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Gender Gaps in Medical Academia: Situation Report from a Latin American Medical School

Brechas de género en la academia médica: reporte de situación en una escuela de medicina latinoamericana

Desigualdades de Gênero na Academia Médica: Relatório de Situação em uma Escola de Medicina Latino-Americana

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Solange Rivera Mercado
Pontificia Universidad Católica de Chile, Chile
ORCID: https://orcid.org/0000-0002-4005-5300
María Trinidad Zegers Vial
Pontificia Universidad Católica de Chile, Chile
ORCID: https://orcid.org/0009-0004-8932-1819
Loreto Rojas Sobarzo
Pontificia Universidad Católica de Chile, Chile
ORCID: https://orcid.org/0000-0002-6394-4733
Margarita Bernales Silva
Pontificia Universidad Católica de Chile, Chile
ORCID: https://orcid.org/0000-0002-4993-8927
Andrea Cárdenas Díaz
Pontificia Universidad Católica de Chile, Chile
ORCID: https://orcid.org/0000-0003-1667-3069
María Francisca Elgueta Le-Beuffe[a]
Pontificia Universidad Católica de Chile, Chile
ORCID: https://orcid.org/0000-0002-4212-3960

ABSTRACT

Introduction: Despite advancements in gender equity, significant disparities persist in academia, particularly in medicine. These disparities are evident in the underrepresentation of women in senior academic positions, with fewer opportunities for promotion and access to leadership roles. **Objective:** To analyze the academic status of female faculty at the School of Medicine of a Pontificia Universidad Católica de Chile. **Methods:** A cross-sectional exploratory quantitative study was conducted. The analysis included academic distribution and progression, research participation, leadership positions, teaching workload, and recognitions, disaggregated by gender. The population comprised all faculty members of the School of Medicine. **Results:** Women represented 40.2% of faculty members but were underrepresented in higher academic ranks. Their likelihood of promotion was lower than that of men: From instructor to assistant professor (80%) and from assistant to associate professor (60%), among others. Leadership positions were predominantly held by men (70%). Female faculty managed 40% of undergraduate courses, whereas male faculty oversaw 80% of subspecialty courses. Furthermore, 64.5% of research project applications were led by men, though grant success rates and funding showed no significant gender

[a]Corresponding Author: panchielgueta@gmail.com

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differences. **Conclusions:** Significant gender disparities were identified within this medical school. Women are underrepresented in senior academic categories, resulting in fewer opportunities for promotion, leadership roles, research project applications, and academic recognitions.

Keywords
gender equity; schools; medical; sexism; working women.

RESUMEN

Introducción: A pesar de los avances en equidad de género, persisten significativas disparidades en la academia, particularmente en medicina. Estas se reflejan en la subrepresentación de mujeres en niveles altos de la jerarquía académica y en menores oportunidades de promoción y acceso a roles de liderazgo. **Objetivo**: Analizar la situación académica de las profesoras de la Escuela de Medicina de la Pontificia Universidad Católica de Chile. **Método:** Diseño cuantitativo exploratorio transversal. Se analizó la distribución y progresión académica, participación en investigación, cargos de responsabilidad, carga docente y reconocimientos, desglosado entre hombres y mujeres. La población incluyó a todas las profesoras de la Escuela de Medicina. **Resultados**: Un 40,2% de los académicos eran mujeres y estaban subrepresentadas en categorías superiores. La probabilidad de ascenso era menor que la de los hombres: instructor a profesor asistente (80%), asistente a profesor asociado (60%), entre otros. El 70% de cargos de responsabilidad eran ocupados por hombres. Las académicas estaban a cargo de un 40% de cursos de licenciatura; mientras que los académicos estaban a cargo del 80% de las subespecialidades. El 64,5% de las postulaciones a proyectos fueron lideradas por hombres, aunque su adjudicación y financiación no hubo diferencias significativas. **Conclusiones**: Se detectaron significativas disparidades de género en esta escuela: las mujeres están subrepresentadas en categorías académicas superiores, resultando en menores oportunidades de ascender, obtener roles de liderazgo, postulaciones a proyectos de investigación y reconocimientos académicos.

Palabras clave
equidad de género; escuelas de medicina; sexismo; mujeres trabajadoras.

RESUMO

Introdução: Apesar dos avanços na equidade de gênero, persistem disparidades significativas na academia, particularmente na medicina. Essas desigualdades são evidentes na sub-representação de mulheres em posições acadêmicas superiores, com menores oportunidades de promoção e acesso a papéis de liderança. **Objetivo:** Analisar a situação acadêmica das professoras da Escola de Medicina da Pontificia Universidad Católica de Chile. **Métodos:** Estudo quantitativo exploratório transversal. Foi analisada a distribuição e progressão acadêmica, participação em pesquisa, cargos de liderança, carga docente e reconhecimentos, desagregados por gênero. A população incluiu todas as professoras da Escola de Medicina. **Resultados:** As mulheres representavam 40,2% do corpo docente, estando sub-representadas nas categorias acadêmicas superiores. A probabilidade de promoção era inferior à dos homens: de instrutor a professor assistente (80%) e de assistente a professor associado (60%), entre outros. Cerca de 70% dos cargos de liderança eram ocupados por homens. As professoras estavam responsáveis por 40% dos cursos de graduação, enquanto os professores lideravam 80% dos cursos de subespecialidades. Além disso, 64,5% das submissões de projetos de pesquisa eram lideradas por homens, embora as taxas de aprovação e financiamento não apresentassem diferenças significativas. **Conclusões:** Foram identificadas disparidades de gênero significativas nesta escola. As mulheres estão sub-representadas em categorias acadêmicas superiores, o que resulta em menores oportunidades de ascensão, liderança, submissão de projetos de pesquisa e reconhecimentos acadêmicos.

Palavras-chave
equidade de gênero; escolas de medicina; sexismo; mulheres trabalhadoras.

Introduction

Despite significant advances in gender equality across various professional fields, deep disparities persist in academia, particularly in the fields of medicine and health sciences. Women continue to be underrepresented in the upper echelons of academic hierarchies and leadership positions (1,2). This disparity is clearly reflected in various areas, such as authorship of scientific publications, peer review, and participation on editorial boards of academic journals (3). Additionally, women are promoted less frequently and at a slower pace, receive less research funding, and constitute a minority in research authorship and editorial contributions (4,5).

A recent meta-analysis involving more than 991,000 physicians found that men are 2.77 times more likely to attain full professor status compared to women, even after adjusting for factors such as experience and academic productivity. This disparity is observed across all specialties and geographic regions, underscoring the universality of the problem. Furthermore, men publish more articles, earn higher salaries, and are more likely to hold leadership positions, such as department chairs (1). This gap in

academic promotion has remained consistent over time (6).

The barriers faced by women in academia are multifaceted and include factors such as family pressures, gender stereotypes, funding policies, lack of mentors and role models, implicit bias, and insufficient peer support. These challenges limit women's participation in research and contribute to gender disparities in promotions and leadership selection (7,8). Additionally, women are underrepresented as both first and senior authors, have fewer opportunities to speak at conferences, and receive fewer grants and awards. According to a study published in *Annals of the Rheumatic Diseases* (9), awards in rheumatology could promote gender equity, yet women currently receive significantly fewer recognitions. Measures such as diversifying selection committees and nominations have been proposed to improve female representation.

Hiring and promotion criteria are often susceptible to gender bias. Women also tend to bear a greater burden of childcare and household responsibilities, with critical stages of their academic careers frequently coinciding with family planning (10,11).

As a result, interest and concern regarding gender equality in academia have gained prominence worldwide. In 2021, it was determined that literature on female leadership in medicine has increased over recent decades, while studies specifically addressing the situation of female medical professors in Latin America remain lacking (12). A mixed-methods study conducted in 2024 highlighted gender gaps within the specialty of rheumatology across the Americas. This research identified perceived barriers faced by female rheumatologists, such as balancing family and work life, workplace harassment, and preferential treatment of men for job, academic, and leadership positions. It also proposed strategies to address these barriers and emphasized the need for further studies to identify factors associated with gender gaps and develop interventions to promote equity in rheumatology. These conclusions may inspire other institutions and specialties to follow suit (13).

Each academic institution has its own unique culture, structure, and challenges, making it essential to recognize these differences when designing and implementing initiatives to promote gender equity effectively. For this reason, the present study focused on the Faculty of Medicine at the Pontifical Catholic University of Chile, founded in 1927, one of the oldest and most prestigious institutions in Chile and Latin America. The faculty is renowned for its emphasis on training highly skilled medical professionals, with a strong focus on research, scientific development, and medical ethics.

The objective was to analyze the academic status of female professors in the School of Medicine at this institution, quantifying and comparing the proportions of men and women across various academic and professional indicators to evaluate significant differences.

Methods

A cross-sectional analytical study was conducted within the School of Medicine at the Pontifical Catholic University of Chile. The indicators analyzed included academic distribution and progression, research participation, teaching workload, representation in academic leadership positions, and recognition.

Data were manually collected through a review of administrative sources and academic documents. The database was provided by the Dean's Office of the Faculty of Medicine and included anonymized demographic information on active faculty members up to June 2022. This record contained details on changes in academic categories and associated dates over a period from January 1979 to June 2022.

At the university, academic categories reflect the professional development of faculty members in teaching and research. These categories include: instructor, designated for professionals at the beginning of their academic careers; assistant professor, for those who combine teaching with the development of initial research lines; associate professor, representing a significant academic trajectory with major contributions;

and full professor, reserved for faculty members with demonstrated excellence, leadership, and high scientific output. This hierarchical structure fosters a clear and progressive environment for professional development.

Different statistical tests were applied based on the data characteristics. The relationship between gender and academic categories, as well as project award rates, was evaluated using the chi-square test. To compare academic career duration and awarded funding amounts between men and women, the Student's t test for independent samples was applied. Additionally, the relative risk (RR) with 95% confidence intervals (95% CI) was calculated to determine the likelihood of promotion across academic categories. The Student's t test was also used to measure the duration spent in each stage of the academic career. A statistical significance level of 5% ($p < 0.05$) was considered.

The analysis utilized Disco® *software*, a process mining tool that allows for automatic modeling and visualization of large data sets. All comparisons accounted for the self-reported sex variable, and data anonymization was ensured to protect the privacy of faculty members.

Results

Academic Career Progression

At the time of data analysis, the School of Medicine had a total of 863 faculty members, of whom 345 (39.9%) were women. Figure 1 shows the frequency distribution of academic categories by gender.

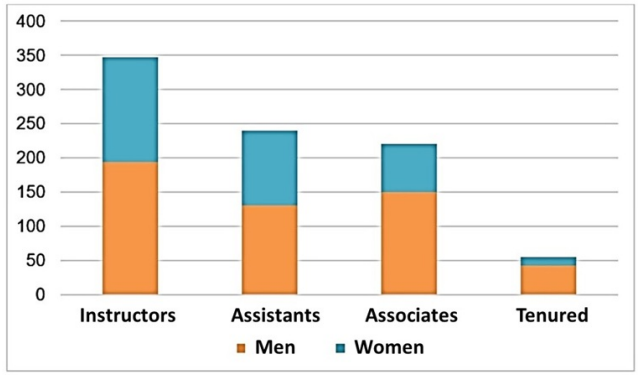

Figure 1.
Distribution of Women Across Academic Categories in the School of Medicine

A relationship was found between academic categories and gender. As faculty members advance in academic rank, the proportion of men increases: 66% among assistant professors, 72% among associate professors, and 80% among full professors ($p < 0.0001$).

Given the significant differences observed, data from 845 faculty members with complete academic career records were analyzed, comprising a total of 1,908 academic category transitions between January 1979 and June 2022. A subset of transitions that best represented the academic career path and included at least 10 faculty members was selected. In the transition from instructor to regular assistant professor (standard, adjunct, or special), 646 changes were recorded. It was observed that the likelihood of women being promoted to regular assistant professor was 80% that of men (RR = 0.78 [95% CI: 0.65–0.93]; $p < 0.0096$).

In the transition from regular assistant professor to regular associate professor (standard, adjunct, or special), 355 changes were identified. The likelihood of promotion for women was 60% that of men (RR = 0.63 [95% CI: 0.52–0.76]; $p < 0.00001$). In the transition from regular associate professor to full professor (standard, adjunct, or special), 59 changes were identified. The likelihood of promotion for women was 50% that of men (RR = 0.63 [95% CI: 0.29–0.82]; $p < 0.00001$). Table 1 summarizes the academic career transitions by gender. It is noteworthy that

no significant differences were observed in the time spent at each academic stage.

Table 1.
Relative Risk and 95% Confidence Interval for Academic Promotion by Gender

Gender	Academic Categories		
	Instructor to Associate Professor	Assistant Professor to Associate Professor	Associate Professor to Full Professor
Men	1	1	1
Women	0,78 (CI % 0,65-0,93)*	0,63 (CI % 0,52-0,76)*	0,63 (CI % 0,29-0,82)*

*$p < 0{,}01$.

Teaching

The Medicine curriculum includes 35 undergraduate courses, 29 clinical modules, and 12 internships. In 2022, the distribution of female faculty members in charge was 40%, 51%, and 33%, respectively, with no significant variations compared to previous years. Regarding postgraduate education, the School of Medicine offered 31 primary specialty programs, 43 subspecialty programs, 7 master's degrees, and 5 doctoral degrees. Across all levels of advanced training at the institution, women were underrepresented. In specialty programs, 57% of leadership positions were held by men. This disparity was more pronounced in subspecialty programs, where 80% of leadership roles were occupied by men. At the master's level, the gap was even greater, with 84% of leadership positions held by men. In doctoral programs, men also represented the majority, at 66%.

Research and Funding

Regarding postgraduate education among faculty members, 243 faculty members at the School of Medicine held advanced degrees, of whom 44% (n = 107) were women. This corresponds to 29% of female faculty members at the School, a figure comparable to the 25% (n = 138) of male faculty members with a master's or doctoral degree. The gender gap was also evident in research projects. Between 2019 and 2021, the School of Medicine recorded 290 applications for five types of external funding opportunities. Of these applications, 64.5% were led by men. Project success rates were 23% for women and 26% for men, with no statistically significant differences. In terms of awarded funding, projects led by women received, on average, $2,276 more than those led by men, though this difference was also not statistically significant (p = 0.4).

Regarding publications, in 2021, only 29.1% of publications were authored by female faculty members at the School of Medicine.

Leadership Positions

Of the 122 leadership positions identified, 85 (70%) were held by men, while 32 (30%) were held by women. Three of the seven executive positions at the School of Medicine were occupied by women, as shown in Table 2. Female faculty participation in collegial committees at the school and faculty levels is detailed in Table 3.

Table 2.
Executive Positions at the School of Medicine Held by Women from 2016 to June 2022

Positions	2006-2008	2008-2010	2010-2014	2014-2018	2018-2021	2022
School Director						
Deputy School Director						
Undergraduate Program Director						
Graduate Program Director						
Research Director						
Extension Director						
Professionalism Director						
Positions Held by Women						

Table 3.
Distribution of Female Faculty Participation in Collegial Committees at the School of Medicine

Committees	2008-2010	2011-2013	2014-2017	2018-2021	2022
Faculty Council (No. of Women/Total)	1/7	1/7	1/7	0/7	7/7
Clinical Practice Council (No. of Women/Total)	---	---	2/14*	1/12	1/14
Graduate Committee (No. of Women/Total)	4/10	3/10	5/13	5/14	5/15
Curriculum Committee (No. of Women/Total)	4/14	3/13	4/11	5/11	7/16
Research Committee (No. of Women/Total)	4/8	5/11	3/12	4/13	4/16
Academic Career Committee: Evaluation (No. of Women/Total)	0/6	0/6	0/6	0/6	3/6
Academic Career Committee: Promotion (No. of Women/Total)	1/6	0/6**	1/6	1/6	2/6
Search Committee (No. of Women/Total)	0/7-1/7**	1/7	1/8	1/8	4/7

***Established in 2015; Since 2010.

Recognitions

Since 1997, the Faculty of Medicine has awarded recognitions in various academic development categories, where female representation in the School of Medicine has been lower than that of men. Between 2018 and 2022, a total of 43 recognitions were awarded, of which 17 (39.5%) were given to female faculty members, with no significant change in the gender distribution over the years.

Discussion

Gender equity in academia is essential for fostering an inclusive and diverse environment that promotes academic excellence. Several areas requiring further attention have been identified at the School of Medicine at the Pontifical Catholic University of Chile.

Firstly, women's academic career progression is constrained. The RR analysis indicates that women have a lower probability of being promoted compared to men and that there is underrepresentation in higher-ranking academic categories. The reasons for these disparities are likely multifactorial and were beyond the scope of this report; however, the literature identifies various barriers to women's advancement in biomedical sciences. These include the reproductive stage as a potential obstacle, the absence of women in leadership roles, gender inequalities in hiring and promotion, among others (14).

This study found no significant gender differences in the awarding of research funding, teaching workload, or postgraduate education. However, women had fewer publications and lower project success rates, which negatively impacts their academic visibility and career advancement opportunities. These findings align with previous research describing phenomena such as the "Matilda effect" (the attribution of women's achievements to men), the "Matthew effect" (cumulative advantage for men in resources and recognition), and women's lower international collaboration rates, all of which contribute to these gender gaps (10,15).

The data on the gender distribution of leadership positions also revealed a significant disparity. This issue has garnered considerable attention in recent years, as women, despite significant progress in education and medical practice, still face substantial challenges in attaining leadership positions (9,16,17).

This study on gender gaps in a Latin American medical school provides a broad and detailed exploration of gender disparities across various academic dimensions, generating hypotheses for future, more specific research and helping to fill a crucial regional knowledge gap in the pursuit of a more inclusive academic environment. One of the study's main strengths is that it not only describes the current situation at the School of Medicine but also examines the academic trajectories of female faculty members. Additionally, the use of data mining offers a clearer understanding of academic career progression by identifying patterns and potential critical points.

Although useful for an initial assessment, an exploratory design does not allow for causal relationships to be established. Therefore, these findings should be interpreted with caution and supplemented by additional studies. It will be necessary to delve into important qualitative factors such as organizational culture, personal perceptions, and implicit biases. Finally, while the results may not be generalizable to other universities in the region, the methodology encourages the replication and dissemination of local data to build a comprehensive Latin

American perspective, where information is currently scarce.

Identifying gender gaps in medical academia is crucial to promoting equal opportunities, improving quality and efficiency in the academic environment, and ensuring social justice and equity. To address these inequalities, several measures are proposed, including fostering mentorship networks, implementing equity advisors, auditing and redistributing academic service assignments, offering childcare services and appropriate lactation spaces, and monitoring and correcting gender gaps in promotion and leadership access (16). The Pontifical Catholic University of Chile has been reflecting on and developing initiatives to integrate gender equity into its institutional culture for over 10 years. Since 2019, it has had a Gender Equity Office, whose objectives include promoting women's academic career advancement by implementing equitable processes and conditions for their development in both academia and leadership roles.

The literature shows that interventions aimed at improving gender equity, such as professional development programs and organizational culture changes, have yielded positive results in promoting equity and enhancing career opportunities for women (17). These actions not only contribute to greater female representation in leadership positions but also foster diversity in decision-making and help mitigate discrimination based on gender biases. Furthermore, they help retain female talent, providing role models and mentorship for future generations (4). The Faculty of Medicine has not been immune to this challenge and, since 2022, has had a collegial body tasked with promoting and developing strategies to address gender equity issues, including identifying the gaps outlined in this report and proposing measures to reduce them. These efforts require time and collaboration from multiple stakeholders, but they are not just a matter of justice; they also enhance the quality of education and medical practice, benefiting society as a whole.

While Latin America is a unique region with significant cultural differences within its territory, studies such as this one (from the Southern Cone) can be enriched by results from studies in other regions, helping establish research lines based on both differences and similarities. In Europe and the United States, similar trends have been observed in recent years, with gender gaps gradually narrowing but a persistent lack of opportunities for female academics (18,19).

Other studies have suggested that it is necessary to consider the social, cultural, economic, historical, and political context of each region to increase the representation of female academic researchers. Nevertheless, there is a universal idea: the importance of creating replicable models (20), an initiative that has grown in Chile but still faces obstacles in the School of Medicine, according to the statistics presented in this article, preventing female faculty members from becoming those role models.

This line of research is urgent since, even in countries where women's academic careers have gained momentum, they remain a minority in original article authorship and scientific editorial boards (21,22). However, understanding these gaps in depth is emphasized as the first step toward meaningful solutions (20,23).

Conclusions

This study revealed gender inequalities at the School of Medicine of a Latin American university, highlighting the underrepresentation of women in senior academic positions and leadership roles. To address these inequalities, measures are suggested, such as increasing the visibility of female leaders, implementing mentorship programs and family-friendly policies, ensuring transparency in hiring and promotion processes, and incorporating gender-related content into the curriculum. This work significantly contributes to filling a critical information gap in the pursuit of a more inclusive academic environment in Latin America.

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Conflict of Interest:

No conflicts of interest were reported.

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