

# How do students approach the study of the History of Medicine? Some considerations after the final exams at the first year and fourth year.

*Emanuele Armocida*<sup>1</sup>, *Nicolò Nicoli Aldini*<sup>2</sup>, *Ovidio Bussolati*<sup>1</sup>

<sup>1</sup>Department of Medicine and Surgery, University of Parma, Parma, Italy; <sup>2</sup> Società Italiana di Storia della Medicina, Bologna, Italy

**Abstract.** *Background and aim:* 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 are collected and the teaching programs are compared. Our study focuses instead on the relationship between the students and the discipline, what they look for from it, and how their interest changes with the progress of the course of study. *Methods:* The final tests of the students of two Italian universities, Parma and Bologna, were analyzed, in which the candidate had the ability to choose the topic of discussion and to outline his personal analysis. The course year in which the final examination was faced is different: in the first year in Bologna, in the fourth year in Parma. *Results:* This survey shows that in both universities most students have carried out autonomous research regardless of the educational material made available to them. This attitude can be interpreted as a real interest in the history of medicine, widening their search throughout all the fields of the discipline. *Conclusions:* These results seem to suggest to teachers of History of Medicine to convey to their students the methodology of historical and epistemological research, giving the student to the pupils the opportunity to become passionate about history in the way he/she prefers. ([www.actabiomedica.it](http://www.actabiomedica.it))

**Key words:** History of Medicine; Medical Humanities; Medical Education; Learning attitudes; Medical teaching.

## Introduction

Reports about the teaching of the History of Medicine in universities worldwide can be found easily in medical literature.

The most addressed issues are the following four.

First, why the study of the History of Medicine?

This teaching is not present in all medical schools, and is sometimes proposed as an optional course (1-3).

Many arguments have been developed on the value of the historical perspective,(4,5) but there remains a lot of skepticism about whether history is actually essential for physicians, considering the temporal limits

of the congested medical curriculum (6-9).

Secondly, what to teach about the extensive History of Medicine program during the course of Medicine to make it preparatory to medical practice?

The history of medicine, once acknowledged as important and promoted in medical education, is hindered by limited resources and temporal curricular limits.

There is also a great variability of approach to the subject, and in the choice of topics in universities (10-15).

Indeed, it is not possible to standardize the program, which is too extensive for reasonably few hours

of lesson assigned to teachers by the educational curriculum.

For example, 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 choices of the topics are certainly influenced by the curriculum of teachers who are clinician-historians or non-medical scholars (1,10,16).

In some cases the choice of topics has been directed by the students (14).

Third, how to teach the History of Medicine?

In addition to topics, teaching methods can also change a lot from university to university based on the teacher's opinions.

In order to bring students closer to the subject, more involving alternatives were proposed with respect to the frontal classes: relying on emotional intelligence of the students, priority was given to the biographical approach and the contact, as direct as possible, with the sites, books and instruments that have characterized this story (14,15).

The teaching method, again, can be influenced by the teacher's curriculum and by their scientific interests.

The fourth question is: when to face the history of medicine during the degree course?

It is debated whether it is more correct to teach the history of medicine in the first years of university, so that it is a basic knowledge that together with the other aid the student will then better approach the clinical subjects (14,15,17), or if it is more correct to introduce the history of medicine only after the acquisition by the student of clinical knowledge (then in the second part of the medical school study plan) (11,12). In some universities history of medicine education was offered to medical students during all years of training (1,18).

In Italy the reform of the studies of the Degree in Medicine of 1986 (Gazzetta Ufficiale, Serie Generale n.83 ,10-04-1986) included the teaching of the History of Medicine integrated with that of semeiotics and of clinical methodology in the second part of the degree curriculum (i.e. from the 4th to the 6th year).

Today History of Medicine is usually taught during the first year of Medical School in Italian universities, sometimes as integrated course.

Unfortunately, when medical history teachings are offered as not compulsory, they are being selected by a diminishing number of students (6,14).

On the other hand, isolated empirical studies seem to suggest that after the course the usefulness of the history of medicine is more appreciated by the students (18), and it is important that the teacher listens to the suggestions of the students to improve the appreciation of his teachings (17,19).

Historically, students often led the early stages of education reform and their innovations focused on the medical humanistic disciplines (20).

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 practitioner who is included in a social context. The study of the History of Medicine can help the student in training to understanding the professional identity that has been built over the centuries by responding to and modeling the sociocultural circumstances of every age with a critical spirit.

The request for introduction of medical humanities into the degree programs by the students and their lack of interest for history of medicine creates a mismatch. Students are rarely asked what they consider to be more educational than the extensive history program.

A survey carried out in 32 universities in the United Kingdom has 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 (21). 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. In Bologna (Italy) a study is centered instead 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 appear to be more clearly recognizable (22).

At the University of Parma a method of teaching and examination similar to that described in Bologna is used, with a substantial difference: in Bologna the history of medicine is a subject of the first year, in Parma a part is taught in the first year, a part in the second, and finally a part in the fourth year at the end of which the final overall exam is scheduled.

The present study aims to verify how the medical student modifies the personal approach to the history of medicine with the progress in its formative course and to see if its historical interests are modified after the acquisition of more clinical knowledge.

## Materials and Methods

The University of Parma's Degree in Medicine and Surgery provides in the school program the teaching of History of Medicine.

History of Medicine is scheduled in three modules, each consisting of 7 hours of frontal teaching, distributed as follows: one in the first year of studies, one in the second year of studies and the last in the fourth year of studies.

Considering the limited number of hours of scheduled teaching, only some most significant or general issues were dealt with during lessons (Tab.1).

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 a platform that was specially created on-line by the Universities.

The course is compulsory and at the end of the three modules the student must take a final exam.

For the final examination, students were asked to make a short presentation (10-15 slides). The topic, relevant to the History of Medicine, is freely chosen by

the student, including topics that were not discussed in class.

For the purpose of this study, the presentations drafted by the students were collected and filed, then were divided into two sets, depending on whether they were had a more historical-philosophical or biomedical (iatrocentric) approach in regards to the topic. Within these two sets, some main thematic subcategories were been identified. Due to the complexity of this

**Table 1:** Comparison of the History of Medicine course in Parma and Bologna, showing the distribution of contact hours and the topics covered in class.

PARMA	BOLOGNA
YEAR OF STUDY: 1 CONTACT HOURS: 7	YEAR OF STUDY: 1 CONTACT HOURS: 8
<ul style="list-style-type: none"> <li>- History and medicine.</li> <li>- Evolution of diseases and evolution of medicine.</li> <li>- The concept of pathocenosis.</li> <li>- The case of smallpox.</li> <li>- AIDS as an example of "new" disease.</li> <li>- Medicine in ancient Egypt, Greece and Rome.</li> </ul>	<ul style="list-style-type: none"> <li>- History of Medicine's role in the training of the medical doctor</li> <li>- The teaching of medicine before and after the birth of the University</li> <li>- Origins and evolution of hospital care</li> <li>- 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</li> </ul>
YEAR OF STUDY: 2 CONTACT HOURS: 7	
<ul style="list-style-type: none"> <li>- Medicine in the Middle Age and in the Modern Age</li> <li>- The "Black Death" and its consequences on the development of medicine and health organization.</li> </ul>	
YEAR OF STUDY: 4 CONTACT HOURS: 7	
<ul style="list-style-type: none"> <li>- The scientific revolution of medicine: the 19th century</li> <li>- A protagonist: Rudolf Virchow</li> <li>- The 20th century: the molecular medicine, the impact of globalization, the rise and downfall of the universalistic systems</li> <li>- From the "dream" to the "tiramny" of health</li> </ul>	

discipline, and the fact that some topics pertained to several of these subcategories, it was decided that the commission should consider them as belonging only to the more predominant category.

The originality of the works presented by the students was also assessed, determining whether they had been inspired to choose topics that were contained in the teaching material.

Finally, the results obtained were compared with those that emerged from a similar study carried out in Bologna on 115 students examined in their first year of study.

The two studies were considered to be comparable mostly for the following reasons:

- 1) both courses of History of Medicine were compulsory;
- 2) the two courses of History of Medicine had final evaluation exams carried out in similar ways;
- 3) 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 platform that was specially created on-line by the Universities;
- 4) In both courses, only some significant or general issues were dealt with during lessons.

The main differences between the two history courses were (Tab.2):

- 1) the number of hours of frontal lessons
- 2) the distribution of courses within the study plan
- 3) teacher training

## Results

The presentations of 309 students from Parma who took the exam were analyzed. The topics present-

ed at the final exam were allocated between the two main areas of interest determined above with large difference: 93.5% concerning the iatrocetric area, 6.5 % concerning the historical-philosophical area.

In the Bologna's sample the two main areas of interest are chosen above without much difference: 53% concerning the historical-philosophical area, 47% concerning the iatrocetric area. (Fig.1)

By grouping the topics chosen by the students of Parma into sub-categories, we tried to use, as far as possible, the subdivision adopted in Bologna to facilitate the comparison of the two studies. This objective has been satisfactorily achieved. It was only necessary to create a new sub-category with respect to Bologna, that of paleopathology (Fig.2).

The students' topics on historical-philosophical issues have been further grouped in the following sub-categories:

Medicine in ancient civilizations: 0.3% students of Parma. This subcategory collected one presentation dedicated to medicine in Ancient Greece. These issues were dealt during the lessons.

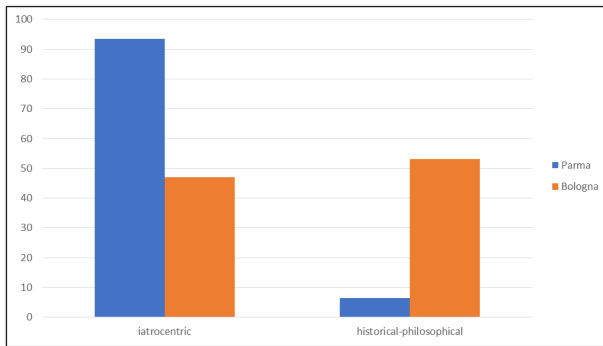
In terms of percentage, this grouping represents the category chosen most by the students of Bologna: 21.1%. While these issues were only dealt with in an introductory way during the lessons, the fact that 24 students chose to write a dissertation on this topic leads us to conclude that they were interested in the subject matter themselves.

Ethical aspects of the profession: with the 2.9% it represents the most chosen historical-philosophical topic in Parma. This subcategory collects dissertations dealing with ethics, deontology, and the right to health. In Bologna 7% of students chosen this subcategory.

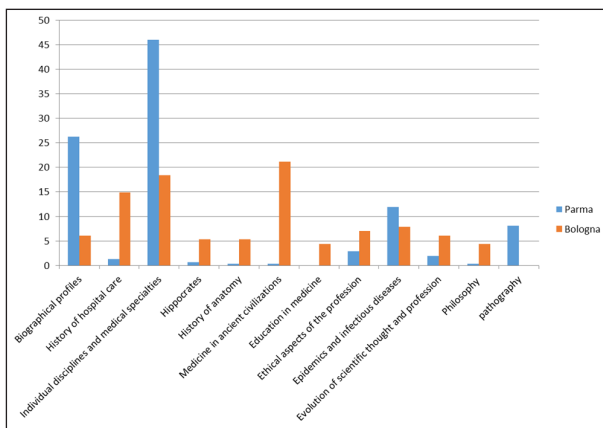
Evolution of scientific thought and medical practice: 1.9% students of Parma. This subcategory in-

**Table 2:** Main differences between the History of Medicine course in Parma and the one in Bologna.

	<b>Bologna</b>	<b>Parma</b>
Number of contact hours	8	21
Distribution of courses within the study plan	First year of studies	3 modules: First year of studies, Second year of studies Fourth year of studies
Teacher training	Medical Doctor, external teacher in possession of the National Scientific Qualification for teaching History of Medicine disciplines	Medical Doctor, Associate Professor of General Pathology



**Figure 1.** Distribution between historical-philosophical area and iatrocentric area of the topics chosen by the students of Parma and Bologna.



**Figure 2.** Students dissertations presented at the final exam in Parma and in Bologna broken down by topics

cludes the students whose topics deal with events and discoveries that have marked the progress of scientific thought and medical practice. In Bologna 6.1% of students chosen this category.

**Hippocrates:** 0.6% of students of Parma, compared to 5.3% of Bologna. The commission decided to consider this subject in a distinct way, even though it may be included in other categories. The reason for the creation of this subcategory is the variety of profiles available to the student: biographical, ethical-deontological, scientific-philosophical.

**History of anatomy:** 0.3% of students of Parma, compared to 5.3% of Bologna. As for those dedicated to Hippocrates, it was decided to maintain a separate subcategory for the historical relevance of this topic. All the works dealt with anatomy using a predominantly humanistic interpretation.

**Education in medicine:** none student of Parma, compared to 4.4% of Bologna. In Bologna, themes attributable to this topic were presented by the teacher and his teaching material. For this reason the choice of the student could have been influenced. 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:** 0.3% of students of Parma, compared to 4.4% of Bologna. 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 Biomedical issues (iatrocentric) have been grouped into the following sub categories:

**Individual disciplines and medical specialties:** 46% of students of Parma, compared to 18.4% of Bologna. It represents the most chosen iatrocentric topic in both groups examined. 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 and that has strongly increased in students who have completed the fourth year of studies. This led the students to carry out the completion of their dissertations with great research autonomy.

**History of hospital care:** 1.3% of students of Parma, compared to 14.9% of Bologna. In order to develop this topic, the Bologna's 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 it 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:** 12% of students of Parma. Themes attributable to this topic were presented by the teacher and his teaching material. For this reason the choice of the student could have been influenced. However, 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. Indeed, even a representative group of students from Bologna chose this topic regardless of the program addressed in class: 7.9%.

**Biographical profiles:** 26% of students of Parma (81 presentations). The selected biographies focused on figures that played a pivotal role in the History of Medicine. In this category it may be interesting to highlight that 10% of the students of Parma presented biographies of subjects still living and, overall, 55% chose biographies of characters that marked the twentieth century. The 6.1% students of Bologna have chosen this category; they have dedicated their research to figures of the seventeenth and nineteenth centuries.

**Pathography:** 8.1% of students of Parma (25 presentations).

A biography that explores the clinical aspects and the effects a disease may have on a person's life. Typically this type of research is applied to famous personalities of the past.

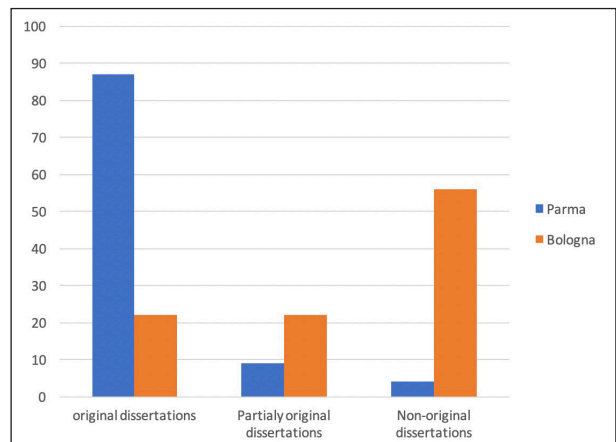
It is a discipline that stimulates the student to exercise his clinical skills by applying them to historical sources.

No student from Bologna has dealt with this topic, probably due to the lack of clinical bases.

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 (Fig. 3).

During the exam period 4% of the students were inspired to choose dissertation topics that were contained in the teaching material that was made available by the teacher, and 9% of the students carried out dissertations with partial originality dealt with topics of history of infectious diseases, a subject widely taught in class. However 87% of the students carried out dissertations on original topics that were independent of the teaching material at their disposal or only mentioned or cited in it.

In Bologna 22% of the students carried out dissertations on original topics that were independent of the teaching material at their disposal; 56% of the stu-



**Figure 3.** Students dissertations divided in relation to their degree of originality and personalization with respect to the themes proposed by the teacher.

dents were inspired to choose dissertation topics that were contained in the teaching material; 22% of the students carried out dissertations with partial originality (19% of the students decided to expand upon topics that were only mentioned or cited in the teaching material; 3% of the students developed topics explained in the lessons independently of the teaching material).

## Discussion

Prior to commenting on the results of this report, some methodological aspects must be considered: this study uses a metanalytic approach, with the resulting limitations. It is believed that bias, the most significant of which the difference of teachers and the organization of the courses, in general does not significantly affect the results obtained.

In the first place, these data suggest that students at the beginning of their studies do not prefer an iatrogenic approach while, with the acquisition of clinical skills, their interest moves to medical subjects, performing an historical investigation on medical topics.

Secondly, analyzing the sub-categories, it seems to be clear that over the years the student has developed an interest in the history of medical specialties.

As a consequence, students might focus more on specific parts of medicine rather than the sick person as a whole. At the same time, an epistemological ap-

proach 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.

Also the interest for medical biographies, often used in teaching by the professors of History of Medicine, increases with the advancing awareness of medical practice.

On this occasion, it is interesting to note that while medical historians question whether it is correct or not to carry out historical analyzes of events that have occurred over the last 50 years (11), it seems that the students have already answered the question autonomously. In fact, 42% of them have dealt with biographies focused on figures who contributed to scientific progress in the 21st century or in the second half of the twentieth century.

Regarding the historical-philosophical sub-categories, the interest in ancient civilizations (a purely historical topic) that stands out among the students in the first year of a course in Bologna is almost absent in the students of Parma who have completed the preclinical three-year period. The figure is even more significant if we consider that in Bologna the study of medicine in ancient civilizations was not particularly addressed in class while in Parma it was.

The choices suggest that first year 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.

In the historical-philosophical area the students of Parma have favored the subcategory of medical ethics, reaffirming an utilitarian and practical approach to the history of medicine. In fact the ethical aspects are of humanistic origin but are applied daily in medical practice.

More, it is interesting to observe that, although a predilection for the iatrogenic approach has matured, the interest in historical analysis does not change.

Indeed, this study shows the tendency of students to consider other topics as well as those discussed in lessons. Furthermore, they tend to develop more research autonomy over time, carrying out 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.

## Conclusions

The results of this survey obtained show that most medical students have carried out historical research regardless of the educational material made available to them. This attitude can be interpreted as a real interest of students in the history of medicine, widening their search throughout all the fields of the discipline. However, their approach to History of Medicine evolves as they acquire clinical skills and awareness of their professional ambitions. In fact, 54.1% of students in the fourth year of study chose a topic of Individual disciplines and medical specialties or Pathography, compared to 18.4% of the first year students.

This attitude may seem to be due to the fact that the first year students are not yet ready for a specialist or clinical approach to medicine, definitely too early.

This propensity of the student must be taken into consideration by the teacher.

It is obvious that the teacher cannot satisfy the interests of each student individually. In conclusion, these results seem to suggest to teachers of History of Medicine to convey to their students the methodology of historical and epistemological research, giving the student to the pupils the opportunity to become passionate about history in the way he/she prefers. 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. The addition in the introductory lectures for each course of a short presentation on the history of that discipline could be another good idea (5), useful not only to spread knowledge in students, but also to elicit in the listeners questions and critical approach.

**Conflict of Interest:** Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

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Correspondence:

Emanuele Armocida

Department of Medicine and Surgery, University of Parma.

Via Gramsci 14

43126 Parma, 43126 Italy

Phone: 3409287585

E-mail: emanuele.armocida@studio.unibo.it