time received the honorable title of “head of the Basel medical school” in 1674. He returned to his homeland, Debrecen, in 1675, where he was invited to be a doctor by the city council, but he did not accept this. He was also invited to be a doctor in Nagyenyed, but he did not take this job. Mihály Teleki invited her to be the court physician of Princess Anna Bornemissza, and in 1678 she was offered the Department of Greek Language, Philosophy and Natural Sciences at the Bethlen College in Nagyenyed,

which he accepted and in January 4th 1680. He was solemnly inducted into his office. After the death of Anna Bornemissza, he became a general practitioner of Prince Mihály Apafi. During the teaching of Nagyenyed, which he wore for 40 years, he suffered constant unrest in various wars. His main work, *Pax corporis*, on the causes and nests of the ailments of the human body and the way to cure them (1747), was published by András Papai Pariz, Kolozsvár, which focuses on the prevention of diseases, ie the prevention of health [26, 27].

István Mátyus Kibédi (Kibéd, 1725 - Marosvásárhely, May 24, 1800)

István Mátyus (Kibedi), was a regular chief physician of Küküllő and Maroszlék. He studied at the evangelist college and in 1754 went to the University of Utrecht, where he obtained a doctorate in medicine two years later. He was in Göttingen, Marburg and Vienna for further training and medical practice. He returned in 1757 as a practitioner and settled in Marosvásárhely. After a short time he became the chief physician and panel judge of Küküllő county and Maroszlék. In 1765 on the 18th of April, Maria Theresa elevated him to the nobility of Transylvania. He has written several books, reflecting the preventive approach in both his works:

Diaetetica, is: a book that fundamentally lectures on how to maintain good health. (1762-66) Kolozsvár-Cluj-Napoca, Two volumes. and the Old and New Diaetetica is the reckoning to the maintenance and guardianship of life and health, the more remarkable natural means given from God, as they were given to them, and from the very beginning men have lived with them to their detriment or benefit, in which he explained in more detail the first piece of his earlier diaethetic; and he enlightened people with many of the old customs and notable stories which belonged here, and at the same time he broke the ice in many places for the holy places of nature; so that, in so many respects, this work could also serve as a natural history. (1787-93), Pozsony-Bratislava, Six volumes [26, 27].

János Zsoldos, (Köveskál, May 2, 1767 - Pápa, May 12, 1832)

Chief physician of Veszprém county, born. May 2nd 1767 In Köveskál (Zala county.), where his father was a Reformed priest. He studied in Sopron and Debrecen, then in 1790–92 he was a teacher in Halas. In 1792 he traveled to the University of Jena to study medicine. 1794. He went to Vienna to continue his studies, where he was inaugurated as a doctor in December 1795. From 1796 he worked in Pápa as the chief physician of Veszprém county. His significant work was a summary of the health advice given to students, which was used by teachers even in the 20th century in the form of health advice taken into verse. *Dietetics or policies to maintain health and prevent disease.* (1814) Győr, 1814. (2nd ed. Pest, 1818). *Diaetetica or Regulations for the Maintenance of Health for Schools* (1818) by doctor János Zsoldos, Sárospatak [26, 27].

Lajos Markusovszky (Csorba, April 25, 1815 – Abbázia-Opatija, April 21, 1893)

He was a doctor, military doctor, one of the organizers of modern Hungarian health education, a member of the Hungarian Academy of Sciences. He became an assistant to János Balassa at the University of Pest, and then was one of the organizers of the advanced medical group around Balassa, which developed plans to raise the profile of medical education, medicine and public health in Hungary. He was the member of the National Public Health Council (1867), and President (1868). He was a founding member and vice-president of the National Public Health Association (1886–). He edited the Medical Weekly from June 4 1857 to the end of 1888. In medical healing, he is the scientific founder of the preventive approach. [26,27]

József Fodor (Lakócsa, July 16, 1843 - Budapest, March 20, 1901)

He was a hygienist, university professor, member of the Hungarian Academy of Sciences (l. 1878, r. 1883), honorary doctor of the University of Cambridge. He studied in Vienna and Pest, in 1865 he was a doctor of medicine, and from 1866 he was an assistant professor in the Department of State

Medicine. In 1869 he was the chief autopsy officer of a hospital, a private teacher of medical procedures for health officers. After a study trip abroad in 1872 in Kolozsvár-Cluj-Napoca he was a retired professor of the State Medical School. In 1874–1901, he was the retired professor of the public health department at the University of Budapest. In 1894–95 he was rector of the university. He is not only the first Hungarian educator and practitioner of public health, but also one of the founders of it internationally. He organized the National Public Health Association with Lajos Markusovszky. He was one of the first to show the role of water in spreading typhus. His name is associated with the organization and management of the School Physician and Secondary School Health Teacher Training from 1885 until his death (at the Medical Universities of Budapest and Kolozsvár-Cluj-Napoca). He has written several books, including the Health Textbook, which has been used the most in high school health education [26, 27].

Béla Johan (Pécs, September 6, 1889 - Bp., April 11, 1983)

He was a doctor, pathologist, microbiologist, Secretary of State. He moved to Budapest in 1907, and in 1909 he was a demonstrator at the 1st Institute of Anatomy and then an intern. He obtained his medical degree from Antal Genersich in 1912 to the Institute of Pathology as an unpaid trainee. In 1913 he was an award-winning trainee, in 1914 an assistant teacher, in 1924 an assistant professor. He was habilitated as a university private teacher in 1919, and in 1927 he was awarded the university teacher title. During World War I, he produced large quantities of cholera and typhoid vaccines for the military. In 1922 he was invited to the United States, the first Rockefeller Fellow. He worked alongside the world-famous coroner, Mallory. He spent a year in the U.S. and then for the next two years studied vaccine production, public health laboratory work, and its system in various states in Europe. In Hungary, the plans for the building of the Institute of Public Health were made according to his idea. In 1925 he was appointed director of the institute. Under her leadership, the village health service (Green Cross nurses) was organized. In the

so-called model procedures, a unified state system of health care work (Green Cross Labor) was developed. He described the essence of his work in his book “Gyógyul a magyar falu”, published in several languages. Under his secretariat, he drafted several public health bills in 1935–44. After World War II, there were unfounded attacks on his previous work as secretary of state and because of his foreign scientific connections. He has received numerous recognitions and honors [26, 27].

IX.4. Bibliography

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