

## Exploring the boundaries of medical anthropology in understanding human health

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### Abstract

The concept of human health has evolved beyond the confines of healthcare systems since the 20th century, spawning various definitions from diverse disciplines. While conventional views often solely on the absence of disease, they have faced criticism for their narrow perspective. Medical anthropologists, recognizing the complexity of health, assert that human health encompasses not only physical well-being but also mental and social dimensions. Medical anthropology, a subfield of anthropology, delves into the cultural dimensions of health and illness. It examines how different cultures define health and illness, and how cultural beliefs and practices influence health behaviors. Pivoting on the anthropo-ontogenetic approach to health, this article highlights the pivotal role of human development in shaping health. Health, it argues, is not a static entity but rather an evolving process that unfolds across the lifespan. To illustrate this dynamic nature, the article introduces the spatial-temporal continuum (STC) of health, a model that maps the trajectory of health development throughout life. The STC framework incorporates ontogenetic stages, the distinct periods of human development, and their associated health determinants. This anthropo-ontogenetic perspective carries significant implications for medical practice. It advocates for preventive medicine to focus on early developmental stages, where interventions can yield the most profound impact. Rehabilitation, it suggests, should prioritize restoring functional capacity, rather than solely treating disease. Moreover, health education should be tailored to diverse age groups and developmental phases. This paper provides a comprehensive overview of the contributions of medical anthropology to our understanding of human health. It commences by exploring the diverse definitions of health proposed by medical anthropologists, followed by an in-depth analysis of their insights into the cultural dimensions of health and illness. In conclusion, the anthropo-ontogenetic approach to health offers a more comprehensive and nuanced understanding than traditional medical models. It emphasizes the dynamic and holistic nature of health, recognizing its intricate interplay with human development. This perspective has profound implications for medical practice, guiding preventive strategies, rehabilitation approaches, and health education initiatives. By embracing this holistic view, we can foster a more holistic and effective approach to promoting human health.

**Key words:** anthropology, human, health, regeneration, genome, cell, microbiome, holism, growth, regression.

### Introduction.

Since the 1920s, the topic of human health has begun to emerge from the exclusive control of health care systems. Numerous concepts from related sciences have been added to the initial medical content of the concept of health. The definition of health has acquired general biological, psychological, sociological, economic, valeological, moral and ethical, philosophical, physical and chemical, theological and many other meanings, reflecting the specifics of numerous directions of human cognition. One of the reasons contributing to such an explosive interest in the problem of human health was the reliable and impressive increase in the average life expectancy of the population of developed countries as a result of the globalization of economic, political, cultural life, as well as a powerful international movement for the preservation of natural resources, a healthy ecology and a healthy lifestyle (Gozenko et al., 2018; Grygus et al., 2018; Khan et al., 2022; Public health milestones through the years. 75 years of improving public health. World Health Day, 2023). The contribution of these socio-economic forms of public movement to increasing the life expectancy of the population of developed countries turned out to be more effective than modern medical care. An analysis of the contribution of various factors to the preservation of health showed that the actual medical contribution is no more than 10% (Hnatush et al., 2019; Iqbal, et al., 2023; Kausar et al., 2023). The rest of the influence is exerted by hereditary and,

controlled by society, economic, ecological and social factors. Such a pluralistic approach to understanding the essence of human health, objectively, gave rise to numerous definitions of the phenomenon of health. Review. Traditionally, within the framework of educational programs of medical universities, the teaching of health is presented within the discipline "public health", where three categories of health are considered. Individual health - assessment of the health of a specific person. It is assessed by the presence or absence of complaints, by the assessment of personal well-being, data from an objective examination by medical workers (clinical and paraclinical signs of the presence or absence of diseases, the degree of physical development, mentality, etc.) (Mechkin et al., 2023; Niaz et al., 2023). The health of an individual is traditionally considered by clinical disciplines from the position of the "doctor-patient" system, i.e. searching for symptoms of various infectious and non-infectious diseases and eliminating health disorders. In the absence of obvious signs of any disease, the doctor concludes that the person is healthy. In this case, the formula based on the exclusion of signs works: "Health is the absence of disease". The medical approach to studying health is replaced by searching for signs of disease and is not able to fully represent the essence of the phenomenon "health". Group health - health of homogeneous cohorts of people, selected separately according to different characteristics: by gender, age, profession, etc. Research of this kind sets epidemiological goals (Rana et al., 2022; Scheler et al., 2011; The holistic perspective. 1.2: The Anthropological Approach, 2023; Tkachuk et al., 2021). The prevalence of certain health disorders among men and women, adults and children, schoolchildren and workers of various specialties, etc. reflects the effectiveness of the sanitary and epidemiological service, labor protection and the effectiveness of the entire regional health care system. Numerous observations by WHO (Global Burden of Disease (GBD). Key findings from GBD 2019, 2019) show that the success of these services prolongs the satisfactory state of health and the average life expectancy of the studied population groups. But they do not reveal the biological essence of health and cannot explain why in a homogeneous group of people, in the same production atmosphere with the same harmful production factors, part of the people maintain a high level of health for a long time, and part - quickly de-adapt, get sick and their disease often acquires a protracted or chronic character (Tong-Keun, 2000).

Population health - a territorial characteristic of the health of people (birth rate, mortality, population growth, morbidity), living in a certain territory (district, region, zone, country, continent). The health characteristic of a country's population reflects the effectiveness of the governments of these countries, according to positions 1 and 9 of the WHO Charter (Constitution WHO, 2023):

"1. Health is a state of complete physical, mental and social well-being, and not just the absence of disease and physical defects.

9. Governments are responsible for the health of their peoples, which can only be achieved through the adoption of adequate medical and social measures."

Such data are also not able to reveal the essence of the biomedical concept of health, as they bear political, social and economic aspects of research.

The concepts of "health" and "disease" are fundamental in the theory of medicine. At the same time, as many authors (Štrkalj Despot, 2021; Raguž & Alebić, 2021; Sadegh-Zadeh, 2008) note, there is no single opinion in creating a comprehensive definition of these categories.

The introduction of the cognitive linguistics method into the paradigm of anthropology should be recognized as a successful step in understanding the phenomenon of health, despite the fact that the analysis is subjected not to the natural phenomenon itself, but to its reflection in the representation of people of various schools. The author of the article Štrkalj Despot K. (Štrkalj Despot, 2021) asks a difficult question: "Do we think the same because of the universality of human experience, or do we all think differently because we speak different languages?" This alternative hides the truth that needs definition and argumentation. But without a conceptual apparatus at the level of postulates or axioms, no doctrine can develop harmoniously, and in this regard, the analysis of cognitive features of thinking in science and practice is extremely useful.

The most general science capable of uniting numerous directions of studying human activity is anthropology, the subject of which (if we do not take into account its theological content) is the study of people and their ancestors in time and space, as well as in relation to the physical character, ecological and social relations and culture (Anthropology. Merriam-Webster Dictionary, 2023). The anthropological approach allows to harmoniously combine all known facts of human activity with an ethical assessment of the values of the objective world for society. Life and health of people in many philosophical, political, socio-economic concepts are considered as an unconditional highest value. This is the initial postulate, relying on or referring to which, numerous intellectual concepts are built.

But here's what's curious: in the famous studies of human needs, started by one of the leading developers of philosophical anthropology, Max Scheler (Gozhenko et al., 2018; Grygus et al., 2018), and later - Abraham Maslow (Maslow, 1943; Ziarati et al., 2021), health, as the highest value, is not indicated! M. Scheler ranked types of universal human values from lower to higher in the following order: pleasure, utility, life force, culture and holiness. A. Maslow also identified five priorities of higher values or basic human needs.

1. Physiological: hunger, thirst and so on;

2. Needs for safety/protection: comfort, constancy of living conditions;

3.Social: need for contacts, social ties, communication, attachment, care for another person and attention to oneself, joint activity;

4.Self-esteem: respect from others, recognition, achievement of success and high evaluation, career growth;

5.Spiritual: cognition, self-actualization, self-expression, self-identification.

Further work by other researchers in this direction has added two more components (Zaremskyi, 2023), which also bypassed the need for health:

a) The desire for knowledge, expanding horizons, erudition, new knowledge, answers to important questions, knowledge of the world.

b) Aesthetic needs: a sense of beauty, art, harmonization of the surrounding environment, beauty.

In a special study dedicated to the review of human values (Tong-Keun, 2000), the author used the method of proof "from the contrary" (Latin *contradictio in contrarium*), from the hierarchy of anti-values, including six levels. In particular, the act of killing or causing the death of a person - the 3rd level of anti-values; causing harm to the human body – 4th level. Further, highlighting the higher values, the author cites the following five categories in descending order: (1) absolute values, such as absolute truth, absolute good, absolute beauty and absolute holiness; (2) contribution to the development and happiness of humanity; (3) act of assistance to the nation or state; (4) contribution to the development of regional society; (5) act of self-improvement and good management of one's family. As can be seen from the example given, the category "health" is not considered in this work, although the category opposite to "health" is mentioned - "causing harm to the human body".

### **Main part.**

Man, as a biosocial rational being, is studied by various sciences. The most general approach belongs to anthropology, the task of which is to integrate the biological essence of man with the evolution of his cultural development and social relations. Anthropological analysis is based on a holistic approach, that is, on understanding that all different aspects of human biology and culture are necessarily interconnected. For example, the biological structure of a human and a large brain make our complex cultures possible (Yeremenko, 2021). At the center of anthropology's attention is understanding our common humanity and diversity, as well as interaction with various ways of existence in the world.

Modern views on the essence of human health are extremely diverse. And the category "health", like "anthropology", has split into many narrow utilitarian directions. Directions have appeared that study "chromosome health", "cell health", "organ and tissue health", "healthy food", etc.

In the last decade, the attention of scientists has been actively attracted to the study of the role of telomeres (end sections of chromosomes) as indicators of human health (Kalichman et al., 2022). The length of telomeres at a certain age is one of the best molecular markers (biomarkers) of the degree of aging of the body and therefore can be used to determine the biological age.

The assessment of the level of health is based on the postulate that premature shortening of telomeres can be a marker of various diseases. Exceeding the passport age over the biological is considered evidence of good health.

However, the conceptual approach to understanding the essence of health did not find anything new in the prevention of health disorders by the developers of the telomere hypothesis. So they noted the following, quite well-known factors that prevent the shortening of telomeres: healthy eating, enrichment of the diet with omega-3 fatty acids, regular physical exercises, reducing the level of stress, moderate alcohol consumption. Factors provoking premature shortening of telomeres include smoking, overeating, a sedentary lifestyle, lack of a balanced diet. The fact that the telomere map is specific for each nationality contradicts this concept. Since there are long-livers in each nationality, it is obvious that the telomere approach is not a dominant factor.

In this work, we adhere to the view that the category of health is initially applicable exclusively to the person himself. Generalized health of various groups of people or group health indicators (morbidity, birth rate, mortality, etc.) do not carry that depth of understanding of health disorders at the biological level, but rather reflect epidemiological, social and economic relations in the regions where people live.

Disruption of the number of chromosomes in a cell or gene mutations in chromosomes, the quality of functioning of cells or organs, the optimal composition of food and water consumed are not equivalent to health or "complete well-being". These are limiting factors that contribute to the manifestation of various levels of health in an individual.

The anthropological approach helps the researcher to focus on the holistic perception of the human personality. Thus, in a series of reviews dedicated to congenital diseases in children, it is noted that various pathogenic factors affecting a pregnant woman: an excess of technogenic pollutants, unbalanced nutrition, disturbances in the microbiocenosis, microwave radiation, etc., can cause persistent changes in the woman's body and thereby disrupt the development of the fetus (Zaremskyi, 2023). In such situations, newborns have disorders in both physical and mental development. But, as the author notes (Zaremskyi, 2023), correction of somatic disorders in such children significantly improves their cognitive abilities, which confirms the correctness of the ancient saying "Mans sana in corpore sana", or "In a healthy body - a healthy spirit". Such an observation confirms the indivisibility of the health phenomenon into "physical, mental and social fragments", laid down in the WHO definition.

In a sense, the science of health and the science of life are similar, since the subject of research is living organisms. The science of health is one of the branches of life sciences (Difference Between Health Science and Life Science, 2023). Health is an attribute of life, but it does not replace life. People who have lost their sight, hearing, limbs as a result of accidents can live a long, socially saturated life, remaining disabled

Human life is indivisible, it takes place in a certain society and has an infinite number of shades of the palette of social existence. But the health of a given person at different moments of the life process is subject to changes, it can limit the duration of life, it can affect the quality of life, but it cannot replace it. Health is a fragment, a subsystem in a more general system called "life".

Biological life "filters" people through their ability to adapt to changing environmental factors: magnetic storms, seasonal infections, climate changes, nutrition regimes, intensity of physical work, etc.

Social life conducts "filtration" from another pole. Society needs mentally stable and physically strong people. Therefore, individuals who do not meet these requirements (psychiatric patients, childhood disabled, helpless people) form a cohort of chronically ill people who require significant resources to maintain their decent life and form an article of expenditure in the healthcare economy "burden of diseases".

At the same time, the global anthropological approach to the study of human evolution, covering millennia of human civilization, is not able to focus on the development of a specific person, on issues of genotypic and phenotypic transformations, regulating human health, the quality and duration of his life..

This thesis is more vividly confirmed by the methodology of ontogenetic research. It includes the obligatory comparison of the data obtained about a specific object with the temporal (temporal) axis of the development of events or processes.

Partially, such a temporal approach was used by us in the development of the concept of the spatial-temporal continuum (STC) of human health (Biryukov et al., 2022; Gozhenko et al., 2018). This model substantiates the approach of combining biological and social determinants of health based on the time axis, which includes, according to the WHO age classification (Omar, 2001), the main known stages of human development: conception, embryogenesis, the period of newborns, childhood, adolescence, mature and old age, old age, longevity and death.

From the position of STC, human health is an integrative assessment of the quality of his life at each specific moment of absolute time and the social age period. At the same time, absolute lifetime is characterized by passport age, and social age - generally accepted age gradations: childhood, adolescence, youth, etc. Such a dichotomy is necessary, since the biological essence of health remains unchanged, but its qualitative characteristic is formed in different social conditions, adapted for each stage of human life (obstetric aid, neonatology, pediatrics, maternal and child health care, labor protection, geriatric care, etc.). Thus, we consider health criteria as a derivative of the human ontogenetic scale. The peculiarity of this scale is the combination on the time axis (x) of both calendar and biological ages. On the axis (y), the magnitudes of the influence of known health determinants accompanying a person at each stage of his ontogenetic movement are reflected (Figure 1).

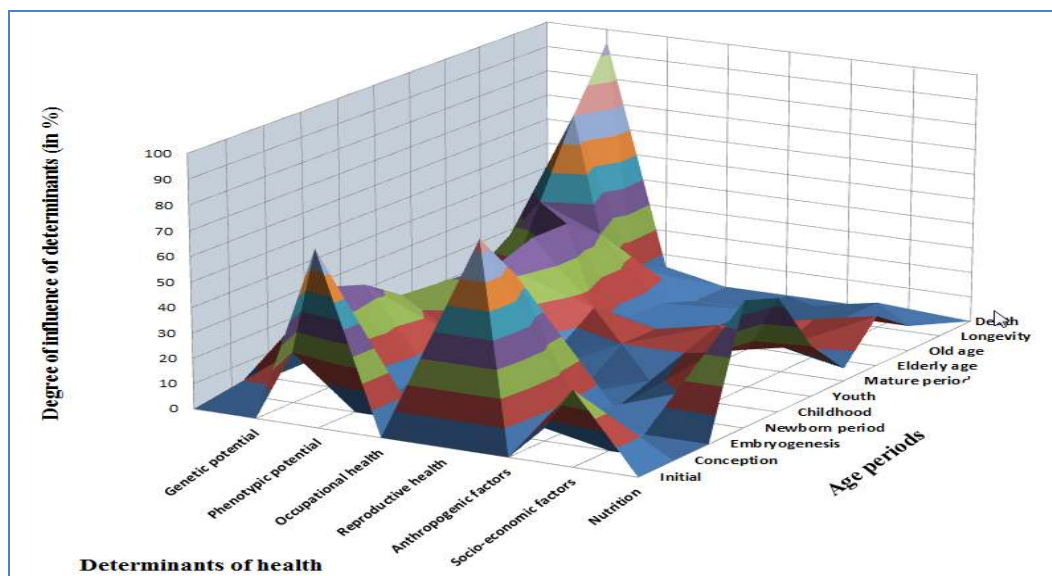


Figure 1. Anthropogenic factors in the formation of the human spatial-temporal continuum (Gozhenko & Biryukov, 2019; Biryukov et al., 2022; Scheler, 1938). Horizontal levels reflect the degree of merging of determinants at different periods of human life.

Harmonious adaptation of the human body to these determinants will characterize full health or, according to the WHO terminology, "a state of complete well-being". Violation of adaptation - not full health. This does not mean the absence of health, but indicates its infringement, limitation of opportunities.

Ontogenetic spatial visualization helps to assess the multifactoriality and strength of the influence of determinants at different periods of life and understand the essence of the indicator of the reliability of the work of vital systems of the body. From this point of view - health is an indicator of the reliability of the work of adaptive biophysical and social mechanisms inherent in a person at a given specific, ontogenetic moment in time.

It should be noted that the International Statistical Classification of Diseases and Health Problems (ICD) (International Statistical Classification of Diseases and Related Health Problems 10th Revision, 2015; Omar et al., 2001) also provides for a block of health disorders from ontogenetic positions. Thus, the following classes of health disorders were included in the 10th edition.

XVI - Some conditions arising in the perinatal period

XVII - Congenital developmental defects, deformities and chromosomal anomalies

XXI - Factors affecting health status and seeking medical attention

In human ontogenesis, the following irreversible sequential periods should be distinguished (Table 1):

**Table 1. Ontogenetic "lifespan" of a person**

**No. Periods of ontogenesis Biological essence of the period Risk factors for health**

1 Early progenesis, Formation of gametes of the parent pair (the period of development and maturation of germ cells - eggs (ovogenesis) and sperm (spermatogenesis). Mutations caused by harmful environmental factors, bad habits, old age of parents.

2 Late progenesis Fertilization, formation of a unicellular organism - zygote Inferior zygote with low enzymatic activity and survival rate.

3 Mother-placenta-fetus system Transformation of the zygote with the formation of a blastocyst (multicellular human embryo). Death of the blastocyst due to abnormal development Embryogenesis (histogenesis phase, up to 22 weeks of gestation) TORCH infections causing congenital deformities, chromosomal abnormalities. Fetal development. Fetal period.

From 22 weeks of gestation to birth Premature or late birth, intrauterine growth restriction, chromosomal abnormalities.

4 Neonatal period.

First 28 days of life.

Asphyxia and intraventricular hemorrhages, birth injuries, disorders of adaptation to extrauterine life.

5 Infancy.

From 29 days to a year Sudden death syndrome, abuse, decompensation of congenital diseases

6 Younger pre-school age.

From 3 to 4 years Abuse, decompensation of congenital diseases, accidents.

7 Senior preschool age.

From 5 to 6 years Abuse, decompensation of congenital diseases, accidents.

8 Junior school.

From 7 to 11 years Decompensation of congenital diseases, accidents.

9 Senior school (teenage).

From 12 to 18 years Decompensation of congenital diseases, accidents.

10 Young age\*.

18-44 Accidents, sexually transmitted diseases, abortions.

11 Average age\* 45 - 59 Occupational hazards, industrial accidents.

12 Old age\*.

60-74 Occupational hazards, cancer, strokes, heart attacks, domestic accidents.

13 Old age\*.

75-90 Domestic accidents (falls), cognitive impairment, cancer, strokes, heart attacks, accidents.

14 Longevity\*.

90 + Domestic accidents (falls), high comorbidity: cognitive impairment, cancer, strokes, heart attacks, accidents.

15 Dying and death.

Includes palliative and hospice periods, facilitating the quality of life of dying people Multisystem and multiorgan failure.

\* WHO Age Classification, 2013. (International Statistical Classification of Diseases and Related Health Problems 10th Revision, 2015).

The above ontogenetic "lifespan" includes 15 stages, each of which, at a certain point in time, specifically and, unfortunately, irreversibly, subject to the influence of biosocial determinants, translates the state of health to the next stage.

There is a common opinion that health, as a quality inherent in the subject, must withstand attacks from various adverse factors from the outside.

But it should also be noted that health, as a function, is implemented through a number of structures that provide the function of health. This complex multi-level structure can be called the "anatomy of health". Their complex activity to maintain homeostasis allows maintaining a full life. Insufficiency of these structures forms insufficiency of protective mechanisms and subsequent disruption of the body's vital activity, called disease.

Health is the weapon of life. And this weapon is forged from the earliest stages of human development, from the moment of conception. Violation of the technology of creating the "body of health" sooner or later manifests itself in acute or chronic diseases in people, starting from the very early age.

Extending the principle of the spatial-temporal continuum (STC) of health to the ontogenetic axis, it should be noted that the analysis of the formation of health in dynamics should begin with human embryology, which gives the keys to understanding the causal factors of health disruption and its incomplete functioning.

Using the well-established Carnegie system in science, which is a chronological classification of the stages of human embryo development, it is possible to identify the risks that await the future person from the moment of birth, when after tying the umbilical cord he loses maternal life support and launches his autonomous existence.

The development of human embryos according to Carnegie includes 23 stages, which are determined by the presence in the embryo at this stage of certain anatomical structures (O'Rahilly & Müller, 1987; Streeter, 1942).

It should be clarified that the classification of stages of human embryonic development according to Carnegie describes only the first 60 days (the first 2 months, or 8 weeks) of embryo development. After this period, instead of the term embryo, it is customary to use the term fetus. Such a division is justified, since it is in the first two months of pregnancy that the organs and systems of the human body are laid and formed.

The study of human embryogenesis has revealed a complex sequence of development of human body structures in dynamics. Having a chronological map of organ development, it is possible to accurately determine, up to two days, at what week of the mother's pregnancy the child was harmed and which organs or their combination may be involved in distorted development. Thus, on the 30th day of embryo development, the formation of primary partitions between the atria and the formation of a primary interatrial hole (the so-called oval window) occur. Any toxic effect on the embryo at this moment can cause the development of a congenital heart defect with non-closure of the oval window.

With toxic effects on the human embryo 10 days later, simultaneous damage to the retina of the eye, the external auditory canal, the heart, kidneys and liver is possible. Such "critical" phases of development are well known to clinicians, neonatologists, geneticists, obstetricians. However, this knowledge further actualizes the question of the essence of health. How to evaluate it: it either exists or it does not (the exclusion formula "either ... or)? In this context, according to the WHO definition, health is not divided into parts (health is a state of complete physical, mental and social well-being). However, practice shows that with many congenital diseases, life is possible and quite full. That is, for the continuation of life, not full well-being is quite enough. And then the discussion about the essence of health moves into the plane of assessing its sufficiency for any types of life activities.

The more data accumulates about the morphological, biophysical, biochemical and physiological determinants of health, the more obvious becomes the need for their synthesis in a system of general ideas about health and disease.

At the same time, psychology and the practice of knowing health through disease often leads us away towards the predominant value of the specificity of symptoms and individual morpho-functional and biochemical indicators characteristic of pathology. The latter, indeed, are important and necessary elements (markers, criteria) characterizing a sick organism, but they are not actually a disease. These are echoes of adaptive processes occurring in the body when it is damaged.

Therefore, the thinking and psychology of a doctor should be based on basic general theoretical ideas about the essence of health and its disorders, which form an idea of the pathology of the body, and then are concretized to the level of a symptom, syndrome, nosology and disease of each patient.

A new stage in the development of medicine is associated with the introduction into the treatment and rehabilitation of sick people of a whole class of biomedical technologies. This stage can be designated as replacement medicine, when a non-functioning organ is replaced by an artificial analogue. At this stage, a person subjugates nature and independently modifies his body and health. Cardiac implants, controlling and restoring heart rhythm, hearing or cochlear implants, increasing the level of sound perception with severe sensorineural deafness, bio-prostheses, restoring the basic functions of the upper or lower limbs and retinal implants, capable of replacing the retina of the human eye in case of its damage or dysfunction - this is far from a complete list of the medical services market, based on modern scientific ideas about molecular and cellular biotechnologies, the software industry, micro-chipping and economic feasibility.

And this stage of "self-assembly" of the human body also requires anthropological philosophical explanation.

## Conclusions.

Thus, the anthropo-ontogenetic approach in medicine allows us to highlight the following elements of the concept of health.

1. The doctrine of health, based on the entire set of the most modern data on the structure, biochemistry and functions of the body, is designed to give a description of a person as a holistic biological system in the process of normal adaptation to the environment.

2. The doctrine of health is an important theoretical basis for preventive medicine, rehabilitation and recreation. Moreover, these ideas serve as starting elements for comparison with painful conditions.

3. Extrapolating the further expansion of the sphere of public health, with the formation of the "health industry", shows the steady growth in the importance of the doctrine of health.

4. The doctrine of sanogenesis, as a science about the mechanisms of recovery, revealing the anatomy and physiology of health, helps to deepen the understanding of pathogenetic mechanisms that underlie the spatial-temporal continuum of health, reflecting the processes of disruption and restoration of the vital activity of the human body.

5. The anthropo-ontogenetic approach to the interpretation of health, together with an understanding of pathogenesis, allows predicting and managing the outcome of the disease and the recovery of a person and serves as the theoretical basis of restorative medicine (rehabilitation).

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