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Some aspects of teaching the history of medicine: the case study method

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In this article, the case study method as a training strategy for teaching the history of medicine is discussed. The author views the history of medicine as an interdisciplinary knowledge system offering a variety of intellectual challenges that require the use of a wide range of research tools. Pertinent methodological issues concerning the place of the history of medicine and significance in the system of higher medical education are uncovered. The author identifies current approaches to the teaching of the history of medicine that aid the fullest development of students' professional thinking and development of their personal qualities. The options for applying the case study method to the material of the training course are analyzed. The case method is presented as an effective tool in an interactive, personality-oriented learning strategy aimed at developing critical thinking and communication skills in the history of medicine study process. The strengths and weaknesses of the case study method as a pedagogical technique used to analyze issues in the history of the formation and development of medical knowledge are identified. The experience of using the case study method in teaching the history of medicine is described, its main function being to teach students to find ways to solve unstructured problems. A methodological approach in the search for a multiplicity of solutions to the tasks presented allows us to create an intentionally planned dialectical situation, the purpose of which is to develop methods for organizing discussions to choose the best possible outcomes. Cognitive activity, in this case, takes the form of a desire to analyze knowledge, beliefs and thinking on the basis of a conceptual model of purposeful activity with special attention to the study of cause-effect relationships in the history of the development of medicine as a science. The problems, possibilities, and prospects of using this method are discussed, as well as its importance in the formation of research and professional competencies for medical students.

Keywords: *case study techniques, case method, case studies, medical education, history of medicine, practical-oriented approach, search and research technology, training strategy*

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Many doctors believe that the history of medicine is a source of knowledge which is useless in practice, if not obsolete for a modern medical professional. Today, the doctrine of modern medicine is dominated by the physicalist approach toward life sciences, based on rejection of the holistic concept of a human being and the reduction of the semantic characteristics of the object of medical science to the state of a biological organism, which has a number of functions [1]. From this point of view, the history of medicine is "an appendage" of science, lacking practical, informative value [2]. However, in our view, the history of medicine is an essential component of medical knowledge, the basis of clinical thinking and clinical practice. O. Temkin said: "What we mean by the history of medicine, is largely determined by what 'medicine' means to us, and I do not see fundamental differences here. The usefulness of history of medicine will depend on whether you first see in medicine the actions of a doctor at the patient's bedside, or the complex of what we now, unfortunately, call the science of health. To a large extent, it determines

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the contents of the history of medicine. I would like to think that our indecision and doubt that the history of medicine can be a creative force, are evidential of how we view medicine in general" [3, p. 47].

The future development of modern medical science should aim to combine humanitarian and scientific approaches, an endeavor which fits perfectly into the practice of teaching the history of medicine as a field of scientific knowledge with its own laws of development. These laws mainly deal with the complex nature of medical knowledge, which combines biological and socio-humanitarian, scientific and technological, anthropological and economical components, designed to answer questions about what is a man, what is his nature and how his nature is learned in specific historical conditions. A human being is studied according to a system of sciences, each of which includes a number of individual areas. However, biology, history, cultural studies, philosophy, sociology, psychology and other disciplines do not form a complete image of a man, but rather reduce it to one of the components of human nature – biological, psychological, sociological, etc. At the same time, for a medical scientist, along with knowledge of the theoretical foundations of biology, history, and law, the very genesis of medical knowledge in a variety of contexts is of great importance, namely, knowledge of the epistemological and value/normative bases of medicine, of its traditions, rules and ideals. This unity of cognitive and value-related forms on the one hand, and reformative activities and regulatory determination of medical knowledge on the other, makes the history of medicine one of the few disciplines that contribute to the formation of a holistic view of man [4, 5].

The use of quantitative, mathematical, physical, chemical, informational, biological and other methods in modern medicine allows for the application of almost all methods of research to medical science, forming a natural tendency to expand its methodological basis by introducing new elements into its explanatory constructs. In a situation where the methodological and logical armament becomes a practical necessity, the historical-medical discourse brings up for a future physician such issues as the ambivalence of the object of medical study, the nature of medical fact, a proper understanding of the scientific method, the rationality of medical knowledge and the relationship of the empirical and theoretical within medical knowledge. These problems are posed by life as well as by the progress of medicine as a science. Such an approach makes the history of medicine indispensable in the formation of clinical thinking. The history of medicine as a systemized set of concepts in this case turns into a fertile ground for the formation of such professional medical skills as accuracy and effectiveness, responsibility in making controversial decisions and humanism [6].

Medicine is an essential cultural phenomenon which determines not only the boundaries of the normal and pathological but also the prospects for the development of civilization. Problems of transhumanism and a search for human identity, issues of socio-medical knowledge, the relationship of cultural-historical types of society and approaches to healthcare – all these are central to studying the history and philosophy of medicine today.

The history of medicine as part of the history of science owes much of its development to philosophy. Sociocultural, methodological and historical analysis of the mutual influence of philosophy and medicine allows a focus on the empirical nature of medical knowledge and the epistemic problems of medicine, reveals the conditions for growth of its categorical framework and explains the logic of development starting from ontological concepts of the nature of human disease and health to biological, technological and socio-medical aspects of medical knowledge.

Knowledge about a man is constantly enriched to include more empirical data, theoretical bases and more clinical and preventive approaches. With the variety and increasing volume of scientific data researchers face the problem of using it rationally. In this situation, teachers should not merely use the established teaching methods but also consider implementing a more practical approach to learning. In such approach, all the actions of a teacher should serve the interests of the students and ensure their individual creative development. One of the conditions for creating a student-centered learning system is a systematic activity approach, which treats the training and development of specialists not as a passive mechanism for relaying information, but as a process of their own work [7]. The active role of

the students is the most important condition for their personality development and one of the basic principles of achieving the ultimate goal of teaching. Organizing such a process demands a radically different approach to key elements of learning, in which the goal should be not an increase in the volume of information transmitted, or the number of assessment tools and monitoring activities, but rather the creation of psychological and didactic conditions for activating the students' independent work [8, 9]. That purpose is achieved through interactive teaching methods popular today, case studies in particular. Case study is a method of teaching through analysing specific problem situations. The study material is set as a problem case for which the students must employ their creativity and research skills to find a solution. According to the procedure, the students obtain a set of documents from their instructor (i.e., the case), which they use to formulate the problem and define the ways of finding a solution; or, if the problem is already defined, they propose options for resolving the situation [10]. In this way medical students learn to apply the internalized theoretical material in practice while improving their analytical and evaluative skills and learning to work as a team.

The case study method focuses on the development and improvement of all the necessary professional competencies of a prospective doctor, including the following:

– analytical (looking for, classifying, selecting and ranking the necessary information);

– creative (moving away from the traditional problem-solving approach towards searching for other, even improbable, opportunities);

– communicative (listening to colleagues and patients, relinquishing one's ambition, working in a team, managing one's emotions and sacrificing one's own interests if necessary);

– managerial (overcoming complex situations and making appropriate managerial and professional decisions).

The main advantage of the case study method is that it guarantees more than one approach to a problem. A good case teaches students to look for original approaches because there is no one right solution. The classic solution that usually exists for any situation is not necessarily the best, and the researcher will have to learn to take into account all the potential risks.

In the case study method, the instructor hands over initiative to the student and becomes a moderator of the study process. The students employ their own experiences, knowledge and additional sources of information, interacting with each other and, as a result, together overcoming their controversies, arriving at appropriate professional decisions and searching for and finding solutions to problems. Thus, the students acquire knowledge and a system of values and attitudes to life while internalizing the skills gained during their work. These elements make case study a truly interactive nonlinear training method, promoting the formation of a mature personality capable of self-organization.

The case study method was used for the first time at Harvard Business School in 1924 [11]. Since it was assumed that in business there are no indisputable solutions, the cases offered to the students were based on the stories of actual companies and the specific challenges that they faced in the business environment. The stories were accompanied by real financial statements, figures and diagrams. In fact, a case was a kind of business game, in which the students, based on their knowledge, experience, and intuition, played the roles of business analysts to conduct their own analyses of the situation, offer a forecast for the company's development, and make up a list of non-standard actions that could lead the company to success. Discussing the cases, students were taught not to give up prematurely on any ideas, even the most trivial, and to take an interest in seemingly insignificant details, down to the personal information about the participants in a deal.[1]

Currently, the case study method is common in such fields as economics, management, law and education. It is employed in medicine, but is mostly used as a typical study problem case, allowing a future doctor to learn the sequence of actions in the anatomy classroom or in clinical practice. However, case studies are efficient when studying the history of medicine as well, which seeks to reconcile the numerous approaches to argumentation and interpretation of facts and cause-effect relationships at different stages

[1] For example, if for one student the change in the CEO's marital status was not important, another might find this fact extremely important and build his own strategy on it [12].

of the formation and development of medical knowledge [13]. In the process of solving cases, the students develop independence of thought, a habit of reflective thinking and the skills necessary to process huge amounts of data; they are also taught the basic mental operations and processes: analysis, synthesis, generalization, the scientificity of historical thinking (a special type of reflection aimed at an unbiased understanding of the present and an ability to imagine the future through reconstruction of the past), a careful study of the totality of facts and the process of making objective conclusions [14, 15]. The case study principles of developing knowledge imply students' equality in their assessments and opinions, both with other students and with the instructor. This, in turn, fosters independence of thinking and promotes the development of value systems, personal attitudes, professional convictions and the worldview of a future medical professional.

However, the application of the case study method should be methodically grounded and provided for (firstly in organizing the study process within the existing educational program), as case method is an assistive tool with a number of obstacles to its implementation in teaching history.

The main function of a case study is to teach students to solve complex unstructured problems. At first glance, upholding this criterion in creating a history of medicine case seems difficult, because the essence of the history of medicine as a science lies in identifying the laws of social development, which are based on theoretical interpretation and synthesis of historical facts and processes. On the one hand, analytical work cannot be intuitive (one cannot make serious conclusions without in-depth knowledge of laws and patterns of the studied subject); on the other, the whole course of the development of science shows that the scientist's thinking should not rely solely on the formal logical side. Producing new information can rarely be reduced to either inductive or deductive thinking: "Pure analysis puts many techniques at our disposal, guaranteeing their infallibility; it reveals to us a thousand different ways which we can safely travel; we are confident that there will not be any obstacles there; but which one of these routes is likely to lead us to the goal? Who will tell us what should we choose? We need the ability, which would let us see the target from a distance, and this ability is intuition. A researcher needs it to choose of the way, and his follower needs it no less to know why he chose it" [16, p. 214]. With regard to the methodology of the history of medicine, Professor D.A. Balalykin says: "We are trying to answer the question: How does [the scientist] come to his discovery? Right after which, there follows: why him (and not someone else), and in this place and at this time (as opposed to some other)?" [17, p. 10] In this sense, clinical reasoning is not only about solving complex logic problems, but also about powers of observation, the ability to gain the patient's trust and a developed intuition and "reproductive imagination" that allows one to imagine the pathological process in its entirety [18]. Here, applying the method of situational cases, helpful in developing the skill of independently searching for the optimal solution, is indispensable. The complex nature of stating a scientific problem, a systematic outlook at etiology and pathogenesis and a holistic view of the patient all reveal the epistemological reserves for future scientific discoveries.

An important condition for making a good case study is a relevant problematic situation, based on interesting, up-to-date material. A case is a "snapshot of reality", "a photograph of the world around" [19, p. 8]. However, the historical science is mainly engaged in the study of past human societies. In this regard, cases based on recent historical material provide students the opportunity to engage in the search for innovative solutions, in some cases also demonstrating their familiarity, or lack thereof, with the subject. But in our view, that problem as well is methodological rather than ontological. In order to avoid it, it is enough to shift the scientific interests of a case study participant toward the logical-epistemological aspects of the history of medicine. In this case, the student will not only get answers to questions about who discovered it and when it was invented, but will also consider such questions as what factors contributed to a discovery, why it was made at this time and how that knowledge could be obtained.

Finally, it is difficult to maintain a keen interest in case studies whose scientific problems remain in the distant past. Students tend to listen eagerly to such material, but are passive in

working with it. A shift in focus from description to analysis of the formation and development of history of medicine and its operational procedures permits students to reconstruct the formation of medicine as a science and apply the result of work on a case study to understanding, for example, the correlations between various methods and current medical reality.

Comparing the advantages and disadvantages of the case study method, we can speak about the feasibility of its use in teaching the history of medicine, because even in the initial stage of training it helps students acquire a skillset needed for differentiating assessments and finding possible solutions for problems posed, as well as for choosing the optimal ways of solving them. It has been found beneficial for the following skills: problem structuring, which involves defining the problems of the case, the typology of their properties and ways to resolve them; analyzing the system of case assessment and ranking its conditions and consequences; predicting the possible, the potential and the desired outcome; stating one's position in a clear and concise manner in oral and written form, defending one's point of view; and programming one's activities in a given situation.

Medical knowledge, like any socially conditioned knowledge, reflects the mores of a particular era – society's culture, its history, science, law and morality. Medical science uses the experimental and theoretical knowledge of related sciences, appropriating their methods and ideas. However, in most current textbooks on the history of medicine, we find dry information about what theses were put forward and what methods were used at different times by various physicians. Quite rare are interesting explanations of why doctors made certain decisions, why they defended their precise views and why they felt it important to justify their teachings with those particular statements. However, to prevent the history of medicine from becoming a "cemetery of more or less forgotten doctrines" [20], it is also important to mention why in serving the general object of medicine – the prevention and treatment of human diseases – doctors in different times were faced with different problems, what caused their choice of means to solve them and why the standards of treatment success varied. Nearly always the answers to those questions lie in the plane of conceptual assumptions (or theories), which a researcher assumes for himself explicitly or implicitly. In our view, identifying specific features of the formation and development of medical doctrines of the past and present, of the way medical thinking developed in different eras and of assessing the impact of social conditions on the development of studying human health and disease, is the essence of the history of medicine, both as a science and as an academic discipline [21–23].

The "lifetime" of medical information is now reduced, and its volume increases; hence the search for new technologies for the retrieval and usage of the newly created medical information, which also affects the process of teaching the history of medicine. Application of the case study method helps to implement action-oriented learning, and using it as a research strategy helps to teach medical students to conduct a detailed analysis of a particular situation and to solve a poorly structured problem of great complexity, as well as teaching them the importance of context in making decisions – i.e., the essentials for the further formation of clinical thinking skills.

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