

Modern Medicine: Ideas and Advances

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ABSTRACT

Considering the limitations of medical science and the risks associated with medical treatments, we need to re-examine the connotation of medical science from the perspective of philosophy. Medical science is the natural expression of human kindness and human nature of rescuing the dying and healing the wounded. It is a combination of the natural sciences, social sciences, and humanities. From the perspectives of medical philosophy and humanistic care, this article expounds the concepts and ideas of evidence-based, translational, and precision medicine in modern medicine and emphasizes the importance of avoiding new technical bureaucracy, paying attention to achieving a holistic view and systematic understanding, and avoiding biases in development because of the loss of the humanistic spirit in modern medical practice.

Key words: epistemology; philosophy; humanistic care; evidence-based medicine; precision medicine; translational medicine

PHILOSOPHICAL FOUNDATION OF MEDICINE — EPISTEMOLOGY

The aim of medical science is to study humans, who represent the least studied species. Medical science has several limitations, and considerable risks are associated with medical treatments. These two characteristics of medical science make our understanding of it as relative as our understanding of other truths. Medical science itself is a branch of anthropology as well as a philosophy. As the large-scale scientific documentary *200 Years of Surgery* specifies, surgical scalpels have shaped medical civilization^[1]; however, medical science has developed for over 200 years. During this development process, we realized that our struggle against diseases is arduous and long-term and we even thought that diseases could not be completely conquered by humans as they seem to always wait for an opportunity to counterattack or become stronger, pushing humans into a variety of traps. New virus outbreaks affect people almost every year or two, from

the discovery of human immunodeficiency virus (HIV) in 1981, through the outbreak of severe acute respiratory syndrome (SARS) in 2003, to the coronavirus disease 2019 (COVID-19) pandemic we are fighting now. The fight against viruses will continue. This is the responsibility of human being but above all, the responsibility of doctors. Because our understanding of things is always limited. "To cure sometimes, to relieve often, to comfort always." as correctly described by Edward Trudeau. Therefore, we must focus more on patient's experience in addition to the disease itself.

Truth and knowledge are relative, more so in medical science. The observation and cognition of problems vary greatly across people. The epistemology of medical science actually takes a long time, and the so-called truth is often the common understanding among people at one point in history, which is not necessarily scientific or accurate. Different and even opposing opinions are necessary and should be allowed. Being "scientific" should be equal with being "unscientific" and "anti-scientific" in the philosophical sense.

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"Anti-science" is an attitude, not a sin. The truly scientific attitude is precisely to be skeptical, remain silent when no basis exists, and respect the explorations of others. We should recognize that, in many cases, we only know a fraction of the whole, and we should not believe or say indiscreetly that we fully understand something but should continue to explore.

Medical risks are everywhere, including misdiagnosis and trauma in diagnosis; toxic side effects and allergies associated with medications; and surgical risks such as those associated with anesthesia, bleeding, injury, and infection. Therefore, a doctor's practice of medicine should be especially like walking on thin ice or on the edge of an abyss, which is accurately encapsulated in the motto of Dr. Zhang Xiaoqian, a well-known medical practitioner: Caution, Prudence, Dread, and Fear^[2].

We should rethink what medical science is. Medical science is not a pure science. It is a combination of natural and social sciences. It often lags behind the development of other sciences. At the same time, medical science is always inseparable from humanities.

Medical science is a science of humanity. We should always remember that during the development of medical science, its origin was an expression of human kindness and emotion and an important means of maintaining human self-value and protecting survival and production abilities^[3]. Regarding the understanding of life, science does not and cannot know what life is all about. In philosophy, the nature of life is believed to be continuously changing and developing; philosophy tries to interpret its contingency and inevitability; however, it is far less rich and magnificent than science. Religion elevates life to the spiritual level, but it can neither be seen nor touched, and eternal life has become a myth beyond time and space. In contrast, medical science is the ultimate care for life.

Medical science is also the science of benevolence. Just as ancient Chinese politicians and philosophers said, people should understand the natural law, be close to human feelings, and obey the national law when doing their work; doctors also should follow these rules. Natural law is the law of nature or that of disease development and progression. Human feelings are about people's ideology, consciousness, feelings, and will, including family and social backgrounds. National law spans from the laws of the country to the basic political principles, paradigms, technologies,

guidelines, methods, and policies that doctors should master. We should always keep in mind that philosophy originated from medical science, and medical science shall eventually find its place in philosophy. At the current development stage of medical science, we may find the answer in philosophy to the question of where we are going. The so-called intelligent medicine is not only medicine based on big data and cloud computing but also science that combines scientific, philosophical, and religious ideas.

CONCEPTS AND IDEAS OF MEDICINE

Various medical views have been introduced since the 1980s, from evidence-based and translational medicine to digital, intelligent, and population medicine. Importantly, the origins of new medical concepts, when investigated, should not deviate from or violate the humanistic origin of medical science. Philosophical visions and humanistic care should be the center of all components of medicine, be it basic, clinical, or teaching research or western medicine, traditional Chinese medicine, or healthcare of any kind.

1. Evidence-based medicine

Evidence-based practice requires us to act based on acquired data; however, evidence itself is not a medical decision. Good medical decisions must consider and balance three factors: evidence, resources, and value orientation. A gap exists between medical guidelines and medical practice. Medical decision-making must be based on the actual situations of individuals and involve social, economic, ethical, and other humanistic factors to bridge the gap. The clinical experience of doctors is also an evidence, particularly for intractable and/or rare diseases. A person with no clinical experience, regardless of his/her familiarity with evidence, can not be a good clinician.

2. Translational medicine

According to the basic principles elucidated in Chairman Mao Zedong's *Theory of Practice*, translational medicine actually comprises theory, practice, and the combination of the two. The essence of translational medicine is the combination of the basic and clinical research and also the combination of practice and theory. However, some misunderstanding exists in research and practice. Applying the concept of translational medicine to clinical practice, teaching, and scientific

research is recommended to eliminate the “translational gaps” among knowledge, technology, thinking methods, and stakeholders in the process of translation. There are differences in basic methods, risks, and ethical principles between clinical application and experimental research, and the possible “therapeutic misconception” between them or during the translation must be avoided.

3. Precision medicine

As a medical goal, precision medicine is valuable; however, precision itself is relative. Therefore, we should pay special attention to this issue from a more comprehensive, developmental, and flexible perspective. The road to precision is long and difficult. Faced with the complexities of life and massive data, the elimination of data interference and acquisition of meaningful information have become a challenge. The sharing and supervision of data as well as the related ethics, laws, and regulations need to be improved urgently. More than 100 years ago, the great medical educator Sir William Osler said, “Medicine is a science of uncertainty and an art of probability.” A century has passed, and science and technology have made considerable progress; however, although our understanding of things might have become more solid, many unknowns and possibilities remain. That is why I always say the following when I give lectures to freshmen in our college: “Surely, everyone comes to Peking Union Medical College with bright anticipation, but we really cannot guarantee to cure every patient; however, we must ensure that every patient is treated properly.” I think this is what a medical practitioner, a doctor, should be like.

MODERN CRISIS AND BIASES IN THE DEVELOPMENT OF MEDICINE

1. Avoid new technical bureaucracy

In fact, this statement is not rigorous. Technology has been developed well, but it cannot be above all or nourish “technicalism”. Medical technology should not be synonymous with medical treatment. Overdiagnosis and overtreatment have become common nowadays, and I call it the new technical bureaucracy or alienation of technology, which may affect the development of medicine, bring dangerous tendencies to clinical practice, and restrict clinicians from becoming good doctors. Therefore, a doctor’s mindset and technical concept are essential. To avoid the “alienation of tech-

nology”, value clinical decision-making, and avoid the taboo of “seeing the disease not the patient”, we must see patients ourselves. We must face the patients and tell them solemnly and respectfully that “I am your doctor, you are my patient, and I am responsible for you.” In an era of technology, medical practitioners are those who use technology. Equating medicine with technology is unethical — patients should not be viewed as machines, nor should hospitals be deemed as repair shops or workshops.

2. Advocate a holistic view and systematic understanding

The human body is a unit of organically integrated and interacting parts, with each organ and system coordinating with, cooperating with, and influencing one another. Nowadays, more and more medical subdisciplines have been established, which facilitates more in-depth research but also causes segregation. Medicine requires an overall, holistic, and systematic view, and a living person should be treated as a whole rather than as a collection of parts on a hospital assembly line. Traditional Chinese medicine adopts a holistic view and habitually recommends treatment based on syndrome differentiation. Therefore, western medicine and traditional Chinese medicine should be integrated and learn from each other. Some philosophical and religious thoughts with a holistic view, including the understanding of religion held by some great scientists, reflect people’s devout pursuit of truth in response to nature.

3. Prevent the loss of the humanistic spirit

Medical science is not a pure and perfect science but a constantly changing and elusive system of knowledge, technology, and consciousness. Our subjects are people who live in social groups and have thoughts, emotions, consciousness, wills, families, and social backgrounds. Clinicians should not be only scientists who interpret reports or control instruments. Dialogue and communication should be established and maintained between doctors and patients. The narratives between doctors and patients should be about stories between people, not stories between technicians and machines. Therefore, with the development in science and technology as we see today, we particularly need a re-education in medical philosophy and humanities. For instance, the stethoscope is actually the emotional bond that connects a patient to the doctor and not just

an instrument for auscultation. When we use medical instruments, we must not give in to the machines but remain as the manipulators of the machines. More importantly, people shall not think like machines. Preserving a humanistic view is crucial.

For the future of medicine, a holistic view and systematic understanding need to be upheld to avoid biases in research, prevent overdiagnosis and over-treatment, and strengthen technological progress combined with humanistic ideas, so as to allow medicine to return to its origin and explore medical wisdom with philosophy.

Let us remember the words of Dr. Lin Qiaozhi: "We should always diagnose and treat patients face to face. It is dangerous for a doctor to diagnose and treat patients based simply or solely on laboratory reports." As doctors, we must practice according to the nature of medical science to improve our professional spirit,

wisdom, insights, and abilities.

Article information

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Conflict of interest

None disclosed.

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