


## Rewritting the history of Spanish Pharmacy in feminism

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**ENG Abstract: Introduction and Objectives.** The main objective of this article is to highlight the role of first Spanish women in pharmacy, through history in feminine. Concretely, authors wish to praise the figure of the first Spanish female pharmaceutical university students, emphasizing the difficulties they had to overcome simply because they were women, to achieve their goals. **Methodology.** To publicize the history of the pioneering Spanish women of pharmacy, authors made a video which was aimed at second-year students of the degree in Pharmacy at the University of Seville (Spain) and it was elaborated according to the conditions of that time (places and clothing, above all), which was projected in a classroom of the Faculty of Pharmacy of that university and reflected, in the form of interviews, the lives of four first Spanish pharmacists, chosen from among those women who can be considered pioneers of the Spanish pharmaceutical profession, who managed to study in the first Pharmacy faculties in the country. Subsequently, students were asked to respond to a questionnaire in which they could express their impressions about the difficult life that these women had had due to issues of their gender. The enormous efforts they had to make to be able to overcome these difficulties and be able to practice their professions. **Results.** Apart from promoting a methodological resource that can be used by other professors in their own universities, a qualitative and quantitative statistical analysis is carried out on the responses given by the students to the aforementioned questionnaire. **Conclusions and discussion.** This study concludes that the pioneering women of Spanish Pharmacy laid the first stone to try to achieve, on the one hand, equality between genders. On the other hand, to serve as references and models for those women of the future who also want to follow in their footsteps.

**Keywords:** Gender inequalities; role of women in society; pioneering women of Spanish Pharmacy; methodological resources, pharmaceutical profession, statistical analysis.

## ES Reescribiendo la historia de la Farmacia española en feminismo

**Resumen: Introducción y objetivos.** El objetivo principal de este artículo es poner de relieve el papel de las primeras mujeres españolas en la farmacia, a través de la historia femenina. En concreto, los autores quieren ensalzar la figura de las primeras estudiantes universitarias farmacéuticas españolas, destacando las dificultades que tuvieron que superar, por el solo hecho de ser mujeres, para alcanzar sus objetivos.

**Metodología.** Para dar a conocer la historia de las mujeres pioneras españolas de la Farmacia, los autores realizaron un vídeo dirigido a estudiantes de segundo curso del grado de Farmacia de la Universidad de Sevilla (España) y elaborado según las condiciones de la época (lugares y vestimenta, sobre todo), que se proyectó en un aula de la Facultad de Farmacia de dicha universidad y reflejó, en forma de entrevistas, la vida de cuatro de las primeras farmacéuticas españolas, elegidas entre aquellas mujeres que pueden considerarse pioneras de la Farmacia española, quienes lograron estudiar en las primeras facultades de Farmacia del país. Posteriormente, se pidió a los estudiantes que respondieran a un cuestionario en el que podían expresar sus impresiones sobre la difícil vida que habían tenido estas mujeres por cuestiones de su género, y los enormes esfuerzos que tuvieron que hacer para poder superar estas dificultades y ser capaces de ejercer sus profesiones. **Resultados.** Además de promover un recurso metodológico que puede ser utilizado por otros profesores en sus propias universidades, se muestra un análisis estadístico cualitativo y cuantitativo de las respuestas dadas por los estudiantes al citado cuestionario. **Conclusiones y discusión.** Este estudio concluye que las mujeres pioneras de la Farmacia española pusieron la primera piedra para intentar

conseguir, por un lado, la igualdad entre géneros, y, por otro, servir de referentes y modelos para aquellas mujeres del futuro que también quieran seguir sus pasos.

**Palabras clave:** Desigualdades de género; papel de la mujer en la sociedad; mujeres pioneras de la Farmacia Española; recursos metodológicos, profesión farmacéutica, análisis estadístico.

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## 1. Introduction

The fight for equality is an effort that many women have been working for since the beginning of history. The focus of this work is linked to the history of women in science. It is known that the reference to these women, who took part in the development of different scientific specialities, dates back about four thousand years. From Hypatia of Alexandria in the 4th century to Rosalind Franklin (1920-1958), to cite an example, countless anonymous women passed through history, always hidden behind the shadow of hetero patriarchy (Alic, 1991; Frías, 2001; García and Pérez, 2018).

If we focus on science itself, no one disputes that it is the pillar on which the progress of humanity is sustained, and all the hands and brains that contribute to this must be welcomed within it. However, unfortunately, over the centuries, half of the population has been neglected, women, whose contribution without a doubt would have made it possible to have made even more progress in terms of research, development, and innovation.

Talking about men of science, a multitude of names come to mind, but does the same happen in feminine? The answer is clear, no. For this reason, we have proposed honoring the figure of the pharmaceutical pioneers of our country so that, after reading this contribution, the reader may come to mind the name of a Spanish woman, scientist, and pharmacist.

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## 2. Objectives

Women of any nationality and any job who have reached relevant milestones in the development of their professional lives prior to the current century are not usually as well known by society as men who have those same characteristics. Despite the fact that, certainly, there is considerable progress currently being made to try to improve this situation as much as possible.

With this communication, the authors wish to put our small grain of sand in this performance. For which, taking into account our academic training, we have focused on the work carried out by the first women who graduated in Pharmacy in Spain. The work of many of them has undoubtedly contributed to the enormous prestige and progress that pharmacy in our country currently has. Within it, the role played by women.

For this reason, and as already indicated in the abstract, the main objective of this article is to value the role of Spanish women in Pharmacy, through History in Feminine. Particularly, we try to praise the figure of the first female Spanish pharmaceutical university students, highlighting the difficulties they had to overcome just because they were women, to achieve their goals.

### 3. Methodology

The authors created a documentary in video format in the surroundings of the Museum of the History of Pharmacy in Seville focused on the lives of the first female pharmacists, those who could be considered pioneers of the pharmaceutical profession. They managed to enter the Faculty of Art of Heal in our country.

That video was aimed at second-year students of the degree in Pharmacy at the University of Seville (Spain) and it was elaborated according to the conditions of that time (places and clothing, above all). It was projected to students of the Faculty of Pharmacy of that university and reflected, in the form of interviews, the lives of four first Spanish pharmacists. They were chosen from among those women who can be considered pioneers of the Spanish Pharmacy.

On the other hand, regarding the subject "History of Pharmacy", which is studied in the second year of the Degree in Pharmacy in Seville, the students were also asked, after watching the video, to response to the following questionnaire (written in Spanish).

1. What does the video suggest to you if you compare that society with the current one?
2. What would you highlight from the video?
3. On the difficulties of women in the University and especially the Pharmacy. What do you think?
4. Do you think these types of documentaries are useful for university teaching?
5. Say the conclusion you reach when you have seen the video-documentary "Pioneers of the Spanish Pharmacy. Meetings at the Museum of the History of Pharmacy". Any questions to add?

The purposes of this questionnaire were the following:

1. That the students understand that access to the University for women was not always easy.
2. That it is essential to know history, especially when it is so close, in order to know and understand the present, and after assuming this knowledge to be able to have a critical attitude about it.

### 4. Results

The descriptions of discussions and debates related to this video, which was entitled "Pioneers of Spanish Pharmacy: Encounters at the Museum of the History of Pharmacy", are the main results indicated in this article. The two subsections of this section show, respectively, a very complete description of the content of the interviews that constituted the video. The results obtained by the authors when analysing, both qualitatively and quantitatively, the answers given by the students to the questionnaire. They were asked to complete.

#### 4.1. A description of the video

The first woman in Spain to graduate in Pharmacy was María Dolores Martínez Rodríguez, born in the province of Alicante, who did so three years before Blanca de Lucía. And almost at the same time that the latter it was also done by Gertrudis Martínez Otero.

The documentary describes, using an interview model, the life of Blanca de Lucía Ortiz (Figure 4), Clara Orozco (Figure 5), Elvira Moragas (Figure 6) and Gertrudis Martínez Otero (Figure 7) in the context late 19th century and early 20th century.

The reality of these women is shown, all with strong character, but with very different personalities.

Next, we extract, in an interview model, which is how it was reproduced in the video, the life of the four pharmacists who were chosen for the documentary (the questions are original from the authors, while the answers have been extracted and adapted from (Núñez, 2021), (Pioneras, 2019) and (Ramos, 2022) as the most consulted texts).

##### 4.1.1. Interview to Blanca de Lucía Ortiz (E= Interviewer. B= Blanca)

I: Hello, Blanca. What was the date of your birth?

B: On November 21, 1875, in Palma del Río (Córdoba). I know you are interviewing me because I was one of the first women to study and pursue a Pharmacy degree in Spain.

I: That's right. How did you start your studies?

B: I studied Baccalaureate at the Instituto de Córdoba (now Luis de Góngora) from 1884 to 1889. I then took a course at the University of Seville to later move to study Pharmacy at the Central University of Madrid.

And the truth is that all this was influenced by the fact that my father was a pharmacist and had a pharmacy in my town, Palma del Río. I went to visit him many times and it started to like me.

I: So, Blanca, considering that you graduated in Pharmacy in 1896. Were you the first woman to graduate in Spain?

B: No. The first was María Dolores Martínez Rodríguez, from Alicante, who did it three years before. And, almost at the same time as me, Gertrudis Martínez Otero.

After finishing my degree, I started working with my father in the pharmacy and, when he died, I already took care of it.

I: It is said that you were very religious. What can you tell about it?

B: Yes, I was very religious, although I never had a vocation as a nun.

I married my husband whom I loved dearly, but he died, and I have never forgotten him. In fact, every month a reminder of his death appeared in the *Diario de Córdoba*, paid for by me. As you will see, I always wear a pendant with the image of my late husband.

In addition, I was the local president of Catholic Action and went to hear daily mass both in the Asunción parish and in the San Sebastián Hospital. I respected the parish priest Don Juan Navas very much.

I have to say that I am a convinced Catholic.

*I: But Blanca, why didn't you decide to flee the town when the Civil War began?*

B: The truth is that I thought war would be a matter of a short time, and besides, I had nothing to fear. I was politically on the right, but I didn't get involved in political issues, I gave a lot of alms and always helped everyone I could in my pharmacy, even trusting them with medicines.

My great friend Victoria Díez did, she fled, and thanks to that she saved her life and was able to return to her teaching position in the town when the war ended.

In my case it was horrible, I tell you.

They murdered me when I was 62 years old, four days after the assassination of the priest Juan Navas, on August 20, 1936, in the following way.

They took me on foot to the iron bridge over the Guadalquivir River, stripped me naked, tortured me, harassed me, and threw me with a stone tied to my neck, already dead, into the river waters. I tried to prove my integrity and died, forgiving my executioners and pronouncing the name of Christ.

*I: Did you have a will?*

Yes.

But I had very few direct relatives, since I had no children, so I divided my inheritance among them and left a good part to Pepitín, the son of my landlords, to whom I was paying for his primary studies.

*I: Thank you very much, Blanca, for everything.*

I tell you that people will remember you, and that in 2008 the Archbishop of Córdoba will even open a cause for your beatification, which at the end of 2021 has not yet been resolved.

#### **4.1.2. Interview to Clara Orozco Barquín (E= Interviewer. Cl= Clara):**

*I: Hola Clara, tus apellidos son, Orozco Barquín y naciste en Zumárraga, Guipúzcoa, el 27 de marzo de 1910. Hello Clara, your last name is Orozco Barquín and you were born in Zumárraga, Guipúzcoa, on March 27, 1910.*

Cl: Yes, that's right.

*I: You were born into a very wealthy family, and that circumstance marked your whole life. What can you say about it?*

Cl: Indeed, I was born into a privileged family. We moved to Madrid, where we lived near the Retiro in a 15-room flat. I have to admit that I moved with ease and sufficiency.

A good example is that my husband, Luis Casas, and I got married at the Ritz Hotel on February 4, 1935. Look, my engagement bracelet had more than 300 diamonds, almost 7 carats, and the wedding was attended by 249 people and cost 3,220,80 pesetas. I want to add that in November of that same year, our daughter was born.

*I: I see, yes. So, once you graduated, you started working in a Department of the Faculty of Pharmacy of the Central University of Madrid. Is this right?*

Cl: Yes. I studied Pharmacy at the Central University of Madrid, graduating in 1934. While I was studying, I worked in the Electrochemistry section of the National Institute of Physics and Chemistry, under the direction of Julio de Guzmán, during the 1931-32 academic year.

*I: I'm sorry to have to ask you about personal and sad aspects. For your husband and your daughter.*

Cl: All this is painful for me, but I also want to record it.

In Madrid in 1934 I met my husband, Luis Casas, in the Department of Pharmacology of the Faculty of Pharmacy of the Central University.

But Madrid was at the dawn of the Civil War, and Luis was a member of the Spanish Falange. He was assassinated on September 25, 1936, three months before our second son was born. In addition to this, fate had another fatality in store for me. Our daughter immediately fell ill with pneumonia and passed away not long after, all of which left me deeply sad and melancholy.

I was able to start to get over it, in part, because my father, a widower, came to live with me and his grandson.

But I converted, I am strong, I reinvented myself as a painter and entered the cultural and literary circle of Madrid. I have to tell you that I am passionate, stubborn, and strong-willed, when necessary.

*I: I'm glad you came out of that depression, logical, on the other hand. Who did you meet at that cultural stage?*

Cl: I was already another person. Because of the inheritance, I stopped talking to my husband's family. As I told you, I was never the same again.

I began to rub shoulders with personalities from the scientific and artistic world such as Joan Miró, Jean Cocteau, Andrés Segovia and Salvador Dalí, who was a very close friend and who gave me a watercolour of the Virgin. Another painter, Enrique Navarro, painted me in a painting in 1948.

*I: Did you remarry?*

Cl: No, but I had many suitors during that time. I don't want to appear pretentious, but I was a muse to many artists. I was able to leave my son an important collection of Spanish art.



I: *Thank you very much, Clara, that's all. Fortunately, in the 21st century, women scientists are no longer considered a rarity, despite this, there is still no parity in positions of power and management with their male colleagues.*

#### 4.1.3. Interview to Elvira Moragas Cantarero (E= Interviewer. El= Elvira):

I: *Hello Elvira.*

Were there many pharmacists in your family? Was that the reason you studied Pharmacy?

El: Yes, both my father and my grandfather and also an uncle of mine were pharmacists.

My father had a pharmacy in Lillo (Toledo), the place where I was born on January 8, 1881. He came to have the degree of Doctor of Pharmacy.

I: *What is your full name?*

El: Well, according to the custom of the time, I was given many names. My full name is Elvira, Casilda, Luciana, Juana, Manuela, Eladia and Isabel Moragas Cantarero.

I: *And the studies of Pharmacy? And to become religious?*

El: I enrolled in the Faculty of Pharmacy of the Central University of Madrid in 1899, and in my course, I was the only woman. I finished in 1905.

My father was decisive in those studies because as I was a woman, he had to address many requests to the Rector to allow me to carry out my studies.

The professors were forced to respond to the relevant authorities that the presence of women in the classroom "would not alter in any way the order in the classroom".

So, a few months before my brother finished his career, I decided to enter the Convent of Discalced Carmelite Nuns of Santa Ana and San Luis Gonzaga, on Calle Torrijos in Madrid. I did it under the name of Sister María del Sagrario de San Luis Gonzaga in June 1914, when I was 34 years old.

I: *How did your murder take place?*

El: Militiamen began to burn the convent in July 1936. They arrested the nuns and took us to the General Directorate of Security.

Later they released us, and I went with some religious companions to the house of the parents of one of them. But, after a few days, they arrested us again and took us to the checa on Marqués del Riscal Street.

On the night of August 14, they took me to the San Isidro prairie and there they shot me three times in the head, killing me.

I: *Thank you, Elvira. I tell you that in 1998 you were proclaimed Blessed in a ceremony officiated by His Holiness Pope John Paul II, on May 10, in the Basilica of Saint Peter in Rome.*

#### 4.1.4. Interview to Gertrudis Martínez Otero (E= Interviewer. G= Gertrudis):

I: *Hello Gertrudis. Thank you for participating in this research.*

G: You're welcome, I'm here to help you with whatever you need. I have a long and temperate view of everything that happened, you know that I was born on October 9, 1878.

I: *I understand that you were the first university woman in the province of Cádiz. Is that true?*

G: Yes. I'll tell you, I first studied at the San Francisco Javier school in my town, Sanlúcar de Barrameda, although I was examined at the Padre Coloma Institute in Jerez de la Frontera. I finished high school at the age of thirteen with the highest grade.

I took a preparatory course at the University of Cádiz, then dependent on the one of Seville, and then I went to Granada, where I graduated in Pharmacy in 1896 with top qualifications.

After that, I returned to Sanlúcar de Barrameda.

I: *What did you do when you got to your town?*

G: I opened a Pharmacy there, which was the third in Spain run by a woman, after María Dolores Martínez Rodríguez's in Almoradí (Alicante) and Blanca de Lucía Ortiz's in Palma del Río.

I: *Tell me about your husband.*

G: He was Roberto Witte Mergelina, one of the grandsons of Fernando Mergelina, who was an important winemaker from Sanlúcar de Barrameda.

So, when I moved my pharmacy from Calle Colón to Calle San Agustín, he lived across the street from where I put it and, although he was 28 years older than me, we soon met and fell in love.

I: *But you stopped practicing your profession, right?*

G: Yes, my husband continued with his father's business, and I accompanied him on many occasions. We lived very well, and I did not need to continue exercising.

But unfortunately, my husband died. And this led me to assume two regencies in my town for pharmacists' widows, and then another one for another pharmacist's widow, this time in Lebrija (Seville) in 1940.

I: *Did you even think about the recognitions you were going to have after your death?*

G: Well, frankly no. But I have to admit that I was moved by the tribute paid to me by the Padre Luis Coloma Secondary School in Jerez de la Frontera, where I had studied high school. They named the courtyard of the orange trees after me, as well as other many.

I: *Thank you very much, Gertrudis, for participating in this study.*

Note that, in fact, the video, for obvious reasons of length, does not reflect more than a small part of the difficulties that these women had to encounter throughout not only their student life. But even later, in the development of their professional life. We will next comment to some episodes of their lives not contemplated in the video that reflect this (see (Núñez, 2021), in this regard).

Figure 1 shows an image of the interviewer (one of the authors) with each of the pharmacists interviewed, one of them also represented by one of the authors



Figure 1. From left to right and from top to bottom, interviews with Lucía Ortiz, Elvira Moragas, Clara Orozco y Gertrudis Martínez. Source: (Web video)

4.2. Statistical analysis of the questionnaire completed by students

In this subsection, the answers given by the students to the questionnaire that they were asked to complete once watching the video are analysed qualitatively and quantitatively.

To carry out that statistical study, the responses of students to each of the 5 questions have been classified into 4 groups. For each question, group p 1 is made up of all those answers that are very similar or similar (even if they are written with different words), that are repeated the most, that is, whose number is as high as possible. Group 2 is made up of other responses, also all similar to each other, but conceptually different from those of the previous group, whose total number was the greatest of those lower than that of the first group. Group 3, due to the similarities between them, conceptually different from those of the two previous groups, whose total number was lower than that of group 2. Finally, in the last group, group 4, which may even be greater than any of the previous answers, the rest of the answers obtained to that question have been included, being titled with the name “other answers”.

Table 1 shows the results obtained in the answers to the questions in the questionnaire. G1, G2, G3 and G4 denote, respectively, the four groups into which the answers to each of the five questions have been classified. H and M denote, respectively, the number of responses given by men and the number of responses given by women in each group. T means the total number of responses included in each of those 4 groups, and % indicates the percentage of responses that that group has obtained in each question.

Table 1. Quantitative study of student responses. Source: Personal elaboration

Pregunta 1													
G1				G2				G3				G4	
H	M	T	%	H	M	T	%	H	M	T	%	T	%
10	30	40	33,33%	8	22	30	25%	8	13	21	17,5%	29	24,17%

Pregunta 2													
G1				G2				G3				G4	
H	M	T	%	H	M	T	%	H	M	T	%	T	%
Pregunta 3													
G1				G2				G3				G4	
H	M	T	%	H	M	T	%	H	M	T	%	T	%
16	26	42	35%	14	23	37	30,83%	8	18	25	20,83%	16	13,34%
Pregunta 4													
G1				G2				G3				G4	
H	M	T	%	H	M	T	%	H	M	T	%	T	%
12	25	37	30,83%	13	17	30	25%	2	17	19	15,83%	34	28,34%
Pregunta 5													
G1				G2				G3				G4	
H	M	T	%	H	M	T	%	H	M	T	%	T	%

#### 4.2.1. Statistical analysis of the answers to Question 1

Three major groups of responses to Question 1 have been found.

Group G1 is made up of all the answers equal or similar to the following: *"The great advance that has occurred in current society, compared to that of the time reflected in the video, with regard to the role of woman in Society"*.

This group consists of 40 responses (33.33%), of which 10 (25%) were answered by men and 30 (75%) by women.

Some responses included in this group were the following:

- *"The progress regarding the role and recognition of women in the pharmaceutical and scientific field compared to what they had in previous centuries". (M)*
- *"During that century there were several advances in the movement to fight for women's rights, but not enough. In today's society, women have a much more active role in public life, access to education and employment is more equitable and the wage gap has decreased. However, today there are still many inequalities that need to be eliminated to have true equality". (F)*
- *"There has been great progress from the 19th century to the present day. Firstly, women were in the background in society at large. As we can see in the video, everything came from families that had a pharmacy". (F)*

Group G2 is made up of all the same or similar responses to the following: *"The difficulties and struggle of women of the time to study and then to work"*.

This group consists of 30 responses (25%), of which 8 (26.6%) were answered by men and 22 (73.3%) by women.

Some of the responses included in this group were the following:

- *"It makes me a little helpless to see the great difficulties and injustices that women had to be subjected to in order to exercise a universal right such as education. But at the same time, it inspires me to see those pioneers who managed to achieve it after fighting and breaking many barriers at the time". (M)*
- *"That before, women had more difficulty studying and depended more on their families and/or husbands." (F)*
- *"This video shows the great difficulties that women had to enter university and demonstrate that their abilities were the same as those of a man to acquire the necessary training and thus be able to obtain the degree. In addition, teachers and professors had to make a report explaining that women in the classrooms were not going to cause any disorder". (F)*

For its part, group G3 is made up of all the answers equal or similar to the following: *"Currently, a much higher percentage of women are studying Pharmacy than men"*.

This group consists of 21 responses (17.5%), of which 8 (38%) were answered by men and 13 (62%) by women.

Some of the responses included in this group were the following:

- *"At that time, pharmacy was a career where the highest percentage were men. In the current 21st century, the perspective has changed significantly, since women are an active part of society focused on the thought*

*of equality, making it possible for them to enter university and their ability to work and run a pharmacy. Additionally, the pharmacy degree is mostly taken by women". (F)*

- *"I don't understand how the Pharmacy profession (where there is a higher percentage of female pharmacists studying) continues to have Colleges of Pharmacy where the president is almost always a man". (M)*
- *"That at that time it was something revolutionary for women to study and those who achieved it were a small group. However, today, classrooms are full of women studying". (F)*

Group 4 is made up of the rest of the answers given by the students to this question that are conceptually different from the previous ones, such that none of them, together with their similar ones, reaches a percentage of 8%.

This group consists of 29 responses (24.17%). Some of those included in this group were the following:

- *"The machismo prevailing at the time and the bravery of women". (4 men and 5 women).*
- *"Women needed dependence on a man to run a family business" (4 men and 2 women)..*
- *"The religious beliefs of the time prevented women from being studied". (3 men and 2 women).*

#### 4.2.2. Statistical analysis of the answers to Question 2

In Question 2, three major groups of responses have been found.

Group G1 is made up of all the same or similar responses to the following: *"The courage and efforts of the female pharmacists who fought against the difficulties they had to suffer".*

This group consists of 57 responses (47.5%), of which 43 (75.4%) were answered by men and 14 (24.6%) by women.

Some responses included in this group were the following:

- *"The struggle of these women to find a place in the world of Pharmacy and their success at work within the society in which they had to live, which has served to pave the way for other later women". (F)*
- *"I would highlight the moment in which Elvira Moragas affirms that teachers and professors had to make reports ensuring that the woman did not cause a stir in the classroom, since all her classmates were men." (F)*
- *"That although for centuries women have dedicated themselves to the preparation of medicines just like men, while men were healers, women who carried out the same profession were branded witches and were even murdered by dedicate yourself to it". (M).*

Group G2 is made up of all the same or similar answers to the following: *"The importance of these pharmaceutical pioneers and the fact that they have not been made known before".*

This group consists of 21 responses (17.5%), of which 13 (61.9%) were answered by men and 8 (38.1%) by women.

Some responses included in this group were the following:

- *"I find it very interesting that the lives of these female pharmacists are delved into and that, in addition to talking about their lives and studies, they also mention other female pharmacists who were not interviewed, but who were important in history" (F)*
- *"I would highlight the importance given to the role of women in the history of Pharmacy, since we are used to a history focused on men. (F)*

Group G3 is made up of all the answers equal or similar to the following: *"Originality and quality of the video".*

This group consists of 19 responses (33.33%), of which 15 (79%) were answered by men and 4 (21%) by women.

Some responses included in this group were the following:

- *"On the one hand, the great characterization of the actors, on the other, highlighting how well documented and planned the interviews with the women are". (M)*
- *"That shows in a very concrete and clear way the most salient aspects of the biographies of the women it deals with and in a way that captures attention". (F)*
- *"The originality and the very didactic way of learning about the pharmaceutical past". (M)*
- *"The staging of the actors, getting into the role of the characters". (F)*

Group 4 is made up of the rest of the answers given by the students to this question that are conceptually different from the previous ones, such that none of them, together with their similar ones, reaches a percentage of 8%.

Some responses, along with others very similar, that are included in this group were the following:

- *"Consideration of the woman who prepares medicines as a witch" (4 M and 1 F)*
- *"The marginalization of women in those times". (3 M and 1 F)*
- *"The existence of pharmacies that were run by wives or widows". (2M)*



#### 4.2.3. Statistical analysis of the answers to Question 3

In Question 3, three major groups of responses have been found.

Group G1 is made up of all the answers equal or similar to the following: *"That the pioneering women who appear in the video, like the rest of them in that time, have had great merit and have greatly influenced so that women can study today without any problems"*.

This group consists of 42 responses (35%), of which 16 (38.1%) were answered by men and 26 (61.9%) by women.

Some responses included in this group were the following:

- *"In the interview with Elvira Moragas, reference is made to the fact that her father had to send letters to ensure that a woman was not going to cause any type of inconvenience by being the only one in her class. These types of situations were inconvenient in their time, but thanks to this, a before and after is marked in history for women, the pioneers being a symbol of respect and admiration". (F)*
- *"If it had not been for the pioneers like those mentioned in the video and others, we would not have our place in the university and in the pharmacy today". (F)*
- *"Since ancient times, education, and Pharmacy with it, has been dominated by men, which has led to many difficulties for women. Thanks to the pioneers who appear in the video and many more, this has been able to be solved, leading to the fact that today 80% of pharmacy students are women". (F)*

Group G2 is made up of all the answers equal or similar to the following: *"That the existing differences between women's work and men's work should never have existed."*

This group consists of 37 responses (30.83%), of which 14 (37.8%) were answered by men and 23 (62.2%) by women.

Some responses included in this group were the following:

- *"As in all areas of society, women have always been one step behind men, and furthermore, in science they have had to prove their worth for the simple fact of being a woman since the role assigned to us, it was a very different one. In pharmacy, it was not going to be different." (M)*
- *"I understand that it was a different time than the current one where women were socially below men. Even so, it seems very serious to me that men had it easier to enter and practice as pharmacists than women just because they are men. I think the important thing is that we can all acquire knowledge and be able to contribute scientific advances, regardless of the person's sex" (M)*
- *"There should be no difference between the work of men and women, since both are equally qualified." (M)*

Group G3 is made up of all the answers equal or similar to the following: *"That women at that time had very great difficulties in studying"*.

This group consists of 25 responses (20.83%), of which 8 (32%) were answered by men and 17 (68%) by women.

Some responses included in this group were the following:

- *"I think that all those women had many difficulties in being able to study, which seems very unfair and sad to me. I was struck by what Elvira Moragas says, that her father had to write requests several times to the rector to let her study. The professors and professors had to write letters corroborating that it was not going to be a disorder for a woman to be in the Classroom. "I was surprised that family members supported some of these women". (F)*
- *"It is evident that women have had many difficulties in accessing university studies, since at that time, women were destined to take care of the home and family" (F)*
- *"Fortunately, it is something of the past, thanks to the change in society's thinking and above all because brave women who love the pharmaceutical profession decided to confront the "norms" of the time and break barriers. Although it also shocks me very much to see the difficulties they had to face, which seem like very distant events, but which occurred only 100 years ago". (M)*

Group 4 is made up of the rest of the answers given by the students to this question that are conceptually different from the previous ones, such that none of them, together with their similar ones, reaches a percentage of 8%.

This group consists of 16 responses (13.34%). Some of those included in this group were the following:

- *"The machismo prevailing at the time and the bravery of women". (4 M and 5 F).*
- *"Women needed dependence on a man to run a family business". (4 M and 2 F).*
- *"The religious beliefs of the time prevented women from being studied". (3 M and 2 F).*

#### 4.2.4. Statistical analysis of the answers to Question 4

100% of the students who were given the questionnaire responded affirmatively to this question. The groups of responses obtained were constituted as follows:

Group G1 is made up of all the answers equal or similar to the following: *"They facilitate the study of the subject"*.

This group consists of 37 responses (30.83%), of which 12 (32.4%) were answered by men and 25 (67.6%) by women.

Some responses included in this group were the following:

- *“I think this way of teaching using videos/documentaries/etc. “It is very useful, comfortable, educational, and interactive for students”. (M)*
- *“Yes, it is definitely a way adapted to new technologies that makes it very enjoyable to pay attention to the video and what we are being told”. (F)*
- *“Yes, the truth is that I think it is a good method to tell the story and learn from it; Since many times studying everything by heart it becomes very tiresome”. (F)*

*“Quite useful. It is not the same to be told who Gertrudis was with some slides as to be told through a “play.” History is assimilated and understood much better this way”. (M)*

Group G2 is made up of all the answers equal or similar to the following: *“They help us learn the history of the past”*.

This group consists of 30 responses (25%), of which 13 (43.3%) were answered by men and 17 (56.7%) by women.

Some responses included in this group were the following:

- *“Especially because of the way it is made, I find the video very dynamic and entertaining. It is also a way to learn history differently”. (F)*
- *“It is very important to know what history has been like so as not to repeat the mistakes of the past. Since this is essential to evolve as a society”. (M)*
- *“I didn’t know the story of these women, and I think few people know it. I find it very interesting, since it is not only learning about the history of our career, but also learning about the struggle of all women”. (F)*

Group G3 is made up of all responses that are the same or similar to the following: *“Thank you to pioneering women for their work”*.

This group consists of 19 responses (15.83%), of which 2 (10.5%) were answered by men and 17 (89.5%) by women.

Some responses included in this group were the following:

- *“Thanks to the struggle of these pioneers, today many women can access the study of the pharmaceutical profession”. (F)*
- *“The society that the video describes is much more sexist and sexist, for this reason, I am grateful to pioneers (like those who star in the video) who have opened a great path for future generations of women to be able to go to university and graduate from the same way as men” (F)*
- *“Currently, we live in a society that has normalized women as pharmacists, thanks to the pioneering women who began studying pharmacy. Although there are still inequalities in other positions or jobs, and we must act like these women, contributing our grain of sand”. (F)*

Group G4 includes the rest of the answers given by the students to this question that are conceptually different from the previous ones, such that none of them, together with their similar ones, reaches a percentage of 8%.

This group consists of 34 responses (28.34%). Some responses included in it, obviously very heterogeneous in its content, were the following:

- *“Women needed dependence on a man to run a family business”. (4 M and 2 F)*
- *“The courage of women in general”. (4 M and 5 F)*
- *“The religious beliefs of the time prevented women from being studied”. (3 M and 2 F).*

#### 4.2.5. Statistical analysis of the responses to Question 5

Question 5 consists of two questions: “Say the Conclusion you reach when you have watched the video-documentary “Pioneers of Spanish Pharmacy. Encounters at the Museum of the History of Pharmacy” and “Any questions to add? Given that the second of them is quite complex to analyse quantitatively, as the nature of the responses is very heterogeneous, this type of analysis will be carried out next referring only to the first of the questions. It will indicate later, as an example, some responses. Most significant results obtained on the second question.

Proceeding as previously done, the groups of responses to the first question of that question were constituted as follows:

Group G1 is made up of all the answers equal or similar to the following: *“Gratitude to the pioneering and brave women of Spanish Pharmacy from a century ago who have allowed current women to study equally”*.

This group consists of 47 responses (39.2%), of which 33 (70.2%) were answered by men and 14 (29.8%) by women.

Some responses included in this group were the following:

- *“My conclusion is that we have to be very grateful to the pioneering women of Pharmacy in Spain and everything they achieved and that we do not have to stop evolving both politically and socially, and we have to train ourselves to continue paving the way for the following generations.” (M)*
- *“That pharmacy is one of the many fields in which women have played an indispensable role throughout history and that we should thank all these pioneers and other female pharmacists for their effort and dedication for not giving up despite the difficulties and contribute in such an important way in this area”. (M)*
- *“As a woman, I consider myself very lucky to have been born in today’s society, and not to have suffered the hardships that the pioneers of Pharmacy had to go through to become pharmacists. We all have a lot to thank them for”. (F)*

Group G2 is made up of all the answers equal or similar to the following: *“Recognition for their effort and sacrifice and being a reference and source of inspiration”*.

This group consists of 38 responses (39.2%), of which 30 (78.9%) were answered by men and 8 (21.1%) by women.

Some responses included in this group were the following:

- *“They all had complications when it came to studying or practicing the profession, but they finally succeeded and paved the way for the following pharmacists. And since all their effort has its reward, some got it, but they did not get to see it in life”. (F)*
- *“It must be emphasized that these women, after their efforts, achieved their goals and became pharmacists, paving the way for others. They are exemplary women who need all the recognition in the world, although the vast majority already have it” (F)*
- *“That it is very good to recognize the effort and hardships that the first women scientists had to endure, and that we must move towards a society in which there is no type of discrimination”. (M)*

Group G3 is made up of all the same or similar responses to the following: *“It is necessary to value the lives of these women in the past to improve the present”*. This group consists of 15 responses (12.5%), of which 11 (73.4%) were answered by men and 4 (26.6%) by women.

Some responses included in this group were the following:

- *“Women have been, for a long time, subordinated and overshadowed by men, and have had much more difficulty developing in certain areas. That is why this type of video is necessary to make them visible and show their contributions, which, until now, many of them have been hidden.” (F)*
- *“Thanks to the brave pharmacists who laid the foundation in Spain so that in the profession there were fewer social stigmas against women’s work, we can see that society has been advancing along an increasingly feminist path, especially with respect to our profession, but also in the university environment in general” (F)*
- *“Thanks to them and many more, I can be studying today and tomorrow I can be the researcher that I have always wanted to be. (F)*

Group G4 includes the rest of the answers given by the students to this question that are conceptually different from the previous ones, such that none of them, together with their similar ones, reaches a percentage of 8%.

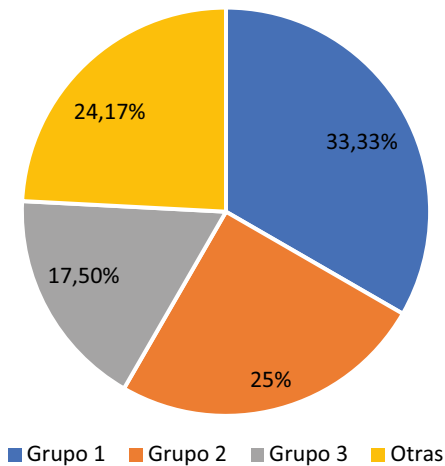
This group consists of 20 responses (16.6%). Some responses included in it, quite heterogeneous in its content, were the following:

- *“I would like to know better the work and academic situation of women pharmacists in the Third World, since in my opinion they must have many similarities with pioneering women”. (F)*
- *“Can we achieve a society where human rights are totally equitable for everyone? (M)*
- *“I found it interesting that the video was made in the faculty museum, giving us a suitable environment for the topic we wanted to focus on. (M)*
- *“I would have liked more dynamism in the interviews, adding other scenes or some events in between to explain the background of each woman in a more visual way”. (M)*
- *“I would like to thank the teachers who spread these types of videos. I think that at the university it is simply important to fight to recover the name of those people who have remained in the shadows for so many centuries”. (F)*

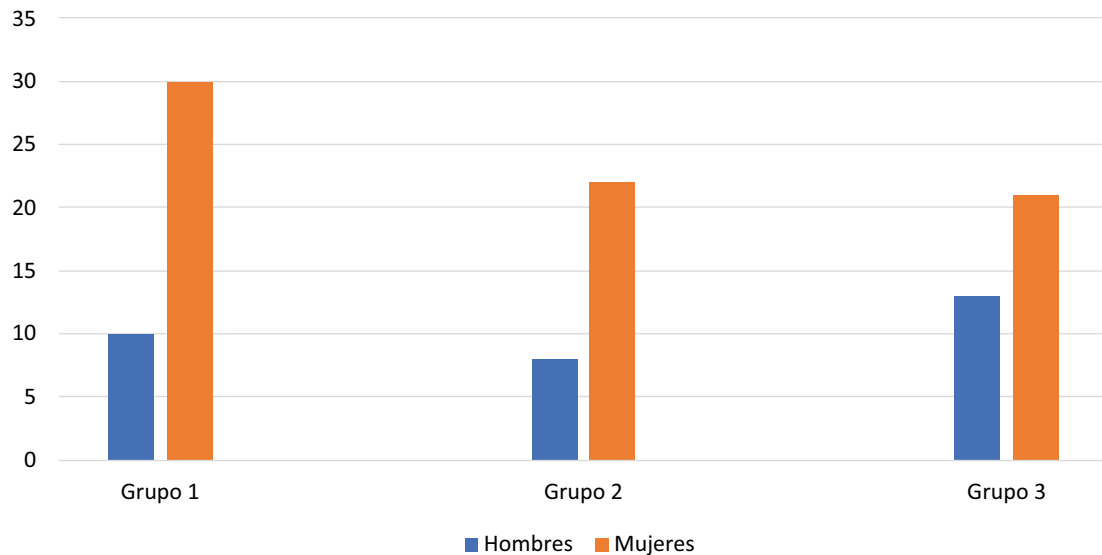
Below are some graphics that illustrate the statistical analysis carried out previously. Note that some indications are in Spanish (Graphics 1 to 10).

Graphics Question 1

Graphic 1. Groups of responses to Question 1. Source: personal elaboration.

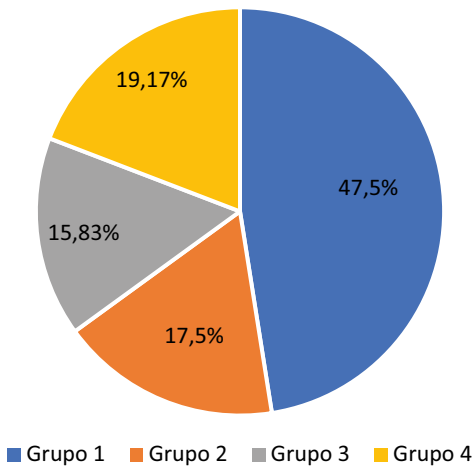


Graphic 2. Men/Women Histogram of Question 1. Source: Personal elaboration.



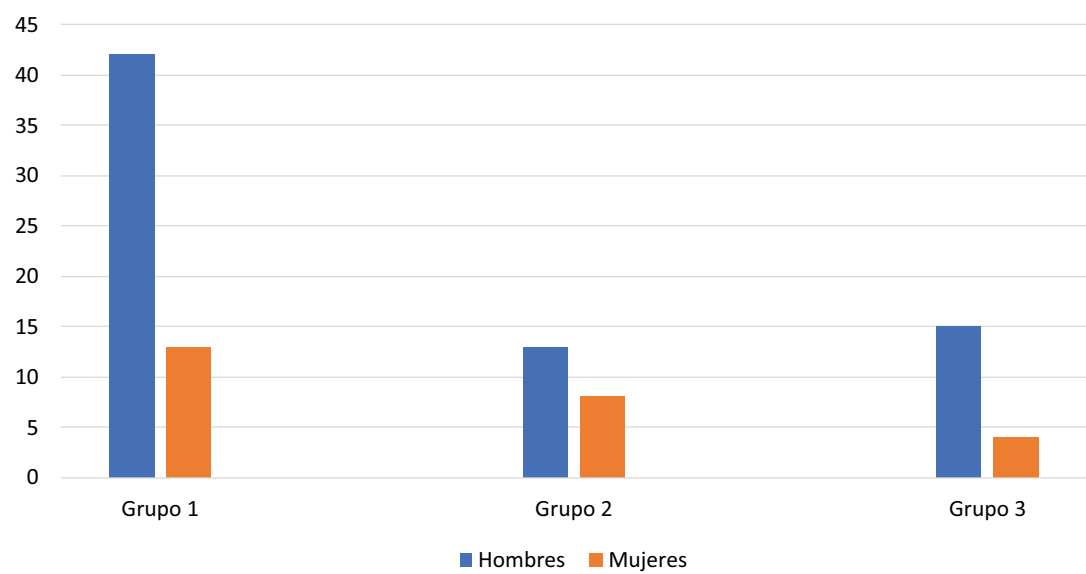
Graphics Question 2

Graphic 3. Groups of responses to Question 2. Source: personal elaboration.



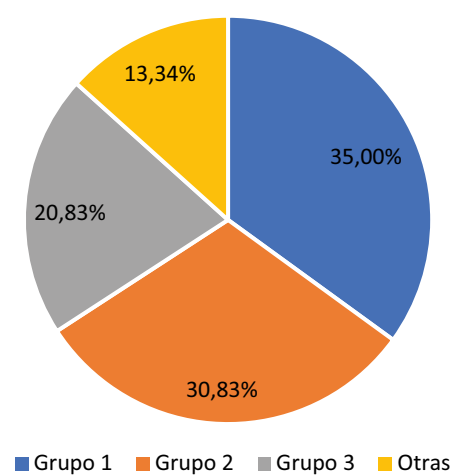


Graphic 4. Men/Women Histogram of Question 2. Source: Personal elaboration.

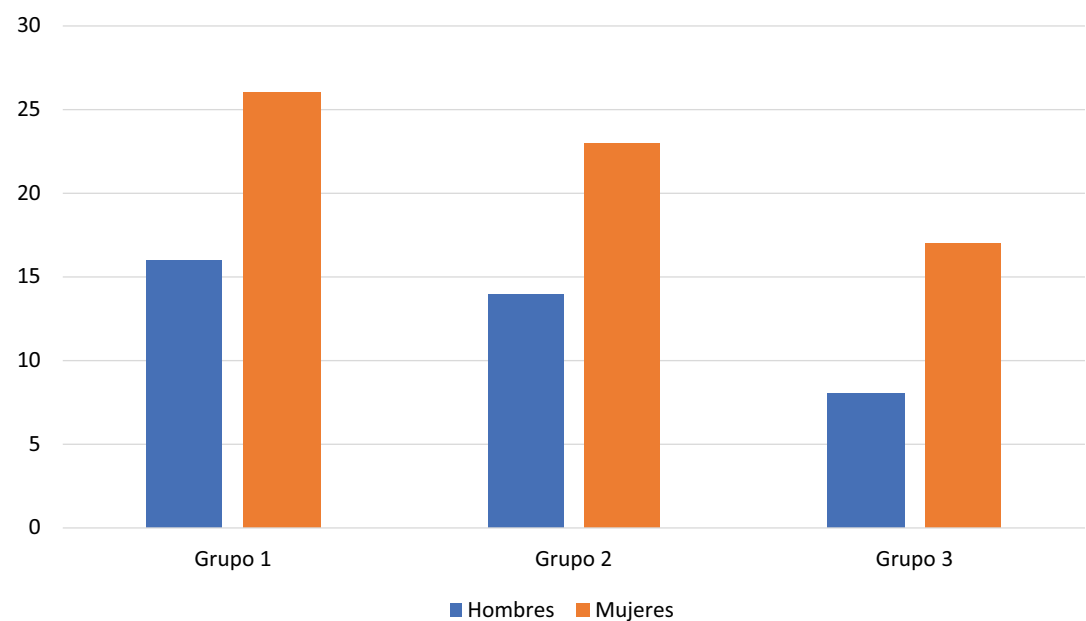


Graphics Question 3

Graphic 5. Groups of responses to Question 3. Source: personal elaboration.

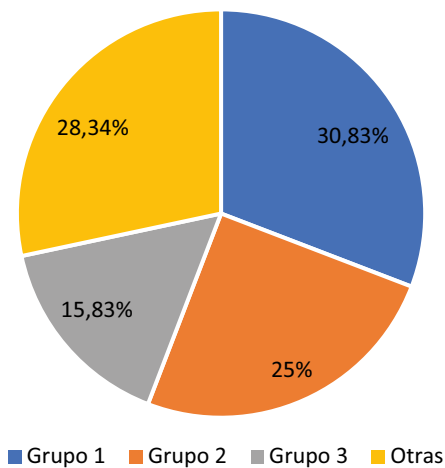


Graphic 6. Men/Women Histogram of Question 3. Source: Personal elaboration.

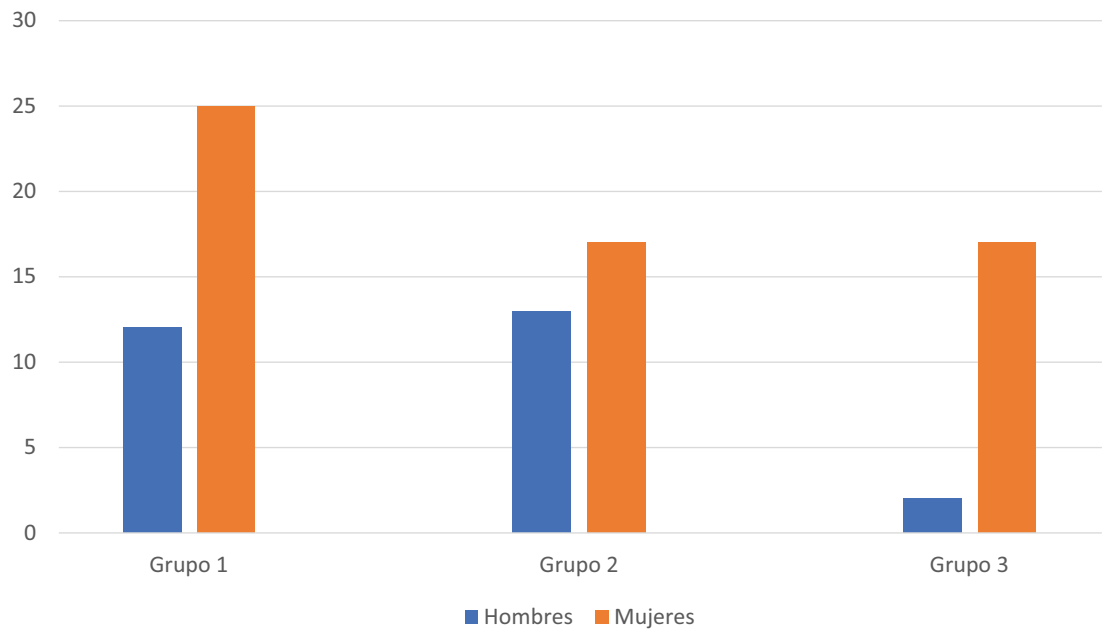


Graphics Question 4

Graphic 7. Groups of responses to Question 4. Source: personal elaboration.

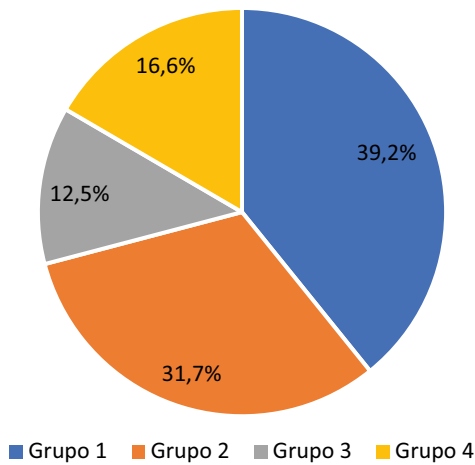


Graphic 8. Men/Women Histogram of Question 4. Source: Personal elaboration.

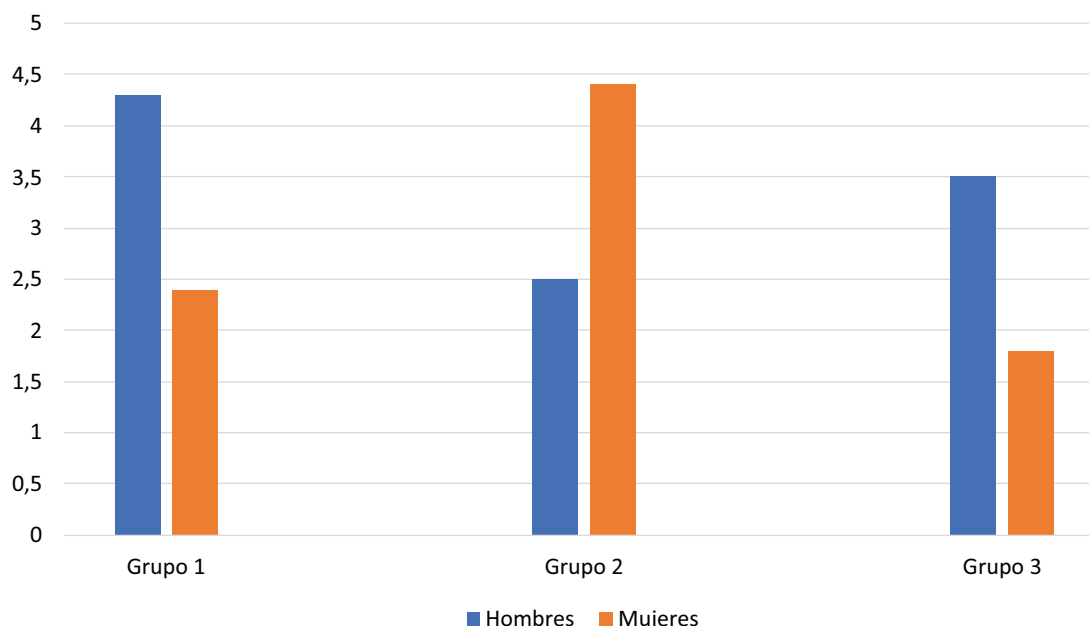


Graphics Question 5

Graphic 9. Groups of responses to Question 5. Source: personal elaboration.



Graphic 10. Men/Women Histogram of Question 5. Source: Personal elaboration.



## 5. Conclusion and discussion

We have valued the lives of four of the first women with a degree in Pharmacy in Spain, all with very different personalities. They, just because of their gender, had to fight to achieve their goals, trying to change both the unjust laws that put obstacles to them like the mentality of the time that they had to live.

Remember that the first university women had to fight to be able to enter the classrooms, and they had it much more difficult than their male counterparts. In the professional press of the time, one could read how men were notable pharmacists and women, literally “beautiful flowers” who entertained themselves in the pharmacy.

It is indisputable that these women paved the way so that decades later the female figure in auditorium classrooms was not something unusual, and parity could be seen in the number of men versus women, or even in the case of careers such as Pharmacy, the female presence in the classrooms being the majority, but having reached this statement “today, the presence of women in the University is more than normalized”, we can make this other -as a criticism in the middle of the 21st century-despite studying at the University, and pursuing the same degrees, the male role is the one that predominates in managerial positions”, perhaps because they are women, perhaps because of the role of mother that continues to be taken for granted by the majority of society, which is a role that falls to the mother, because it is “natural”, surely due to a mixture of both, women continue to be relegated to positions of lesser importance. In the case of Pharmacy, it is only necessary to have a look at the different Colleges of Pharmacy, for example, of the eight provinces of the Autonomous Community of Andalusia: there is only one female president when, as we have mentioned, this career is estimated to be 70-80% studied by women.

These women were brave, with positive characteristics to be scientists, autonomous people, totally independent, although these characteristics were not positive to be a woman of her time.

Thanks to these women who were ahead of their time, the current presence of women in the University is a more than normalized fact. Much more in the Pharmacy career, where the percentage of female students is quite higher than that of men. Nothing to do with what happened at that time and before, in which the women shown in this article lived, where the presence of pharmaceutical graduates who practiced their profession in pharmacies was approximately 2% (Roldán, 1975 and 2003).

In the documentary that is commented in the article, the difficulties that women had to access studies and later practice a profession at that time have been revealed. This is an objective fact, though it certainly stands in contrast to the enthusiasm aroused in the newspapers of the time for any success in women's studies. Several examples of this statement can be checked in (Núñez, 2021).

On the other hand, the video shown also alludes to the ancient healers, from who could be said to have been the first apothecaries in a broad sense of the word, and to the so-called witches. They also had a relationship with the world of medicine. Their knowledge about the power of plants is well known. Apart from that, that knowledge, together with their vision of morality and sexuality, led them to be arrested.

Perhaps all of our pharmaceutical pioneers, the ones we have discussed in this article among them, were the distant descendants of the healers and those witches who preceded them.

From here, our greatest appreciation and gratitude to all of them.

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