

Teaching and learning the History of Medicine in the university: some considerations after the students' final exams

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Abstract. Reports about the teaching of the History of Medicine in universities worldwide can be found easily in medical literature. They are often comparative studies in which the opinions provided by the professors of History of Medicine are collected and the teaching programs are compared. A survey was also done based on questionnaires given to the students, in which queries about programs and matters of the teaching were proposed, but answering the closed and predefined questions of a questionnaire can limit or condition the opinion of the student on the subject. Our study is instead centered on the final tests of the students, in which the candidate had the ability to choose the topic of discussion, and to outline his personal analysis. In this way the interaction between the student and the discipline, and his feelings about it appears to be more clearly recognizable. Therefore, this study may be proposed as a contribution to improving the knowledge surrounding the various scenarios that characterize teaching the History of Medicine, and more so the Humanities, in Italian universities today.

Key words: medical education, teaching history of medicine, medical school curriculum, medica humanities

Introduction

As early as 1941, an American gynecologist by the name of Frederick Loomis wrote that there is a great difference between the science of medicine and the art of medicine, and that the patient is in need of both. While science is taught in every medical school, art is taught in a relatively small number of schools, and even then, it is the student himself who unconsciously learns the best way to do things (1).

The overall organization of studies in the degree program in medicine, is as a whole based on the model of bio-medicine – namely the perspective of medicine as science that mainly emphasizes the biological and physiological principles applied to clinical practice.

This risk of imbalance may cloud the human dimension of medical practice and does not help the student develop the awareness that his future profession requires and attitudes and methods that go beyond pure technical knowledge (2, 3). The skills acquired by

the student according to the exclusive model of bio-medicine must match, at the time of application in the practice, with the cultural and social context, the economic situation, and the anthropological dimension of each person. The doctor-patient relationship sometimes resembles a true art rather than a pure science.

Due to this pedagogical concern, in the early sixties of the twentieth century in the United States, the so-called Humanities became part of the curricula of medical schools (4). The inclusion of the Medical Humanities in the study programs, spreading from the United States to other contexts such as the European one, is considered a great innovation in medical education in recent years (5). It would be optimal if one could transmit the contents of the Medical Humanities into every single clinical teaching, as well as in medical practice. This would allow the human and clinical dimension to merge into the unicum of the patient, thus integrating them into the so-called hidden curriculum, namely the set of cultural contents, expect-

tations, and values that are not formally communicated and established, but which are nevertheless transmitted within a learning environment (6, 7).

This kind of approach, which David Jones summarizes as “infiltrating the curriculum”, has already been integrated into the educational systems of some American Universities (8, 9).

The History of Medicine, as part of the Medical Humanities, serves as a valuable tool when it comes to teaching students the concept of medicine as a science that is applied to humans, and helping them understand that the role of the physician is to not only act as a clinician and as a scientist, but also as a figure who is included in a social context. In fact, the study of the History of Medicine, whether it be by way of discoveries and progress or errors and failures, can help the student in pre-clinical training when it comes to understanding the professional identity that has been built over the centuries by responding and modeling to the sociocultural circumstances of every age, with a critical spirit.

The statements of the Italian Ministry for Education, University and Research, concerning the academic discipline encoded as MED/02 S.S.D. (Settore Scientifico-Disciplinare - Scientific-disciplinary Sector) foresees that the History of Medicine is interested in scientific and didactic-training activity in the medical history field, including medical museology, paleopathology, and the history of veterinary medicine; the discipline also focuses on developing skills in bioethics, the history of bioethics, and the aspects of teaching in the health sector that are derived from the history of the medical sciences.

The limited amount of lecture times that are offered for frontal lessons force the teacher to limit the number of topics that are to be taught in the classroom, thus obliging him to make a suitable choice when it comes to offering the student adequate elements to develop an autonomous critical approach to the discipline.

Unlike the strictly technical-professional, biological, and clinical subjects, which lend themselves to a didactic program that is built in a fairly standardized way, so as to lead the student to achieve the necessary skills, the fluidity of the topics that the History of Medicine offers, allows one to reach educational

objectives in variety of ways. The aforementioned academic fluidity may allow teachers and students to build, through an appropriate interaction, a path that is not necessarily pre-established, but is flexible and adaptable, in light of previous experiences.

Beginning with a description of the experience of the semiannual course about the History of Medicine, this study then moves on to an analysis of the topics discussed during the students' final exam, which was based on an autonomous and individual choice. The aim of this study is to obtain an indication of the level of interest they developed in relation to the subject matter, to understand the students' ability to individually elaborate one of the chosen subjects, and to comprehend the teacher's final expectations in regards to the panel of issues discussed during the lessons.

In order to complete the above-mentioned analysis, the results obtained from the exam survey were compared to those that were collected from the answers of the students' questionnaires for the evaluation of the course's didactic at the University of Bologna's Medical School.

Reports about the teaching of the History of Medicine in universities worldwide can be found easily in medical literature (10-13). They are often comparative studies in which the opinions provided by the professors of History of Medicine are collected and the teaching programs are compared. A survey carried out by Neil H. Metcalfe is based on a research in 32 universities in the United Kingdom and highlighted how the History of Medicine is delivered, learnt, and assessed in a variety of ways as a Student Selected Component (optional modules) of the curriculum (14). This study is based on questionnaires given to the students, in which queries about programs and matters of the teaching were proposed, but answering the closed and predefined questions of a questionnaire can limit or condition the opinion of the student on the subject. Our study is instead centered on the final tests of the students, in which the candidate had the ability to choose the topic of discussion, and to outline his personal analysis. In this way the interaction between the student and the discipline, and his feelings about it appears to be more clearly recognizable.

Therefore, this study may be proposed as a contribution to improving the knowledge surrounding the

various scenarios that characterize teaching the History of Medicine, and more so the Humanities, in Italian universities today.

Materials and methods

During the 2014-2015 academic year, the University of Bologna's Medical School introduced a slight change to the structure of the first year of the Course of Medicine and Surgery. In addition to the two customary groups (identified as channels A and B) in which the students are generally divided, a third group (deemed the Recovery Channel) was set up in the second semester. This additional group was created for students that were enrolled with reserved status in the school, by virtue of the legal appeal against the national admission selection test in the 2014-2015 academic year. One hundred and thirty students were thus enrolled in this Recovery Channel. According to the school programs, they followed the Integrated Course of Human Anatomy - History of Medicine. The History of Medicine module provided eight hours of frontal teaching and was assigned to an external teacher (NNA) in possession of the National Scientific Qualification for the Competition Area 06/A2, comprehending the History of Medicine disciplines, and with previous experience in teaching at the university level as a contract professor of History of Medicine and Medical Humanities. For the purpose of setting up the examining board, an „exam board member“ (Cultore della Materia) trained in the discipline, was also appointed (E.A.).

Considering the limited number of hours of scheduled teaching, only some introductory and general issues were dealt with during lessons, namely:

- 1) History of Medicine's role in the training of the medical doctor
- 2) The teaching of medicine before and after the birth of the University
- 3) Origins and evolution of hospital care
- 4) The development of anatomy from antiquity to the nineteenth century: normal and pathological anatomy, the microscope, microscopic anatomy, and the study of the cell and tissues.

The learning material used in the classroom was

made available to all students, both those attending and those not attending to the lessons, thanks to the AMS Campus platform that was specially created on-line by the University of Bologna. In addition, the teacher also placed a file on this site containing the entire historical path of medicine, from its origins to the nineteenth century, that he had already used in his other courses, so as to give to the students a general trajectory for their studies. For the final examination, students were asked to discuss a topic of their choice in the field of the History of Medicine, including topics that were not discussed in class. The topic was discussed in a short paper, which was then presented orally to the examining commission. The commission then used the paper topic to develop the oral questions that were used to evaluate the candidate's acquisition of autonomous critical reasoning.

The dissertations presented by the students were then collected and filed. Once the exams were completed, this material was submitted for careful review, in order to elaborate upon and draw out the elements that would be most useful for an assessment of the students' educational path.

Moreover, at the end of each course, the University of Bologna's Medical School gave the students an optional and anonymous questionnaire in order to evaluate the didactic activity. For the 2014-2015 academic year, the questionnaire included seventeen questions that encompassed all the didactic aspects (teaching, classrooms, didactic material, final exam procedure, etc.) with respect to which the students were asked to choose one of the following four possibilities of personal judgment: Clearly NO, More NO than YES, More YES than NO, Clearly YES.

The results that emerged from the questionnaires were analyzed and compared with what emerged from the students' exams.

For the purpose of this study, the papers were first divided into two sets, depending on whether they were characterized mainly by historical-philosophical contextualization, or rather bio-medical (iatrocentric) contextualization, in regards to the topic. Within these two sets, some main thematic subcategories were been identified. Due to the complexity of this discipline, and the fact that some topics pertained to several of these subcategories, it was decided that the commis-

sion should consider them as belonging only to the more predominant category.

Results

Starting from the summer session of the 2014-2015 Academic Year, and in the following sessions leading up to June 2016, one hundred and fifteen students took the exam, which included delivering the dissertation and discussing it orally.

The topics presented at the final exam were allocated between the two main areas of interest determined above without much difference: 53% concerning the historical-philosophical area, 47% concerning the iatrocentric area.

The students' topics on historical-philosophical issues have been further grouped in the following subcategories (Tab. 1):

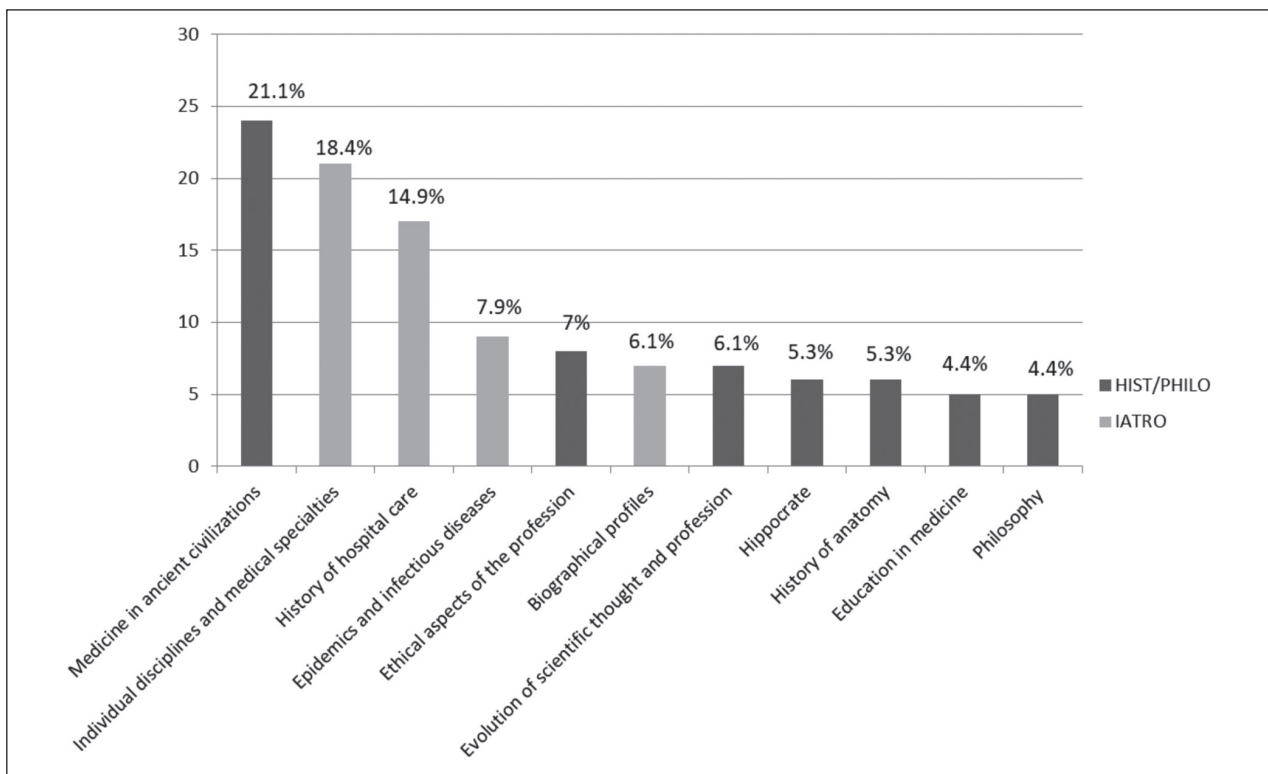
Medicine in ancient civilizations: 24 dissertations (21.1%). This category collected three papers dedi-

cated to medicine in Ancient Rome, five dedicated to Egyptian medicine, nine dedicated to medicine in Ancient Greece, and six compared Greek and Roman medicine. In terms of percentage, this grouping represents the subcategory chosen most by the students. While these issues were only dealt with in an introductory way during the lessons, the fact that 24 students chose to write a dissertation on this topic leads us to conclude that they were interested in the subject matter themselves.

Ethical aspects of the profession: 8 dissertations (7%). This category collects very different dissertations in amongst themselves, in addition to issues exclusively dealing with ethics and deontology, such as the right to health, the medical sciences, the gender medicine, the the doctor-patient relationship.

Evolution of scientific thought and medical practice: 7 dissertations (6.1%). This subcategory includes the students whose topics deal with events and discoveries that have marked the progress of scientific thought and medical practice.

Table 1. Students dissertations presented at the final exam broken down by topics and allocated between the two main areas of interest: historical-philosophical area (HIST-PHILO), and iatrocentric area (IATRO)



Hippocrates: 6 dissertations (5.3%). The commission decided to consider this subject in a distinct way, even though it may be included in other categories for two reasons. The first reason is quantitative in nature, because the number of works that had the Hippocratic figure as their theme was numerically relevant in itself. The second reason for the creation of this subcategory is the variety of profiles chosen by the students: biographical, ethical-deontological, scientific-philosophical – thus demonstrating that this theme deserves an autonomous categorization.

History of anatomy: 6 dissertations (5.3%). As for those dedicated to Hippocrates, it was decided to maintain a separate category for the relevance of this topic. The history of anatomy has been addressed by highlighting the aspects related to the scientific innovation that it represented, creating a socio-cultural contextualization of the historical period in which the practice of dissection was reintroduced, and studying the artistic repercussions resulting from the evolution of anatomical sciences. All the works dealt with anatomy using a predominantly humanistic interpretation. For this reason, one must consider these dissertations as belonging to the historical-philosophical and non-iatrocentric area.

Education in medicine: 5 dissertations (4.4%). This category includes dissertations that have retraced the main historical phases of the evolution of medical training or focus on particular moments and facts (for example the Scuola Salernitana).

Philosophy: 5 dissertations (4.4%) The dissertations were based on the relationship between the philosophical and scientific disciplines in Medicine. They studied the epistemology of scientific method and clinical reasoning by relating the models of the scientific environment with those of the surrounding human society. The students' dissertations about Bio-medical issues (iatrocentric) have been grouped into the following sub categories (Tab. 1):

Individual disciplines and medical specialties: 21 dissertations (18.4%). The students chose to discuss the history of some medical specializations and / or pathophysiology of organs and apparatuses. Their choices were often motivated by their interest in a specific medical discipline, which had already begun to emerge after their first year of study. This led the

students to carry out the completion of their dissertations with great research autonomy.

History of hospital care: 17 dissertations (14.9%). In order to develop this topic, the students were provided with the teaching material that was used by the teacher in the classroom. There were also some dissertations that successfully personalized the topic and treated in a very original way. For example, some students carried out historical research on local hospitals that are located close to their residence.

Epidemics and infectious diseases: 9 dissertations (7.9%). In this group, it is perhaps easier to appreciate the willingness of the student to seek a synthesis of the interpretative keys of the History of Medicine, thus drawing up a social, philological, and historical-scientific framework of the main epidemics and infectious diseases in history (plague, tuberculosis, and AIDS) – taking on the perspective of both the doctor and the patient.

Biographical profiles: 7 dissertations (6.1%). The selected biographies focused on figures that played a pivotal role in the History of Medicine, such as Giovanni Battista Morgagni (1682-1771), Ignaz Philipp Semmelweis (1818-1865), William Conrad Roentgen (1845-1923), and Florence Nightingale (1820-1910).

Furthermore, it was then possible to divide the students' dissertations in relation to their degree of originality and personalization, with respect to the themes proposed by the teacher. During the exam period:

36 students (31.3%) were inspired to choose dissertation topics that were contained in the teaching material that was made available by the teacher on the AMS Campus platform but not presented during the lessons.

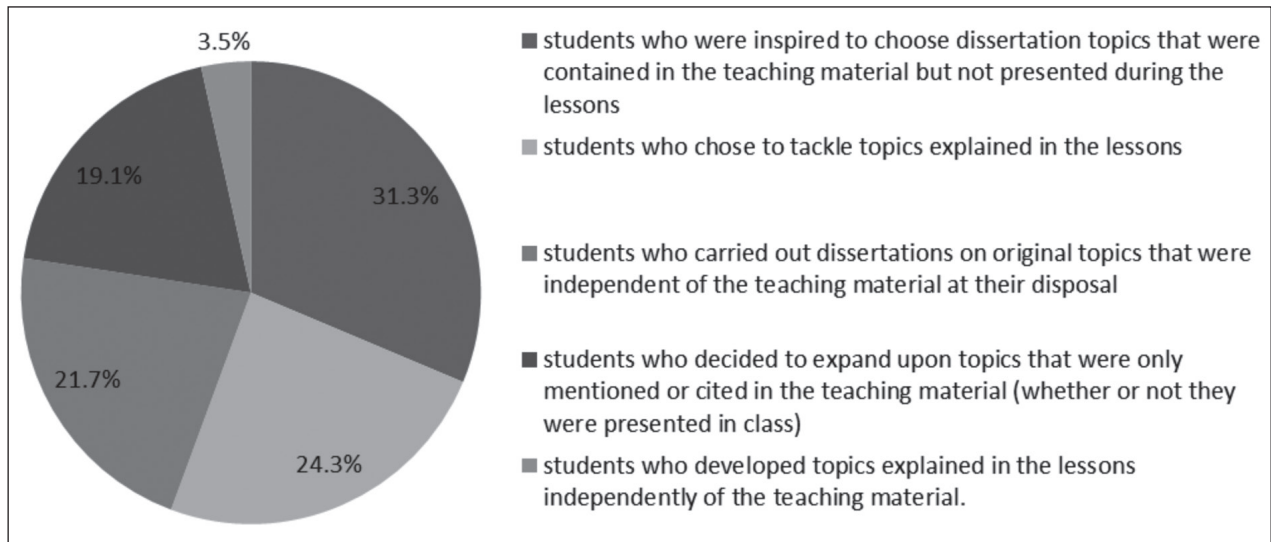
22 students (19.1%) decided to expand upon topics that were only mentioned or cited in the teaching material (whether or not they were presented in class) in their dissertation.

25 students (21.7%) carried out dissertations on original topics that were independent of the teaching material at their disposal.

28 students (24.3%) chose to tackle topics explained in the lessons, and the main subject of their dissertations was the history of hospital care.

4 students (3.5%) developed topics explained in the lessons independently of the teaching material.

Table 2. Students dissertations divided in relation to their degree of originality and personalization with respect to the themes proposed by the teacher



Thirtyfive students filled in the the questionnaire for the evaluation of the course, which amounts to just over a quarter of the total number of students. Of the 17 questions proposed in the university scheduled format, the following six were considered as relevant for this study:

- 1) Was the preliminary knowledge possessed sufficient to understand the topics included in the exam program?
- 2) Is the teaching material (that is indicated and available online) adequate for the study of the subject?
- 3) Were the examination methods clearly defined?

- 4) Does the teacher stimulate interest in this discipline?
- 5) Has the teaching been carried out consistently with what was stated on the course website?
- 6) Were you interested in the topics covered in the course?

The summarized results of the inquiry provided by the university offices show that the positive opinions (More YES than NO, Clearly YES) were 97.1% for the first question, 91.4% for the second question, 88.6% for the third question, 94.3% for the fourth question, 97.1% for the fifth question, and 91.4% for the sixth question (Tab. 3).

Table 3. Most relevant results about students questionnaire for the evaluation of the course of HIstory of Medicine

Question	Positive opinions
Was the preliminary knowledge possessed sufficient to understand the topics included in the exam program?	97.1%
Is the teaching material (that is indicated and available online) adequate for the study of the subject?	91.4%
Were the examination methods clearly defined?	88.6%
Does the teacher stimulate interest in this discipline?	94.3%
Has the teaching been carried out consistently with what was stated on the course website?	97.1%
Were you interested in the topics covered in the course?	91.4%

Discussion

Prior to commenting on the results of this report, some methodological aspects must be considered: this study is based on a fairly small sample, which refers to a single academic year and to a single university. In order to carry out a more extensive survey, it would be beneficial to expand the research. However, it is important to be aware of the fact that individual teachers adopt different teaching and examination methods, which may lead to difficulties in outlining a homogeneous collection of data.

To begin with, this study shows the tendency of students to consider other topics as well as those discussed in lessons. Furthermore, they tend to develop dissertation topics in a personal way, thus taking advantage of their freedom to choose content based on their own attitudes, aspirations, interests, and cultural background.

Second, out of the 32 students (27.8%) who chose to focus on topics discussed in class, 28 of them (24.3%) solely relied upon the teaching material that was at their disposal. Therefore, one can argue that these students are not willing to further develop their personal research skills and to expand upon what has already been explained by the teacher; On the other hand, 4 of them (3.5%) developed the subject independently of the teaching material, and adopted a method that revealed their personal interests in the topic. In fact, one can argue that the course topic aroused their interest in this field of study, which led them to further develop it.

Third, nine dissertations (7.8%) dealt with topics related to the place of origin of the students. For instance, some students from Rimini discussed the "*domus of the surgeon of Rimini*" in a in-class presentation. Fourth, three dissertations analyzed the role of women in the History of Medicine. Due to the fact that all of these papers were written by female students, one can gather that future female doctors can already perceive gender inequalities, and feel the social responsibility to change this structure.

In light of the above, it is now possible to connect the results of the final examinations and the opinions expressed in the questionnaire regarding the teaching activities.

Despite the limited and partial representativeness of the sample (it was not obligatory to complete

the questionnaire in order to take the exam, as it was in some other universities), the opinions previously highlighted seem to be reinforced by the questionnaire results. For example, the students showed interest in the discipline itself, and this agree with the fact that several of them also chose topics that were not included in the teaching program (questions 4 and 6). They also were successful in the examinations, thus proving that they were able to understand the relevant mode of examination (question 3). A connection between the student's cultural background and the topics discussed during the exam was identifiable (question 1). Finally, the circumstance that a large part of the students expressed a positive judgment on the teaching material (question 2) highlights the fact that they were inspired by it, which then encouraged them to further develop these topics by using external sources.

More, the categories with the highest number of dissertations were: "Medicine in Ancient Civilizations" and "Individual Disciplines and Medical Specialties" (also including physiopathological or therapeutic topics related to some diseases). The first of these choices suggests that the students were interested not only in the strictly technical aspects of medicine, but also in the evolution of medical thought, its socio-cultural contextualization, and the intertwining of social dynamics and the humanistic-literary world.

The second of these choices highlights the fact that students tend to decide upon their specialization within the first years of medical school. As a consequence, students risk focusing on specific parts of medicine rather than the sick person as a whole. At the same time, an epistemological approach leads the student to comprehend that the evolution of a single medical specialty is connected to the evolution of all the other specialties, and overall that they are focused on the human being.

Finally, 85 of the students (74%) did not mention any bibliographic sources, which highlights the lack of methodological skills. While there was no instruction given in regard to creating a bibliography, this shows that the teachers cannot assume that first-year students have any knowledge of these skills. With regards to the oral examinations, it is clear that the students grasped the material overall, with a generally satisfactory interview.

Conclusion

The teaching of the History of Medicine is traditionally taught during the first year of Medical School in Italian universities. One can argue that including this course in the first year is a logical choice because it allows the students to study the foundations of medicine. On the other hand, one may claim that students are not capable of fully understanding the depth of this material, especially in regard to iatrogenic topics compared to the historical-philosophical subjects. It is, therefore, the duty of the teachers to understand how to make the History of Medicine accessible to the students (15). They must not limit their instruction to a simplistic list of episodes or definitions, and should instead insist upon the use of a methodological approach, critical rigor, and questioning the facts. As G. Armocida writes, the History of Medicine should focus on “historical information, which is useful to approach ideas and methods of the present, through the conscious use of conceptual, intellectual, and logical tools” (16).

J. Jones recently highlighted, “We believe that historical analysis can contribute to medical education in exactly the same ways as anatomy, biochemistry, or pathophysiology, as a fundamental component of medical knowledge. If this argument can be made visible through solid pedagogy, then the system of competencies can itself become a structure for demonstrating the value of history” (8). In conclusion, this study represents a proposal for further and more detailed investigations, with the involvement of a greater number of students from a variety of university medical schools, and through repeated observation in multiple academic years. For example, the multicentric collection of data makes it possible to compare different teaching models. Further, if the final exam is based on a free choice of topics, it must be remembered that students can change their choices over the years, and this fact could represent how contemporary events impact their approach towards the history of medicine.

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