

# Elizabeth Garrett Anderson and the heroic first women to access medical schools

R. Belvís<sup>1</sup>, D. Momblán<sup>2</sup>

<sup>1</sup>Headache and neuralgia unit, Neurology Department. Hospital de la Santa Creu i Sant Pau, Barcelona, Spain.

<sup>2</sup>Gastrointestinal surgery department. IMDM, Hospital Clínic, Barcelona, Spain.

## ABSTRACT

**Introduction.** In the 19th century the first women were allowed to receive formal medical training at universities, after a long-fought battle characterised by deception, ploys, misunderstandings, and aggression. These women had to overcome numerous hurdles before they were able to qualify and begin practice as physicians, and very few were successful.

**Development.** This article reviews the history of women's inclusion in the practice of medicine from antiquity to the 19th century, and focuses on a woman who perfectly illustrates the social transgression sparked by her and her contemporaries around the world, who dared to follow their calling, medicine, in a misogynistic society. This woman, Dr Elizabeth Garrett Anderson, became the first woman to practise medicine in Great Britain after a bitter fight against the academic and medical establishment, also becoming the first woman to hold a mayor's office in Britain and the first to earn a doctorate in France. Garrett was a pioneer of British feminism, setting her medical prestige at the head of the women's suffrage movement. While she cannot be considered a neurologist, her doctoral thesis was one of the first in history to deal with migraine. We performed a comprehensive search of the MEDLINE database and on history web pages.

**Conclusions.** Elizabeth Garrett and her contemporaries transgressed the societal norms of their day and brought about the beginning of the progressive normalisation of women's admission to medical schools and to universities in general.

## KEYWORDS

Discrimination, Elizabeth Garrett, history, medicine, migraine, women

## Introduction

"I am the first but not the last. After me will come thousands."<sup>1</sup> This prophetic statement was given by the Russian physician Nadezhda Prokofyevna Suslova in an interview after she presented her doctoral thesis in Zurich on 14 December 1868, becoming the first woman to earn the title of Doctor of Medicine. Amidst great controversy, medical schools progressively opened their doors to women in the late 19th century. Criticism, obstacles, humiliation, and aggression could

not overcome the determination of a small, unorganised, geographically dispersed group of women who resolutely set out to rupture the misogynistic social norms of the day, aware that they would be joined by many others if they were successful.

In this article, we intentionally name numerous female physicians to spare readers the typical reductionism of speaking about them as a group but then only mentioning certain famous individuals. In fact, numerous women have attempted to practise medicine over the course of

history, but the majority became dispirited and gave up, while others did not dare to defy the male hegemony of the day. How many talents were wasted? What degree of delay did this cause for the advance of medicine?

These women's stories show numerous similarities, despite their origins in countries as disparate as Great Britain, Spain, Japan, Russia, India, and the United States. This article focuses on the life of Dr Elizabeth Garrett Anderson, the first woman in Great Britain and the second in Europe to practise medicine (after Dr Suslova), and addresses both her medical career and her role as a pioneer in the fight for women's equality. We consider hers to be a prototypical and illustrative story; this article not only reviews the critical moment in the history of medicine in which Garrett lived, but also pays homage to the women who attempted to practise medicine before her.

## Development

Before Elizabeth Garrett Anderson

The first civilisations in which women practised medicine were probably the Sumerian and the Ancient Egyptian cultures. A Theban headstone dating from 2730 BCE refers to a female chief physician. Another example appears in the Kahun Papyrus, dating from 1850 BCE, which mentions a school in Sais where women were taught to cure diseases. Theban paintings from 1420 BCE also show women performing surgeries.<sup>1-5</sup>

In Greece, Homer's *Iliad* (12th century BCE) mentions that Agamede was an expert in plant-based medicine. Other texts mention the female physician Phanostrate. The first women writing on medicine appear in the 5th and 6th centuries BCE; key figures are Theano of Crotona, who wrote on mathematics, philosophy, and medicine, and Aspasia of Miletus (Figure 1), who wrote on obstetrics and gynaecology. In Lycia, remnants have been found of a statue dedicated to Antiochis of Tlos, referred to as a physician. However, Greek women were proscribed from practising medicine after this time.<sup>1-5</sup>

The first woman to practise medicine after receiving medical training was the Athenian Agnodice (Figure 2); moved by high maternal and neonatal mortality rates, she disguised herself as a man and attended classes from Herophilus of Chalcedon in Alexandria in the 4th century BCE. Agnodice distinguished herself as a gynaecologist in Athens, but envious competitors accused her of



Figure 1. Statue of Aspasia of Miletus, one of the first women to write about medicine in Ancient Greece (4th-5th centuries BCE)



Figure 2. Agnodice studied and practised medicine under disguise as a man in Ancient Greece, for which she was sentenced to death; she was subsequently pardoned after her patients intervened. Greek myth or reality?



**Figure 3.** Hildegard of Bingen, the Sibyl of the Rhine, one of the most influential women in medieval Germany

seducing and sexually abusing her patients, which led to a trial. At the trial she revealed her true sex, and was consequently acquitted of the charges, but sentenced to death for practising medicine as a woman. However, her patients intervened on her behalf and told the tribunal that if she were executed they would die alongside her; as a result, she was pardoned. Whether it reflects reality or is simply a Greek myth, this story foreshadows the great difficulty facing women in their fight for inclusion in the medical profession.

Another figure from the same epoch, Mary the Jewess, lived in Alexandria in the 1st to 2nd century BCE, and dedicated her work to the invention of such laboratory methods as the bain-marie and the alembic.

Later, the Roman Empire allowed female physicians or *medicae* to practise medicine, and the field of midwifery developed greatly, with midwives taking full responsibility for births. Numerous women wrote on the subject of medicine, including Octavia, who wrote on tooth pain; Philista and Lais on obstetrics; Egerasia on nephritis; Salpe of Lemnos on ophthalmology; the army surgeon Margareta; Origenia, who wrote on diarrhoea and haemoptysis; Metrodora, author of what may be considered the first treatise on gynaecology; and many others: Sotira, Antiochis, Elephantis, Aspasia, Olympia, Cleopatra, Andromache, etc. However, women usually did not practise medicine openly, and would treat only family, friends, or neighbours.<sup>1-5</sup>

With the arrival of Christianity in Rome, women came to occupy an important position in caring for disadvantaged people, with healthcare centres and orders being established in the 4th and 5th centuries AD. Important figures include St Fabiola, St Nicerata, Macrina, St Olympias the Deaconess, Aretusa, St Monica, St Scholastica, St Clotilde of Burgundy, and St Radegund.<sup>1-5</sup>

In the Middle Ages, practising medicine was difficult for men and almost impossible for women. Nonetheless, we should mention the German Abbess Hildegard of Bingen (Figure 3), also called the Sybil of the Rhine, who was known for her depictions of migraine auras.<sup>6,7</sup> One of her most significant books is *Physica*, a compendium of monastic medical knowledge in the 12th century; her work was not disseminated outside of Germany, however.

One exception was the medical school of Salerno, which did allow women to study medicine, and trained Trotula of Salerno, Constanza Calenda, Rebecca Guarna, Abella, and Mercuriade.<sup>1-5</sup> The school was probably founded in the year 1000 and was subsequently absorbed by the University of Naples in the 13th century, before being closed by Napoleon in 1811. Little is known about these physicians, with the exception of Trotula of Salerno (11th century), whose works were the treatises of reference in obstetrics and gynaecology in the Middle Ages. In *De secretis mulierum* she discusses headache, proposing several theories and treatments.<sup>6</sup> However, it has been suggested that Trotula was not the true author of these works and that they may have been written by her husband Giovanni Platearius, or even a slave named Eros. It has also been said that she did not exist, and her name has even been masculinised as Trotulo.

Subsequently, with the creation and development of universities in the 13th century, women were excluded from studying medicine, and even prosecuted. Such was the case of Jacqueline Felice, who was tried for illegally practising medicine in 14th-century Paris. During the trial, the authorities did not go to the trouble of verifying her medical knowledge, and disregarded the testimony of various patients who praised her for the care she had given them. Nonetheless, certain exceptions, such as the universities of Bologna and Salerno, enabled some European women to practise medicine: Dorotea Bucca, Alessandra Giliani, Marie Colinet, and Barbara Weintrauben are examples.<sup>1-5</sup>



Away from urban and academic settings, women with the capacity to heal were often thought to be witches, and could be tortured or executed. This was the case of the Scottish woman Geillis Duncan, who was accused of witchcraft for her knowledge of medicinal herbs; under torture, she accused the midwife Agnes Sampson and Dr John Fian of the same crime. All three were executed in 1592. Similar cases are recorded in Spain, such as that of Ana Linda in Huelva in 1648; this situation persisted until the 19th century. Similarly, Margaret Jones (Figure 4), a midwife who also performed certain medical treatments in the Massachusetts Bay Colony, was hanged in 1648 on an unfounded charge of witchcraft.

The ideological shift that accompanied the Renaissance led to the inclusion of women in the field of medicine; in the 16th and 17th centuries, the universities of Padua and Montpellier allowed restricted access to women. Important examples include Sophie of Mecklenburg-Güstrow, Catherine de' Medici, Cassandra Fedele, Isabella Cortese, Maria Romeu, Beatriz Galindo, Isabella Losa, Oliva de Sabuco de Nantes Barrera, Prudence Ludford, Ann Woolley, the Countess of Kent, the Duchess of Newcastle-upon-Tyne, Grace Mildmay, Elizabeth Lawrence, and Anne Halkett.<sup>1-5</sup> Another important figure from this period is Louise Bourgeois (1563-1636; Figure 5), a French woman who was able to practise medicine legally after being employed to assist Marie de' Medici, wife of King Henry IV, in the birth of her first son. The Queen was so pleased that she also requested her services for the following five children. In addition to her discoveries in the field of obstetrics, Bourgeois associated poor diet with anaemia, and proposed the use of iron to treat the condition.

In the next century, the German woman Dorothea Erxleben was the earliest known example of a woman receiving a degree in medicine: after interrupting her studies for 11 years due to five pregnancies, she graduated from the University of Halle on 12 June 1754. One of her publications, entitled *Inquiry into the causes preventing the female sex from studying*, caused a great stir, although she faced no repercussions as the pamphlet had been authorised by King Frederick II of Prussia. Regrettably, hers was an isolated case and she practised for only eight years, before dying of breast cancer. A multitude of women practised medicine in the 18th century: Anna Morandi Manzolini, Marguerite du Tertre de la Marche, Laura Bassi, Maria Dalle Donne, Maria Petracchini, Zaffira Peretti, Maria Matellari, Marie Catherine Bihéron, Luisa



Figure 4. A portrait of Margaret Jones, who was executed under charges of witchcraft for practising medicine in Massachusetts Bay in the 19th century



Figure 5. Louise Bourgeois (1563-1636) attended the queen of France in the births of all her children

Rosado, Martha Mears, Frau von Heidenreich, Frau von Siebold, etc.<sup>1-5</sup> Two women from this era merit particular attention. The first is Mari-Anne Victorine Boivin, who was the first to use a stethoscope to observe the fetal heartbeat in 1773 and who made several anatomical discoveries related to pregnancy. For many years, her work on uterine diseases was considered an essential



**Figure 6.** Photograph of Dr James Barry, or should we say Margaret Ann Bulkley?

textbook in gynaecology. The second was not truly a physician, but rather an eccentric British aristocrat, Lady Mary Wortley Montagu, who observed in 1716 that Turkish women inoculated their children with smallpox using nutshells infected by human pustules. She used the same method on her own children and on those of the Princess of Wales and other British aristocrats upon returning to England, and they did not develop the disease. However, the practice was not generalised due to the opposition of the medical community, despite Lady Montagu's dissemination of the benefits of the treatment. In fact, this method was similar to that which Edward Jenner used in cows in 1789.

Until this point in history, the vast majority of women who practised medicine had done so without formal medical training, thanks to physicians in their families or influential figures, and worked principally in the fields of obstetrics and gynaecology, often without payment. All this was to change in the 19th century.

It is highly likely that Dr James Barry (Figure 6), a surgeon and Inspector General in British military hospitals, was in fact a woman named Margaret Ann Bulkley, who concealed her sex in order to practise medicine. James Barry was born in 1795 (place unknown), received his medical degree in Edinburgh, and died in 1865. The deception was revealed when his body was prepared for the funeral. Letters exchanged between astonished civil servants and military officers from the time explain that

the body was that of a woman, which Barry had never made known in life. Barry passed into history as the first surgeon to perform a caesarian section in which both mother and child survived: until that time, the procedure was only performed when the mother was dying or already dead.

The case of Enriqueta Favez (1791-1856) bears certain similarities to that of Barry. She was born in Lausanne and married a French soldier. Their son died during childbirth three years after they married, and her husband was killed in action soon thereafter. She then decided to enrol at the Sorbonne to study medicine, disguised as a man, and served as a military physician in the Napoleonic Wars. Under the name Enrique Favez, she emigrated to Cuba, and in a religious ceremony married a woman who knew her true sex. She was reported when a maid walked in on her while she was undressed. The resulting trial was the most scandalous to occur in Cuba at the time (two women married by the Church). Favez was jailed, and after her eventual release was banished from all territories of the Spanish Empire; she later joined a convent in New Orleans. She was probably the first transsexual physician: in her trial in Cuba, she said that she felt like a man trapped in a woman's body.

In the United States, Harriot Kezia Hunt (1805-1875) applied to attend classes at Harvard medical school. She was accepted in principle, but the dean of the school ultimately refused her admission on account of the misogynist arguments of the school's students (all of whom were men). Eventually, having navigated all manner of difficulties, she earned a doctorate in homeopathic medicine in Syracuse. She later became a professor of obstetrics and the diseases of women and children at Rochester College, and finally emigrated to London. Like Harriot Hunt, other women were unsuccessful in their attempts to access universities: Nancy Talbot Clark, Sara R. Adamson, etc.

Finally, Elizabeth Blackwell (1821-1910, Figure 7), though born in England, became the first woman in history to receive a degree in medicine at a university and to practise in the United States; she later earned a doctorate with a thesis on typhus. She received her degree in medicine at Geneva College (later absorbed by New York University) on 11 January 1849, after being rejected by at least 29 North American universities. Geneva College was a relatively new university in the agricultural west of New York State; it appears that



Blackwell was allowed to attend because the faculty left the decision about her admission to the students, who voted to accept her, believing her application to be a joke from a rival university. The *Boston Medical and Surgical Journal* (now the *New England Journal of Medicine*) reported that “a pretty little specimen of the feminine gender” was studying medicine at Geneva. Another example of the prevailing ideology of the day is apparent in the sarcastic affirmation in the *Baltimore Sun* that Blackwell’s practice would be limited to “diseases of the heart.” She was described as an “experiment” rather than as a “precedent”; however, the newspapers did not report that she graduated first in her class. In the following years, American universities would award degrees to Lydia Folger Fowler, Clemence Sophia Harned Lozier, Emily Blackwell, Marie Elizabeth Zakrzewska, Mary Corinna Putnam Jacobi, Lucy Ellen Sewall, Anita Elizabeth Tyng, Rebecca Lee Crumpler (the first African-American woman to receive a medical degree), and Susan La Flesche Picotte (the first Native American woman).<sup>1-5</sup>

The creation of the Woman’s Medical College of Pennsylvania in Germantown in 1850 was a key event in the United States. The institution was founded by Dr Bartholomew Fussell and five other physicians as a tribute to Fussell’s late sister, who had wanted to be a physician. The college instructed both American and foreign women, and by 1904 had awarded degrees to women from Canada, Brazil, England, Sweden, Denmark, Russia, Syria, India, China, Japan, Australia, and Congo. Following the centre in Pennsylvania, other institutions were opened, including the Woman’s Hospital of Philadelphia (1861) and the New England Hospital for Women and Children (1862). By now, the incorporation of women into American medicine was unstoppable.

#### Elizabeth Garrett Anderson

This was the historical context into which the protagonist of this article, Elizabeth Garrett Anderson (Figure 8), appears. She was born in London on 9 June 1836 to Louisa Dannel and Newson Garrett, their second child (the couple’s third child died at the age of six months). When Elizabeth was five years old, the family moved to the town of Aldeburgh, around 100 km north of London on the Suffolk coast. Her father, Newson Garrett, was a successful pawnbroker who invested his London fortune in trading malt and barley for brewing. As a result, the Garretts lived in relatively comfort, without being an



Figure 7. A portrait of Dr Elizabeth Blackwell, the first woman to be awarded a degree in medicine in the United States and in the world

influential family, and were very ahead of their time in terms of their ideas about education. Her siblings Alice, Agnes, Millicent (who would also become a noteworthy figure in the feminist movement), Sam, Josephine, and George were born in Aldeburgh. The Garretts’ daughters received private tuition in subjects including Latin, Greek, philosophy, literature, arithmetic, and French. For most English girls at the time, study did not extend beyond finishing schools where they were taught ladylike manners and prepared to be attentive wives. Elizabeth was sent to the Boarding School for Ladies, run by Louisa Browning. There she met Jane Crow, a figure from the incipient British feminist movement who years later became Secretary of the Society for Promoting the Employment of Women. Through Jane Crow, Elizabeth met another key feminist figure, Emily Davies, the founder of Girton College, Cambridge, and a staunch defender of higher education for women.<sup>3,5</sup>

It did not become clear that Elizabeth had a medical calling until she discovered that a female British physician, qualified in the United States, was to come to England in 1859 to give a series of lectures with the provocative title “Medicine as a profession for ladies.” The speaker was Dr Elizabeth Blackwell, who had been invited by another celebrated feminist, Barbara Bodichon, the founder of the *English Woman’s Journal*. Garrett had the opportunity to speak with Blackwell

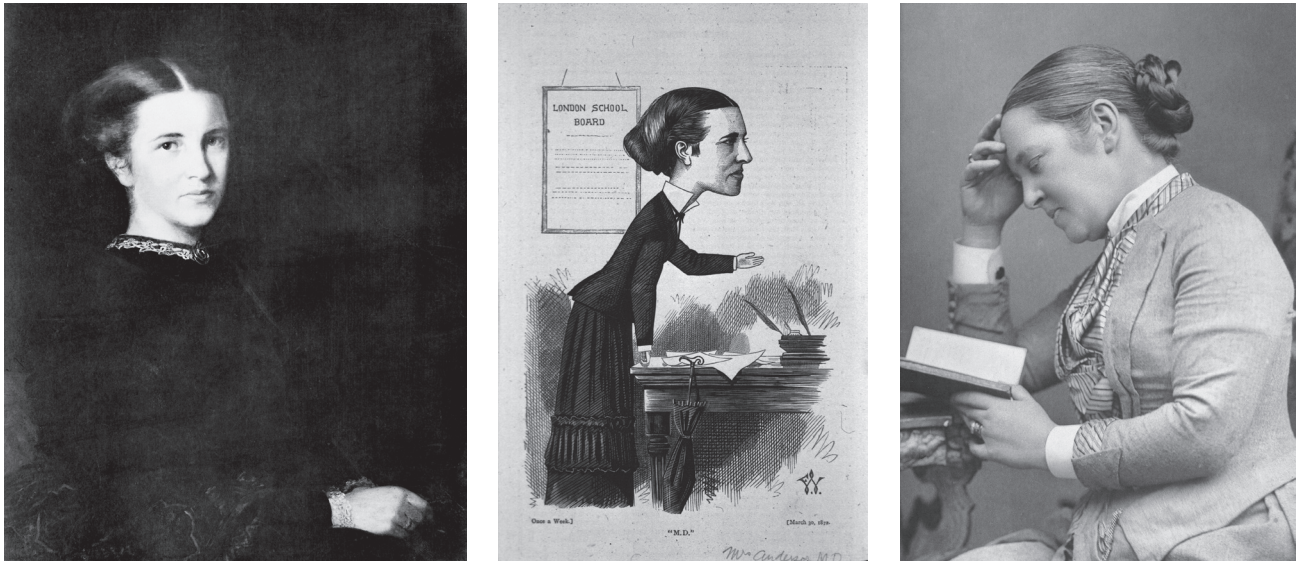


Figure 8. Elizabeth Garrett Anderson shown as a young woman, in caricature, and in adulthood

at a reception following one of the lectures. After this meeting, Elizabeth Garrett resolved to study medicine.

When Garrett informed her parents of her decision, her mother was upset, but her father was supportive, tirelessly accompanying his daughter in her struggle to become a physician. Through her father's contacts, Garrett worked for six months as a nurse in the operating theatre at Middlesex Hospital in London. In these early months, she received training on physiology, anatomy, and surgery from various male physicians. She attempted to pay the same fees as male medical students, but was not permitted to do so. However, her father was allowed to make a donation, and she was able to audit lectures.<sup>3,5</sup>

Her scores were so brilliant that some lecturers suggested that she not give explanations in order not to arouse envy; however, this came too late. During a ward round, a lecturer posed a question and, when the other students remained silent, Elizabeth responded correctly. This was the final straw. Several students demanded in writing that she be expelled, describing her presence as "promiscuous assemblage" and reporting that some lecturers behaved differently with Garrett due to her being a woman. They also requested that women be separated from men in classes and asserted that Middlesex Hospital was considered a joke at other institutions due to Garrett's presence. Elizabeth politely replied to this letter, and

another group of students also wrote a letter defending her. Nonetheless, she was expelled. Garrett's tenacity is demonstrated by the fact that despite this, she sat the final exam, citing the fact that she had paid the relevant fees, and passed the first year of her degree in medicine. She was later rejected by the Grosvenor Street and Westminster hospitals and the universities of Oxford, Cambridge, Glasgow, and Edinburgh. Rather than being dispirited, she became more determined than ever.<sup>3,5</sup>

At that time, there were three ways of practising medicine, with licences being issued by the Royal College of Physicians (the most reputed institution), the Royal College of Surgeons, and the Apothecaries' Society. The Apothecaries' Society set her no obstacles, but she did have to sit a difficult examination. Elizabeth needed medical training, and was able to trick a secretary at the University of Edinburgh into issuing her a matriculation ticket (for a fee of one pound) to attend classes with Dr Day, with the latter's consent, and then used the ticket to sneak into chemistry and anatomy lectures. When her deception was discovered, the secretary was sent to return the fee; however, acting on legal advice, Elizabeth returned the money by post to the Council of the university, asserting that payment of the fee for the matriculation ticket represented a contract and that the university was bound to allow her to attend classes. The Council had to meet to consider this rejection, but the

news reached the daily newspaper *The Scotsman*, and then the *British Medical Journal*, which began to report on “the female doctor.” Her case crossed national borders, and French newspapers printed stimulating lines, such as “Europe is watching you, France applauds you.”

Elizabeth received private lessons from numerous physicians: Day, Plaskitt, Macadam, Young, Keiller, Adams, and Heckford. Eventually, she sat her examination alongside another seven candidates on 28 September 1865, and passed. The *Lancet* published a bittersweet article, which claimed that “no doubt, the examiners had due regard for her sex and omitted all those subjects of examination which would be shocking to the female mind.”

Garrett was now able to practise medicine; with the financial assistance of her indefatigable father, she opened a consultation at number 20, Upper Berkeley Street. Today, a plaque at the site reads: “Elizabeth Garrett Anderson, 1836-1917. The first woman to qualify as a doctor in Britain lived here.”

However, Garrett was not satisfied with practising without holding a degree in medicine, and the United States were very far away. She discovered that an American physician, Mary Putnam, had been accepted to study for a doctorate at the Sorbonne in Paris; Garrett decided not only not to follow the course of study, but to present her thesis immediately. The British ambassador in Paris submitted her application, which was rejected, but the dean of the university decided to present her case before the French Council of Ministers, despite the fact that no woman (even a French woman) had previously earned the title of Doctor of Medicine in France.<sup>3,5</sup>

As luck would have it, Emperor Napoleon III was unwell the day the Council met, and his Spanish wife, María Eugenia de Montijo, presided over the meeting. The Empress decided that Elizabeth Garrett should be accepted to study at the Sorbonne.

After sitting five oral examinations, Elizabeth presented her thesis, “Sur la migraine” (Figure 9),<sup>8</sup> before a jury including Drs Axenfeld, Cornil, and Duplay and chaired by the distinguished physician Paul Broca, on 15 January 1870.

Garrett earned her doctorate, becoming the first female doctor of medicine in France and the first English woman to receive the title. She was also the second female doctor of medicine in Europe (the Russian

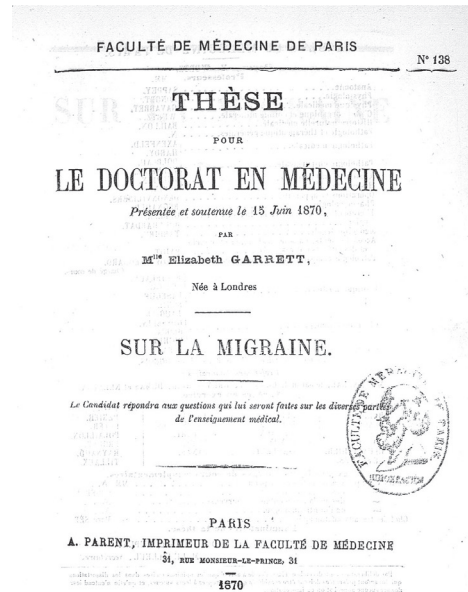


Figure 9. Front page of Elizabeth Garrett Anderson’s thesis “Sur la migraine”<sup>8</sup>

Nadezhda Prokofyevna Suslova had qualified in Zurich in 1867). Elizabeth Garrett was fortunate, as when war was declared between France and Prussia just five months after she presented her thesis, Napoleon III was taken prisoner and the Third Republic was proclaimed, marking the beginning of one of the most convulsive periods of the country’s history since the revolution.

Elizabeth selected migraine as the subject of her thesis because there was no need to study cadavers and because many of her patients presented the condition.<sup>8</sup> It can be said that the thesis did not make any great contributions. It begins with an excellent clinical description of migraine, illustrated with cases from her clinic.<sup>7</sup> Next, she addresses the complex subject of the pathophysiology of migraine, citing the theories of Matteucci, du Bois-Reymond, Radcliffe, Erb, Trousseau, and Tissot. Garrett argued that the pathological cause of migraine was explained by electrical changes in nervous tissue, and that migraine is a hereditary central and peripheral disease to be considered in the same category as asthma and epilepsy. The last chapter addresses treatment, and places great weight on lifestyle. Garrett recommends avoiding fatigue (stress), exercising, eating regularly, ventilating rooms to allow the passage of fresh air, and



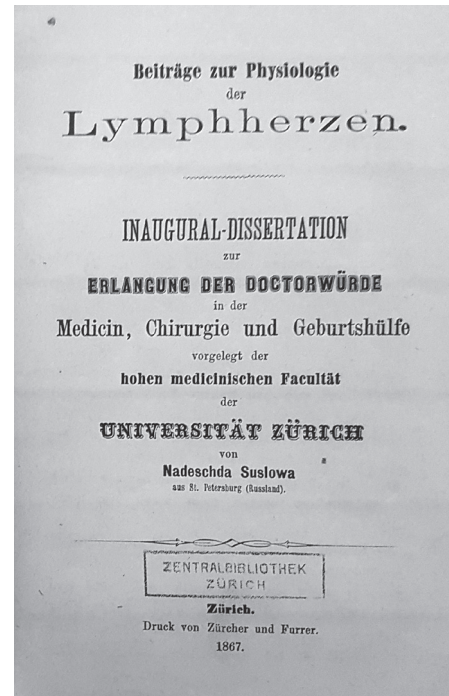


Figure 10. The Russian physician Nadezhda Suslova, the first woman to earn the title Doctor of Medicine in Zurich, and the front page of her thesis

avoiding noise and light during attacks. She suggests that voltaic current (an antecedent to neurostimulation) may be useful, and recommends prudent use of phosphorus, arsenic, strychnine, belladonna, and gold nitrate. She also mentions digitalin, quinine, potassium bromide, and tea.<sup>8</sup>

We may deduce from Garrett's thesis that she attended many patients with migraine at her consultation; however, she cannot be considered a neurologist. The first women to complete hospital neurology residencies, attending patients with multiple diseases, were Blanche Edwards and Augusta Déjerine-Klumpke, in 1882 and 1886, respectively.<sup>9,10</sup> These women may be considered the first female neurologists.

Six months after her return to London, during which she received private patients at her consultation, Garrett founded the St. Mary's Dispensary for Women and Children, consulting with brilliant physicians of the day, such as Dr Hughlings Jackson, who would pass into medical history for his contributions on epilepsy. Garrett had several female assistants, who prepared to sit the Apothecaries' Society examination; however, the Society

changed its statutes, preventing any further women from applying, and they had to travel to Zurich, where Nadezhda Suslova had studied.<sup>3,5</sup>

In 1871, Garrett married James Anderson, the director of a large shipping company. The couple had three children, Louisa, Margaret, and Alan, although the younger two died at a young age. In 1874, with some controversy, she became the first woman admitted as a member of the British Medical Association, and for nearly 20 years remained the only female member. The same year, she founded the London School of Medicine for Women with Sophia Jex-Blake.

In 1886, Garrett's home became the headquarters of the first suffragist society in England. She and Emily Davies delivered the "Ladies' Petition," bearing the signatures of over a thousand women requesting the right to vote, to the British Parliament; the proposal was rejected, however.

The dispensary slowly grew, becoming the New Hospital for Women; eventually, on 7 May 1889, the Archbishop of Canterbury and the Princess of Wales laid the foundation stone for the new hospital, named the Elizabeth Garrett Anderson Hospital after she died.<sup>3,5</sup>

In 1908, Garrett marched at the head of various demonstrations which led to numerous arrests, but was never herself detained because the police were under explicit orders not to arrest her on account of her prestige; Garrett was not aware of this. The same year, she became the first British woman to be mayor of a town. Like her father had been years before, she became mayor of her home town of Aldeburgh, holding the office for two terms.

In 1910, she led a proposal by over 800 female academics for women to be given the vote; Winston Churchill was able to block the proposal. The legislature was to be suspended, and the British feminist leader Emmeline Pankhurst decided to go to Parliament with the most prestigious woman in England, Dr Elizabeth Garrett, to ask the Liberal Prime Minister, Herbert Henry Asquith, to revoke the veto over women's right to vote. Pankhurst and Garrett were escorted by the police, with over 300 women joining them on the way to Parliament. Regrettably, that day came to be known as "Black Friday" (Figure 11) due to the brutal police charges against the women: over 100 were arrested and 2 women were killed. Churchill explained that the police had misunderstood his orders. Violence erupted in the suffragette movement and Elizabeth Garrett, a moderate feminist, distanced herself.

Her health began to decline in 1912, and she died on 17 December 1917.<sup>3,5</sup> Her daughter Louisa followed in her footsteps, also becoming a doctor of medicine in Britain. As a suffragette, she was sentenced to perform hard labour for public disorder during her youth, but years later was appointed a Commander of the Most Excellent Order of the British Empire for creating the Women's Hospital Corps, the first unit of female physicians, which ran two military hospitals during the First World War; however, it should be noted that these were under the flag of the French Red Cross, not the British flag.

After Elizabeth Garrett Anderson

In the late 19th century, newspapers gradually began to report on the fact that women in various countries had begun to receive medical degrees, and more women became willing not to abandon their calling and to defy the male medical establishment. Table 1 shows women's now unstoppable, though slow, progress in accessing the medical profession in the later 19th century. Despite cultural differences, these pioneering women faced the



**Figure 11.** Black Friday, 18 November 1910. Images from the *Daily Mirror* showing the leaders of a 300-woman march on Parliament in London, with Emmeline Pankhurst (right) and Dr Elizabeth Garrett (left), and the subsequent rioting in the vicinity of the British Parliament

**Table 1.** The first women to earn university degrees in medicine in the 19th century

Elizabeth Blackwell	USA	1849
Elizabeth Garrett Anderson	United Kingdom	1862
Nadezhda Suslova	Russia	1867
Marie Heim-Vögtlin	Switzerland	1874
Madeleine Brès	France	1875
Jennie Kidd Trout	Canada	1875
Anna Tomaszewicz-Dobrska	Poland	1877
Ana Galvis Hotz	Colombia	1877
Anastasia Golovina	Bulgaria	1878
Rosina Heikel	Finland	1878
Dolors Aleu i Riera	Spain	1879
Aletta Jacobs	The Netherlands	1879
Vilma Hugonnai	Hungary	1879
Isala Van Diest	Belgium	1879
Draga Ljočić	Serbia	1879
Ogino Ginko	Japan	1882
Maria Cuțarida-Crătunescu	Romania	1884
Nielsine Nielsen	Denmark	1886
Kadambini Ganguly	India	1886
Eloísa Díaz	Chile	1886
Matilde Montoya	Mexico	1887
Rita Lobato Velho Lopes	Brazil	1887
Cecilia Grierson	Argentina	1889
Laura Martínez de Carvajal	Cuba	1889
Constance Stone	Australia	1890
Sabat Islambouli	Syria	1890
Amélia dos Santos Costa Cardia	Portugal	1891
Marie Spångberg Holth	Norway	1893
Sofia Okunevska	Ukraine	1894
Emily Siedeberg	New Zealand	1896
Gabriele Possanner	Austria	1897
Laura Esther Rodríguez Dulanto	Peru	1899

**Table 2.** Common features in the stories of women accessing the medical profession in the 19th century

- Perseverance in the face of numerous misogynistic bureaucratic hurdles
- Commitment to women's rights and active participation in the embryonic feminist movements of the day
- Giving medical care to the poor, sex workers, and orphans
- Specialisation in gynaecology and/or paediatrics
- Working without payment
- Working under the supervision of male physicians
- Creation of medical training institutions for women

same obstacles as Elizabeth Garrett, to some degree. This was a common story (Table 2).

Nadezhda Prokofyevna Suslova (1843-1918, Figure 10) was a contemporary of Elizabeth Garrett.<sup>3-5</sup> Born to a family of serfs in Tsarist Russia, she was permitted to audit lectures at the Saint Petersburg medical school. However, women's access to the school was revoked two years after she started studying; in order to continue her studies, she travelled to the Muslim provinces of Russia, where women were unwilling to be treated by male physicians. A Russian woman, Maria Kniazhnina, had sought permission to attend medical classes in Zurich in 1864, and Suslova was also able to enrol there the following year. Kniazhnina left the university, but Suslova completed her degree and became the first female doctor of medicine in modern times, just three years before Elizabeth Garrett.

Marie Heim-Vögtlin (1845-1916) was the first Swiss woman to be awarded a degree in medicine, and was the subject of a national scandal, as Swiss universities had previously only admitted "imprudent" or "shameless" foreign women such as Suslova, who would then practise medicine outside the country.<sup>3-5</sup>

After finishing her medical training, the Polish woman Anna Tomaszewicz-Dobrska (1854-1918) was rejected by her country's medical societies and was not allowed to sit licensing examinations. She had to travel to Saint Petersburg to complete the examinations, and returned subsequently.

The Colombian Ana Galvis Hotz (1855-1934) was the first woman to practise medicine in Latin America, but she qualified in Switzerland due to difficulties with Colombian universities.

Aletta Jacobs (1854-1929), from the Netherlands, was able to study medicine in Groningen, becoming her country's first female physician and the first to earn a doctorate, thanks to the then Prime Minister Johan Rudolph Thorbecke, to whom she wrote a letter requesting that she be allowed to study.

Kadambini Ganguly (1861-1923) was the first Indian woman licensed to practise Western medicine in her country, the same year as Anandi Gopal Joshi. Due to problems practising medicine, she travelled to Great Britain and was able to practise upon her return, though not without problems. For instance, one publication





Figure 12. Dr Jennie Kidd Trout, the first female physician to practise in Canada  
 Figure 13. Dr Dolores Aleu, the first woman to receive a degree in medicine in Spain, as a young woman (a) and later in life (b)

indirectly called her a “whore”; she pressed charges against the editor, who was sentenced to six months in prison.

Little is known of the Syrian woman Sabat M. Islambouli (1867-1941), the first woman in the Middle East to be qualified in medicine (although she was awarded her degree in Pennsylvania).

The French physician Madeleine Brès (1842-1921), a mother of three, received her doctorate five years after Elizabeth Garrett; she also benefited from the assistance of Paul Broca, and faced the same obstacles as Elizabeth Garrett. The *Hospitals Gazette* published an article with the following comments:

To make a woman a doctor, it is necessary to make her lose her sensitivity, her timidity, her modesty, harden her to the sight of the most horrible and frightening things. When the woman arrives at that, I ask myself, what remains of the woman? A being who is no longer either a young girl nor a woman; neither a wife, nor a mother.

Jennie Kidd Trout (1841-1921; Figure 12) was born in Scotland and became the first female physician in Canada.<sup>3-5</sup> She received her degree in Pennsylvania, having left the Toronto medical school due to humiliating treatment from lecturers and students; she even threatened to tell the wife of one lecturer about the lewd

comments he publicly made about her. She wrote that “I hope to live to see [...] one good true lady physician working in His name.”

The Japanese woman Ogino Ginko (1851-1913, Figure 16) contracted gonorrhoea from her husband; the disease was not curable by Japanese traditional medicine, and she had to visit male practitioners of Western medicine. She was made to feel so embarrassed during these consultations that she decided to become a physician herself in order to help women in similar circumstances. She told herself “I will not stop until I become the first female physician in Japan,” achieving this feat in 1882.

Matilde Montoya (1852-1938) qualified in medicine in her home country of Mexico in 1873. She was called “impudent and dangerous” for trying to become a physician, “a perverse woman wanting to study medicine and to see the corpses of naked people.” She was accused of having falsified her scores from her pre-university examinations, and of participating in freemasonry. She was expelled and subsequently readmitted after the intervention of the Mexican president, general Porfirio Díaz, to whom she had written requesting assistance. The university eventually agreed that she may present her thesis in a smaller hall, but Porfirio Díaz demanded that the *Salón Solemne de Exámenes Profesionales* be



**Figure 14.** A portrait of Dr María Elena Maseras, the first woman to complete a degree course in medicine in Spain, but who did not receive the title



**Figure 15.** Martina Castells i Ballespí, the first woman to earn a doctorate in medicine in Spain

opened, as he personally wanted to hear her defend her thesis. After deliberating for more than two hours, the committee announced that Montoya had passed; she fainted upon hearing the news.<sup>14</sup>

Eloísa Díaz (1866-1950) was not insulted, but did ask her mother and caretakers at the Universidad de Chile to

accompany her to lectures, and was separated from male students by a folding screen during anatomy lectures.<sup>14</sup>

The case of Dolores Aleu i Riera (1857-1913; Figure 13) was one of the most unfortunate.<sup>11-13</sup> She did not dress as a man in the first days of class, as Concepción Arenal had done several years earlier at the law school in Madrid, but she did masculinise her appearance, binding her chest and wearing a hat. She was applauded, but people also hurled insults and stones as she entered the Universidad de Barcelona medical school; however, like the other women in this article, she refused to be intimidated and attended lectures escorted by two policemen thanks to the influence of her father, the pharmacist Joan Aleu, who was governor of Catalonia and the chief of police. Some newspapers belittled her, reporting on “the new doctor in a skirt,” “pretty little thing,” “a member of the fairer sex,” “lady doctor,” “girl’s first steps”; of course, none mentioned the 17 top scores on her academic record. Thanks to her determination, she was the first woman to be awarded a degree in medicine in Spain, in 1882, and the second to earn a doctorate, with a thesis defending the intellectual equality of men and women; it also included strong social criticism, with Aleu writing that “were she more educated, woman would never consent to such degradation.”<sup>11-13</sup>

It should be noted that while Aleu was the first woman to receive a degree in medicine in Spain, another Spanish woman, María Elena Maseras (1853-1905), had completed her medical studies two years earlier at the same university; however, after waiting three years to receive her degree, she decided instead to pursue a career in teaching. There was tense parliamentary debate in Spain at the time about whether women should receive university degrees. Another Spanish woman, Martina Castells i Ballespí (1852-1884; Figure 15) received her degree in medicine after Dolores Aleu, but presented her doctoral thesis four days before the latter; therefore, Castells was technically the first female doctor of medicine in Spain, and Aleu the second.<sup>11-13</sup>

When Aleu was awarded her degree, there were only nine other female university students in Spain, all at the universities of Barcelona, Valencia, and Valladolid; the majority were studying medicine. When women were finally given free access to Spanish universities in 1910, only 77 women had been awarded university degrees. A year later, female students were still stoned at the faculty of philosophy and letters in Madrid.<sup>11-13</sup>



Unlike other female physicians, Aleu was able to practise medicine at her private clinic for over 25 years; however, she was never admitted to any Spanish medical society (but did join some French societies). The medical school where Aleu, and both authors of the present article, studied now has a student population including 68% women.

### Conclusion

In antiquity, there were disparate episodes of women practising medicine. Later, the puritanical fervour of the Middle Ages prevented women from providing medical care; finally, from the 13th to the 19th centuries, universities became the greatest obstacle preventing them from practising medicine, with honourable exceptions including the Salerno school and the universities of Bologna, Montpellier, Padua, Zurich, Saint Petersburg, and Pennsylvania. M. Patricia Donahue's excellent description of the history of nursing may also be applied to the inclusion of women into medical practice: "[The history of nursing] has been one of frustration, ignorance, and misunderstanding; [...] a great epic involving trials and triumphs, romance and adventure."<sup>15</sup> However, in defence of the medical schools of the 19th century, we should note that they were not especially misogynist: in 1909, 57% of female university students in Spain were studying medicine. Therefore, it may be suggested that it was through medical schools that women gained access to university education.

The story of Elizabeth Garrett is prototypical, reflecting women's path into universities in the late 19th century: disguises, schemes, and ruses; bureaucratic hurdles; misunderstandings; training in other countries; assistance from heads of state, intellectuals, and some male physicians; but above all, perseverance, a strong dose of perseverance.

Curiously, the majority of deities associated with health and life were represented by female figures in ancient civilisations; similarly, caring for the sick has always been the responsibility of women in the home and in tribal societies. However, the obstacles women faced in gaining medical training were based on prudishness about women seeing such "lewd" sights as men's genitals. Despite this, such embarrassment seemed not to be a concern for women working as nurses, who were seen as inferior to male physicians at the time.



Figure 16. Ogino Ginko, the first woman to qualify in medicine in Japan

It has been said that the status of women serves as a barometer of a culture's level of civilisation.<sup>16</sup> Liberalising women's access to medical practice enabled them to exercise a socially prestigious profession, totally independently from men. The world was changing, and the new roles that women could take on represented a threat to male hegemony. All the women mentioned in this article lived through very similar situations in very different countries and cultures (Table 2), paying a high price in the form of discrimination and even humiliation. However, aware of their status as pioneers, they did not cease in their efforts.

Currently, 80% of healthcare professionals in the United States are women. Nonetheless, echoes remain of that time: while gender parity does exist within the medical profession in Spain, data from 2015 show that fewer than 29% of presidencies of the 75 medical societies and directorships of public hospitals are held by women, and fewer than 10% of provincial medical colleges have female presidents. Female physicians are no longer stoned, as was the case of Dolors Aleu at the University of Barcelona; however, 46% of female physicians in



Spain report that they have experienced harassment, discrimination, or mistreatment at work in the last year. Similarly, the Spanish National Statistics Institute recognises the existence of a gender pay gap of 8900 euros per year in favour of men in the healthcare sector, but proposes no plausible hypothesis explaining this.<sup>17-19</sup> It is without question that many more Dr Garretts are needed for institutions to make gender equality a reality.

The inclusion of women in modern medical practice, having received formal academic training, began approximately 150 years ago and was extremely hard; therefore, today's physicians, of both sexes, should seek to prevent the courage and tenacity of those first female doctors from being forgotten. Periodically rediscovering the stories of those early fighters for women's rights in medicine, both Elizabeth Garrett and the many others, is a healthy and stimulating reflective exercise.

### Conflicts of interest

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