https://doi.org/10.18778/8331-953-7.09

Magdalena Wieczorkowska

The Body and Medicine

1. Introduction

Medicine is inextricably linked to the human body as it is the direct object and goal of the instrumental actions of medical professionals. Along with the development of medical sciences, knowledge about the body and attitudes towards it have changed, not only in this field. Medical knowledge about the functioning of the body influences its perception in society, culture, art, and politics. Progress in medicine itself, the development of pharmacology and medical engineering as well as technology have caused not only changes in the understanding of what the body is but also in what the body can be. Changes in the perception of the human body concern both medical and social sciences.

Michel Foucault's concept of the body as an effect of knowledge/power, Norbert Elias' concept of civilizing the body or the individualization of the body described by Chris Shilling are sociological constructs based on medical achievements. The body becomes a link between sociology and medicine. The sociological concepts of death, dying, and disability are revised by the achievements of technological medicine whereas the development of the latter's capabilities changes the meaning of the body, becoming an inspiration for the research and development of new areas of sociological reflection. As Williams (2003) wrote, the classic divisions between the body and mind, nature and culture or biology and society take on new meanings.

It is worth emphasizing, however, that medicine without social sciences would be an incomplete field. The change in the structure of diseases[1] "pushed" medical sciences into the arms of sociology and other social sciences, as understanding the non-medical determinants of health resulting from lifestyle, place of residence, and place in the social structure became crucial. Therefore, this chapter is interdisciplinary in nature, combining the sociology of the body with the sociology of health and medicine.

1 The change in the structure of diseases is related to the development of medicine and pharmacology and means a decrease in the number of acute and fatal diseases and an increase in the number of chronic diseases.

The aim of the chapter is to show the development of attitudes towards the body along with changing medical knowledge. In a historical perspective, the chapter will take the reader from ancient times, through the Middle Ages to the Enlightenment and the emergence of clinical medicine. In the area of contemporary evidence-based medicine (EBM), the reader will become familiar with the concepts of medical power over the body, as well as the processes of medicalization and geneticization. It will also show key areas relating to the relationship between the body and medicine – the body as a laboratory, the issue of transplantation, and the attitude towards the dying and dead body. The issue of commercialization of the body in relation to medical and health services such as plastic surgery will also be outlined. The last part of the chapter will bring closer the issue of the body of the future in relation to cyborgization in the dimension of medical enhancements.

2. The most important theoretical concepts

2.1. Hippocrates and humors

Since ancient times, scientists have pondered the mystery of how the human body functions, and ideas about its work as well as internal processes have been based for many centuries on the descriptions of Greek scholars. Initially, Greek medical thought was based on practices and beliefs drawn from Mesopotamia, Phoenicia, and Egypt (Brzeziński 2014; Krajewska 2018). The breakthrough came with the works of Hippocrates, based on the observation of clinical symptoms and drawing rational conclusions from them in a scientific manner, which described the relationship between the structure of the body and human predispositions, including those of a social nature.

The so-called humoral model of the body developed by Hippocrates was based on the observation of its functioning, the cyclical changeability of nature (Vigarello 2005; Kalachanis, Michailidis 2015) and views on the four elements: fire, air, earth, and water (Tatarkiewicz 2014). The theory of humors introduced by Hippocrates in the 5th century BC was developed in later centuries, among others in the works of Galen (2nd century AD), who proposed the theory of temperaments, combining the body with the psyche. The elements and their corresponding features (impetuousness, strength, constancy, and changeability) became the basis for the characteristics of the human personality. Hippocratic theory is a model that not only explains how the human body works and changes, but it also defines the balance between health and disease. The Greek scholar described the human body using four substances, the so-called humors. They were bile, blood, phlegm, and black bile, also known as melancholy. Each of these substances, due to its properties, kept the body alive, and their mutual interactions were responsible for body temperature, skin color, and even temperament. Additionally, these four fluids were associated with the elements – fire, water, air, and earth.

The balance between the four fluids determined the health of an individual. Illness was caused by the predominance of one of the fluids. The cause of the state of imbalance could be, among others, our behavior, which today we would call lifestyle. In one of his works – *De acre, aquis et locis* – Hippocrates demonstrated clear cause-and-effect relationships between environmental factors and illness (Brzeziński 2014; Krajewska 2018). In this way, he changed the perception of man and his body and drew attention to the social determinants of health.

The structure and functioning of the human body in humoral theory also determined the character of a person, predisposing them to specific behaviors, activities, actions, and even professions. The psychosocial dimension of humoral theory is still present to some extent today – in social contacts we describe others by referring to the typology of temperaments, assigning specific social characteristics to people we consider choleric, melancholic or phlegmatic. Many contemporary personality theories are also based on humoral theory.

From today's perspective, these considerations may seem somewhat primitive and naive, but they laid the foundations for modern medicine. The scientific nature of Hippocrates' approach is undeniable, and his achievements set the course for the development of medical knowledge for a long time. Although the Hippocratic Oath refers to the gods in its opening words – "I swear by Apollo the Physician, and by Asclepius, Hygieia, and Panaceia, and by all the gods and goddesses, making them my witnesses, that I will fulfill this oath and these obligations according to my ability and judgment,"[2] – Hippocrates is considered the first physician to break with the mystical-religious model of disease in favor of a rational-pragmatic model.

2.2. Illness as a punishment, or a story about the sinful body

The mystical-religious model of illness mentioned above, also referred to as the metaphysical-blaming model, is, alongside the pragmatic-rational model, the most frequently cited way of interpreting illness, as well as the physical and psychosocial changes it causes. Both models have their social conditioning because each of them describes the role of the sick person and their relationship with the environment in a different ways. The metaphysical-blaming model was formed in ancient times – the belief in the divine origin of illness was present in Egypt and Phoenicia, and also reached Greece (Jouanna 2012). Historical evidence for the assumption of the divine origin of illness can be found in ancient literature, e.g., in the works of Homer, Hesiod, in addition to the works of Herodotus or Thucydides (Williams 2003).

The development of scientific knowledge led to a departure from this deterministic vision of human life, in which people were subject to the grace or disgrace of higher powers. The works of the previously mentioned Hippocrates contributed to this. The metaphysical-blaming model returned in the Middle Ages, along with the growing role of Christianity and the Catholic Church as institutions. Medicine

2 The quote comes from the website of Okręgowa Izba Lekarska [Regional Medical Chamber] http://www.oil.org.pl/xml/oil/oil50/tematy/prawo_oil/hipokr (accessed: 25.09.2021).

itself remained under the strong influence of the Catholic Church, as a significant number of medieval physicians came from clerical circles (Reiser 1985; Dougherty 1993; Jouanna 2012; Le Goff, Truong 2018; Krzysztofik 2020). During this period, the perception of the human body in strictly moral categories also strengthened. On what assumptions was the metaphysical-blaming model based? First of all, the body appeared in opposition to the soul – the former belonged to the profane, the latter to the sacred. The body was seen as the center of the earthly order, while being condemned as a seat of evil and cared for as a reservoir of the soul, an instrument of suffering that brought one closer to God and salvation. Illness appeared as a result of human actions and misdeeds; it was seen as a punishment for sins, but, at the same time, it gave a chance for redemption, because it caused a person to suffer physically, like Christ dying on the cross. Illness was, thus, an impurity of the body and soul, therefore, both were treated. The social dimension of human life was religiously determined, and the disease itself was more moral than physical, although its manifestations were very physical.

This model, devoid of religious overtones and with a dominant element of blame, is also present today – many diseases have an environmental basis and are related to an individual's lifestyle. People suffering from, for example, AIDS or venereal diseases are stigmatized because there is a presumption that the sick person contributed to the development of the disease and, as a result of their bad/immoral behavior, was punished in the form of a specific disease. In 2008, the media reported the death of a six-month-old child who had been identified as having a rare metabolic disease associated with a deficiency of the LCHAD enzyme. In Poland, about 100 people live with this disease, 37 of whom live in the region of Kashubia (northern Poland). The disease has a genetic basis and manifests itself in infancy. The patient's body does not produce (or produces too little of) the enzyme responsible for fat metabolism. When the sugar level in a healthy person's body drops, energy is drawn from fats. In patients with LCHAD deficiency, the drop in glucose levels damages the nervous system and muscles. The fact that over 1/3 of the sick are the residents of Kashubia has caused the disease to change from a rare genetic disease into an "ethnic disease" and has led to the "creation of a negative stereotype of Kashubians as a closed group, burdened with a genetic disease, cultivating outdated customs (endogamy)," (Kwaśniewska 2018).

Stigmatization or branding is a social reaction to an objective definition of a disease. This term, used in 1963 by Erving Goffman, refers to any attribute that discredits an individual in the process of interaction (Goffman 1990). Stigmatization is usually a consequence of labeling. In the medical context, defining a patient's condition in terms of a disease gives them a label of a sick person. Depending on how this label is perceived by society, it can become a cause of stigmatization or branding of the sick person. This, in turn, leads to unequal treatment, marginalization, and exclusion.

2.3. The birth of modern medicine – the biomedical model of the body

With the weakening role of the Catholic Church and the simultaneous development of science, knowledge about the human body and its functioning evolved. From the 15th century, when medical schools began to free themselves from the domination of the Church, there was also a change in education in this field. The works of scholars such as Leonardo da Vinci and Vesalius, based on dissections of human cadavers, enabled the verification of earlier views on the anatomy and physiology of the human body. Medical knowledge, increasingly based on empiricism, also reached for philosophical trends of thought. 17th-century science was inspired by Cartesian philosophy, while in medicine the concept of psychophysical dualism, presented by Descartes in *Principles of Philosophy*, took on particular significance:

> And although a substance is known by any attribute, nevertheless, every substance has some principal property which constitutes its nature and essence and to which all other properties are reduced. Thus extension in length, breadth, and depth constitutes the nature of a bodily substance; and thought constitutes the nature of a thinking substance. For everything else that can be attributed to a body presupposes extension and is only some modification of an extended thing; just as everything that we discover in the mind constitutes only various modifications of thought. Thus, for example, nowhere else but in an extended thing can form be conceived, and motion only in extended space; and nowhere else imagination, or feeling, or will, but in a thinking thing (Descartes 1960: 39–40).

The mind (*res cogitans*) was characterized by thought and consciousness, while the body (*res extensa*) was characterized by extension in space.

Descartes' considerations caused life processes (not only in relation to the human body, but to nature in general) to be perceived as purely material, mechanical. The body, as *res extensa*, was subject only to mechanical processes, and the soul was reduced to a thinking substance (Lampart 2020). The separation of the soul and the body and the mechanistic vision of the latter became an attractive trope for the developing medicine, which proposed a biomedical model of disease and an accompanying scientific vision of the human body as an object of interest to physicians.

In 1878, Louis Pasteur announced that diseases were caused by microorganisms. This discovery was expanded upon by Robert Koch, who clarified that specific bacteria caused specific diseases. Thus, the single-causal model of disease known as the biomedical model became the dominant paradigm in medicine until the early 20th century. Together with Cartesian dualism, it caused medicine to focus on finding and removing a specific cause from the body, or, more precisely, from the diseased part, and completely neglected the psychosocial side. The human body at that time appeared as a machine made of interconnected and interdependent parts, and the role of the doctor was similar to that of a mechanic who had to find and fix the fault. The social causes of disease were also ignored (Germov 2019). The biomedical model also recognized that the proper place to treat this "damaged" body was the hospital. The body became describable and measurable in scientific terms, the patient became subject to medical decisions, and the disease appeared

as an objective, undesirable state. Hospital medicine introduced four innovations: structural nosology, localized pathology, physical examination, and statistical analysis (Williams 2003). Such a perception of the body caused several important consequences (Germov 2019):

- objectification – the body-soul dualism focuses on repairing damaged parts of the body-machine; this can lead to objectification – patients are treated as sick bodies or cases and are not perceived as unique individuals with their own individual needs; the patient is not treated holistically;
- reductionism – there is a reduction within the human body – from organs to cells, from cells to molecules and genes; at this level, the psychosocial causes of disease are completely lost;
- specialization – a consequence of reductionism is the belief that a specific organ can be treated in isolation from others, which, in turn, leads to a growing number of specialists (cardiologists, endocrinologists, gastroenterologists; within these specializations, more specialists follow – doctors specializing in the treatment of a specific organ appear, e.g., a hepatologist);
- biological determinism – as a consequence, reductionism often also leads to the belief that biology determines a person's social, economic, and health status, and not the other way around; biological determinism is dangerous because it can legitimize social inequalities – if health or social inequalities are considered to be biologically determined, the belief that little can be done to change it becomes legitimized;
- the blame approach – the final consequence is that the cause of a disease and its cure are located solely within the individual, while ignoring the social context of health and disease – "Instead of asking why disease occurs and trying to remove these conditions, medical researchers try to understand the biological mechanisms of disease development so that they can influence them," (Capra 1982: 150); focusing on treating the individual can lead to the use of the blame approach – diseases can be seen as a kind of genetic fatalism or as the effect of individual lifestyle choices. Such an approach seems to completely ignore the role of environmental variables, such as living or working conditions, which result from the specific location of the "sick body" in the social structure.

The biomedical model led to objectification of the human body, as well as its progressive fragmentation. Instrumental medical intervention concerned the sick organ, which medicine was supposed to repair at all costs. Not only did the holistic approach to people, which appeared in antiquity, lose its importance, but also the body itself ceased to appear as a whole, and the growing specialization within the medical professions caused its specific decomposition. Reparative medicine, as an effect of the biomedical model, sets the main goal of restoring the health of the sick body (or more precisely, its parts), but it is not interested in the disease from a biopsychosocial perspective. Additionally, medicine was established as the only institution that could control the health and disease of an individual. This growing role of medicine was noticed after World War II, and the processes of medicalization became the analytical framework for the transformation of evidence-based medicine (EBM).

2.4. Medicalization processes

The relationship between the body and medicine is inextricably linked to the processes of medicalization. These processes mean that medicine is entering subsequent areas of human life and making them a territory of exploration for medicine (Conrad 2007; Wieczorkowska 2012b; Clark 2014; Nowakowski 2015). Since the body is the most direct object of medicine's impact, the processes of medicalization are simultaneously the processes of the appropriation of the human body by medical institutions. Medicalization understood as a form of medical social control is not a new phenomenon, but progress in medicine means that the processes of "making medical" subsequent areas of human life have intensified in recent decades. The processes of medicalization are not uniform, they are differentiated by:

- The dynamics of medicalization – in macrostructural terms, an intensification of medicalization processes is observed; nevertheless, in relation to specific phenomena, states, and behaviors, one can speak of different degrees of medicalization and different intensities (Conrad 2007). In the case of bodies, the female body is much more subject to medical jurisdiction than the male body (Wieczorkowska 2012a, 2015, 2016). Peter Conrad wrote about the gendering of medicalization processes (Conrad 2007).
- Territorial scope – speaking of medicalization, one means processes typical for contemporary capitalist societies (Nowakowski 2015).

Medical social control dates back to ancient times – Greek scholars wrote about the need to supervise people suffering from madness. The basis of control was nonconformism in the behavior of the patient. Michel Foucault placed the beginnings of modern medicalization in the second half of the 18th century and it was associated with the development of medicine itself as well as medical institutions (Foucault 1999). The first works devoted to the entry of medicine into subsequent areas of human life in addition to the use of medical terminology and procedures in reference to states, characteristics and behaviors that were previously treated as natural or were under the jurisdiction of other institutions appeared in the 1950s and 1960s (Conrad 1992, 2005; Conrad, Schneider 1992). They emphasized the negative consequences of medicine appropriating phenomena that had no biological basis (such as poverty or unemployment) and criticized the arbitrariness of diagnostic criteria in addition to the fluidity of the boundaries between the norm and pathology. Medicalization at that time was top-down in nature and consisted in the imposition by the medical elite as well as medical institutions of diagnostic and therapeutic frameworks on natural physiological states, life failures, family or social problems. Medical imperialism, the transmission of medical knowledge-power, and medical social surveillance from top to bottom, from elites to the general public, were the subject of interest of researchers such as Erving Zola, Ivan Illich, and Talcott Parsons.

Since the end of the 1980s, a change has been observed, consisting in the reversal of the direction of medicalization (Conrad 2005, 2007). Currently, medicalization is bottom-up, and medical professionals are one of many and not so significant actors in these processes. Currently patients and consumers themselves, associations,

groups and social movements, and at the mezzo- and macro-level – health economics, the pharmaceutical industry and genetics are the driving force behind the medicalization of subsequent areas of life, as well as the internet (Miah, Rich 2008), and architecture (Zardini, Borasi, Campbell 2012). In his analyses, Peter Conrad, a leading researcher of medicalization processes, emphasizes the multidimensionality of this phenomenon and draws attention to the growing role of new actors in the processes of medicalization. Giving the field to medicine is caused by growing social expectations related to the category of success, which has become a kind of pan-value in American society.[3] A lack of success in a particular field (e.g., education) is not a weakness of the intellect; difficulty in concentrating and hyperactivity are not character traits or deficiencies in upbringing, but the symptoms of a disease (the medicalization of underperformance). The ease with which medicine has been taking over subsequent areas and exerting power over the body and life is caused by growing social expectations regarding the fitness and efficiency of the body in addition to its appearance, but also by growing expectations towards medicine itself, which from corrective medicine has become a medicine of fulfilling desires. Illness increasingly becomes a wall behind which one can safely hide from the demands and expectations of the outside world; it is an excuse and it generates the expectations of a different, concessional treatment.

Medicalization can manifest itself in the use of medical language to describe phenomena, states, and behaviors, and in the use of medical procedures instead of educational, upbringing, legal, and social solutions.

Medicalization does not affect women and men equally, and this is related to the perception of women and their bodies in the past. Until the 18th century, the so-called **unisex model** of the body functioned. It was assumed that there was one biological sex (male), and the difference between women and men was a difference in the "degree" of intensity of certain features, not a qualitative difference. In humoral theory, this difference was a combination of humors. The model of the biological body was a male model, and a woman was its worse variant, with male genitals placed upside down in the abdominal cavity (Laqueur 1992; Park 2010; King 2013; Buczkowski 2017). In the 18th century, the uniqueness of the female body (mainly the reproductive system) was "noticed," but with its discovery (and emancipation, which was accompanied by a symbolic exit of women from the domestic into the public sphere), the female body became the object of interest of "male medicine," i.e., dominated by men and adopting a male point of view. Hence, many more medicalized states, behaviors, and phenomena concerned women than men. Nowadays, the male body is also increasingly becoming a field of medical annexation, piece by piece. When speaking about medicalization, attention is drawn to three areas (Waggoner, Stults 2011):

3 It was also to this that Talcott Parsons referred in his works in the 1960s, constructing the role of the sick person.

- The medicalization of normal life events – female infertility, menopause, aging, menstrual control, childbirth, premenstrual syndrome, erectile dysfunction, and andropause.
- Biomedical and aesthetic enhancements – plastic surgery (breast augmentation and reduction, blepharoplasty, buttock implants, liposuction, leg lengthening, voice and vagina rejuvenation, calf and chest implants), dermatology, cosmetology, steroids, blood transfusions, baldness therapy, hair transplants, and stem cell transplants.
- Medical supervision and interventions – mammography, cytology, prenatal care, and circumcision.

In the case of the medicalization of physiological processes such as pregnancy or aging, medicine appropriates these areas, defining them as requiring medical supervision and intervention. Since female physiology in terms of reproductive functions is different from male physiology, women experience medical practices in this area more often than men. Biomedical and aesthetic improvements are an area in which medicalization is mainly bottom-up in nature – it is the clients who demand to have a procedure performed, to improve their – usually healthy and fit – body. And although plastic surgery had its origins in procedures to reconstruct damaged or deformed body parts, it is currently associated mainly with the sphere of aesthetic improvements. They are mainly used by women, but increasingly often by men as well. The growth of social expectations regarding the body stimulates the development of medicine in the area of improvements; the body is transformed and modeled, health has become a product purchased on the medical market, and its resources are determined by the financial situation, as well as individual needs of the client. The last area – medical supervision and interventions – is the use of medical instruments to control the health of the population and monitor their health capital in order to maintain the economic and social efficiency of the state. Preventive programs and screening tests are intended as the medical supervision of citizens' bodies which may result in, if necessary, a medical intervention. Of course, there is also a measurable positive effect of these programs and tests – they enable the identification of risk groups or the detection of diseases at an early stage, and can consequently significantly reduce the risk of illness or – in the case of detection of an illness – allow the sick person to decide whether and how to treat the illness, which can be interpreted as Goffman's stigma management (Goffman 1990).

Medicalization is a contemporary form of power over the body. It is power based on scientific knowledge, supported by expert authorities. According to Michel Foucault (2006, 2010), it is a form of supervision over the body of an individual and the population as a living organism. The task of this power is to discipline, supervise, subject to regimes, and control bodies distributed in space. Life and survival become the central category; population measures such as the birth rate and morbidity determine population health, as well as define the directions of specific policies (health, education). The institutional location of this power is the state, but this power is exercised on the basis of medical expertise, which becomes the basis for

the normalization of society. This, in turn, takes place through the "measuring" of bodies as such and their vital parameters. The medical norm becomes a cultural norm, while care for health and the body become a moral imperative. It is the product of a specific discourse and specific knowledge, and it is not universal in nature. Foucault (2020), describing the process of normalization, referred to the example of prisons and punishments, but it can also be found in reference to medical power over the body, which is measured, compared, homogenized, hierarchized, and excluded as a consequence of having certain diseases. Medical standards usually change as a result of the development of medical knowledge, while experts in the field of health and disease recommend specific actions that are the basis of state policy towards citizens and, at the same time, is an instrument of medical supervision and social control.

The development of medicine has led to a change in the structure of diseases – thanks to vaccinations, antibiotics, and the popularization of knowledge of hygiene and asepsis, diseases that used to decimate human populations have ceased to pose a threat to them. The so-called epidemiological transition (McKeown 2009) shows how – since the beginning of the 19th century – mortality resulting from infectious diseases has decreased and how they have been "replaced" by chronic and civilization diseases. This epidemiological transition can also be viewed from the perspective of medical power over the body, because controlling infectious diseases was possible thanks to discipline and regimes such as mass vaccinations (tuberculosis, polio), isolation, taking medications, and monitoring the effects of treatment. Modern medicine controls not only the course of a disease and the treatment process, but also the health of a population, subjecting bodies to measurement and monitoring in order to detect even the smallest irregularities and deviations from the norms. For the price of safety, individuals give up the autonomy of their own bodies, subjecting them to progressively more numerous medical procedures.

Initially, medicine was of a **remedial** nature – its task was to heal and restore the body to health. Currently, alongside this branch dealing with the sick, disabled and ineffective body, there has emerged the **medicine of fulfilling desires**, or the medicine of improvement, in which health becomes the central category as an area of intervention in addition to supervision by medical institutions and professionals. While in the case of remedial medicine a person is forced to use its services, the medicine of improvement is an area that an individual enters voluntarily. A new category appears between health and disease – health risk. Monitoring body functions, defining the boundaries between the norm and pathology, and analyzing the socio-cultural conditions for the occurrence of specific diseases have led to the emergence of the area of health risk management. A body that is on the borderline between the world of the sick and that of the healthy is a body that is treated as sick and subjected to diagnostic, therapeutic as well as curative procedures, even though the disease is not yet an objective state in which the individual finds themself. **Preventive medicine** (Courtine 2020) exerts power over a still healthy

body, making it dependent on the knowledge and skills of medical specialists. This constant monitoring in search of potential diseases escalates the fear for one's own health and life, as well as makes the body seem uncertain and posing a threat to its owner, which in a world of risk has its rational justification. Medicine, however, goes a step further, also trying to predict and create the body – the ability to describe the human genome gives the possibility of anticipating the fate of an individual in the distant future in addition to designing a body free of defects and equipped with specific improvements. **Predictive, personalized, preventive, and participatory medicine** (4P) is a model of the medicine of the future, but today we can already observe the first achievements in this area related to the development of genetics and bioengineering (Głos 2017; Pasowicz 2013).

2.5. The body at the mechanic's – remedial medicine

In relation to the model of medicine focused on treating specific diseases, we can speak of a mechanistic approach to the human body, which was previously characterized within the biomedical model. The assumptions regarding the doctor –patient relationship show that the latter, depending on the type of ailment, is to passively submit to medical procedures and the authority of specialists (activity vs passivity), cooperate recognizing the doctor's authority (direction vs cooperation) or become a partner and be able to decide on their own treatment to a certain extent (participation) (Szasz, Hollender 1956; Sokołowska 1986). Therefore, the body, to a greater or lesser extent, is subject to repair without the participation of the patient. Only the last relationship, characteristic of chronic diseases, means that the patient is treated holistically, and the power over their body weakens, which is also to some extent the effect of medicine's helplessness in the causal treatment of this type of ailment.

It is worth mentioning here a special case of diseases – those that cause epidemics. AIDS, which took its toll in the 1980s, changed the face of the discourse on disease and treatment of the patient, while the SARS-CoV-2 pandemic initiated a debate on autonomy, freedom, and the limits of interference in the life and body of a human – a citizen, becoming a perfect exemplification of Michel Foucault's model of biopower. Emerging epidemics have another significant effect on medicine itself, perceived as a type of power and control over human life – they undermine[4] its authority and weaken its power over the body, leaving the door increasingly ajar for skeptics who do not believe in the scientific nature and validity of the medical solutions used. The media coverage of 20th-century epidemics also means that the sick body (and the sick population) becomes the subject of public debate and is shown and explained in the context of a disease. AIDS was the first disease that

4 There is, of course, an inverse relationship, which involves the strengthening of the position of medicine among the supporters of medical interventions and solutions, e.g., the supporters of vaccinations, but in this context the point was to show that situations such as an epidemic are a kind of test for the privileged position of medicine.

– through its media exposure – stripped patients, including celebrities, of their privacy (Courtine 2020). At the same time, it made people realize that in the face of the risk of disease, we are equal, while inequalities concern the chances of appropriate treatment. While AIDS drew attention to the importance of prevention in the spread of disease, COVID-19, the disease caused by the SARS-CoV-2 virus, showed the strength of the relationship between expert knowledge and political decisions disciplining as well as controlling the bodies of citizens through isolation, quarantine, social distancing (which is in fact physical distance), the use of personal protective equipment (masks, disinfectants, and gloves), the "COVID passes" used in some countries to allow shopping during a hard lockdown, vaccination certificates differentiating access to public space for vaccinated and unvaccinated people (an element of the so-called sanitary segregation), and, finally, the bans on touching objects in public space without a clear need (e.g., items in stores) used in some countries. In this case, preventive measures of this nature were the only possible instrument to use in the fight against the spreading virus. Healthy bodies were subjected to preventive regimes, while sick bodies underwent medical procedures aimed at saving them at all costs.

In addition to epidemics (those recurring such as malaria or completely new such as SARS-CoV-2), we are currently dealing with a rise in the number of chronic conditions. The latter means that at the time of diagnosis, the patient becomes bound by a strong relationship with healthcare entities and their representatives. One could risk the thesis that chronic disease causes addiction to medicine, which alleviates symptoms, increases the comfort of life, and prolongs it. Modern achievements in medical knowledge and technology allow such patients not only to live long, but often also happily. Chronic disease or disability sometimes becomes a pretext for patients to cross boundaries and test their bodies – such people often embarrass healthy people with their strength, fitness, and achievements (e.g., Paralympians). This is possible not only thanks to reparative medicine, but also thanks to bioengineering, which goes beyond simple repair – enablement becomes improvement (Piore 2019). In one of the following subchapters, these threads will be described in more detail.

It is worth mentioning here an important area of reparative medicine, namely transplantology. Transplantation, i.e., the transfer of tissues, cells or organs within one or several organisms, is the only chance for many patients to continue living. The first attempts at organ transplantation took place in ancient times, but transplantology as a science developed in the second half of the 20th century (Nogal, Wiśniewska, Antos 2016).

The 1960s were a breakthrough moment for the development of global clinical transplantology thanks to the improvement of transplantation techniques, learning how to recognize and treat the process of transplant rejection, introducing methods of storing organs (using preservative fluids), and discovering a new generation of drugs – immunosuppressive drugs (Nogal, Wiśniewska, Antos 2016: 116).

When talking about transplants, the context of the recipient, donor, and family must be taken into account. Organs for transplantation are taken from either living

and dead people. In a situation where the donor gives an organ during their life, we are most often dealing with a family transplant (of, e.g., kidney or liver). The donor and recipient know each other, but the very fact of the disease and the need for a transplant changes the family relationship. Often, loved ones feel obliged to be a donor against themselves, while the recipient may expect this and demand a transplant or, conversely, feel awkward but afraid to refuse. Extracting organs from a deceased donor is subject to legal regulations.[5]

Allogeneic transplants (between two people of a similar genotype) create a special bond between the donor and the recipient. The very fact of "exchanging" an organ may be associated with anxiety, depression, and withdrawal in the recipient. The early postoperative period is a time when the recipient begins to think about the donor. It is assumed that the donor's anonymity should be maintained to prevent emotional burden and unnecessary ideas about the donor (Gulla 2006). After a transplant, it may be difficult for a patient to accept the new organ; sometimes disturbances in the perception of their own body appear, and patients feel grief over the loss of their organ, mourn it, and regret the decision to have a transplant. Some fear that the transplant will change their identity, that they will take on the recipient's personality traits (Engle 2001; Rainer, Thompson, Lambros 2010).

In 2020, 1,180 transplants from deceased donors and 59 from living donors (kidney and liver fragments) were performed in Poland (Poltransplant 2020). The kidney was the most frequently performed procedure (717 from deceased donors and 31 from living donors). 1,269 cornea transplant procedures were also performed. In December 2020, the number of people waiting for a transplant was 1,806, of which over 1,000 were people waiting for a kidney. According to the 2016 report of the Public Opinion Research Center (CBOS) (Feliksiak 2016), 80% of Poles agree to have their organs harvested for transplantation after their death. Unfortunately, 75% have not discussed this with their loved ones. At the same time, as many as 89% of people declared that if they knew that their deceased loved one had not objected to having their organs harvested after death, they would respect this decision. 20% of the respondents knew that the principle of presumed consent applied in Poland.

2.6. The body at risk – preventive medicine

Preventive actions are to relieve remedial medicine in the instrumental sense, and the healthcare system in the economic one. According to the principle of "prevention is better than cure," individuals who are part of broader categories and groups (referred to as risk groups) are subject to monitoring and control of selected

5 In Poland, presumed consent applies – if the donor did not object to the removal of their organs during their lifetime, this is tantamount to consent. Article 5 of the Act of 1 July 2005 on the collection, storage and transplantation of cells, tissues and organs states: "The removal of cells, tissues or organs from human corpses for the purpose of transplantation may be performed if the deceased person did not object during his or her lifetime," (Anon 2005). In practice, the family of the deceased often does not consent to the extraction of organs even when the deceased had not objected to that in writing and there are no formal obstacles to the extraction of organs.

parameters. This type of power over the body has political and economic significance – population health translates into economic efficiency of a country. This constant measurement and reference to norms causes the individual to escalate their fear for their own health, and the latter becomes a risk factor for disease. In their book *The Medicalization of Cyberspace*, Andy Miah and Emma Rich (Miah, Rich 2008) described the phenomenon of medicalization of the internet towards the chronic care web and preventive web. The latter is a proposal for healthy people who are looking for information on improving their fitness and avoiding threats. A new type of citizen is emerging – the healthy cybercitizen – whose task is to maintain and improve their fitness by using available medical tests and measurements. To achieve this, it is necessary to cooperate and seek the opinions of experts and advisors who, although not being medical professionals themselves, refer to the authority of medicine to give credibility to their recommendations (Bunton, Burrows, Nettleton 2003).

2.7. The plastic body – medicine for fulfilling desires

The possibilities of modern medicine go far beyond repairing the human body to the extent to which it has been damaged. Another field has evolved from remedial and reconstructive medicine, the aim of which is to improve and enhance the human body. Aesthetic medicine, plastic surgery, cosmetology, dermatology, and physiotherapy are examples of areas in which the central category is the concept of health, and the primary goal is to improve it, strengthen it, and, as a consequence, make someone healthier. Being fit, beautiful, and well-groomed is becoming synonymous with health and a cultural norm (Bauman, Kunz 2012), which determines the social position of an individual, their chances on the job market, in partnerships or social contacts.

The commercialization of medical services means that the body has also become commercialized; it is an investment, a commodity, and an instrument (Gałuszka 2015; Wieczorkowska 2015). We talk about the McDonaldization of medicine, showing that it has become a service activity governed by the laws of supply and demand (Williams 2003; Gałuszka 2013), and the body subjected to commercialization is simultaneously under the jurisdiction of medicine. The medicalization of appearance is largely a women's experience, hence Peter Conrad, writing about contemporary medicalization, has emphasized that these are gendered processes (Conrad 2007).

What are the consequences of the expansion of medicine into fulfilling desires for the human body? Apart from the fact of its further medicalization, which is manifested by the appropriation of the health sphere, it is a change in the perception of one's own body. It becomes malleable, modifiable, and begins to be treated in terms of a project (Wieczorkowska 2012a, 2015; Staniec-Januszek 2019). It ceases to be perceived in naturalistic categories as a biological object that can only be changed by the passage of time (Nettleton 2007; Jakubowska 2009; Kluczyńska 2016), but instead it appears "moldable" and "creatable" according to the needs and desires of the individual. Hence, medical procedures aimed at improving appearance are referred to as the medicine of fulfilling desires.

One body is aestheticized, individualized, experienced, and distinct from other bodies (Shilling 2021). It is a potential, a possibility, and a capital shaped by individual ideas, but also by culture and social relations (Turner 2008; Bieńko 2009), thus also becoming a carrier of social inequalities in the sphere of health. Writing about the body as biological capital, Honorata Jakubowska (2009) wrote about three dimensions of its differentiation:

- the initial base, i.e., the biological body;
- capital management – the possibility and ability to transform the body, also in terms of reversing the processes that concern it; and
- the protection of capital against threats.

Medicine causes the body to be beautiful, but also to remain young. By removing the signs of aging, it also pushes away the prospect of death, making it a taboo subject.

The pressure on medicine is also a consequence of the belief in the uncertainty of one's own body – it appears as fragile, delicate, and imperfect, which is why it is so eagerly subjected to improvement (Williams 2003; Nettleton 2007). The fluidity of the human body enables it to be designed, starting from the color of the hair and eyes, through the shape of the face, the size of breasts, height, and the shape of the figure, and ending with sex.[6] The body is a possibility limited by the progress of medicine, one's own imagination, and the depth of one's wallet. This gives rise to the previously mentioned inequalities in the sphere of health, reinforcing its gradual nature and market dimension. Repeatedly having procedures causes undesirable medical consequences, and each of them causes psychosocial changes – identity disorders, addiction to procedures, and disturbances in the perception of one's own body (body dysmorphic disorder).

2.8. Traditional and alternative medicine

Traditional ways of dealing with ailments have accompanied people since the beginning of time. In many regions of the world, methods based on herbal medicine, acupuncture, crystal therapy or light therapy are still more popular than evidence-based medicine. Many methods and techniques originating from traditional medicine have been transferred to Western societies, giving rise to alternative medicine, also known as complementary, although it is often – owing to a lack of documented scientific basis – referred to as non-medical treatment (Piątkowski 2014).

One of the most important differences between EBM and alternative medicine is the perception of disease in holistic categories. In the case of the latter, the patient appears as a biopsychosocial unity, while the disease is considered as a psychosocial and cultural phenomenon, and only then as a biological one. In many approaches in the field of alternative medicine, a disease is not distinguished from other forms of the so-called bad luck; the body, mind and soul form a unity as well as interpenetrate each other, and a disease does not always have a biological basis (Sokołowska 1986).

6 It is also worth mentioning such procedures as: vaginal rejuvenation, vocal cord rejuvenation or lower limb lengthening.

Despite much evidence of the psychosocial basis of somatic diseases, medicine based on the biomedical model has still not met the expectations of patients. Therefore, **mind-body medicine** seems promising, being an area of medicine that uses a variety of techniques designed to increase the efficiency of the mind and psyche to cope with somatic problems (Astin et al. 2003; Wolsko et al. 2004). The most popular techniques include relaxation, meditation, hypnosis, biofeedback, cognitive-behavioral therapy, and psychoeducation. With the growing demand from patients for a partnership and personal relationship with their doctors in addition to a demand for a holistic approach to health problems, this type of medical intervention seems promising.

2.9. The body depicted by medical technology

Medicine is a special case of violating the intimacy of the body. A visit to a doctor usually involves the need to expose the body and show it to a stranger who, due to their profession, has the possibility of physical contact with it. This violates the rules of social relations because in formal, official contacts, a lack of physical contact is assumed, and it is often prohibited by law. The doctor-patient relationship is one of the few exceptions[7] where this rule does not apply (Anon 2012). The patient must expose their body and place it in the hands of the doctor for diagnostic and therapeutic purposes. This is often associated with a sense of discomfort for the patient, who is ashamed of their imperfections, scars or deformities (Szary 2014; Gulla, Izydorczyk, Kubiak 2019). Religious or cultural conditions can further complicate this relationship and increase the patient's anxiety and discomfort (Padela, Pozo 2011; Bagheri, Alali 2017).

In the conditions of modern medicine, a physical examination is only the beginning of a journey into the depths of the human body, because in order to make a diagnosis and then apply treatment, the body comes into contact with medical equipment that X-rays its interior. Before medicine reached the point where – thanks to medical technology – it could look into the most inaccessible areas of the human body, it was based on guesswork and fantastical imaginations. A breakthrough in understanding human morphology was made by Andreas Vesalius in the 16th century. In 1543, he published his work *De humani corporis fabrica*. The author included precise engravings of all parts of the human body and their detailed descriptions. Interestingly, Vesalius based his works on animal dissections (Jędrzejewski 2013). A little earlier, Leonardo da Vinci, breaking the then applicable rules, performed dissections on human bodies (Legierska et al. 2009). The sketches and drawings he left behind perfectly show human anatomy. As the authors of the article about Leonardo wrote:

7 Other examples of formal relationships with acceptable physical contact include a visit to the dentist, beautician, piercer, tattoo artist, hairdresser or physiotherapist, and participation in dance or yoga lessons.

> For scientific and didactic purposes, he presented the structures he was examining from every side and sometimes in cross-sections. He tried not only to learn about their structure, but above all to learn, understand and explain their function. Such an understanding of anatomy had never been known before him or in his contemporaries. He is the first anatomist in the modern style (Legierska et al. 2009: 74–75).

A groundbreaking instrument that enabled "listening" to the interior of the human body was the **stethoscope** invented in 1816 by Rene Laennec (Bishop 2018). This invention revolutionized medical practice and the doctor-patient relationship as it allowed physical distance to be maintained. At that time, this was of great importance since hygienic procedures such as bathing were not very popular.

Another revolution in medicine came in 1895 when Wilhelm Röntgen discovered **gamma radiation** and used it for the first time to X-ray the human body. **Medical radiography** has found wide application in surgery – it was used to locate foreign bodies, bullets or fractures. Thanks to the efforts of Maria Skłodowska-Curie, military trucks were equipped with X-ray machines (Courtine 2020). Radiology became the prototype of a no-touch examination, in which there is no direct physical contact between the patient's body and the person taking the picture.

Imaging studies have changed medical practice and shaped the image of one's own body in the average person (Courtine 2020). They are performed on living people (although radiography or tomography can be performed on cadavers, too), not on the dead, like autopsies, and are less invasive, although risky (especially when contrast is required). Since the 1920s, medicine has been interested in achievements in physics and chemistry related to radioactivity (Lawson 2012). In 1942, Enrico Fermi from Chicago created a nuclear reactor, and after World War II, since 1946 it has been used to produce radioisotopes for medical purposes. The name "**nuclear medicine**" was first used in 1952. Today, radioactive isotopes are used for both the diagnostics and treatment of patients (diagnostic and interventional nuclear medicine). Scintigraphy, positron emission tomography (PET), three-dimensional SPECT tomography are names that sound scary to patients and are associated with the negative effects of radiation. Currently, the achievements of nuclear medicine are employed by cognitive sciences to study the work and functions of the human brain (Courtine 2020). In this way, medicine looks into human thinking, leaving for the individual not even a piece of the body that could hide a secret.

Another type of examination that has enabled us to delve into the secrets of the human body is **ultrasonography**, which uses ultrasound for imaging. This method, known already during World War II, became popular in the 1960s and 1970s. Currently, it is used, among others, to detect tumors, ulcers, cysts, and also serves as a tool for assessing fetal development, but its application is much broader and includes such specializations as anesthesiology, angiology, ophthalmology, neonatology, emergency medicine, and cardiology. Ultrasonography takes on particular importance in relation to pregnancy. The possibility of observing the development of the embryo and fetus has had at least two consequences. First, it has sealed the psychological bond between the mother and the unborn child. Second,

it has contributed to a change in the understanding of the beginning of life, which, in turn, has sparked a debate on the possibility of ending it through abortion. According to some (Courtine 2020), ultrasound has become an instrument in the hands of the state and the Catholic Church, being a new form of supervision over a woman's body, causing its expropriation and taking away some of the rights of women to decide about their own bodies and, consequently, their lives. Conversely, prenatal tests, especially imaging, can escalate fear in expectant mothers about the correct development of the fetus and cause the time of joyful waiting to become a time of unpleasant anxiety (Puzewicz-Barska, Tarasiewicz 2004). The decision to have an abortion for therapeutic reasons (because of an irreversible or severe fetal defect) may be difficult precisely because the expectant mother has seen the fetus in her womb and it is easier to personalize it. Since the 1970s, American law has recognized the right to be born without disabilities, commonly known as the right to "non-existence" (Justyński 2003), which is used by disabled children who sue their mothers for compensation for "wrongful birth," using medical records such as ultrasound (Courtine 2020).

2.10. Virtual medicine and e-health

It is worth mentioning here the use of imaging and visual images for procedures and consultations. Medical technology is not only becoming more intelligent, but is also becoming smaller – some tools are becoming smaller and handier, procedures do not require extensive surgical intervention, as the so-called endoscopic surgery has been popularized (Williams 2003), which uses the image from an endoscopic camera for precise, targeted surgery.

Virtual medicine creates opportunities for training for students, "remote" surgery using a robot and a stereoscopic camera (tele-presence surgery), teleconsultation, remote assistance during procedures, and even streaming live surgeries (Williams 2003).

The SARS-CoV-2 pandemic has accelerated the development of telemedicine and e-health solutions (teleconsultations, remote examinations, and remote health monitoring). Many of them still require refinement and improvement, but we can already see how healthcare services can and will evolve in this area.

2.11. Death and dying of the body

The development of medical knowledge, along with the increase in the general standard of living and education of people, has led to the extension of life. The consequence of this new process is the possibility of observing new biological changes occurring in the human body. An additional consequence is the delay of death, resulting in its removal from biomedical discourse. Death appears to medicine as an accident at work that should not have happened. In the biomedical model of health, there is a place for remedial medicine – treatment and restoring efficient and effective bodies to society. The hospital is a place where the treatment process takes place and this is the basic purpose of its functioning. Even the moment of death itself is still unclear to many. The classic criterion of death (the cessation

of basic vital functions, i.e., breathing and heartbeat) was replaced in the 1970s by a modern criterion, within which brain death is pronounced (Pala 2014). At that time, resuscitation techniques were already being used and a ventilator was being used, which resulted in the emergence of a new category of patients – permanently unconscious patients, artificially kept alive thanks to resuscitation procedures. This also created opportunities for transplantology, but required changes in definitions that would enable legal changes. In the case of maintaining life for transplantation purposes, the question arises about the state of the body – is it alive or dead? In sociology, in such cases we talk about social revival – a person in whom brain death has been diagnosed but is kept alive for transplantation purposes (or to maintain pregnancy until delivery is possible) is treated by the environment as if they were alive. Connected to life support equipment, they look as if they were asleep (Ogryzko-Wiewiórowska 2000). Medical personnel have an instrumental attitude towards such a person, but for the family, it is associated with great emotions.

Death and dying are not subject to therapy and are inevitable. The attempt to institutionalize them in the 1950s resulted in dehumanization of the process of passing away and contributed to the growth of the social fear of death. The concept of persistent therapy seems to perfectly reflect this type of medical power over the body. Referring to Foucault's concept of biopower, which orders to live and allows to die, we can understand this medical form of oppression of the human body even better. The achievements of medicine have meant that we now more often deal with the process of dying than with a quick, violent death. When a person learns about a diagnosis, there is added time, which can be perceived as something good (when the patient can take care of their earthly affairs and prepare themselves as well as their loved ones for passing away) or as something negative (when dying is accompanied by pain, disability, and the loss of independence and control over their body). A dying patient experiences fear, which may have various causes (Więckowska 2002): a fear of physical suffering, of humiliation, of changes in the body, of dependence on others, of the consequences of our death for others, of the inability to take care of important life matters, of non-existence, and of he punishment for sins. The institutionalization of death, i.e., transferring death from the private sphere to the public one, from home to hospital, causes the dying person to be isolated from their loved ones, becoming an anonymous case. Separation from home and family causes death to appear as something terrifying – in the past, death occurred at home, it was a social event, and the body of the deceased was taken care of by family and neighbors until the funeral. The hospital, as a place where treatment takes place, cannot cope with death and dying, turning these last moments of life into dehumanized events subjected to technologization and instrumentalization (Ogryzko-Wiewiórowska 2000; Więckowska 2002).

The relationship between the body and medicine does not end with death – on the contrary, it can become stronger. In addition to the transplants discussed earlier, when organs are taken from a person with confirmed brain death, another example of this relationship is donating one's body for medical purposes. Moreover, only in

the case of a transplant and donating one's body to science do we have the right to dispose of our own body and its parts in the event of death (Soniewicka 2020). A donation for scientific and educational purposes is a special case of a gift, and its meaning is related to the public good (the protection of human health and life). The body of the deceased serves other people who, by interacting with it, prepare to practice as a doctor.

The answer to the shortcomings of restorative medicine in relation to dying is palliative medicine, which deals with the care of patients in a terminal state. It is focused on improving quality of life, not on treatment. Specialists take action to alleviate the pain and symptoms of the disease, enable the most dignified experience of the last moments, and support the dying person in addition to their family (also after the patient's death). No action is taken to delay or hasten death. The institutional answer to the hospital in palliative care is a hospice.

Pain is an inherent part of dying, it varies in intensity, location, and duration, and is also an extremely subjective experience (Więckowska 2002; Ostrowska 2005; Ryshkovska, Bohuta, Kruta 2016; Leung, Arthur, Udo 2018). The reaction to pain is individual and should be considered with biological, psychological, and social factors in mind. Historically, pain accompanying an illness was associated with punishment or understood as a cleansing, ennobling experience. Pain causes anxiety and depression, which, in turn, increases the sense of loneliness and can cause hostility towards the environment. Therefore, it is so important to alleviate it in order for the patient not to focus on the body as a source of pain and be able to survive the period approaching death with dignity.

2.12. The body of the future

In one of Stanisław Lem's short stories (Lem 1957), Mr. Johns, a racing driver, is brought to court by the Cybernetyk Company, which claims to have the right to the protagonist's body. As a result of accidents, the latter gradually replaced subsequent body parts with prostheses supplied by the company, whose president claims that the defendant is no longer human, and his body belongs to the company. The question of where a human ends and a machine begins is becoming increasingly important in light of contemporary scientific achievements. Virtual clinics, xenotransplants, bionic limbs, CRISPR technology that has enabled the editing of genes, and organs from a printer – although they sound like descriptions of scenes from a science fiction film, it is not such a distant future or a film director's vision. The paradox of modernity is the creation of an uncertain body. This uncertainty results from the fact that significant interference in the human body calls into question the definition of what it is, and what a human and humanity are in general. The words of Fukuyama that we are losing our sense of humanity because we do not have a clear vision of what a human is are still relevant (Fukuyama 2003). On the one hand, we have an unprecedented opportunity to control the human body using biotechnology, but, on the other, this very opportunity becomes a source of uncertainty as it questions and blurs the boundaries between the body and the outside world, between man

and machine, between humanity and artificial intelligence. A cyborg is a hybrid, a chimera – a combination of a **cyb**ernetic device and a biological **org**anism.

The medicine of the future is developing before our eyes. Previous achievements are becoming the basis for further research and exploration, combining the efforts of doctors, pharmacologists, and biotechnologists with the discoveries of engineers. Considerations of the human body in this context go beyond the framework of medicine. The body appears as an interdisciplinary creation – printing organs, producing tissues, genetic improvement aimed at eliminating diseases, crossing the limits of the body's possibilities and efficiency thanks to bionic, and bioengineering solutions are just examples of this cooperation. In this context, we talk about the 4P medicine described in one of the previous subchapters, i.e., predictive, preventive, personalized, and participatory (Głos 2017). In the following paragraphs, the newly developing branches of medicine will be presented.

Genomic medicine

The Human Genome Research Project was completed in 2003 (Pasowicz 2013). Initially an American undertaking, it became an international initiative. Its goal was to learn the sequence of human DNA and identify genes responsible for specific diseases. The genetic paradigm became one of the most promising at the turn of the 21st century due to its explanatory and predictive value (Cockerham 2007). Genomic medicine differs from genetic medicine – the latter mainly deals with inheritance, and within its framework the influence of a single gene on the development of a disease is studied. Genomic medicine goes a step further and deals with diseases having a multi-genic basis (Pasowicz 2013). The search for genes responsible for the development of diseases seems to be an obvious consequence of the development of medicine, but it carries a certain risk related to medicalization – the combination of these two processes may cause our predispositions or character traits perceived as undesirable or inappropriate to become the target of genetic research and possible biomedical solutions. This phenomenon is called geneticization, and Abby Lippman has defined it as a process in which differences between individuals are reduced to DNA sequences, while most diseases, disorders, and psychological or behavioral differences are at least partially defined as having a genetic origin. On this basis, interventions based on genetic technology are implemented to solve health problems (Lippman 1991: 19). Thus, we are dealing here with a change at the conceptual level (defining problems in genetic terms) and instrumental level (diagnosing and treating within the genetic paradigm). Jan Domaradzki wrote about 4 consequences that are closely related to the human body (Domaradzki 2019):

- genetic reductionism – humans and their bodies are reduced to the level of molecules;
- genetic determinism – humans are determined by biological processes occurring at the level of these molecules, and explanations of other kinds (e.g., environmental) lose their significance;
- genetic essentialism – DNA contains instructions for life, which constitute its essence and the basis for the uniqueness of an individual; and

- genetic fatalism – the uniqueness and stability of DNA mean that the scenario of human life and the functioning of the body are programmed and cannot be changed.

Genomic medicine is considered the future of healthcare, in which it will be possible to precisely determine the individual risk of disease and select personalized therapy (Pasowicz 2013). Nonetheless, this raises many bioethical problems. The hopes and expectations related to the therapy of the future have led to a growth of interest in storing genetic material so that it can be used in the future, along with the availability of therapy. Many expectations are associated with biobanking, i.e., collecting and storing human genetic material, and the commercialization of this phenomenon means that the potential benefits are much more often emphasized, omitting the possible risks (Domaradzki 2019). Understanding the human genome opens up the possibility of manipulation within it. The aim of genomic medicine is to repair or eliminate defective genes. The recently developed CRISPR/Cas9 (clustered regularly interspaced short palindromic repeats) technology enables such interference in the human genome through gene editing. On the one hand, this gives huge opportunities to eliminate certain diseases and improve the effectiveness of healthcare, but, on the other, it resembles playing God and carries the risk of arbitrarily selecting features that are to be "fixed." Such a creation of the human body, apart from the unquestionable benefits, raises the problem of the right to property and decision-making about one's genome, and, as a consequence, in the long term, may pose a threat to the human species.

Personalized medicine

It uses clinical knowledge, combining it with the latest achievements (e.g., in the field of genetics and genomics) to create "tailor-made" therapies, taking into account the individual differences of patients. The complexity of diseases such as obesity or cancer forces us to look for explanations not at the level of a single gene, but at the level of the genome. This, in turn, enables the design of targeted therapy, responding not only to the disease in a specific patient, but also minimizing the risk of this therapy. In addition to therapeutic solutions, personalized medicine is also part of preventive medicine since it also focuses on the analysis of the mechanisms that promote health maintenance. Such solutions not only change the face of the doctor-patient relationship, but are also beneficial from the point of view of health economics (Pasowicz 2013).

Translational medicine

It is an interdisciplinary approach that combines the achievements of basic science, public health, and clinical science in order to design optimal therapeutic and preventive solutions that go beyond the traditional understanding of health services (Pasowicz 2013). As Mieczysław Pasowicz wrote:

> Translational medicine includes: scientific research in search of the beginning and mechanisms of the disease process, the identification of specific biological events, biomarkers, or pathways

> leading to disease, the use of these discoveries to develop new diagnostic methods and therapies, the incorporation of new diagnostic methods and therapies into everyday clinical practice (Pasowicz 2013: 88).

The new areas of diagnostics, treatment, and prediction outlined above are a response to the expectations of highly technical medicine. The risk associated with increasingly advanced therapies arouses fear, escalating the expectations of patients who demand the effectiveness of therapy combined with the safety of its use and minimization of side effects.

This way of looking at a human being and their body means that, despite fragmentation and reductionism, the individuality and uniqueness of each of us is taken into account. However, this is happening in a dehumanized way, which has not yet met the fourth postulate of 4P medicine, i.e., participation, which is why other forms of treatment, such as traditional medicine and alternative medicine, are also gaining popularity.

Transplantology has opened up new possibilities, but has also shown limitations related to the low supply of organs compared to the demand for them. Currently, xenotransplantation is becoming promising, i.e., procedures involving the transplantation, implantation or infusion into a human recipient of living cells, tissues, and organs from non-human donors or human fluids, cells, tissues, and organs that have had ex vivo contact with non-human but animal cells, tissues or organs (U.S. Food and Drug Administration 2021).

Non-human elements are not unknown to the human body,[8] although until now they were simply artificial – a pacemaker, a titanium hip, a polymer blood vessel, an electronic ear, titanium dental implants, exoskeletons, and prosthetic limbs – these are just examples of the applications of bioengineering achievements. Currently, the bionic body is a combination of software engineering, robotics, and medicine – prosthetic limbs are connected to a computer that controls them, the brain of a paralyzed person sends impulses that special software processes into thoughts and speech (Meyer, Asbrock 2018). The bodies of paralyzed people with disabilities become not only functional and healthy, but their efficiency and capacity exceed the limits of the average human body. A pioneer in the field of this type of enhancement is Hugh Herr, a professor at the Massachusetts Institute of Technology, who lost both his legs below the knees as a result of an accident in the mountains. When asked about his disability, he said: "I don't see a disability, I see faulty technology," (Piore 2019). He created bionic legs for his own needs that mimic natural limbs. He is considered a pioneer of biomechatronics. Other examples include bionic limb

8 It is also worth mentioning the organisms living inside the human body. Microbes, bacteria, parasites – medicine and pharmacology have found a way to eliminate them, believing for a long time that all foreign organisms in our body are bad. And the cultural concept of the body has reinforced the division between the biological body belonging to the natural world and the spiritual body being a socio-cultural product.

prostheses offered by Össur, the Ekso Bionics GT exoskeleton, as well as the reWalk and REX systems (Meyer, Asbrock 2018).

The question arises about the boundaries and differences between "repair" and "enhancement" or "improvement." Enhancement is the result of using nanotechnology, biotechnology, information technology, and cognitive sciences in a way that improves the functioning of a healthy body in comparison to the average level of human fitness. Therapy and repair are actions aimed at eliminating the obstacle caused by disease or disability (Meyer, Asbrock 2018). But what if a person with a disability becomes, thanks to "repair," additionally "enhanced"? This issue is raised in the chapter *The Body and Sports*. Modern technology enables physical and mental limitations caused by disability to be overcome, but it is also becoming a promising solution for those who want to be even fitter, healthier, more efficient, faster or to have greater endurance. A solution that illustrates this well is Elon Musk's Neuralink. This is an implantable brain-machine interface that is supposed to be a response to the needs of people with brain damage, but its market potential in the area of increasing work efficiency has also been noticed. Will we be employees controlled by such interfaces in the future? Who will control us? These are further questions that we do not know the answers to today, but which we will have to face in the near future.

3. Key concepts

Biomedical model of the body – assumes the existence of cause-and-effect relationships between specific microorganisms and diseases. It assumes that a disease is a biological phenomenon, uses an instrumental approach to treating a damaged organ/tissue.

Cyborg – a combination of a cybernetic device and a biological organism.

Cartesian dualism – a belief popularized by René Descartes that the body and soul are separate and distinct entities, which is the basis of the biomedical model of disease, according to which it is a physical, biological phenomenon, where subjective feelings and social factors are irrelevant to the process of diagnosis and treatment.

EBM – evidence-based medicine, medicine based on evidence, in which clinical decision-making is based on the use of the latest scientific achievements in conjunction with knowledge about the patient's health.

Geneticization – a process in which differences between individuals are reduced to DNA sequences, and most diseases, disorders, as well as psychological or behavioral differences are at least partially defined as having a genetic origin.

Unisexual body model – assumes that there is one biological sex (male), and the difference between a woman and a man is a difference in the "degree" of the intensity of certain features, not a qualitative difference.

4P medicine – predictive, personalized, preventive, and participatory medicine.

Genetic medicine – deals with inheritance, and within its framework, the influence of a single gene on the development of the disease is studied.

Genomic medicine – deals with diseases with a multi-genic basis.

Nuclear medicine – a branch of medicine that uses radioactive isotopes for the diagnostics and treatment of patients.

Palliative medicine – a branch of medicine dealing with the care of patients in a terminal condition; it is focused on improving quality of life, not treatment.

Preventive medicine – deals with prevention and risk factors that can cause disease.

Medicine of fulfilling desires – the medicine of improvements; the central category is health as an area of intervention and supervision by institutions and medical professionals.

Personalized medicine – uses clinical knowledge, combining it with the latest achievements, to create "tailored" therapies, taking into account the individual differences of patients.

Translational medicine – an interdisciplinary approach, combining the achievements of basic science, public health and clinical science to design optimal therapeutic and preventive solutions that go beyond the traditional understanding of health services.

Medicalization – the entry of medicine into new areas of human life and making them a territory of exploration for medicine, defining natural states and behaviors in terms of pathology, disorder or disease in addition to using medical interventions to cure them.

Mind-body medicine – a field of medicine that uses a variety of techniques designed to increase the efficiency of the mind and psyche to deal with somatic problems.

Biomedical model – an approach based on evidence-based medicine (EBM), in which disease is viewed as a malfunction of biological mechanisms in the human

body. In the classical approach, this model focused on the biomedical causes of disease, disregarding psychosocial determinants that can lead to health disorders and ignoring the issue of prevention. This model led to a reductionist approach to the human body and, consequently, influenced the shape of doctor-patient relationship models.

4. The most important studies

Medicalization. The authority in the field of research on medicalization processes is the American medical sociologist Peter Conrad. Since the late 1980s, he has been dealing with a wide range of sociomedical issues, including: ADHD, the medicalization of deviations, the experience of epilepsy, medical education, wellness programs, medical improvements, the development of genetics, and the experience of illness. Recently, his research has focused on the structure, meanings, and potential of biomedical improvements and the globalization of ADHD. His groundbreaking work was research on ADHD among American students, the result of which is the book *Identifying Hyperactive Children: The Medicalization of Deviant Behavior* (1975, 2004). The work shows the historical background of the formation of this disease entity, and also perfectly illustrates the phenomenon of the gendering of medicalization processes discussed in the theoretical part, showing the differences in describing the symptoms of the disease among girls and boys. This work perfectly describes not only the process of the medicalization of behaviors, but also a specific crisis of the institution of the family and educational institutions in raising children. Research on ADHD has also shown a constructivist perspective on defining the disease, which the author discussed brilliantly in his book *Deviance and Medicalization: From Badness to Sickness* (with Joseph W. Schneider 1980, 1992). The medicalization of a state or behavior consists precisely of constructing a disease – naming something that was previously subject to moral characteristics (bad, incapable, incompetent) as a disease, syndrome or disorder.

Geneticization. Genetics is one of the areas of medicine that is developing dynamically. Currently, geneticization is said to be a process similar to medicalization. Research in this area in Poland is conducted by Jan Domaradzki, a sociologist associated with the Department of Social Sciences of the Karol Marcinkowski University of Medical Sciences in Poznan and the Department of Health Sociology and Social Pathologies. He is a pioneer of research on geneticization phenomena in Poland. In his book *Społeczne konstruowanie genetyki – reprezentacje biotechnologii w polskim czasopiśmiennictwie opiniotwórczym*, he refers to the most important sociological perspectives in research on medicalization (biomedicalization, geneticization, molecularization, and genetic essentialism) and focuses on geneticization, describing the many metaphors of genetics: DNA as a cipher of nature, as a language and book of life, as a source of identity, as a recipe, and as a construction plan; the genome as a factory and computer, as the Holy

Grail, as a map, and as a riddle; genetic research as a war, as a horror movie, as an investigation, and as a race.

Donations. Research conducted by Magdalena Makuch and Maciej Woźniak (Makuch, Woźniak 2020) among the students of the Medical University of Lublin has shown that most students consider donations for scientific purposes to be something positive – almost 90% of the respondents admitted that this type of teaching aid is the best way to learn about human anatomy and morphology, while slightly over 10% considered that "this is an acceptable action, provided that the corpses should be gradually replaced with other, more modern teaching aids, e.g., virtual models or atlases," (Makuch, Woźniak 2020: 432). More than half of the respondents admitted that it would be unacceptable to use the corpses of unidentified people for scientific purposes. The students were divided when it came to opinions on whether a person donating their body for scientific and teaching purposes should receive material compensation for this – about 30% said yes, almost the same number said no, and the same group had no opinion on the matter. Almost 60% of the respondents denied the possibility of replacing the donation act with the consent of the family if the person did not sign it themselves, while the vast majority of students (over 84%) recognized the indisputability of the deceased's decision in the case of donation. Interestingly, over 42% of students believed that the possibility of buying teaching aids derived from the human body should be legalized. And although the students believed that this method of learning was the best, over 1/3 would dissuade their loved ones from making a decision to donate. Less than 22% of the students would be willing to donate their body for scientific and educational purposes. The research, although with a limited scope of conclusions, shows the complexity of issues related to the role of the body for scientific and educational purposes.

Transplants. Organ transplants entail the risk of complications and even death. Patients for whom a procedure was successful experience psychological consequences. Qualitative research among people after upper limb transplantation was conducted in Poland by Katarzyna Kowal (Kowal 2012a, 2012b). According to the research, the body undergoes physical changes, which are accompanied by mental changes in its perception – the body was integral before the transplant, to become fragmented and finally reconstructed, which was associated with an identity crisis. It is related to the fact of having something foreign, which made it difficult for the recipient to identify. The second problem was the awareness that the "new" limb meant the death of its donor and the accompanying feeling of guilt related to the inability to repay the donor.

5. Summary

Medicine is undoubtedly a form of exercising control over the human body. This control is not always bad – preventive actions enable a person to avoid illnesses, corrective actions help cope with it as well as return to full fitness and normal

functionality. Nevertheless, one should be aware of the ease with which medicine appropriates subsequent areas of human life, making them dependent on its actions. The direct field of influence of medicine is the human body, which is still perceived as a biological organism, detached from the psychosocial existence of its owner. The change in the structure of diseases, the increase in medical knowledge among laypeople, and the expectation of partnership relations in the doctor-patient system are still not fully perceived or taken into account within the framework of technically and instrumentally-oriented medicine, which, by penetrating deeper and deeper into the human body in addition to breaking it down into molecules, loses sight of its essence, which is humanity. The marriage of medicine with engineering, mechanics, and other fields is, on the one hand, a promise of a longer, healthier and, consequently, better life, but, on the other, it fills us with fear of the consequences of genetic or bioengineering interference.

6. Review questions

1. What will the body of the future look like in relation to further developments in medical knowledge and bioengineering?
2. What might be the consequences of biomedical enhancements for defining and understanding the human body?
3. What significance do medicalization processes have for controlling the human body?
4. What are the consequences of geneticization?
5. What is the role of imaging techniques in the perception of the human body?

References

Article 5 of the Act of 1 July 2005 on the collection, storage and transplantation of cells, tissues and organs (Ustawa z dnia 1 lipca 2005 r. o pobieraniu, przechowywaniu i przeszczepianiu komórek, tkanek i narządów, Dz.U. 2005 nr 169 poz. 1411), https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=wdu20051691411

Anon (2012), *A Primer on Communication Studies*.

Astin John A., Shapiro Shauna L., Eisenberg David M., Forys Kelly L. (2003), *Mind-Body Medicine: State of the Science, Implications for Practice*, "The Journal of the American Board of Family Practice", vol. 16(2), pp. 131–147.

Bagheri Alireza, Alali Khalid (2017), *Islamic Bioethics. Current Issues and Challenges*, Intercultural Dialogue in Bioethics, vol. 02, World Scientific.

Bauman Zygmunt, Kunz Tomasz (2012), *44 listy ze świata płynnej nowoczesności*, Kraków: Wydawnictwo Literackie.

Bieńko Mariola (2009), *Niedyskretny urok ciała i seksu w formacie medialnym*, [in:] Marta Kaczorek, Krzysztof Stachura (eds.), *Przemiany seksualności*, Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego, pp. 41–53.

Bishop P. J. (2018), *Evolution of the Stethoscope*, "Journal of the Royal Society of Medicine", vol. 73(6), pp. 448–456. https://doi.org/10.1177/014107688007300611

Brzeziński Tadeusz (2014), *Historia medycyny*, Warszawa: PZWL.
Buczkowski Adam (2017), *Płeć kulturowa jako kategoria historyczna. Relacje między medyczną koncepcją ciała a pojęciem płci kulturowej*, "Adeptus", vol. 9. https://doi.org/10.11649/a.1470
Bunton Robin, Burrows Roger, Nettleton Sarah (2003), *The Sociology of Health Promotion*, London: Routledge.
Capra Fritjof (1982), *The Turning Point Science Society and The Rising Culture*, Flamingo Publisher.
Clark Jocalyn (2014), *Medicalization of Global Health 2: The Medicalization of Global Mental Health*, "Global Health Action" 7 (SUPP.1).
Cockerham William C. (2007), *The Blackwell Companion to Medical Sociology*, New York: Wiley-Blackwell.
Conrad Peter (1992), *Medicalization and Social Control*, "Annual Review of Sociology", vol. 18, pp. 209–232.
Conrad Peter (2005), *The Shifting Engines of Medicalization*, "Journal of Health and Social Behavior", vol. 46(1), pp. 3–14.
Conrad Peter (2007), *The Medicalization of Society*, Baltimore: Johns Hopkins University Press Books.
Conrad Peter, Schneider Joseph W. (1992), *Deviance and Medicalization: From Badness to Sickness*, Philadelphia: Temple University Press.
Courtine Jean-Jacques (ed.) (2020), *Historia ciała*, vol. 3: *Różne spojrzenia. Wiek XX*, Gdańsk: Wydawnictwo słowo/obraz terytoria.
[Descartes René] Kartezjusz (1960), *Zasady filozofii*, Warszawa: PWN.
Domaradzki Jan (2019), *Geneticization and Biobanking*, "Polish Sociological Review", vol. 205(1), pp. 103–117.
Dougherty Charles J. (1993), *Bad Faith and Victim-Blaming: The Limits of Health Promotion*, "Health Care Analysis", vol. 1, pp. 111–119.
Engle David (2001), *Psychosocial Aspects of the Organ Transplant Experience: What Has Been Established and What We Need for the Future*, "Journal of Clinical Psychology", vol. 57(4), pp. 521–549.
Feliksiak Michał (2016), *Postawy wobec transplantacji*, Warszawa: Fundacja Centrum Badania Opinii Społecznej.
Foucault Michel (1999), *Narodziny kliniki*, Warszawa: Wydawnictwo KR.
Foucault Michel (2006), *Trzy typy władzy*, [in:] Aleksandra Jasińska-Kania, Lech Nijakowski, Jerzy Szacki, Marek Ziółkowski (eds.), *Współczesne teorie socjologiczne*, vol. 2, Warszawa: Wydawnictwo Naukowe Scholar, pp. 512–536.
Foucault Michel (2010), *Bezpieczeństwo, terytorium, populacja*, Warszawa: Wydawnictwo Naukowe PWN.
Foucault Michel (2020), *Nadzorować i karać. Narodziny więzienia*, Warszawa: Aletheia.
Fukuyama Francis (2003), *Our Posthuman Future*, New York: Picador.
Gałuszka Mieczysław (2013), *Medycyna i zdrowie w społeczeństwie konsumpcyjnym: makdonaldyzacja opieki zdrowotnej versus ryzyko zdrowotne*, "Acta Universitatis Lodziensis. Folia Sociologica", vol. 45, pp. 35–50.
Gałuszka Mieczysław (2015), *Komercjalizacja ciała ludzkiego w społeczeństwie ryzyka biomedycznego*, "Acta Universitatis Lodziensis. Folia Sociologica", vol. 55, pp. 37–56.
Germov John (2019), *Imagining Health Problems as Social Issues*, [in:] John Germov (ed.), *Second Opinion. An Introduction to Health Sociology*, South Melbourne, Victoria: Oxford University Press, pp. 2–23.
Głos Aleksandra (2017), *Medycyna P4 i antynomie samowiedzy*, "Filozofia w Praktyce", vol. 3, pp. 1261–1284.
Goffman Erving (1990), *Stigma: Notes on the Management of Spoiled Identity*, London: Penguin.

Gulla Bożena (2006), *Psychologiczne aspekty transplantacji serca*, "Psychiatria Polska", vol. 2, pp. 323–334.

Gulla Bożena, Izydorczyk Bernardetta, Kubiak Rafał (2019), *Godność i intymność pacjenta. Aspekty psychologiczne i prawne*, Kraków: Uniwersytet Jagielloński, Biblioteka Jagiellońska.

Jakubowska Honorata (2009), *Socjologia ciała*, Poznań: Wydawnictwo Naukowe Uniwersytetu im. Adama Mickiewicza.

Jędrzejewski Kazimierz (2013), *Andreas Vesalius i jego wielkie dzieło: De humani corporis fabrica*, "Folia Medica Lodziensia", vol. 40(2), pp. 155–206.

Jouanna Jacques (2012), *Greek Medicine from Hippocrates to Galen. Selected Papers*, "Studies in Ancient Medicine", vol. 40, Leiden–Boston: Brill.

Justyński Tomasz (2003), *Poczęcie i urodzenie się dziecka jako źródło odpowiedzialności cywilnej*, Kraków: Zakamycze.

Kalachanis Konstantinos, Michailidis Ioannis E. (2015), *The Hippocratic View on Humors and Human Temperament*, "European Journal of Social Behaviour", vol. 2(2), pp. 1–5.

King Helen (2013), *The One-Sex Body on Trial: The Classical and Early Modern Evidence*, Routledge.

Kluczyńska Urszula (2016), *Ciało jako obszar refleksji naukowej i jako projekt*, "Polski Przegląd Nauk o Zdrowiu", vol. 3(48), pp. 277–284.

Kowal Katarzyna (2012a), *Doświadczanie własnej cielesności biorców kończyny – socjologiczne studium ciała*, "Przegląd Socjologii Jakościowej", vol. 8(2), pp. 152–199.

Kowal Katarzyna (2012b), *Kryzys tożsamości w doświadczaniu ciała zrekonstruowanego przeszczepem kończyny górnej*, "Hygeia Public Health", vol. 47(4), pp. 477–483.

Krajewska Judyta (2018), *Nie tylko "o sztuce lekarskiej" w wybranych pismach w Corpus Hippocraticum*, "Saeculum Christianum. Pismo Historyczne", vol. 25, pp. 54–62.

Krzysztofik Małgorzata (2022), *The Image of Disease in Religious, Medical–Astrological and Social Discourses: Old Polish Literature as an Example of Early Modern European Mentality*, "Journal of Religion and Health", vol. 61(4), pp. 3340–3349.

Kwaśniewska Anna (2018), *Choroba jako klątwa. Analiza i kontekst dyskursu medialnego dotyczącego tzw. genu kaszubskiego*, "LUD. Organ Polskiego Towarzystwa Ludoznawczego i Komitetu Nauk Etnologicznych PAN", vol. 101, pp. 231–251.

Lampart Konrad (2020), *Antropologiczno-metafizyczne konsekwencje nietomistycznego rozumienia duszy ludzkiej na przykładzie wybranych problemów*, "Studia Gilsoniana", vol. 9(1), pp. 63–85.

Laqueur Thomas (1992), *Making Sex. Body and Gender from the Greeks to Freud*, Cambridge: Harvard University Press.

Lawson Richard (2012), *Przyczynki do historii medycyny nuklearnej, z podkreśleniem roli laureatów Nagród Nobla. Nowotwory*, "Journal of Oncology", vol. 6(5), pp. 385–90.

Le Goff Jacques, Truong Nicolas (2018), *Historia ciała w średniowieczu*, Warszawa: Aletheia.

Legierska Maria, Węcławek Małgorzata, Jarosz Robert, Ślusarczyk Konstanty (2009), *Leonardo Da Vinci jako anatom. Próba odtworzenia stosowanej przez niego techniki*, "Annales Academiae Medicae Silesiensis", vol. 63(1), pp. 70–75.

Lem Stanisław (1957), *Dzienniki gwiazdowe*, Warszawa: Iskry.

Leung Kelvin, Arthur Richard, Udo Itoro (2018), *Patient's Perspective on Management of Chronic Pain Associated with Frequent Emergency Attendances and Psychiatric Diagnoses*, "Journal Patient Experience", vol. 6(3), pp. 179–184. https://doi.org/10.1177/2374373518787467

Lippman Abby (1991), *Prenatal Genetic Testing and Screening: Constructing Needs and Reinforcing Inequities – PubMed*, "American Journal of Law and Medicine", vol. 1–2(17), pp. 15–50.

Makuch Magdalena, Woźniak Maciej (2020), *Wykorzystanie ciała ludzkiego w badaniach naukowych i dydaktyce medycznej w ocenie studentów oraz reakcje towarzyszące studentom podczas kontaktu z ludzkimi zwłokami*, [in:] Jakub Pawlikowski (ed.), *Ciało ludzkie w badaniach naukowych i praktyce medycznej: ujęcie transdyscyplinarne*, Warszawa: Wydawnictwo Lekarskie PZWL, pp. 430–443.

McKeown Robert E. (2009), *The Epidemiologic Transition: Changing Patterns of Mortality and Population Dynamics*, "American Journal of Lifestyle Medicine", vol. 3(1 Suppl), p. 19S.
Meyer Bertolt, Asbrock Frank (2018), *Disabled or Cyborg? How Bionics Affect Stereotypes Toward People With Physical Disabilities*, "Frontiers in Psychology", 0(NOV):2251.
Miah Andy, Rich Emma (2008), *The Medicalization of Cyberspace*, London: Routledge.
Nettleton Sarah (2007), *The Sociology of the Body*, [in:] William C. Cockerham (ed.), *The Blackwell Companion to Medical Sociology*, Wiley-Blackwell, pp. 43–63.
Nogal Halina, Wiśniewska Ewa, Antos Elżbieta (2016), *Zarys historyczny dynamiki rozwoju transplantologii klinicznej*, "Polski Przegląd Nauk o Zdrowiu", vol. 1(46), pp. 113–118.
Nowakowski Michał (2015), *Medykalizacja i demedykalizacja. Zdrowie i choroba w czasach kapitalizmu zdezorganizowanego*, Lublin: Wydawnictwo UMCS.
Ogryzko-Wiewiórowska Mirona (2000), *Umieranie i śmierć. Perspektywa socjomedyczna*, [in:] Włodzimierz Piątkowski, Anna Titkow (eds.), *W stronę socjologii zdrowia*, Lublin: Wydawnictwo UMCS, pp. 94–115.
Ostrowska Antonina (2005), *Śmierć w doświadczeniu jednostki i społeczeństwa*, Warszawa: Wydawnictwo IFiS PAN.
Padela Aasim I., Rodriguez del Pozo Pablo (2011), *Muslim Patients and Cross-Gender Interactions in Medicine: An Islamic Bioethical Perspective*, "Journal of Medical Ethics", vol. 37(1), pp. 40–44.
Pala Amadeusz (2014), *Zjawisko śmierci – zmora medycyny*, "Semina Scentiarum", vol. 13, pp. 115–139.
Park Katharine (2010), *Cadden, Laqueur, and the "One-Sex Body"*, "Medieval Feminist Forum (MFF)", vol. 46(1), pp. 96–100.
Pasowicz Mieczysław (2013), *Medycyna nowej generacji*, [in:] Mieczysław Pasowicz (ed.), *Zdrowie i medycyna – wyzwania przyszłości*, Kraków: Oficyna Wydawnicza AFM, pp. 85–95.
Piątkowski Włodzimierz (2014), *Lecznictwo niemedyczne. Wybrane aspekty socjologiczne i formalno-prawne*, "Konteksty Społeczne", vol. 4(2), pp. 7–20.
Piore Adam (2019), *Magia bioinżynierii. Ciało, geny i medycyna przyszłości*, Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego.
Poltransplant (2020), *Statystyka 2020*, http://www.poltransplant.org.pl/statystyka_2020.html (accessed: 03.10.2021).
Puzewicz-Barska Joanna, Tarasiewicz Małgorzata (2004), *Nasze ciała – nasze życie*, Gdańsk: Fundacja Współpracy Kobiet NEWW.
Rainer Jackson P., Thompson Catherine H., Lambros Heather (2010), *Psychological and Psychosocial Aspects of the Solid Organ Transplant Experience – A Practice Review*, "Psychotherapy (Chicago, Ill.)", vol. 47(3), pp. 403–412.
Reiser Stanley J. (1985), *Responsibility for Personal Health: A Historical Perspective*, "The Journal of Medicine and Philosophy", vol. 10(1), pp. 7–17.
Ryshkovska Nataliya, Bohuta Krystyna, Kruta Anastasiya (2016), *Pacjenci z bólem przewlekłym – specyfika diagnozy zaburzeń psychicznych i zaburzeń zachowania*, "Psychiatria", vol. 13(4), pp. 198–202.
Shilling Chris (2021), *Socjologia ciała*, Warszawa: Wydawnictwo Naukowe PWN.
Sokołowska Magdalena (1986), *Socjologia medycyny*, Warszawa: PZWL.
Soniewicka Marta (2020), *Problem prawa własności do ciała ludzkiego i jego części po śmierci*, [in:] Jakub Pawlikowski (ed.), *Ciało ludzkie w badaniach naukowych i praktyce medycznej: ujęcie transdyscyplinarne*, Warszawa: PZWL, pp. 175–186.
Staniec-Januszek Ewa (2019), *Zastosowania nowoczesnej biotechnologii z perspektywy ciała jako projektu*, "Rozprawy Społeczne", vol. 13(2), pp. 129–141.
Szary Stefan (2014), *Znaczenie i godność ludzkiego ciała w praktyce medycznej*, "Hygeia Public Health", vol. 49(2), pp. 222–224.
Szasz Thomas S., Hollender Marc H. (1956), *The Basic Models of the Doctor-Patient Relationship*, "Archives of Internal Medicine", vol. 97, pp. 585–592.

Tatarkiewicz Władysław (2014), *Historia filozofii*, vol. 1: *Filozofia starożytna i średniowieczna*, Warszawa: Wydawnictwo Naukowe PWN.

Turner Bryan S. (2008), *The Body & Society: Explorations in Social Theory*, London: Sage Publications.

U.S. Food and Drug Administration (2021), *Xenotransplantation | FDA*, https://www.fda.gov/vaccines-blood-biologics/xenotransplantation (accessed: 03.10.2021).

Vigarello Georges (ed.) (2005), *Historia ciała*, vol. 1, Gdańsk: słowo/obraz terytoria.

Waggoner Miranda, Stults Cheryl (2011), *Gender and Medicalization Sociologists for Women in Society – Fact Sheet, Spring 2010*.

Wieczorkowska Magdalena (2012a), *Medicalisation of a Woman's Body – A Case of Breasts*, "Przegląd Socjologiczny", vol. 61, no. 4, pp. 143–172.

Wieczorkowska Magdalena (2012b), *Medykalizacja społeczeństwa w socjologii amerykańskiej*, "Przegląd Socjologiczny", vol. 61, no. 2, pp. 31–56.

Wieczorkowska Magdalena (2015), *Medykalizacja wyglądu – nowy wymiar zdrowego ciała*, "Acta Universitatis Lodziensis. Folia Sociologica", vol. 55, pp. 93–109.

Wieczorkowska Magdalena (2016), *Medykalizacja męskiego ciała*, "Acta Universitatis Lodziensis. Folia Sociologica", vol. 58, pp. 71–87.

Więckowska Elżbieta (2002), *Umieranie i śmierć w instytucjach medycznych – instytucjonalizacja śmierci*, [in:] Jarosław Barański, Włodzimierz Piątkowski (eds.), *Zdrowie i choroba: wybrane problemy socjologii medycyny*, Wrocław: Oficyna Wydawnicza Atut – Wrocławskie Wydawnictwo Oświatowe, pp. 182–195.

Williams Simon J. (2003), *Medicine and the Body*, London: Sage.

Wolsko Peter M., Eisenberg David M., Davis Roger B., Phillips Russell S. (2004), *Use of Mind–Body Medical Therapies: Results of a National Survey*, "Journal of General Internal Medicine", vol. 19(1), pp. 43–50.

Zardini Mirko, Borasi Giovanna, Campbell Margaret (2012), *Imperfect Health: The Medicalization of Architecture*, Montreal: Canadian Centre for Architecture.