SAPIENZA
UNIVERSITÀ DI ROMA

E-ISSN 2531-7288
ISSN 0394/9001

MEDICINA NEI SECOLI
Journal of History of Medicine and Medical Humanities
36/1 (2024) 103-132

Received: Settembre 2023
Accepted: Novembre 2023
DOI: 10.13133/2531-7288/2902

Corresponding Author:
lluiscifuentes@gmail.com

Vernacular Surgery in the Medieval and Early Modern Latin West: Works, Individuals, and Research Methodologies

Lluís Cifuentes i Comamala
Universitat de Barcelona

ABSTRACT

One of the most surprising aspects of the history of surgery in the medieval and early modern periods is the intense use of vernacular languages in the dissemination of treatises on the subject, via translations, and even in the writing of originals. This vernacularization of surgery began in the thirteenth century and is closely associated with the creation of a new medical system in the Latin West and with the birth of a rational "new surgery", linked to Galenism, to school education, and to the transmission of knowledge in books. This article presents a summary of this interrelationship and the role played by the vernacularization of surgery in the success of these processes, and it upholds the need for an interdisciplinary research methodology in order to gain an overall understanding of it.

Keywords: Surgery - Vernacularization - Surgeons - Latin West - Middle Ages and Renaissance

This study offers a summary of the vernacularization of surgery in the Latin West in the latter centuries of the Middle Ages and the Renaissance. This synthesis uses as a basis the already lengthy research work conducted by the Sciència.cat research group and the researchers who have mentored it[1]. The accumulated research experience makes it possible to place special emphasis on the methodological issues of the study of the subject. The exposition is based on the Catalan-speaking countries, the heart and soul of the composite monarchy known as the Crown of Aragon, which straddled the Iberian, Franco-Occitan and Italic cultural spheres. Precisely for that reason, this Catalan-based exposition will include comparisons with other nearby European contexts. I should point out that in the following summary it is not possible to be exhaustive with the cited bibliography, already very abundant, and more so bearing in mind the multiple facets of the subject that will be taken into account. The exposition will not be limited to the works and translations, as is usually the case, but it will place them in their corresponding historical and social context.

1. A new medical system for a new society

In Western Europe, from the eleventh century onwards, thanks to the initiative of the Church and the peasantry, the limitation of the very high levels of internal violence to which feudalism had led, produced relative stability. This made the creation of a "middle class" possible and, with it, the revival of urban society, which had disappeared from the continent since the end of the Roman Empire. By the thirteenth century urban society was dominant, and it played a key part in strengthening the power of monarchies and other similar rulers over warlords, which at the same time, stimulated its development.

This new model of society, superimposing itself over the feudal system, generated many changes in thinking, beliefs, education or social organization. One of these was the need to manage and guarantee, both individually and collectively, the most highly-prized asset in an urban context: health. This need is increasingly more in evidence during the thirteenth century, which also witnessed the creation of the university as an institution for the education of those aspiring to positions in government and the judiciary, as notaries, and in the Church and medicine. For medicine, the Hippocratic-Galenic medical doctrine – Galenism – was revived, enriched with Byzantine and especially Arabic contributions, and later with those of the academic doctors themselves. With the direct involvement of bourgeois and noble elites and of the rulers (monarchies, municipal councils, the Church), from the last quarter of the thirteenth century a new medical system began to be constructed founded on the model of academic medicine and on that of the university-trained medical practitioner. This model was regarded as the tool most useful for managing healthcare and offering the proper guar-

antees. It was however unable to provide the graduate physicians (*fisici*) needed to meet the healthcare needs of the whole population, and even less so at a price that the majority could afford. Therefore, for centuries, it had to rub shoulders with the reality of the traditional training and practice of medicine, and all the other healthcare professions, which shared the same unschooled master-apprentice system as all the artisanal trades – a system of training and practice that, in the history of medicine, has been called the "open system" in opposition to the other one, based on formal studies. The history of the first centuries of that new medical system (which, with many changes, is still in use today) is the story of how to make the two models of professional training and practice coexist and, in particular, of how to integrate the vast majority of non-university-trained medical practitioners in the system, among whom those who practised surgery stood out. It was a success story, as the new medical system was soon embraced by the elites and society as a whole down to the lowest sectors, by the medical elite and non-academic practitioners, in the towns and cities and the countryside. It was a process that began in the north-western Mediterranean arc, from Sicily to Valencia, where urban society developed first and most intensely, and in no time it spread throughout the Latin West[2].

The urban society that had created the universities and introduced a new medical system posed a challenge hitherto unprecedented in the field of knowledge. The clerical elites, by definition Latin scholars, who had previously monopolized the creation and spread of knowledge, reading and writing, and everything that depended on it, beginning with the government, made way for new "lay" sectors – that is, not clergymen and not acculturated in Latin – who wished to take part in it and make use of it. These lay urban sectors, who were gradually making the change from the oral to the written transmission of knowledge, realized that the ability to read and write was a formidable asset for managing everyday life and for the possibilities of advancement. Contrary to what the commonplace says, more widespread than it seems, the spread of literacy was intense and growing[3].

For these lay urban sectors, reading and writing was not just useful for keeping the books of businesses; it was also for gaining access to the knowledge contained in books. In this context, the favourable reassessment of technique – work done with the hands, as that of the surgeons was – previously highly stigmatized, and in general that of all urban occupations, encouraged the search for ways to gain access to knowledge. Knowledge could improve the management of one's profession and make it more profitable, and more generally people realized that knowing more meant being more successful in that society.

For those sectors there was however a serious problem with books. It was not the price, because the recent appearance of paper in the thirteenth century had made them much cheaper and therefore an attainable goal. The serious problem was the language: with few exceptions, up to the thirteenth century books were written in Latin. As the

century progressed, and as had happened in many other areas of writing, the production of books in the vernacular went from exceptional to normal (in the Catalan context, the turning point came in about 1270). Western Europe thus entered a situation of diglossia that was to last for centuries, with Latin for the more prestigious, more formal functions, or those which were sanctioned by the authorities (the more formal writings of government, notaries or the Church, liturgy, university knowledge), and the vernacular for the most everyday informal uses, or those which facilitated access to useful knowledge for those who did not know enough Latin (private communications, the management of government bodies and businesses, preaching, translations of works on almost any subject).

In effect, the combination of the wish to gain access to useful knowledge and the fact of not knowing enough Latin led to a process of the transferral of an important part of the accumulated knowledge into the vernacular languages, a process that is known by the name of the vernacularization of knowledge, and which had a huge effect on the area of interest, an absolute priority for urban society, that was health, and on many others too[4]. I should point out that this vernacularization of knowledge was not restricted to transferring works in Latin into the vernacular, nor to the translations, and that it was not merely, or even chiefly, a case of popularization. Besides the highly prized works in Latin that could be found in university circles, in the European regions in contact with the Arab world – the Iberian Peninsula especially – readers of these vernacular translations had to hand works written in Arabic that had not been translated into Latin, and they translated some of them directly into the vernacular language[5]. Moreover, when the readers of the medical works in the vernacular were of a particular social rank, and in particular when they began to be numerous, works began to be written directly in the vernacular: original works whose authors, significantly, were usually medical practitioners trained in university medicine, surgeons too, as was also the case with many translators. University circles were involved more heavily than is supposed in the vernacularization of medical knowledge and, consciously or not, they used it to disseminate the new medical system[6].

The readership of these medical works was made up of laymen in medicine (kings, noblemen, bourgeois) and by healthcare professionals who were not university trained (surgeons, barbers, female practitioners, apothecaries). The former sought information in it that could be profitably applied in their circles, but also medical culture that, in view of the prestige attained by Galenism, could advance them socially. The latter sought in it technical handbooks that would enable them to gain access to knowledge applicable to their profession that was generated in the universities and their circles (for example schools of surgery) or which was within reach via other channels (the case of the Arabic texts). It was knowledge that, given the social demand favourable to that model of academic medicine and university-trained medical practitioners, could advance them professionally. All of them responded in this way to the prestige of uni-

versity and school education, to that of Galenism and its authors, to that of knowledge in general, and to that of the book as the conveyer of knowledge, and they sought to profit from it. For these people, therefore, works in the vernacular were a real intellectual and social bridge capable of providing them with the desired advancement[7].

As a sociocultural phenomenon, the vernacularization of knowledge was very important in the history of Western Europe. However, this perception has only become evident as research has been done into it, mainly philological (the history of old texts and language, lexicography) and historical (the history of culture and science), and since the moment when this research, instead of moving along parallel lines, began to converge. In these two disciplines two powerful research traditions have arisen, very fruitful but not always well connected: one focused on the study of the textual and intellectual tradition, and the other on that of the cultural and social contexts. Overcoming this lack of communication and mutual understanding has not been easy, but these days even the most recalcitrant scholars have to bear in mind and understand the existence of a number of texts in the vernacular on surprising subjects, quite unknown until recently.

The need to understand the phenomenon has led to further questions and interrelationships. The cultural study of non-university-trained people and the active role they played – not passive as was believed – not only in the search for ways to gain access to highly prized knowledge, but also in the creation of knowledge, is particularly interesting. This is the case of the new understanding of figures that were misunderstood until not long ago and therefore considered strange and undervalued by research, such as Ramon Llull. He was the creator of a method of gaining access to knowledge that was alternative to the current university method, valued by non-university-trained people and by not a few university-trained ones. It was a method that mechanized thinking and was applicable to theology, philosophy, mathematics, medicine and, according to him and his many followers (who went so far as to create a faculty of Llullian medicine), to all fields of knowledge. Llull was not just the inventor of a method of reasoning, which fascinated figures such as Leibniz and Newton, but also a producer of vernacular knowledge, not so much for the language used but for being conceived, created and spread from outside the university, vernacular knowledge that has begun to be identified in theology or in philosophy, and in medicine too, particularly in some key instruments of surgeons' and barbers' professional practice: medical recipe books[8].

2. The practice of surgery in medieval and early modern times

The majority of the non-university-trained medical practitioners who promoted the process of vernacularization were surgeons and barbers. Texts on surgery also played an outstanding part in it. These facts could not be accidental, and it is necessary to

explore their reasons and understand their importance. However, we ought to start at the beginning, and try to understand who was who in surgery in that period and what we ought to understand by "surgery" and "treatise on surgery" [9].

To understand who was who in the practice of surgery, and in general the vernacularization of surgery during that period, it is absolutely essential to study it using an interdisciplinary methodology. This methodology has to merge together those of history and philology, and in both of them the two abovementioned research traditions, because it is necessary to interrelate the study of the intellectual production of works and translations, and that of the practice of surgery and the healthcare professions involved, codicological research, the identification and critical edition of the texts and documentary research, as systematically as one can in the historical archives, the analysis of the old book and documentary sources, and the study of the old language and lexicon. Therefore, a complete study of the subject cannot dispense with the skills pertaining to the history of medicine, social history, the history of the texts, of the language and the old lexicon, textual criticism, palaeography, codicology, diplomatics and the study of archives, the history of the book and written culture, to mention just the most obvious ones. Moreover, for a study of surgical technique and the contributions that were made to it, medical knowledge is essential, but it cannot ignore or minimize Galenism: interdisciplinarity is also required of the doctors who are interested in the history of their profession. In this respect, palaeogenomics, palaeopathology and, in general, retrospective diagnosis do not always make valuable contributions. Modern and Hippocratic-Galenic medicine are separate scientific constructs. Trying to connect them is not impossible, but it does require a profound knowledge of Galenism and a great deal of caution, conditions that do not usually arise when one tries.

The application of this interdisciplinary methodology has shown, in general terms, that during that period surgery was mainly practised by surgeons and barbers (who traditionally performed bloodletting and minor surgery), all of them Christian men. However, they did not constitute a homogeneous group; as the new medical system was put in place, the difference between those who acquired a medical education – in Galenism – and those who did not became greater and greater. The prestige of university medicine and the demand in society for medical practice with the guarantees that people assumed it provided, together with the mechanisms of social control introduced by the rulers (examinations and licences), converged and stimulated the desire for social and professional ascent. This desire could only pivot around the knowledge of that medicine and its transmission in books, whose authors upheld this model of advancement. Notwithstanding that, only a tiny minority were able to obtain medical training at university; others gained it in schools of surgery created by the surgeons themselves, but the majority acquired it on their own, getting hold of the right books, or rather, of the vernacular translations of the right books. With this real situation, it was not possible to demand qualifications from them until the early modern period.

Surgeons' and barbers' strategies for advancement gave rise to a complex highly significant nomenclature, which coexisted with "surgeon" and "barber", and which, however, was not used systematically, especially among barbers: "physician and surgeon" (physician-surgeon), in the case of surgeons with a medical education, and "barber and surgeon" (barber-surgeon), in the case of the barbers who sought in the practice of surgery, and more so in rational surgery imbued with Galenism, an advancement that they could not find by restricting themselves to shaving beards and the elementary surgical tasks that they already performed. It was not surprising that those practitioners should have changed the name of their profession throughout their lives, nor that they achieved advancement from one generation to the next[10].

The healthcare situation – very precarious, more so if we only think about those who had knowledge of Galenism – required having these non-university-trained medical practitioners. Authorities (kings, municipal councils, lay and ecclesiastic nobility), with the acquiescence and collaboration of the people involved, introduced mechanisms of social control of medical practice aimed at integrating these non-university-trained medical practitioners in the new medical system. The kingdom of Sicily, under Frederick II, in the first half of the thirteenth century, led the way when it came to requiring guarantees from physicians, surgeons and apothecaries, imposing on the former the need for studies, passing an exam and obtaining a licence in order to practice. The Catalans found out about this innovative organization when they took control of Sicily in 1282 and immediately began to transfer it to the kingdoms of the Crown of Aragon. However, managing to make all non-university-trained medical practitioners pass exams and obtain licences did not begin to become a reality until the second half of the fourteenth century. The king reserved the right to grant the licence after the candidate had been examined and approved by the physicians who he had previously commissioned, although quite soon one of the king's physicians was appointed examiner general. In the fifteenth century these examiners were called proto-physicians because the post was held by the king's chief doctor.

The non-university-trained medical practitioners who underwent this process were in actual fact the healthcare umbrella of the majority of the population, given that graduate physicians were a minority, and an expensive minority, during that entire period. Very particularly, it was the barbers, far more numerous and affordable, who played this part. Surgeons and barbers, especially if they practised with the required guarantees, became necessary experts in times of peace and war, and they were called upon to issue expert reports in trials and to offer armies and navies medical care. When hospitals and baths were medicalized, their care, bloodletting especially, became part of these institutions' medical services. Social demand led to specialization, and experts in treating hernias, teeth and eyes appeared[11].

Notwithstanding all that, the variety of non-academic practitioners was not restricted to these surgeons and barbers, Christian men. Jews and Muslims, in the countries

where communities of them still existed, female medical practitioners, other women with knowledge of healthcare and apothecary-physicians completed the list of people involved in medical care, including the practice of surgery. These sectors had in common the fact of being excluded from the universities, reserved for Christian men and medical studies. Furthermore, non-Christians and women were discriminated against, persecuted, and the former eventually expelled from some countries.

Medicine was one of the few prestigious professions permitted for Jews and it is known that they stood out especially in it, being highly valued by the Christians who were discriminating against them. Jewish medical practitioners, even though the sources do not usually say so, had the double facet of being physicians and surgeons, and they were trained according to the open system. The Iberian Muslim (*morisco*) communities had their own healers, who were usually low-profile because due to the Christian conquest the elites had gone into exile[12].

Likewise, many women practised medicine and surgery, in both the cities and the countryside. Despite being marginalized, it was not unusual for kings and other members of the social hierarchy to require their services, especially, but not solely, if they were women. Apart from those the sources call *medicissae* (Catalan *metgesses*, female practitioners), there were women with medical knowledge, particularly about phytotherapy, who were usually old (*vetulae*). It is moreover useful to bear in mind the role of guardians of the family's health that women have traditionally played. Finally, despite the fact that the laws that were being enacted prohibited it, some apothecaries also practised as physicians[13].

All these situations, with the twin paradox of discrimination/appreciation or prohibition/action, can be explained by the need to fill the large gaps existing in healthcare. But once the medical system had been consolidated, it was thought that they had to practise with the same guarantees that were required of Christian non-university-trained medical practitioners, and Jewish physicians, female practitioners and apothecary-physicians were obliged to pass an exam or at least to obtain a royal licence to be able to regularize their situation.

Despite this regularization, women, and especially Jews, were increasingly discriminated against, and the latter suffered bloody persecution (pogroms in 1348 and 1391 in the Crown of Aragon) which placed them in the difficult position of having to convert in order to try to avoid it. Everything seemed to go better for the Jews who took this step, even much better, as some *converso* physicians even became proto-physicians. In the late fifteenth century, however, in the Crown of Aragon and Castile the new model of government known as authoritarian monarchy was being consolidated, incompatible with all forms of dissidence or, simply, plurality. The decree to expel the Jews in 1492 caused another wave of conversions, but despite that they were harshly persecuted as a result of the reform of the Inquisition. The kings of Castile and Aragon turned it into an ecclesiastical and civil organ of repression responsible for the social

and ideological control of the new authoritarian monarchy, and of a Catholic Church always eager to impose its mediation exclusively. Many *converso* physicians, accused of observing Jewish rites in private, were the subject of reprisals and even burned at the stake. Famous physicians and proto-physicians and their wives and families became a prime target, in order to make examples of them. The Moorish communities were also a target of the Inquisition, in particular the practices related to magic, which were important among their healers, but the fact of them being rural communities very necessary for sustaining the land-owning nobility delayed their expulsion until 1609. As for the women, those with therapeutic knowledge that was also interrelated with magic were persecuted and attacked as witches.

3. Defining "surgery" in the medieval and early modern context

In Hippocratic-Galenic medical doctrine, medicine is divided into *medicina theorica* and *medicina practica.* Surgery was part of *medicina practica*, in which it was, after diet and medication, the third and last of the so-called therapeutic "intentions", which corresponded to the degrees of growing intervention that the medical practitioner could apply. For Galenism, then, it was an integral part of medicine, and thus the great authors of works on surgery demanded it from the thirteenth century onwards (*Inventarium seu collectorium in parte chirurgicali medicinae* is the assertive original title of Guy of Chaulhac's in 1363)[14].

Despite that, prejudice against manual labour – surgery was also, in effect, the technical or manual part of medicine – relegated it for centuries to a less prestigious position, until the processes mentioned above took place. In the new urban society manual work would be vindicated and surgeons and barbers did it just as much as the practitioners of other professions, although they had weightier arguments, those provided by Galenism and the social demand for medicine practised with guarantees.

Notwithstanding that, when medieval surgery is analysed, we see that a "presentist" interpretation must be avoided, which would make it a corpus of hyper-specialized knowledge focused on only the strictest surgical technique. Treatises on surgery contained them, but they also had many others that were directly associated with the basic healthcare function performed by surgeons and barbers. Moreover, treatises became more complex as surgeons and barbers stood up for themselves, from a simple structure in which general and particular surgery were reviewed in a basic order, to a more diverse one, with more parts and knowledge, and an increasingly elaborate order. After the end of the thirteenth century, they usually contained an introduction, with the basic definitions and deontological advice, and more or less differentiated parts on general surgery, relative to surgical problems that affect the whole body or different limbs at the same time; particular surgery, relative to problems that affect each organ of the body, classified from the head to the feet; surgical pathology, relative to diseases

that require surgery or which, in general, were treated by surgeons (this part, increasingly large, is the one that best corresponded to that function of surgeons); fractures and dislocations; and an antidotary, which included a choice of medicinal formulas for surgical use. In this way, treatises on surgery eventually contained quite a lot of *medicina practica* topics and were thus adapted to the needs that surgeons and barbers had as the medical practitioners of the majority of the population. In the end, among this majority, surgery became synonymous with medicine.

This more complex structure was consolidated in works on surgery from the end of the thirteenth century, and it gradually incorporated more subjects that are considered necessary to know for those practising surgery. The authors classify the information better and present it more rationally, making it easier to find it. The high point of this tendency was Chaulhac's treatise, mentioned above, and it is directly indebted to the impact caused by Avicenna's *Canon,* some parts of which – in particular Book IV, which deals with surgery – were also disseminated in the vernacular[15]. Moreover, the information they give, although logically based on experience, is information increasingly documented and packed with references to ancient medical authors, Arab and university trained, and to other treatises on surgery, and Chaulhac's work is again the most finished example. Likewise, they provide more practical information, like the clinical cases, abundant from William of Saliceto's treatise (1275 or 1276) onwards. Even though treatises on anatomy were available, they also begin to incorporate this subject regularly after Saliceto[16]. The final section on making up medicines echoes alchemical experimentation, after Theodoric Borgognoni's treatise (*c.* 1262-1266)[17].

Alchemy is one of the forms of knowledge that were part of the way in which the world was understood in the period. Treatises on surgery also contain elements of magic (some charms for hopeless cases, as in Theodoric) and, even more so, astrology (when calculating when to perform operations, bloodletting, purges or medication). In the end, surgical treatises were part of that cosmology, assumed by everyone despite the fact that from a mistaken "presentist" interpretation the criticisms have been magnified and misunderstood. On the other hand they responded to the general desire to seek ways to maintain health with guarantees, the ones that offered all these forms of knowledge, respected at that time.

Hippocratic-Galenic medicine, of which surgery was a part, on one hand, and the academic doctors and other medical practitioners – surgeons and barbers chiefly – who were eager to appropriate the part of that medicine that was useful to them in order to be able to improve their knowledge and adapt to the demand and the systems of control that were imposed on them, on the other, gradually started to play a larger part in everyday life. This process, which the vernacularization of medical knowledge encouraged to no less a degree, has been called – stretching the concept of modern sociology – the medicalization of society. Various sources bear witness to this medicalization: chiefly, the great number of documents about the practice of healthcare

professions; the books, handwritten and later printed, especially the information they might contain about their use and users (*marginalia*, paratext); the technical lexicon, in particular the spread of its use in society; the literature, in which the motifs related to health, medicine and those who practised it were increasingly present; and the figurative artistic depictions, in books, paintings and sculptures.

It is only possible here to mention a few brief points about the subject, which will be limited to literature and art, while the lexicon will be discussed later. In the nineteenth century it was observed that works of literature in the Latin West contained more and more references to these subjects, but, as in other cases, only recently have we gone from inventorying curious facts to a contextualized interpretation, which in this case must be focused on what in the history of culture is known as reception. As for surgery and surgeons, and female practitioners too, it is enough to bear in mind a few works: surgeons and barbers appear in war and in peace in *Roman de Troie*, *Roman de la Rose*, *Cantigas de Santa Maria*, the lives of Alexander, the Manesse chansonnier, the Arthurian stories, and others. In Catalan literature, they are mentioned in the *Llibre de contemplació* by Ramon Llull, *Crestià* by Francesc Eiximenis, the sermons of Vicent Ferrer, or *Espill* by Jaume Roig, among others[18].

The artistic depictions appear in deluxe codices of surgical treatises and other medical works. Leaving to one side the Latin ones, we have, among others, the Sloane codex of the French translation of the treatise by Roger Frugardo (13th-14th C), the Montpellier codex of the Occitan translation of Albucasis (14th C), and the Vatican codex of the Catalan translation of Chaulhac (second half of the 15th C), which contains an entire iconographical programme designed to make the profession of surgery more prestigious and which may have belonged to a physician-surgeon[19]. There are also figurative depictions of surgery in the deluxe codices of the first works of literature mentioned (wounded knights and surgeons, surgical operations, field hospitals, etc.), in encyclopaedias, in psalters and books of hours (burlesque *marginalia*), in the *Liber ad honorem Augusti*, about the imperial conquest of Sicily (a surgeon and two female assistants, very interesting)[20], and so on. Away from the codices, there are the depictions of the miracle of the leg of Saints Cosmas and Damian, patron saints of physicians and surgeons, on some altarpieces (Fra Angelico, the workshop of Bernat Martorell, Jaume Huguet, *et al*.). In sculpture, there are burlesque depictions of the motif of the enema at the castle of Savallà (now in Peralada) or in the Palace of King Martin in the monastery of Poblet.

All these figurative depictions are the result of costly commissions by the lay and ecclesiastical elite, from the urban patriciate to the king himself, and also by the wealthiest physicians and surgeons. In the codices, the relationship between text and image has been particularly studied, and hypotheses have been produced about the function of the images, beyond mere ostentation, as facilitators of access to the text or of advancement[21].

These deluxe books were not the only ones to contain illustrations. Medical manuscripts in the vernacular have survived, in particular relatable to the practice of surgery, that contain ink drawings, diagrams or tables that do not seem to have a decorative function or one conceived to underpin the desire for advancement, but rather a more practical one, to ensure the comprehension and the memorization of procedures or concepts. Notable are the Cambridge codex of the Anglo-Norman translation of Roger's treatise (13th C), the codex of the works in English by John Arderne, with some famous female practitioners at work (second quarter of the 15th C), or, in the Catalan context, that of the recipe book by Joan Llopis, a Valencian barber-surgeon active in Sicily, with a large diagram of uroscopy (15th C), or the codex by an anonymous physician-surgeon conserved in Krakow, with tables about the fevers and other concepts (15th C). These illustrations, more or less slapdash, definitely less attractive than the ones painted with gold and bright colours, are perhaps even more interesting because they are testimonies from the front line of medical practice, very difficult to get to know[22].

4. Works on surgery and their dissemination in the vernacular language

Despite the varying degrees of consideration it enjoyed, surgery never ceased to be practised in Western Europe in the Middle Ages, not just because of surgeons' role as the medical practitioners of the majority of society, but also due to the presence of violence everywhere. Wars between the great powers, private warfare among the nobility and fights of all kinds required the practice of surgery, and the creation of the new medical system normalized the presence of surgeons and barbers in all these situations, in which they found, moreover, an important avenue for improving their training[23]. It was soon necessary to write down the increasingly complex knowledge they needed in handbooks, born of experience and taken from the books they had to hand. These, few in number to begin with, gradually increased with the ones that came from the Byzantine area and above all the Arab world. The latter were of capital importance, because they brought to the West Arab physicians' idea that medicine was for healing and not for philosophical speculation, a medical instrumentalism controversial in the universities but very convenient for all the non-academic practitioners.
The first school of medicine and surgery in medieval Europe came into existence in the ninth century, in Salerno, near Naples, and schools of surgery sprang up during the thirteenth century, in Bologna, Padua, Montpellier and Paris especially, annexed to the universities. In these schools, authors emerged who wrote the surgical treatises of the period, who expounded a rational surgery, based on those foundations. In a first stage, the most important handbooks were by Roger Frugardo, also called of Parma or of Salerno (*c.* 1180), Roland of Parma (*c.* 1240), and the Four Salernitan Masters Gloss (mid 13th C), written in the circles of the School of Salerno. In the second

half of the thirteenth century, in the schools of northern Italy a second stage began presided over by a "new surgery", the new way of understanding surgery, clearly part of Hippocratic-Galenic medicine. Examples of this are the treatises by Bruno of Longobucco, or Longoburgo in Latin (1253), Theodoric Borgognoni, also called of Lucca or of Cervia (*c.* 1262-1266), William of Saliceto (1275 or 1276), and Lanfranc of Milan (1296). The latter, upon being forced to go into exile due to the conflict between the Guelphs and the Ghibellines, took the "new surgery" to France, and there two more outstanding authors emerged, Henry of Mondeville (1306-*c.* 1320) and Guy of Chaulhac or Chauliac (1363). Moreover, some of the authors of the "new surgery" (Bruno, Lanfranc, Chaulhac) also wrote brief compendia designed to provide surgeons and barbers with handbooks that were more manageable and quicker to use than the great summae (to make it easy, Renaissance printers entitled them *Chirurgia parva*, or small, and *Chirurgia magna*, or large, respectively).

The spread of the "new surgery" outside Italy, however, was not just the work of Lanfranc, nor was France the only direction. The time that Theodoric and the Catalan Andreu d'Albalat, both clergymen, spent together in the papal administration in Rome, led to a friendship between them, and Albalat, having been made the bishop of Valencia, convinced Teodorico to finish the treatise and send it to him – contrary to what is pretended by a very common cliché, the Church was not opposed to the development of surgery. Theodoric's treatise was particularly well known in the Catalan Countries, especially after it was the subject of a rapid translation into Catalan by a surgeon trained in medicine (*c.* 1302-1308), and revised shortly afterwards by a university-trained physician (1310-1311)[24].

All the main treatises on surgery, both the great summae and the brief compendia, were translated into many of the vernacular languages of Western Europe. However, critical editing of the works on surgery in the vernacular did not begin until recently and most of this patrimony has yet to be consulted in manuscripts or in Renaissance editions. This is due not only to the length of these texts but also to the prejudice that the subject arouses in many philologists, who are the ones that possess the relevant editorial knowledge[25].

One of the most interesting translations is the abridged Occitan one of Roger Frugardo's treatise, done in verse. This translation was done by one Raimon d'Avinhon, identifiable as the Provençal troubadour of the same name, and it was done – initially at least – for a readership of noblemen who were demanding to be able to gain access to updated surgical knowledge, in order to use it in wartime when they did not have a surgeon available, thanks to the ease of memorization offered by verse. The only surviving manuscript bears witness to its success, copied in the second half of the thirteenth century in Catalonia, far from the place where it was written[26].

Translations of works on surgery were not always done by a translator identified by his name; some of them, including those of important works, are anonymous. This differ-

ence is striking, and more so because when the translator identifies himself, he usually adds a prologue that is very interesting for learning about his motivations and the readers for whom it is intended. Based on the analysis of the Catalan case, it seems that the translations by an identified author were done by surgeons trained in medicine, sometimes revised by graduate physicians, who could be teachers or students, and initially intended for a homologous audience, but also for a layman interested in the subject, even the king. In the Catalan case, King James II of Aragon (1291-1327), who encouraged his surgeons' medical training, ordered the translation of Albucasis' *Surgery* and perhaps Mondeville's too, although both of which are now lost. Theodoric's treatise and the breviaries by Lanfranc and Chaulhac have known translators, while the translations of the former and of Chaulhac's major treatise were revised by identified physicians and surgeons. The anonymous translations seem attributable to translators and to circles that did not belong to these scholarly milieux with formal training, probably barbers, done by or commissioned by them to laymen with knowledge of Latin – this is the case of the treatises by Lanfranc and Chaulhac; we do not know if it was also the case of those by Roger, the Four Masters, Bruno and Saliceto, which have been lost. Of great interest is the case of some barbers from Barcelona who in 1400 were fighting over a copy, almost certainly in the vernacular, of Chaulhac's treatise, which seems to suggest that it was translated in these barbers' circles[27].

When the vernacularization of surgery – or of any other field of knowledge – is analysed, it is not enough to bear in mind the surviving works. As is well known, the surviving written patrimony is only part of what existed, hard to measure but probably not very large. Limiting ourselves to these materials can easily lead to erroneous conclusions. However, avoiding this way of working is only possible if documentary sources on the possession and circulation of the book have been conserved, if they have been exploited by research, and if the specialist researchers make use of this research. Making this effort means placing the research in an interdisciplinary context, something that is not usually easy to do.

Interdisciplinarity often requires extensive knowledge, or working with researchers who master the necessary areas of it. This is particularly essential for studying translations into Hebrew and *aljamiated* texts. In the Jewish communities of medieval Western Europe, Hebrew was a language reserved for the religious sphere and for other formal uses, while in everyday life the language of the country was used. But Hebrew also made communication possible between communities in different countries, besides sharing book resources between them. In these Jewish communities, among both physicians and the rest of the population, the model of medicine based on academic Galenism and the university-trained medical practitioner that the new medical system had introduced so successfully were very attractive, due to the fascination aroused in them by scholastic medicine and to the need to submit oneself to the social control of the practice of medicine that was being imposed.

The appropriation of that model of medicine and medical practitioner led to the wish to possess its writings, in both Latin and the vernacular, and very often in translations into Hebrew. The Hebrew translations also included some of the works on surgery. The recourse to *aljamia* is especially interesting, that is, copying works in Arabic, Latin or the vernacular using Hebrew script, not the Latin alphabet. *Aljamiated* texts are far less known than Hebrew translations, because they require knowledge of the languages in which they were written. Nevertheless, it has been possible to locate some works on surgery in the vernacular *aljamiated* in Hebrew, including an introduction to Theodoric's treatise in Castilian (perhaps Aragonese). It is very significant that the manuscript in which it is conserved also contains a set of questions and answers for preparing the examination and obtaining the licence to practise, also in Aragonese Castilian transcribed in Hebrew script. Hebrew translations often contain *aljamiated* vernacular words, as is the case with a translation of the same work with words in Catalan that give away its origin. One of the codices of the Catalan translation of this work, full of *marginalia* in Hebrew and in *aljamia*, also informs us of the interest that the work and its vernacular translations aroused among the Jews[28].

Illustrated deluxe books were also copied among the Jews to perform the same functions as among the gentiles. Among the medical works, there is the magnificent Bologna codex of the Hebrew translation of Avicenna's *Canon*, a work that, as we have already said, deals with surgery in book IV (Bologna, Biblioteca Universitaria, MS 2197, first half of 15th C).

As occurred in other fields of knowledge, the vernacularization of surgery was not restricted to translations. Compendia in the vernacular were soon produced on the subject that were adaptations of these works and other materials, often anonymous, or else the work of known surgeons, among which the ones produced in the Low Countries stand out and have been studied. In the Catalan context original works on surgery in the vernacular took the form of a commentary, with which the authors – surgeons trained in medicine – expounded the complex contents of a work to make it easier to understand and made contributions to complete or update them. Commentaries on the brief compendium of surgery by Lanfranc (1329), and various ones on different parts of Chaulhac's treatise (three handwritten, from the fifteenth century, and one printed, from 1501), have survived. Original works in the vernacular begin to appear when vernacularization is consolidated as a means to gain access to valued knowledge and when surgeons and barbers require more tuned resources, more adapted to their situation. For all the implications that we have been commenting on, it is important to study the profiles of the authors, translators, commissioners, target readership and any other types of people associated with the translation and writing of the works, as well as their handwritten and printed transmission, and to interrelate the data with the history of surgery and surgeons. The language and the specialized lexicon in vernacular works on surgery are elements that have above all attracted the interest of philologists, who have not forgotten them

in the editions and studies that have been published. As in the case of the texts in Hebrew, they are the researchers needed to study them. However, one must dismiss the idea that it is a subject only of interest to linguistics and lexicography. The process of vernacularization involved a series of operations in this field: it was necessary to adapt the oral language in order to construct a formal text, find the type of language suitable for expressing scientific and technical subjects with precision, and create the specialized terminology that could reproduce the one that was used in Latin texts, at least. The translators complain in their prologues about the difficulties involved in constructing all of that from scratch. It was however not just the language and the lexicon that had to be established in vernacular texts, but also, as in all the written texts that used this new tool of communication, the *scripta* or conventional graphic model for writing formal texts; a graphic model that must no longer be confused with linguistic phenomena and which, in the Catalan case, is very important for establishing the chronology of the text. These efforts provide precious data for all kinds of historical and cultural studies, very especially for learning about the social penetration of the new kind of medicine and medical practitioner in which surgery and surgeons are inserted[29].

The real impact of vernacularization in the history of surgery is a controversial subject. Based on solid research – but from methodological positions very much focused on intellectual history – relative to the creation of rational surgical knowledge in the medieval Latin West, it has been argued that it was precisely the great importance of the transmission of the subject in the vernacular – in a context in which the university elite functioned exclusively in Latin – that slowed down its advance, principally because the vernacular broke the terminological and intellectual tradition that had been constructed in Latin. On the other hand, from other standpoints, which take social and cultural history more into account, it has been noted that vernacularization played a key role in the training of surgeons and barbers, in the social control of their activity, in the extraordinary increase in levels of healthcare, and in the penetration of rational medicine and surgery in society, even in the domestic sphere, and therefore, in the spread and consolidation of the new medical system. It seems that texts in the vernacular were a means of access to knowledge contained in books, in particular to the rational "new surgery", absolutely essential for those non-academic medical practitioners; that these practitioners could be examined on this knowledge because they had acquired it in this way; that it was possible to have many more medical practitioners working with the required guarantees as they had been able to pass the examinations; and that this knowledge could be valued socially because it could be known and thus become general medical culture. Some translations underwent revisions in which, precisely, the citations and the terminology were refined. Nor is it strange that in the libraries of these practitioners there were copies of the works in Latin, and in fact it has been suggested that the first translations could have been done as tools to support

access to the Latin originals. The real situation of medical care, in which the great majority of practitioners had been trained by the open system, probably prevented rational surgery from evolving in a more linear way[30].

5. Uses and users of vernacular surgery: treatises on surgery and other works

When analysing surgical treatises in the vernacular, different uses and users can be identified. They were initially conceived, and mostly translated, as technical handbooks. Surgeons, barbers and female practitioners used vernacular treatises on surgery for their professional activity, in times of peace and war. This is demonstrated by the many surviving inventories of goods. Their participation in war is particularly interesting: it is highly significant that medieval Western European society constructed a healthcare system in armies and navies in response to social demand, that it should have done so entrusting it to a profile of medical practitioner who could work with the guarantees that were requested, and that the recipients approved of it. Inventories of naval medical practitioners have survived – who were generally barbers – that contain treatises on surgery in the vernacular, and miscellaneous codices containing inventories of their box of medicines and instruments, codices whose size and lettering was designed to be used on board galleys and ships[31].

Apart from this initial purpose, surgical treatises were also works designed for the training of surgeons, and in some cases this objective determined their vernacularization. All the treatises of the "new surgery" reproved "idiotic" and "lay" surgeons, those who practised without having the medical and surgical knowledge that was acquired in books. In their prologues, the translators state that they are translating the works for the training of these sectors in order to incorporate them in the new trend. In the Catalan context, this is the case of the translation of Theodoric and the minor compendia of Lanfranc and Chaulhac. A manuscript is conserved of the Catalan translation of Lanfranc's major treatise, copied by a Castilian apprentice living in the Catalan Countries interested in the work as a technical but also formative tool.

Of special interest is the case of the revised translations. The Catalan translations of Theodoric and Chaulhac were both revised by university-trained physicians with the undeclared intention of making them more useful resources. The evident success of these revisions (of the language and, in particular, of the terminology and the quotations of authorities) proves that this was their intention. The translation of Theodoric was revised as soon as it was finished, in the early fourteenth century. The one of the Chaulhac translation, done in collaboration with a surgeon, is related to other vernacular surgical treatises designed to serve as handbooks for the students of the school of medicine and surgery in Barcelona at the turn of the sixteenth century. This educational and didactic proposal remained alive in handwritten works produced in Catalan in the early modern period[32].

The existence has already been mentioned of sets of questions and answers to prepare for the examination that was gradually imposed on non-university-trained practitioners, which also continued in the vernacular in early modern times, even in a far more elaborate manner. The form of these resources, in questions and answers or "problems", corresponded to an ancient didactic tradition that, in medicine, was developed especially at the School of Salerno, and which was also quite successful in the education of the general public (*Dragmaticon philosophiae*, *Livre de Sidrac*) and in the dissemination of medical knowledge (*Il Perché*). Apart from the Q&A to prepare for the exam, surgeons appreciated the method as a means of access to the principal works, and they produced versions with that format, such as three of the commentaries surviving in Catalan on different parts of Chaulhac's treatise[33].

Finally, treatises on surgery were also perceived as handbooks of practical domestic medicine. This is what that their appearance in the libraries of kings, noblemen and bourgeois would seem to suggest. Their extensive contents, useful for a practice of "surgery" that went further than surgery proper and for domestic self-help, and the accessibility that the vernacular made possible, encouraged this role, unthinkable now[34].

If the books that surgeons, barbers and female practitioners had in their libraries are analysed, one can see that they made use of other works directly associated with the practice of surgery, above all the "new surgery"[35]. On one hand, the *practicae*, the large collections of *medicina practica,* that is, of all the branches of therapeutics (dietetics, medication and surgery). These works were produced by medieval physicians based on the model of *De ingenio sanitatis* (*De methodo medendi*) by Galen, a work also known precisely with the title *Therapeutica*. Arab physicians also provided models for it, some of them with enormous scope, such as the great summae by Rhazes (*Almansor*), Haly Abbas (*Liber Pantegni*), Albucasis (*Taṣrīf*), Avicenna (*Canon*) and Averroes (*Colliget*). Among those produced in Latin Europe the one by the author from Montpellier Bernard of Gordon (*Lilium medicinae*) stands out for its dissemination. It comes as no surprise that many of these works were translated into the vernacular, at least partially, including those by Galen.

The followers of the "new surgery" had to know the fundamental concepts of *medicina theorica*. These concepts were expounded by a successful university handbook that was a synthetic introduction to Hippocratic-Galenic medicine, known as *Isagoge Johannitii*. Three initiatives in Catalan on this *Introduction to Galen's Art of Medicine* are evidence of the desire to learn this theoretical framework: two different translations and, quite significantly, a Q&A version[36].

Of the nascent surgical specialities mentioned above, ophthalmology generated specific texts in both the Arabic and Latin worlds. Outstanding, respectively, are the works by Alcoatí and Benvenuto Grafeo (Benvenutus Grassus). The latter was a highly appreciated handbook and therefore translated into many vernacular languages. Of the one by Alcoatí, incomplete in Latin until later, there is a complete translation into Catalan from the Arabic due to a royal initiative[37].

Finally, with regard to medicines, surgeons, barbers and female practitioners possessed collections of simple and compound medicines (*antidotaria*). In this field, however, the "medical recipe book" was especially important. These works, which were self-produced, contained not just medical recipes, sometimes extracted from the vernacular translations of the treatises on surgery, but also other short works on different aspects of the practice of "surgery", from deontology to bloodletting and medical astrology. It was a true vade mecum of the non-academic medical practitioner, and therefore an extraordinary window on to the world of professional practice. Moreover, given that it was not easy to obtain medical care when it was needed, in the domestic sphere similar works were also produced, with significantly different contents, and therefore they have been divided into "professional medical recipe books" and "domestic medical recipe books", the last of which survived until at least the late nineteenth century. They were also habitual among the Jews (*sefer refu'ot*), and testimonies of both kinds survive in Hebrew and *aljamia*. This genre, essentially vernacular – for both the language and for being conceived, created and spread outside the universities – which was based on earlier Latin models and which has only recently been highlighted, was the product of late medieval urban society, of the medical practice of non-academic practitioners increasingly more integrated in the new medical system, of the wishes to guarantee one's health, and of the poor level of healthcare that dogged it for a long time[38].

6. Conclusion

The creation of a new medical system in medieval Latin Europe, based on the model of Hippocratic-Galenic rational medicine and of a medical practitioner with university degrees, led to great changes in the production of surgical handbooks, the training of surgeons and the practice of surgery. With these changes surgery went from being an empirical technique to a rational form of knowledge that had to be learned in books and which constituted a "new surgery" decidedly inserted in that medicine. The social consensus meant that only this "new surgery" would provide opportunities for advancement to those who practised it, most of them trained outside the universities. The impact was great because these male and female practitioners, Christians and Jews, increasingly obliged to pass exams with those contents and to obtain a licence, and later, if they were Christians, to have formal studies, were the healthcare umbrella of the majority of the population.

Because of all this, these male and female medical practitioners opted to translate and write in the vernacular language the texts that could facilitate for them all those goals, and they were thus some of the main promoters of the vernacularization of medical knowledge. Not the only ones because in the new urban society, that had unleashed all these processes and many others that were decisive in European history, the desire

to have this highly prized knowledge to hand, for necessary domestic self-help and to demonstrate to society that one was part of the system, promoted both the production and possession of texts in the vernacular among laymen in medicine, of surgery too. The vernacularization of this knowledge may have slowed down the academic development of surgery, but it played a crucial role in the professional and social success of the "new surgery" and the new medical system all over Western Europe. This large number of implications demands that any study of these vernacular works intended to be complete must follow an interdisciplinary methodology.

Bibliography and notes

Agrimi J, Crisciani Ch, Edocere medicos: medicina scolastica nei secoli XIII-XV. Naples: Guerini e Associati; 1988.

Agrimi J, Crisciani Ch, Immagini e ruoli della *vetula* tra sapere medico e antropologia religiosa (secoli XIII-XV). In: Paravicini A, Vauchez A (eds), Poteri carismatici e informali: Chiesa e società medioevali. Palermo: Sellerio; 1992. pp. 224-261.

Altieri Biagi ML, Gugielmo volgare: studio sul lessico della medicina medioevale. Bologna: Forni; 1970.

Artale E, Zamuner I, Ricerche sul lessico medico-scientifico: gli strumenti chirurgici (XIII-XIV sec.). In: Piro R, Scarpa R (eds), Capitoli di storia linguistica della medicina. Milan: Mimesis; 2019. pp. 63-104.

Badia L, Santanach J, Soler A, Ramon Llull as a Vernacular Writer: Communicating a New Kind of Knowledge. London: Tamesis; 2016.

Barceló C, Labarta A, Archivos moriscos: textos árabes de la minoría islámica valenciana (1401-1608). Valencia: Universitat de València; 2009.

Baum I, Judeo-Catalan, Jewish Multilingualism and Linguistic Contact in Late Medieval Catalonia. PhD Diss. The Hebrew University of Jerusalem; 2018.

Berthaud H, La médecine populaire dans la littérature romane. Paris: Faculté de Médecine de Paris; 1907.

Blasco Orellana M, Recetario médico hebraicocatalán del siglo XIV (descripción, traducción y estudio). Barcelona: Trialba (Catalonia hebraica et aragonalia, I); 2015.

Burns RI, The medieval crossbow as surgical instrument: an illustrated case history. Bull. NY Acad. Med. 1972;48:983-989 [repr. in: Burns RI, Moors and Crusaders in Mediterranean Spain. London: Variorum Reprints (Collected studies, 73); 1978. VII].

Cabré i Pairet M, Women or healers? Household practices and the categories of health care in late medieval Iberia. Bull. Hist. Med. 2008;82:18-51.

Cardoner A, Danon J, Metges jueus catalans. Barcelona; 1985. Unpublished, in the process of being incorporated into the MedCat database.

Carré A, Cifuentes L, Girolamo Manfredi's *Il Perché*: I. The *Problemata* and its medieval tradition. Med. Stor., n.s., 2010;10(19-20):13-38.

Carreras Valls R, Introducció a la història de la cirurgia a Catalunya: Bernat Serra i altres cirurgians catalans il·lustres del segle XIV. In: Tres treballs premiats en el concurs d'homenatge a Gimbernat. Perpinyà-el Masnou: Societat de Cirurgia de Catalunya-Laboratoris del Nord d'Espanya; 1936. pp. 1-63.

Cifuentes L, Medicina i guerra a l'Europa baix-medieval: la sanitat i la participació dels seus professionals en les expedicions militars de la Corona d'Aragó (1309-1355). PhD

Diss. Universitat Autònoma de Barcelona; 1993. <http://hdl.handle.net/10803/671571> (accessed 1 September 2023).

Cifuentes L, Vernacularization as an intellectual and social bridge: the Catalan translations of Teodorico's *Chirurgia* and of Arnau de Vilanova's *Regimen sanitatis*. Early Sci. Med. 1999;4:127-148.

Cifuentes L, La promoció intel·lectual i social dels barbers-cirurgians a la Barcelona medieval: l'obrador, la biblioteca i els béns de Joan Vicenç (fl. 1421-1464). ATCA 2000;19:429-479.

Cifuentes L, Una traducció catalana desconeguda de la *Chirurgia parva* de Gui de Caulhiac (Barcelona, 1505). ATCA 2000;19:601-609.

Cifuentes L, La medicina en las galeras de la Corona de Aragón a finales de la Edad Media: la caja del barbero y sus libros. Med. & Hist., 4ª época, 2000;4:1-15.

Cifuentes L, Las traducciones catalanas y castellanas de la *Chirurgia magna* de Lanfranco de Milán: un ejemplo de intercomunicación cultural y científica a finales de la Edad Media. In: Martínez Romero T, Recio R (eds), Essays on Medieval Translation in the Iberian Peninsula. Castelló de la Plana-Omaha: Universitat Jaume I-Creighton University; 2001. pp. 95-127.

Cifuentes L, La literatura quirúrgica baixmedieval en romanç a la Corona d'Aragó: escola, pont i mercat. In: Badia L, Cabré M, Martí S (eds), Literatura i cultura a la Corona d'Aragó (s. XIII-XV). Barcelona: Curial Edicions Catalanes-Publicacions de l'Abadia de Montserrat; 2002. pp. 321-335.

Cifuentes L, Université et vernacularisation au bas Moyen Âge: Montpellier et les traductions catalanes médiévales de traités de médecine. In: Le Blévec D, Granier T (eds), L'Université de Médecine de Montpellier et son rayonnement (XIIIe-XVe siècles). Turnhout: Brepols; 2004. pp. 273-290.

Cifuentes L, La ciència en català a l'Edat Mitjana i el Renaixement. 2nd rev. and enl. ed. Barcelona-Palma: Universitat de Barcelona-Universitat de les Illes Balears; 2006.

Cifuentes L, Estratègies de transició: pobres i versos en la transmissió extraacadèmica del saber a l'Europa llatina tardomedieval. In: Alberni A, Badia L, Cabré L (eds), Translatar i transferir: la transmissió dels textos i el saber (1200-1500). Santa Coloma de Queralt: Obrador Edèndum-Universitat Rovira i Virgili; 2010. pp. 241-263.

Cifuentes L, El receptari mèdic baixmedieval i renaixentista: un gènere vernacle. In: Badia L, Cifuentes L, Martí S, Pujol J (eds.), Els manuscrits, el saber i les lletres a la Corona d'Aragó, 1250-1500. Barcelona: Publicacions de l'Abadia de Montserrat; 2016. pp. 103-160.

Cifuentes L, Els tractats de cirurgia medievals en català: entre el manual especialitzat i l'autoajuda domèstica. In: Bellmunt Serrano M, Mahiques Climent J (eds.), Literature, Science & Religion: Textual Transmission and Translation in Medieval and Early Modern Europe. Kassel: Reichenberger; 2020. pp. 121-148.

Cifuentes L, Les miscel·lànies mèdiques medievals en català: una proposta de classificació. In: Müller I, Savelsberg F (eds), Sabers per als laics: vernacularització, formació, transmissió (Corona d'Aragó, 1250-1600). Berlin-Boston: De Gruyter (Beihefte zur Zeitschrift für romanische Philologie, 463); 2021. pp. 255-290.

Cifuentes L, La *scripta* llibrària catalana primitiva als primers textos mèdics en català. In: Alberni A, Cifuentes L, Santanach J, Soler A (eds), "Qui fruit ne sap collir": homenatge a Lola Badia. Barcelona: Universitat de Barcelona-Barcino; 2021. vol. 1, pp. 157-170.

Contreras Mas A, La versión catalana de la *Cirurgia* de Teodorico de Luca por Guillem Correger de Mayorcha: un intento de mejorar la formación teórica de los cirujanos. Est. Bal. 1984;4:55-74.

Contreras Mas A, Barberos y cirujanos navales en Mallorca bajomedieval. Med. Bal. 1992;7:41-51.
Contreras Mas A, Los médicos judíos en la Mallorca bajomedieval (siglos XIV-XV). Palma: Miquel Font; 1997.
Faraudo de Saint-Germain [pseud.: Deztany L], Simon de Guilleuma JM, Alcoatí: *Libre de la figura del uyl.* Barcelona: Impr. "La Renaixença"; 1933.
Ferragud C, Medicina i promoció social a la baixa Edat Mitjana (Corona d'Aragó, 1350-1410). Madrid: CSIC; 2005.
Ferragud C, La atención médica doméstica practicada por mujeres en la Valencia bajomedieval. Dynamis 2007;27:133-155.
Ferragud C, Barbers in the process of medicalization in the Crown of Aragon during the late Middle Ages. In: Sabaté F (ed.), Medieval Urban Identity: Health, Economy and Regulation. Newcastle: Cambridge Scholars; 2015. pp. 143-165.
Ferragud C, Wounds, amputations, and expert procedures in the city of Valencia in the early fifteenth century. In: Tracy L, DeVries K (eds), Wounds and Wound Repair in Medieval Culture. Leiden-Boston: Brill; 2015. pp. 233-251.
Ferragud C, La enfermedad y la práctica médica en los sermones de Vicente Ferrer. eHumanista 2018;39(1):1-11.
García Ballester L, Los moriscos y la medicina: un capítulo de la medicina y la ciencia marginadas en la España del siglo XVI. Barcelona: Labor; 1984.
García Ballester L, La medicina a la València medieval: medicina i societat en un país medieval mediterrani. Valencia: Alfons el Magnànim-IVEI; 1988.
García Ballester L, The construction of a new form of learning and practicing medicine in medieval Latin Europe. Sci. Context 1995; 8(1):75-102 [repr. in: García Ballester L, Galen and Galenism: Theory and Medical Practice from Antiquity to the European Renaissance, ed. Arrizabalaga J, Cabré M, Cifuentes L, Salmón F. Aldershot: Ashgate Variorum (Variorum Collected Studies Series, CS710); 2002. VII].
García Ballester L, La búsqueda de la salud: sanadores y enfermos en la España medieval. Barcelona: Península; 2001.
García Ballester L, Medicine in a Multicultural Society: Christian, Jewish and Muslim Practitioners in the Spanish Kingdoms (1222–1610), ed. Arrizabalaga J, Cabré M, Salmón F. Aldershot: Ashgate Variorum (Variorum Collected Studies Series, CS702); 2001.
García Ballester L, "Artifex factivus sanitatis": saberes y ejercicio profesional de la medicina en la Europa pluricultural de la Baja Edad Media, ed. Olagüe de Ros G, Rodríguez Ocaña E. Granada: Universidad de Granada; 2004.
García Ballester L, Ferre L, Feliu E, Jewish appreciation of fourteenth-century scholastic medicine. Osiris, 2nd s., 1990;6:85-117.
García Ballester L, French RK, Arrizabalaga J, Cunningham A (eds), Practical Medicine from Salerno to the Black Death. Cambridge: Cambridge University Press; 1994.
García Ballester L, McVaugh MR, Rubio Vela A, Medical Licensing and Learning in Fourteenth-Century Valencia, Philadelphia: The American Philosophical Society (Transactions of the American Philosophical Society, 79, pt. 6); 1989.
Guaita i Jiménez P, Dona i medicina a la Corona d'Aragó (segles XIII-XV). Manresa: Arxiu Històric de les Ciències de la Salut; 2010.
Guardiola E, Cifuentes L, Sala J (eds), El receptari de Joan Martina (Sabadell, 1439): estudis i edició facsímil. Barcelona: Reial Acadèmia de Medicina de Catalunya (Publicacions del Seminari d'història de la medicina, 4); 2023.

Huard P, Grmek MD, Mille ans de chirurgie en Occident (Ve-XV siècles). Paris: Roger Dacosta; 1966.

Huizenga E, Tussen autoriteit en empirie: De Middelnederlandse chirurgieën in de veertiende en vijftiende eeuw en hun maatschappelijke context. Hilversum: Verloren; 2003.

Hunt T, The Medieval Surgery. Woodbridge: Boydell; 1992.

Illustrations of Costume & Soldiers. *Liber ad honorem Augusti* by Pietro da Eboli, c. 1197 <http://costume.myartsonline.com/12/Liber_ad_honorem_Augusti.htm> (accessed 21 April 2024).

Jacquart D, Le milieu médical en France du XIIe au XVe siècle. Geneva-Paris: Droz-Champion; 1981.

Jacquart D, La médecine médiévale dans le cadre parisien (XIVe-XVe siècle). Paris: Fayard; 1998.

Jáuregui C, "Físic e cirurgià juheu": la medicina hebrea a la Barcelona del segle XIV. PhD Diss. Universitat de Barcelona; 2017.

Lacanale M, Per l'edizione dei volgarizzamenti romanzi della *Practica oculorum* di Benvenuto Grafeo. ZrP 2023;139(1): 268-285.

Lawn B, I quesiti salernitani: introduzione alla storia della letteratura problematica medica e scientifica nel Medioevo e nel Rinascimento. Naples: Di Mauro; 1969.

Lemme C, Il ricettario del ms. 215 della Biblioteca Classense di Ravenna (ff. 93r-156v): edizione, commento linguistico e glossario. Alessandria: Edizioni dell'Orso; 2022.

Martínez Romero T, Las traducciones según algunos traductores catalanes: unas reflexiones. CEHM 2018;41(1):155-171.

McVaugh MR, Medicine Before the Plague: Practitioners and Their Patients in the Crown of Aragon (1285-1345). Cambridge: Cambridge University Press; 1993.

McVaugh MR, Royal surgeons and the value of medical learning: the Crown of Aragon, 1300-1350. In: García Ballester L, French RK, Arrizabalaga J, Cunningham A (eds), Practical medicine from Salerno to the Black Death. Cambridge: Cambridge University Press; 1994. pp. 211-236.

McVaugh MR, Alchemy in the *Chirurgia* of Teodorico Borgognoni. In: Crisciani Ch, Paravicini Bagliani A (eds), Alchimia e medicina nel Medioevo. Florence: SISMEL-Edizioni del Galluzzo (Micrologus' Library, 9); 2003. pp. 55-76.

McVaugh MR, The Rational Surgery of the Middle Ages. Florence: SISMEL-Edizioni del Galluzzo (Micrologus' Library, 15); 2006.

McVaugh MR, Academic medicine and the vernacularization of medieval surgery: the case of Bernat de Berriac. In: Alberni A, Badia L, Cifuentes L, Fidora A (eds), El saber i les llengües vernacles a l'època de Llull i Eiximenis: estudis ICREA sobre vernacularització = Knowledge and Vernacular Languages in the Age of Llull and Eiximenis: ICREA Studies on Vernacularization. Barcelona: Publicacions de l'Abadia de Montserrat; 2012. pp. 257-281.

MedCat: Corpus Medicorum Catalanorum. Coord. Cifuentes L, Ferragud C. Barcelona-València: Universitat de Barcelona-Universitat de València; 2020-. <https://medcat.sciencia.cat> (accessed 1 September 2023).

Mitchell PD, Medicine in the Crusades: Warfare, Wounds and the Medieval Surgeon. Cambridge: Cambridge University Press; 2004.

Molina i Figueras J, Un manuscrito catalán de la *Chirurgia magna* ilustrado en la Corte Vaticana a finales del Quattrocento. ADHTA 1994;6:23-38.

Mounier-Kuhn A, Chirurgie de guerre: le cas du Moyen Âge en Occident. Paris: Economica; 2006.

Park K, Doctors and Medicine in Early Renaissance Florence. Princeton: Princeton University Press; 1985.

Paterson LM, Military surgery: knights, sergeants, and Raimon of Avignon's version of the *Chirurgia* of Roger of Salerno (1180-1209). In: Harvey R, Harper-Bill Ch (eds), The Ideals and Practice of Medieval Knighthood II: Papers from the Third Strawberry Hill Conference, 1986. Woodbridge: The Boydell Press; 1988. pp. 117-146 [repr. in: Paterson LM, Culture and Society in Medieval Occitania. Farnham: Ashgate Variorum (Variorum Collected Studies Series, CS970); 2011. XVII].

Petrucci A, Writers and Readers in Medieval Italy: Studies in the History of Written Culture, ed. and transl. Radding ChM. New Haven-London: Yale University Press; 1995.

Samsó J, Traducciones científicas árabo-romances en la península Ibérica. In: Fortuño Llorens S, Martínez Romero T (eds), Actes del VII Congrés de l'Associació Hispànica de Literatura Medieval (Castelló de la Plana, 22-26 de setembre de 1997). Castelló de la Plana: Universitat Jaume I; 1999. vol. 1, pp. 199-231.

Sciència.cat DB. Coord. Cifuentes L. Barcelona: Universitat de Barcelona; 2012-. <https://www.sciencia.cat/scienciacat-db> (accessed 1 September 2023).

Serrano Larráyoz F, Medicina y enfermedad en la corte de Carlos III el Noble de Navarra (1387-1425). Pamplona: Gobierno de Navarra; 2004.

Shatzmiller J, Jews, Medicine, and Medieval Society. Berkeley-New York: University of California Press; 1994.

Siraisi NG, Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice. Chicago-London: The University of Chicago Press; 1990.

Siraisi NG, How to write a Latin book on surgery: organizing principles and authorial devices in Guglielmo da Saliceto and Dino del Garbo. In: García Ballester L, French RK, Arrizabalaga J, Cunningham A (eds), Practical medicine from Salerno to the Black Death. Cambridge: Cambridge University Press; 1994. pp. 88-109 [repr. in: Siraisi NG, Medicine and the Italian Universities, 1250-1600. Leiden: Brill; 2001. pp. 37-62].

Steinschneider M, Die hebraeischen *Übersetzungen* des Mittelalters und die Juden als Dolmetscher: Ein Beitrag zur Literaturgeschichte des Mittelalters meist nach handschriftlichen Quellen. Berlin: Bibliographisches Bureau; 1893 [repr.: Graz: Akademische Druck- und Verlagsanstalt; 1956].

Sudhoff K, Beiträge zur Geschichte der Chirurgie im Mittelalter: Graphische und textliche Untersuchungen in mittelalterlichen Handschriften. Leipzig: J. A. Barth; 1914-1918. 2 vol.

Valls HE, Studies on Roger Frugardi's *Chirurgia*. PhD Diss. University of Toronto; 1996.

Valls HE, Illustrations as abstracts: the illustrative programme in a Montpellier manuscript of Roger Frugardi's *Chirurgia*. Med. Secoli 1996;8(1):67-83.

Wyman AL, The surgeoness: the female practitioner of surgery (1400-1800). Med. Hist. 1984;28:22-41.

1. Group Sciència.cat <https://www.sciencia.cat>, whose research starts from those initiated by Luis García Ballester and Michael R. McVaugh. This article is part of research projects PID2021-123419NB-I00, funded by the Spanish government and the ERDF funds of the European Union, and 2021-SGR-00777, funded by the Catalan government. English translation by Andrew Stacey (Barcelona).
2. A summary in: García Ballester L, The construction of a new form of learning and practicing medicine in medieval Latin Europe. Sci. Context 1995;8(1):75-102 [repr. in:

García Ballester L, Galen and Galenism: Theory and Medical Practice from Antiquity to the European Renaissance, ed. Arrizabalaga J, Cabré M, Cifuentes L, Salmón F. Aldershot: Ashgate Variorum (Variorum Collected Studies Series, CS710); 2002. VII]. Some studies, including case studies, in: Jacquart D, Le milieu médical en France du XIIe au XVe siècle. Geneva-Paris: Droz-Champion; 1981. Park K, Doctors and Medicine in Early Renaissance Florence. Princeton: Princeton University Press; 1985. Agrimi J, Crisciani Ch, Edocere medicos: medicina scolastica nei secoli XIII-XV. Naples: Guerini e Associati; 1988. McVaugh MR, Medicine Before the Plague: Practitioners and Their Patients in the Crown of Aragon (1285-1345). Cambridge: Cambridge University Press; 1993. Jacquart D, La médecine médiévale dans le cadre parisien (XIVe-XVe siècle). Paris: Fayard; 1998. García Ballester L, La búsqueda de la salud: sanadores y enfermos en la España medieval. Barcelona: Península; 2001. Serrano Larráyoz F, Medicina y enfermedad en la corte de Carlos III el Noble de Navarra (1387-1425). Pamplona: Gobierno de Navarra; 2004. Ferragud C, Medicina i promoció social a la baixa Edat Mitjana (Corona d'Aragó, 1350-1410). Madrid: CSIC; 2005. Other studies in: García Ballester L, Medicine in a Multicultural Society: Christian, Jewish and Muslim Practitioners in the Spanish Kingdoms (1222–1610), ed. Arrizabalaga J, Cabré M, Salmón F. Aldershot: Ashgate Variorum (Variorum Collected Studies Series, CS702); 2001. García Ballester L, "Artifex factivus sanitates": saberes y ejercicio profesional de la medicina en la Europa pluricultural de la Baja Edad Media, ed. Olagüe de Ros G, Rodríguez Ocaña E. Granada: Universidad de Granada; 2004. The best introduction to the history of medicine during this period is: Siraisi NG, Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice. Chicago-London: The University of Chicago Press; 1990.

3. See, among others, the studies of Petrucci A, Writers and Readers in Medieval Italy: Studies in the History of Written Culture, ed. and transl. Radding ChM. New Haven-London: Yale University Press; 1995.
4. For the Catalan case, see the summary of Cifuentes L, La ciència en català a l'Edat Mitjana i el Renaixement. 2nd rev. and enl. ed. Barcelona-Palma: Universitat de Barcelona-Universitat de les Illes Balears; 2006.
5. Although it tends to minimize it, see: Samsó J, Traducciones científicas árabo-romances en la península Ibérica. In: Fortuño Llorens S, Martínez Romero T (eds), Actes del VII Congrés de l'Associació Hispànica de Literatura Medieval (Castelló de la Plana, 22-26 de setembre de 1997). Castelló de la Plana: Universitat Jaume I; 1999. vol. 1, pp. 199-231.
6. Cifuentes L, Université et vernacularisation au bas Moyen Âge: Montpellier et les traductions catalanes médiévales de traités de médecine. In: Le Blévec D, Granier T (eds), L'Université de Médecine de Montpellier et son rayonnement (XIIIe-XVe siècles). Turnhout: Brepols; 2004. pp. 273-290.
7. Cifuentes L, Vernacularization as an intellectual and social bridge: the Catalan translations of Theodoric's *Chirurgia* and of Arnau de Vilanova's *Regimen sanitatis*. Early Sci. Med. 1999;4:127-148; resumed in: Cifuentes L, La ciència en català… ref. 4.
8. Badia L, Santanach J, Soler A, Ramon Llull as a Vernacular Writer: Communicating a New Kind of Knowledge. London: Tamesis; 2016. Cifuentes L, El receptari mèdic baixmedieval i renaixentista: un gènere vernacle. In: Badia L, Cifuentes L, Martí S, Pujol J (eds), Els manuscrits, el saber i les lletres a la Corona d'Aragó, 1250-1500. Barcelona: Publicacions de l'Abadia de Montserrat; 2016. pp. 103-160.
9. In the Catalan case, the first consistent contribution to the history of surgery was Carreras Valls R, Introducció a la història de la cirurgia a Catalunya: Bernat Serra i altres cirurgians

catalans il·lustres del segle XIV. In: Tres treballs premiats en el concurs d'homenatge a Gimbernat. Perpinyà-el Masnou: Societat de Cirurgia de Catalunya-Laboratoris del Nord d'Espanya; 1936. pp. 1-63. McVaugh, Medicine before the Plague… ref. 2, and Ferragud, Medicina i promoció… ref. 2, are essential. Currently, an exceptional documentary heritage is being computerized in: MedCat: Corpus Medicorum Catalanorum. Coord. Cifuentes L, Ferragud C. Barcelona-València: Universitat de Barcelona-Universitat de València; 2020-. <https://medcat.sciencia.cat> (accessed 1 September 2023). The surgeons' role in the vernacularization process was studied in: Cifuentes L, La literatura quirúrgica baixmedieval en romanç a la Corona d'Aragó: escola, pont i mercat. In: Badia L, Cabré M, Martí S (eds), Literatura i cultura a la Corona d'Aragó (s. XIII-XV). Barcelona: Curial Edicions Catalanes-Publicacions de l'Abadia de Montserrat; 2002. pp. 321-335.

10. See Cifuentes L, La promoció intel·lectual i social dels barbers-cirurgians a la Barcelona medieval: l'obrador, la biblioteca i els béns de Joan Vicenç (fl. 1421-1464). ATCA 2000;19:429-479.
11. García Ballester L, McVaugh MR, Rubio Vela A, Medical Licensing and Learning in Fourteenth-Century Valencia, Philadelphia: The American Philosophical Society (Transactions of the American Philosophical Society, 79, pt. 6); 1989. Ferragud C, Barbers in the process of medicalization in the Crown of Aragon during the late Middle Ages. In: Sabaté F (ed.), Medieval Urban Identity: Health, Economy and Regulation. Newcastle: Cambridge Scholars; 2015. pp. 143-165. Ferragud C, Wounds, amputations, and expert procedures in the city of Valencia in the early fifteenth century. In: Tracy L, DeVries K (eds), Wounds and Wound Repair in Medieval Culture. Leiden-Boston: Brill; 2015. pp. 233-251. For the Catalan kingdom of Sicliy, see Santoro D, Surgeons in late medieval Sicily: education, activities, regulation. In: Sabaté F (ed.), Medieval Urban Identity: Health, Economy and Regulation. Newcastle: Cambridge Scholars; 2015. pp. 110-128. For war and specializations see below.
12. Shatzmiller J, Jews, Medicine, and Medieval Society. Berkeley-New York: University of California Press; 1994. Contreras Mas A, Los médicos judíos en la Mallorca bajomedieval (siglos XIV-XV). Palma: Miquel Font; 1997. Jáuregui C, "Físic e cirurgià juheu": la medicina hebrea a la Barcelona del segle XIV. PhD Diss. Universitat de Barcelona; 2017. Cardoner A, Danon J, Metges jueus catalans. Barcelona; 1985. Unpublished, in the process of being incorporated into the MedCat database. García Ballester L, Los moriscos y la medicina: un capítulo de la medicina y la ciencia marginadas en la España del siglo XVI. Barcelona: Labor; 1984. García Ballester L, La medicina a la València medieval: medicina i societat en un país medieval mediterrani. Valencia: Alfons el Magnànim-IVEI; 1988. Barceló C, Labarta A, Archivos moriscos: textos árabes de la minoría islámica valenciana (1401-1608). Valencia: Universitat de València; 2009.
13. Wyman AL, The surgeoness: the female practitioner of surgery (1400-1800). Med. Hist. 1984;28:22-41. Guaita i Jiménez P, Dona i medicina a la Corona d'Aragó (segles XIII-XV). Manresa: Arxiu Històric de les Ciències de la Salut; 2010. Agrimi J, Crisciani Ch, Immagini e ruoli della *vetula* tra sapere medico e antropologia religiosa (secoli XIII-XV). In: Paravicini A, Vauchez A (eds), Poteri carismatici e informali: Chiesa e società medioevali. Palermo: Sellerio; 1992. pp. 224-261. Ferragud C, La atención médica doméstica practicada por mujeres en la Valencia bajomedieval. Dynamis 2007;27:133-155. Cabré i Pairet M, Women or healers? Household practices and the categories of health care in late medieval Iberia. Bull. Hist. Med. 2008;82:18-51.

14. For the main treatises, see below. For a broad and complex concept of "surgery", see McVaugh MR, The Rational Surgery of the Middle Ages. Florence: SISMEL-Edizioni del Galluzzo (Micrologus' Library, 15); 2006, pp. 135-180. Cifuentes L, Els tractats de cirurgia medievals en català: entre el manual especialitzat i l'autoajuda domèstica. In: Bellmunt Serrano M, Mahiques Climent J (eds), Literature, Science & Religion: Textual Transmission and Translation in Medieval and Early Modern Europe. Kassel: Reichenberger; 2020. pp. 121-148. On practical medicine, see García Ballester L, French RK, Arrizabalaga J, Cunningham A (eds), Practical Medicine from Salerno to the Black Death. Cambridge: Cambridge University Press; 1994.
15. See the Catalan translation in: Sciència.cat DB op1957 (book IV with a fragment of book I) and Cifuentes L, La promoció intel·lectual… ref. 10. pp. 450-451 and 466, no. 44.
16. Siraisi NG, How to write a Latin book on surgery: organizing principles and authorial devices in Guglielmo da Saliceto and Dino del Garbo. In: García Ballester L, French RK, Arrizabalaga J, Cunningham A (eds), Practical medicine… ref. 14. pp. 88-109 [repr. in: Siraisi NG, Medicine and the Italian Universities, 1250-1600. Leiden: Brill; 2001. pp. 37-62].
17. McVaugh MR, Alchemy in the *Chirurgia* of Teodorico Borgognoni. In: Crisciani Ch, Paravicini Bagliani A (eds), Alchimia e medicina nel Medioevo. Florence: SISMEL-Edizioni del Galluzzo (Micrologus' Library, 9); 2003. pp. 55-76. McVaugh MR, The Rational Surgery… ref. 14. pp. 181-215.
18. It is a classic study: Berthaud H, La médecine populaire dans la littérature romane. Paris: Faculté de Médecine de Paris; 1907. For Catalan literature, see, among others, Ferragud C, La enfermedad y la práctica médica en los sermones de Vicente Ferrer. eHumanista 2018; 39(1):1-11.
19. Digital reproductions of these manuscripts can be consulted in the repositories of the British Library (MS Sloane 1977) https://www.bl.uk/manuscripts/FullDisplay.aspx?ref=Sloane_MS_1977; the Bibliothèque interuniversitaire de Monpellier (MS H 95) https://data.biblissima.fr/entity/Q239396; and the Biblioteca Apostolica Vaticana (MS Vat. lat. 4804) https://digi.vatlib.it/view/MSS_Vat.lat.4804 (accessed 1 September 2023).
20. See it in Illustrations of Costume & Soldiers, *Liber ad honorem Augusti* by Pietro da Eboli, c. 1197, folio 110r http://costume.myartsonline.com/12/Liber_ad_honorem_Augusti-f110r.htm (accessed 21 April 2024).
21. See a specific collection in: Huard P, Grmek MD, Mille ans de chirurgie en Occident (Ve-XV siècles). Paris: Roger Dacosta; 1966. A particular treatment in: Burns RI, The medieval crossbow as surgical instrument: an illustrated case history. Bull. NY Acad. Med. 1972;48:983-989 [repr. in: Burns RI, Moors and Crusaders in Mediterranean Spain. London: Variorum Reprints (Collected studies, 73); 1978. VII]. On the Vatican Chaulhac, see Molina i Figueras J, Un manuscrito catalán de la *Chirurgia magna* ilustrado en la Corte Vaticana a finales del Quattrocento. ADHTA 1994;6:23-38. For Roger's Latin illustrated manuscripts, see: Valls HE, Studies on Roger Frugardi's *Chirurgia*. PhD Diss. University of Toronto; 1996. Valls HE, Illustrations as abstracts: the illustrative programme in a Montpellier manuscript of Roger Frugardi's *Chirurgia*. Med. Secoli 1996;8(1):67-83.
22. See these manuscripts in the repositories of Trinity College, Cambridge (MS O.1.20) https://mss-cat.trin.cam.ac.uk/Manuscript/O.1.20; the British Library (MS Sloane 6) https://www.bl.uk/manuscripts/FullDisplay.aspx?ref=Sloane_MS_6; the Biblioteka Jagiellońska (MS Berol. Hisp. Qu. 62) https://jbc.bj.uj.edu.pl/dlibra/publication/69/

edition/60 (accessed 1 September 2023). For the Cambridge MS see also Hunt T, The Medieval Surgery. Woodbridge: Boydell; 1992. For the Palermo MS, Cifuentes L, El receptari medic… ref. 8. p. 127, *passim*. For the Krakow MS, *ibid*., p. 127, *passim*, and Cifuentes L, Les miscel·lànies mèdiques medievals en català: una proposta de classificació. In: Müller I, Savelsberg F (eds), Sabers per als laics: vernacularització, formació, transmissió (Corona d'Aragó, 1250-1600). Berlin-Boston: De Gruyter (Beihefte zur Zeitschrift für romanische Philologie, 463); 2021. pp. 255-290 (pp. 263, 265-266 and 282).

23. Cifuentes L, Medicina i guerra a l'Europa baix-medieval: la sanitat i la participació dels seus professionals en les expedicions militars de la Corona d'Aragó (1309-1355). PhD Diss. Universitat Autònoma de Barcelona; 1993. See also, despite the bibliographic limitations and, especially the first, very focused on paleopathology: Mitchell PD, Medicine in the Crusades: Warfare, Wounds and the Medieval Surgeon. Cambridge: Cambridge University Press; 2004. Mounier-Kuhn A, Chirurgie de guerre: le cas du Moyen Âge en Occident. Paris: Economica; 2006.
24. In the study of medieval treatises, it is a classic: Sudhoff K, Beiträge zur Geschichte der Chirurgie im Mittelalter: Graphische und textliche Untersuchungen in mittelalterlichen Handschriften. Leipzig: J. A. Barth; 1914-1918. 2 vol. The most up-to-date study is: McVaugh, The Rational Surgery… ref. 14. For Teodorico in Catalan, see: Cifuentes L, Vernacularization… ref. 7, and McVaugh MR, Academic medicine and the vernacularization of medieval surgery: the case of Bernat de Berriac. In: Alberni A, Badia L, Cifuentes L, Fidora A (eds), El saber i les llengües vernacles a l'època de Llull i Eiximenis: estudis ICREA sobre vernacularització = Knowledge and Vernacular Languages in the Age of Llull and Eiximenis: ICREA Studies on Vernacularization. Barcelona: Publicacions de l'Abadia de Montserrat; 2012. pp. 257-281.
25. For the Catalan case, see Cifuentes L, La ciència en català… ref. 4. pp. 125-139 and 421-422, and Cifuentes L, Els tractats de cirurgia… ref. 14. For outside the Catalan area, see a general overview in: McVaugh MR, The Rational Surgery… ref. 14. pp. 241-262. There is an important monographic study dedicated to the treatises in Dutch and their context, by Huizenga E, Tussen autoriteit en empirie: De Middelnederlandse chirurgieën in de veertiende en vijftiende eeuw en hun maatschappelijke context. Hilversum: Verloren; 2003.
26. Paterson LM, Military surgery: knights, sergeants, and Raimon of Avignon's version of the *Chirurgia* of Roger of Salerno (1180-1209). In: Harvey R, Harper-Bill Ch (ed.), The Ideals and Practice of Medieval Knighthood II: Papers from the Third Strawberry Hill Conference, 1986. Woodbridge: The Boydell Press; 1988. pp. 117-146 [repr. in: Paterson LM, Culture and Society in Medieval Occitania. Farnham: Ashgate Variorum (Variorum Collected Studies Series, CS970); 2011. XVII]. Cifuentes L, Estratègies de transició: pobres i versos en la transmissió extraacadèmica del saber a l'Europa llatina tardomedieval. In: Alberni A, Badia L, Cabré L (eds), Translatar i transferir: la transmissió dels textos i el saber (1200-1500). Santa Coloma de Queralt: Obrador Edèndum-Universitat Rovira i Virgili; 2010. pp. 241-263 (pp. 252-253).
27. Cifuentes L, La ciència en català… ref. 4, and Cifuentes L, Els tractat de cirurgia… ref. 14. See the dispute over Chaulhac in MedCat doc76. For James II and his surgeons, see McVaugh MR, Royal surgeons and the value of medical learning: the Crown of Aragon, 1300-1350. In: García Ballester, French, Arrizabalaga, Cunningham (eds), Practical medicine… ref. 14. pp. 211-236.

28. García Ballester L, Ferre L, Feliu E, Jewish appreciation of fourteenth-century scholastic medicine. Osiris, 2nd s., 1990;6:85-117. The Hebrew/*aljamiated* works in: Steinschneider M, Die hebraeischen Übersetzungen des Mittelalters und die Juden als Dolmetscher: Ein Beitrag zur Literaturgeschichte des Mittelalters meist nach handschriftlichen Quellen. Berlin: Bibliographisches Bureau; 1893 [repr.: Graz: Akademische Druck- und Verlagsanstalt; 1956] (questions and answers on pp. 832-833). For the Castilian/Aragonese Teodorico's texts, see Baum I, Judeo-Catalan, Jewish Multilingualism and Linguistic Contact in Late Medieval Catalonia. PhD Diss. The Hebrew University of Jerusalem; 2018. A digital reproduction of the Catalan translation manuscript can be consulted in the repository of medieval manuscripts in Austria (Universitätsbibliothek Graz, MS 342) https://unipub.uni-graz.at/urn/urn:nbn:at:at-ubg:2-30560 (accessed 1 September 2023).
29. Outstanding among the studies of the lexicon of the vernacular treatises on surgery: Altieri Biagi ML, Gugielmo volgare: studio sul lessico della medicina medioevale. Bologna: Forni; 1970, focused on the Italic translations of Saliceto's treatise; or Artale E, Zamuner I, Ricerche sul lessico medico-scientifico: gli strumenti chirurgici (XIII-XIV sec.). In: Piro R, Scarpa R (eds), Capitoli di storia linguistica della medicina. Milan: Mimesis; 2019. pp. 63-104. For the Catalan *scripta*, see Cifuentes L, La *scripta* llibrària catalana primitiva als primers textos mèdics en català. In: Alberni A, Cifuentes L, Santanach J, Soler A (eds), "Qui fruit ne sap collir": homenatge a Lola Badia. Barcelona: Universitat de Barcelona-Barcino; 2021. vol. 1, pp. 157-170. See also Cifuentes, Els tractats de cirurgia… ref. 14. pp. 141-142.
30. The vernacular as disruptive in: McVaugh MR, The Rational Surgery…ref. 14. pp. 243, 254-255, *passim*. Translations as auxiliary tools in: Martínez Romero T, Las traducciones según algunos traductores catalanes: unas reflexiones. CEHM 2018;41(1):155-171 (pp. 158-161). The value of translations in the consolidation of the medical system in: Cifuentes L, Els tractats de cirurgia… ref. 14. pp. 133-134, developed here.
31. Contreras Mas A, Barberos y cirujanos navales en Mallorca bajomedieval. Med. Bal. 1992;7:41-51. Cifuentes L, La medicina en las galeras de la Corona de Aragón a finales de la Edad Media: la caja del barbero y sus libros. Med. & Hist., 4ª época, 2000;4:1-15. Cifuentes L, Les miscel·lànies… ref. 22. pp. 267-269.
32. Cifuentes L, Vernacularization… ref. 7. Cifuentes L, Las traducciones catalanas y castellanas de la *Chirurgia magna* de Lanfranco de Milán: un ejemplo de intercomunicación cultural y científica a finales de la Edad Media. In: Martínez Romero T, Recio R (eds), Essays on Medieval Translation in the Iberian Peninsula. Castelló de la Plana-Omaha: Universitat Jaume I-Creighton University; 2001. pp. 95-127. Cifuentes L, Una traducció catalana desconeguda de la *Chirurgia parva* de Gui de Caulhiac (Barcelona, 1505). ATCA 2000;19:601-609. Cifuentes L, Els tractats de cirurgia… ref. 14. Contreras Mas A, La versión catalana de la *Cirurgia* de Teodorico de Luca por Guillem Correger de Mayorcha: un intento de mejorar la formación teórica de los cirujanos. Est. Bal. 1984;4:55-74. McVaugh, Academic medicine… ref. 24. See, for example, MedCat op5355, op5899, and op6005.
33. Lawn B, I quesiti salernitani: introduzione alla storia della letteratura problematica medica e scientifica nel Medioevo e nel Rinascimento. Naples: Di Mauro; 1969. Carré A, Cifuentes L, Girolamo Manfredi's *Il Perché*: I. The *Problemata* and its medieval tradition. Med. Stor., n.s., 2010;10(19-20):13-38. Cifuentes L, La ciència en català… ref. 4, p. 135. Cifuentes L, Els tractats de cirurgia… ref. 14. pp. 132-233, 136, *passim*.
34. Cifuentes L, Els tractats de cirurgia… ref. 14.

35. See, for example, a barber's library in Cifuentes L, La promoció intel·lectual… ref. 10, and MedCat doc3, or a female practitioner's library in MedCat doc28.
36. Cifuentes L, La ciència en català… ref. 4. pp. 88-89. Cifuentes L, El tractats de cirurgia. ref. 14. p. 128.
37. Lacanale M, Per l'edizione dei volgarizzamenti romanzi della *Practica oculorum* di Benvenuto Grafeo. ZrP 2023;139(1):268-285. Faraudo de Saint-Germain [pseud.: Deztany L], Simon de Guilleuma JM, Alcoatí: *Libre de la figura del uyl*. Barcelona: Impr. "La Renaixença"; 1933. Cifuentes L, La ciència en català… ref. 4. pp. 122-125 and 421.
38. Cifuentes L, El receptari medic… ref. 8. A book of recipes by a Catalan surgeon active in Italy in: Lemme C, Il ricettario del ms. 215 della Biblioteca Classense di Ravenna (ff. 93r-156v): edizione, commento linguistico e glossario. Alessandria: Edizioni dell'Orso; 2022. A book of recipes by a Catalan Jewish physician, in Hebrew with many words *aljamiated* in Catalan, in: Blasco Orellana M, Recetario médico hebraicocatalán del siglo XIV (descripción, traducción y estudio). Barcelona: Trialba (Catalonia hebraica et aragonalia, I); 2015. A book of recipes by a Catalan bourgeois in: Guardiola E, Cifuentes L, Sala J (eds), El receptari de Joan Martina (Sabadell, 1439): estudis i edició facsímil. Barcelona: Reial Acadèmia de Medicina de Catalunya (Publicacions del Seminari d'història de la medicina, 4); 2023 <https://ramc.cat/wp-content/uploads/2024/02/4-PUBLICACIONS-SEMINARI-HISTORIA-VERSIO-DIGITAL-OK.pdf> (accessed 21 April 2024).