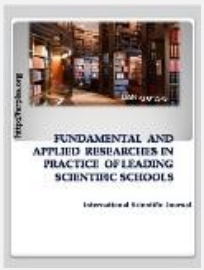

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Dialectics of medical and society interaction: development prospects

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The article reveals that on the basis of modern interaction of medicine and society, the nature of human's disease is increasingly determined by social causes, so the Hippocratic model has already been worked out and the transition to a self-regulatory and preventive model becomes relevant. However, modern society more and more requires genetic engineering. It is interested in genomic analysis, gene therapy, and hence the issue of genetic safety is becoming even more acute, especially in aspects of identifying the risk factors for genetic pathology and preparing recommendations for their prevention. Therefore, in the depths of self-regulatory and preventive model, predictive medicine emerges as a protection of human life that prevents the risk of disease and the transmission of diseases to subsequent generations. This encourages further transformation of medicine model, namely, the preventive. In comparison with preventive medicine, it has a larger volume, more filled with social content. Preventive medicine must prevent unwanted illnesses; respond instantly to all technical inventions that are directly related to the person, protection and preservation of his health. Therefore, precisely in preventive medicine some efforts of not only physicians can and should be merged, but also of other specialists: physicists, chemists, biologists, philosophers, theologians and other specialists.

Key words: Hippocratic model of medicine; self-regulatory and preventive model of medicine; predictive medicine; preventive model of medicine.

Introduction

It is known that the quality of human life depends on the natural and socio-cultural environments that are constantly undergoing significant changes in society. Both the environment and its changes directly affect the health of an individual. It is proved that the occurrence of diseases depends not only on biological (genetic predisposition, viruses, etc.), but also on social (economic, cultural) factors. According to WHO, today 55% of the diseases are caused by economic reasons, 20% - by ecological, 15% - by violations in the work of medical institutions and only 10% - by the genetic predisposition to diseases.

In addition, the state of human health depends on a large extent of a lifestyle such as nutrition, regimen, motor activity, absence of harmful habits. The way of life is largely determined by social factors: education, social status, national and family traditions, religion, etc. In this regard, it becomes increasingly important that, in today's society, health should be considered not only from the point of view of physiology but, first of all, taking into account the sociocultural, mental, political and economic features of this human community, and therefore there is a need for revision of the basic principles of health care structure, which is an important segment of society.

The goals of the article

An urgent requirement for the present is an attempt to show the need of reorganization of the existing health care structure in Ukraine in a context of constant social transformation, to prove the need of revising the principles of modern medicine in the direction of its preventive nature.

Theoretical foundations of research

The problem of interaction between medicine and society has always been interesting to researchers who are different in their specialty and focus of scientific research. They are not only sociologists, but philosophers, historians,

economists, doctors, etc. So, the problem is directional and it covers various sections of the interaction of medicine and society. For instance can be called works of A.M. Izutkin, V.P.Petlenko, G.I. Tsaregorodtsev, O.Ye. Ivanov, Yu.P.Lisitsyn, L.P. Semenov, A.P. Alekseenko, K.I. Karpenko, A.F.Yakovtsova, where philosophical, socio-ecological, sociological, religious, and artistic problems of medicine, as an integral part of society, are studied. However, the problem of the model of medicine, its dependence on the degree of development of society is covered episodically (T.V. Ivanova).

Results and Discussions

In Ukraine, the health care system at this stage of community development works within the framework of the so-called "Hippocratic model", when medicine focuses on the treatment of the disease, which is traditionally understood as a certain psycho-physiological imbalance in the body and treated with traditional medicines. The practice of today proves the decline in the effectiveness of such treatment, which was in line with public inquiries at the time of constant outbreaks of epidemics that threatened millions of lives. Now, medicine requires a more individual, integrated approach that takes into account not only the physiological but also the sociocultural, mental, spiritual aspects of human life that needs medical care.

The reduction of the effectiveness of the Hippocratic model of medicine results from the following factors: firstly, therapeutic therapy has nothing in common with the law of self-regulation of the body; and secondly, the Hippocratic model is based on the local vision of a person, which excludes a comprehensive approach that has proved its relevance and effectiveness in the current conditions of treatment; thirdly, today has appeared a qualitatively new type of disease - degenerative, with a trauma of cellular structure. To overcome it, the efforts of the whole organism are needed and hence new approaches to the treatment strategy; fourthly, ecological catastrophe, pollution of the environment leads to pollution of the internal environment of the human body. Against this background, the usage of drugs leads to decrease of the immune forces of the organism, and therefore does not help its recovery; fifthly, there has been a mass of "social" diseases (diabetes, tuberculosis, anorexia, hypertension, etc.), when the causes are stress, unbalanced nutrition, poor living conditions, low living standards, etc. (Methodology, theory and practice of sociological analysis of modern society: Col. of scientific works, p. 365).

From the above, we can conclude that at the present stage of development, society requires medical reformation. Medicine should be guided by a new model, that is a self-regulatory and preventive health care function, which requires awareness of the new principles of the provision of medical services. It completely changes the format of the interaction between medicine and society, where the treatment not only of the disease, but the entire human organism takes place; where in the process of recovery not only environmental factors are used, but also folk medicine; where there is an equal participation of the doctor and the patient in the process of treatment; where every person's education will take place, how to be healthy, that is, mastering the biological laws of the organism management and the methods of their application. Already set out practical steps in achieving this goal: teaching valeology in high school; use of the natural environment for the treatment of diseases, for example, thermal springs, salt caves, etc.

Speaking about the urgent need for internal reforms in the medical sector, we first seek to pay attention to the degree of sociocentricity of medical science, its willingness to respond immediately to public queries. Today different scientific breakthroughs in biomedicine such as artificial insemination, the birth of a baby "from the test tube", cloning of organs, transplantation, etc., are at the center of scientific attention. It is conditioned by social factors, since it is not a secret that every fifth spouse in Ukraine is barren, and men are increasingly becoming the reason for the disappointing diagnosis. For example, 10% of the Ukrainian male population is alcoholic castrate (Lantukh, Myroshnichenko, 2007). This means that modern society increasingly needs the help of genetic engineering, which is interested in genomic analysis, gene therapy, which means that genetic safety issues are becoming more acute, especially in aspects of identifying of risk factors for genetic pathology and developing recommendations for their prevention.

The problem of genetic safety in modern society is quite acute. According to the Ministry of Health of Ukraine annually about 12 thousands children are born with congenital and hereditary diseases, which are the second reason of mortality of children of the first year of life. According to the WHO, up to 50% of congenital pathology results from teratogenic effects of harmful environmental factors on the pregnant woman. As this a regulated process, the influence of these factors often can be prevented.

Currently has been experimentally established the mutagenic action of more than 1000 chemical elements. The damage to the cellular chromosomes is caused by various additional factors of production processes, substances used in agriculture, medicines, and nutritional supplements.

The formation of congenital defects and miscarriage is under the influence of radiation, mechanical and temperature factors. For example, work of a future mother in high temperature conditions, especially with high humidity, increases the incidence of congenital anomaly of the eyes. Equally large psycho-emotional stresses and hard physical labor can cause complications of reproductive activity. Meanwhile, the nature of work of 70% of agricultural workers and 40% of women who works in industrial enterprises, is qualified as difficult. And the third part among those who works at night, are women of fertile aged from 20 to 39, and therefore, they directly fall into the group of the risk of infertility or pathological course of pregnancy with the subsequent birth of a sick child.

A serious threat to Ukrainian society, and this is a proven fact, represents the environment. So, in Ukraine, the level of pollution per square km is 6,5 times higher than in the United States and 3,2 times more than in Europe. About 16% of the emissions into the atmosphere are mutagenic. More than 70% of the population of the country consumes Dnieper water, which quality, in terms of the mutagens

content, is rather doubtful. Precise information on the chemical composition of groundwater is absent. Contamination of surface water with fertilizers, pesticides, due to soil erosion, reaches beyond the boundary concentrations. Finally, the issue of further investigation of the impact of the Chernobyl accident on the genetic health of the nation still remains open.

It is well-known fact that environmental mutagens provoke mutations in somatic cells, which ultimately leads to the development of tumors. Affection of germ cells, depending on the size and location of the damage, leads to infertility, miscarriage, congenital malformation or even death of the child.

The number of pathological genes in the human population is increasing globally. This can be explained both by increasing the diagnosis quality and registration of genetic diseases, as well as by the actual increase in the incidence of pathology. This increase results from interference to natural humans selection by increasing the level of medical care, primarily for pregnant women, infants, people with hereditary pathology; implementation of artificial insemination technologies, family planning. The frequency of the genetic disorders in newborns in our country is comparable to the European level. Annually in Ukraine there are about 350 children with Down's disease ("magic princes"), about 300 children with multiple birth defects, 90-100 children with reproductive defects of the extremities, about 140 with spinal hernia (Galkovskaya, 2002).

Statistics record an indicative figure: annually in Ukraine, pregnancy in over than 8,000 women is interrupted by spontaneous abortion in the first trimester. It has been scientifically proven that most cases have genetic etiology. Regarding multifactorial illnesses (cardiovascular, oncological, endocrine, psychological), which are formed when both genetic and environmental factors are interacted, they occupy a relatively small part in the statistics of the morbidity of the population of Ukraine. At the same time, they cause disability of almost two thirds of children with disabilities and are the main cause of high mortality. Unfortunately, the issue of the genetics of multifactorial diseases in our country is paid little attention, even less than hereditary diseases in children. In general, it should be noted that only 3% of Ukrainian children are completely healthy.

At the same time, we would like to note that some knowledge and experience that allow to use a DNA technology for the treatment and prevention of a number of hereditary diseases have already been accumulated. Methods of molecular diagnostics reveal not only genes of hereditary diseases, but also genes, prone to one or another disease. Among the diseases caused by the presence of susceptibility genes in the genome, it is distinguished diseases with a late onset and multifactorial illnesses. First, such as breast cancer, Huntington's disease, Alzheimer's disease, a number of neurodegenerative diseases, can be found even at the birth of a child on the basis of its genetic analysis, but usually the obvious symptoms of the disease develop at a later age. Others, for example, diabetes mellitus, hypertension, atherosclerosis, some cancers are also determined at birth, but their development can only start with the presence of unfavorable external factors of the society. Consequently, if a person with such an inclination avoid harmful influences of environment or adhere to the necessary diet, then they can never become ill with an incurable illness. So, in many cases, the risk of getting sick with a particular disease depends primarily on timely medical diagnosis and a responsible attitude of the person to himself and to his health.

Unfortunately, the level of genetic safety of Ukrainians is extremely low, even threatening. Traditionally, the state's inattention to issues of medical genetics is due to lack of funds. Also, it is often forgotten that, 1 UAH, invested in a screening program for the diagnosis of newborns, will save 10 UAH, which are necessary for treatment in the future. Despite the statements of the Government of Ukraine on the European choice, there is not enough money for screening newborns, which brings to naught the idea of early prevention of the morbidity of the population. Biochemical screening of pregnant women, which together with ultrasound diagnostics can detect up to 80% of congenital pathology in the preterm labor period, is also not carried out. As a result, the process of predicting the health of the Ukrainian population is extremely complicated, because the already conducted studies provide an opportunity to state that the genetic component in the formation of health of the population is much larger than 20% allocated for it for now.

In view of the above, we can talk about the urgency of finding fundamentally new approaches to the provision of medical services, to the medical sector as a whole. The scientific community also claims the necessity of revision of the existing healthcare model towards the so-called predictive model (Biojetuk). Predictive medicine is based on the understanding that certain diseases are programmed genetically, and many diseases are the result of the interaction of genes and socio-cultural environment. The activation of research in this area has created opportunities for predicting human predisposition to certain diseases. Predictive medicine makes it possible to solve the principle in terms of maintaining the health of the problem in the system "triage", namely:

1) To find out the "initial cells" of heredity and compile a human's genetic map;
2) To determine defective genes responsible for the onset of the disease;
3) To identify genes of the individual with various diseases.

Practice shows that only in 100 cases among 4000 already known hereditary diseases genetic defect has been identified. The path of solving these problems is still very long, especially since many hereditary diseases are heterogeneous, and the same disease (f. e., schizophrenia) is caused by the mutation of various genes. Diseases of civilization such as diabetes mellitus, cancer, etc. are separated in this list.

Assessment of predictive medicine possibilities is related to the chances that it gives to the individual and the degree of risk of its use. By expanding and deepening our knowledge about human, predictive medicine can reduce the risk of developing diseases and in some cases, prevent, even eliminate, the possibility of its manifestation due to the appropriate way of life. Genetic analysis (monitoring) makes it possible to draw attention to the dangerous external

effects of a person before they lead to the development of the clinical stage of the disease.

Predictive medicine is the protection of human life, which prevents the risk of disease development and the transmission of diseases to future generations. The difficulties of predictive medicine are related not only to the fact that the functions of many genes are still unknown, but also that the reliability and accuracy of the diagnosis of predisposition to certain diseases are not sufficiently confirmed. At the same time, there is always a question about the human right to medical secrets, the right to deliberately decide what and who they can and should say about their illness. Predictive medicine is a basis for new discussions about what is health, disease, norm, individuality, whether the disease is a private matter or it falls within the competence of society, its collective security.

In this context, it is necessary not to forget about the risks to the human community that potentially predictive medicine bears. So, they are:

a) the danger of the division of people into hereditarily strong and weak (f. e., in the Asian countries the possibility of predicting the sex of a future child will increase the number of abortions if the child is a girl);

b) the danger of a person's reduction to a purely biological being, that is, the danger of reductionism (the principle of asserting the possibility of eradicating the highest phenomena to the lowest) and breeding (the principle of selection, improvement of breed), which denies the will, responsibility and dignity of a person, transformation of latter into an instrument for the realization of a certain goal.

So wherever the predictive medicine threatens human life, exposes it to the irresponsible risk, its principles should be denied. Human life is much more than a simple functioning of the organism, and it is determined not by the genome, but by social, cultural, personal, religious relations. In other words, predictive medicine cannot ignore the ethical problems that apply to absolutely all without exception human beings.

Predictive medicine uses genetic analysis as a method of research, but this is an analysis of only the small part of genome, often for one single gene. Genomic analysis is used in the following cases:

a) to study the course of pregnancy, which allows detecting the presence or absence of pathological features in children before their birth, which in turn allows reassuring parents who are unreasonably worried or prepare them for the birth of a sick child;

b) in case of hiring (if other methods do not produce such an effect) to improve the individual professional protection and prevention of occupational diseases, as well as to remove from performing certain functions in case if hereditary factors pose a danger to the hired employee or the third person;

c) in judicial practice for the identification of the offender or proof of the fact of paternity.

Genomic analysis allows using a gene therapy with a purpose of treatment of genetically determined diseases, elimination of symptoms and the removal of the very cause of the disease. Today, such a therapy is carried out only in the case of monogenic hereditary diseases caused by a change in the structure of one gene, but in the future treatment of multifactorial ailments is not excluded. There is somatic gene therapy and embryonic, when interventions are carried out in the cells responsible for fertilization. In the near future, embryonic therapy will not be practiced due to of pragmatic and categorical arguments against it. The first ones are associated with a high risk that intervention can lead to personal changes as well as abusive opportunities in this area. In addition, for the establishment and development of embryonic therapy, experiments with human embryos are required, which is classified as a criminal act. The categorical objection to the use of embryonic therapy is based on the idea that it changes the genetic basis of the individual and thus violates his personal integrity, and this goes beyond the competence of medicine and is a direct intrusion into the ethical, philosophical, and in the end - of God affairs. Therefore, the attitude to predictive medicine, gene therapy should be very careful, because genetic technologies can save human life and at the same time disturb the problems of philosophical, ethical, cultural, theological nature, which can become fatal not only for the individual, but also for human community as a whole.

Understanding the current state of medicine and the prospects for its development pushes to understand that, under the circumstances, human civilization requires the formation of a new, forward-looking model of medicine, which is preventive medicine (from the Latin praevenio - "outpacing", "warning"). Compared to preventive medicine, it has more volume, more intense with social content. Preventive medicine must prevent unwanted diseases, respond instantly to all technical inventions that are directly related to the person, the protection and preservation of his health. Therefore, it is precisely in preventive medicine that the efforts of not only physicians, but also other specialists such as physicists, chemists, biologists, philosophers, theologians and others can and must be merged.

According to WHO, 60% of human illnesses depends on lifestyle that actualizes preventive medicine even more. This is evidenced by the fact that over the past 50 years, the concentration of sperm in men had reduced twice. 40 years ago, the lower limit of the norm, according to WHO were 60 million sperms per milliliter, then - 40 million, and now - only 20 million. In 20 years many spouses will have to resort to artificial insemination as the only way to give a child. The solution to this problem is found in the principles of preventive medicine.

The latter has found that the reproductive problem is in the plane of the multivectoral direction of human activity and the environmental impact on the individual. Firstly, it is alcoholism. 10% of Ukraine's population are chronic alcoholics. They are afflicted with alcoholic hypogonadism. Cells that produce male hormones are negatively affected by alcohol resulting in alcoholic castration. Secondly, there is the negative impact of mobile phones on the quantity and quality of sperm. As Hungarian scientists have shown, investigating the impact of cellular radio waves over the past three years, that men who were wearing mobile phones in their pockets or at the belts of their pants, had for 20-30% worsening of sperm quality in a year. Especially the effect of cell phone has increased in the shielded room (elevator, subway) through activation of the phone for network search.

Thirdly, work on a computer for 4-5 hours in a row leads to overheating of the sexual glands, which negatively affects their function. Fourthly, the 20-minute presence in the sauna at 85°C leads to decrease in the number and quality of sperm, which can be restored only in 5 weeks. Fifthly, these are diseases associated with fever. It has been shown that the flu or quincy affects the reproductive function of men, which can only be restored in 5 months (Lantukh, Myroshnichenko, 2007).

And in general, the social factor has significantly changed the structure of the diseases. This fact is confirmed by the information of V. Dilthey, who pointed out the 5 main diseases that were the main cause of death. If in 1959 38,6% of patients died from heart disease, 15,7% - from cancer, 11,5% - brain hemorrhage, 3,5% - pneumonia and influenza, 2,1% - atherosclerosis, then at the end of the twentieth century under the influence of the social environment, both natural and social, there was a redistribution of the diseases. Namely, in 1990 11,8% of patients died of pneumonia and influenza, 11,3% - of tuberculosis, 8,3% - of enteritis, 8% - of heart diseases, and 8,2% - of stroke (Arguments and facts. Ukraine). In Ukraine, the structure of diseases has a peculiar "pattern": 24,2% are respiratory diseases, 22,4% are cardiovascular diseases, and 9% are stomach diseases (Komsomolskaya Pravda, , 2000, No. 36).

In our work we aim to prove that humanism is the main principle of predictive and preventive medicine, because it recognizes a person and its' health as the highest value. The principle of the independence is also important, which means that the objects of preventive medicine are all those who need help and support, excluding discrimination based on ideological, political, religious, national and age-specific characteristics; the principle of patient-centeredness, recognizing the priority of the rights of the patient in all cases, except those when they contradict the rights and interests of other people; the principle of relying on the potential of a person, which emphasizes the active role of the patient in solving their own problems, taking into account his intellectual, psychic and physical resources; the principle of confidentiality means that in the process of professional activity a doctor becomes aware of different information about the patient (about the illness, negative habits, mental condition, family problems, etc., whose disclosure to relatives, colleagues and other persons is possible only with the consent of the patient ; information may be used by a doctor for professional purposes in the interests of the patient); the principle of tolerance, which consists in the fact that the doctor works with different groups of patients, including those who he does not sympathize with for various reasons; the principle of maximization is based on the fact that each state should allocate funds for preventive medicine that will be used to prevent people's illness for a decade ahead.

Conclusions

Consequently, predictive and preventive medicine can become and becomes an alternative health care ideology. This is the model of medicine, the essence of which is the personified management of the state of human health and reserves of its body. Therefore, its pragmatic goal is to prolong complete extension of healthy life of a person to natural, biologically determined boundaries. So, the main task is to detect early changes in the organism of the specifically surveyed person, capable of causing the disease, and to take measures that can prevent the disease.

Predictive and preventive medicine has good perspectives. The current scientific progress has provided a qualitative leap in several areas of diagnostic medicine. Radiation diagnostic methods (ultrasound, different types of tomography) achieved high diagnostic value and informative character. Along with this, qualitative changes also occurred in laboratory diagnostics. The development and implementation of automated systems have expanded the range of opportunities, increased the accuracy and productivity of research. With the help of molecular-genetic diagnostic methods detection of asymptomatic carriers of hereditary diseases, determination of genetic inheritance for various diseases such as diabetes mellitus, bronchial asthma, hypertension, and others has become possible/

If the treatment process is based today on the old medical model, where a doctor, a disease and a patient are involved, then, due to the development of predictive and preventive medicine, there is an opportunity for effective and safe treatment, prevention of diseases, and saving financial resources and time of medical workers as well as their patients.

The development of new advancing healthcare principles, models of medicine that society needs today, can only be carried out at the will of society itself, depending on the degree of development of civic self-awareness, the citizens' understanding of the timeliness and urgency of the concentration of collective efforts necessary for the preservation of health of individual, and the human community as a whole.

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