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THEMES AND DEBATES

The Silent Pandemic: The Under-representation of Women in Academic Medicine and Publications - Reasons and Solutions

La pandemia silenciosa: subrepresentación de las mujeres en la medicina académica y publicaciones científicas: razones y soluciones

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Abstract

Despite near-equal global gender distribution, women remain starkly under-represented in academic medicine and scientific publications—a systemic inequity so pervasive it constitutes a silent pandemic. While women now comprise 70% of the healthcare workforce, they hold only 15% of full professorships in medicine and face persistent gaps in authorship, citations, and leadership roles. This article examines the multifaceted barriers driving this disparity, including implicit bias in hiring and promotions, disproportionate caregiving burdens, hostile work environments, and gendered disparities in mentorship and peer review. Data reveal that women-authored papers receive 30–50% fewer citations than men's, and fewer than 20% of senior authors in high-impact journals are women. These inequities compromise scientific progress, as diverse perspectives enhance innovation and patient outcomes. Solutions demand systemic reforms: anonymised peer review, gender-balanced editorial boards, flexible work policies, institutional accountability metrics, and targeted sponsorship programs. Addressing this "pandemic" requires treating gender equity as a public health imperative—one that strengthens medicine for all.

Keywords: gender equity; women in medicine; academic medicine; authorship gap; gender bias.

Resumen

A pesar de una distribución global de género casi equitativa, las mujeres siguen estando marcadamente subrepresentadas en la medicina académica y en las publicaciones científicas, una inequidad sistémica tan generalizada que constituye una pandemia silenciosa. Si bien las mujeres representan actualmente el 70% del personal del cuidado a la salud, solo ocupan el 15% de las cátedras titulares en medicina y enfrentan brechas persistentes en autoría, citas y roles de liderazgo. Este artículo examina las barreras multifacéticas que impulsan esta disparidad, incluyendo sesgos implícitos en la contratación y en criterios para ascensos, cargas desproporcionadas en el cuidado de personas, entornos laborales hostiles y disparidades de género en la mentoría y la revisión por pares. Los datos revelan que los artículos escritos por mujeres reciben entre un 30% y un 50% menos de citas que los escritos por hombres, y menos del 20% de los autores sénior en revistas de alto impacto son mujeres. Estas inequidades comprometen el progreso científico, ya que la diversidad de perspectivas mejora la innovación y los pronósticos para los pacientes. Las soluciones exigen reformas sistémicas: revisión por pares anónima, consejos editoriales con equilibrio de género, políticas laborales flexibles, métricas institucionales de rendición de cuentas y programas de patrocinio específicos. Para abordar esta "pandemia" es necesario tratar la equidad de género como un imperativo de salud pública que fortalezca la medicina para todos.

Palabras clave: equidad de género; mujeres en medicina; medicina académica; brecha de autoría; sesgo de género.

Introduction

"We cannot succeed when half of us are held back."
– Malala Yousafzai

In a world where there is an almost equal distribution of males and females—4.05 billion men and 4.01 billion women as of 2023[1]—it is striking that certain careers, including academic medicine, continue to exhibit significant gender disparities.[2] Historically, men have dominated the medical profession, but over the years, there has been a notable increase in the number of women entering the field.[3] Today, women represent approximately 70% of the global healthcare workforce. However, this progress has not translated into equal representation in leadership roles, senior positions, or academic medicine. Men still dominate as physicians, senior nurses, and in higher academic ranks, even in professions where women are the majority, such as nursing.[3,4]

Academic medicine, in particular, reflects this persistent gender gap. While barriers to female participation in the medical workforce have been reduced, women remain significantly under-represented in academic leadership, research, and scientific publications. Female physicians face unique challenges in advancing to the highest echelons of academic medicine, with one major barrier being their lower rate of scientific publishing compared to their male counterparts. Publishing is a critical factor for career advancement in academia, and this disparity contributes to the under-representation of women in senior academic roles.[5]

The reasons for this imbalance are multifaceted. Women in academic medicine often face implicit bias, unequal access to mentorship and networking opportunities, and disproportionate domestic and caregiving responsibilities. Workplace cultures and institutional policies frequently favor traditional male career trajectories, while systemic barriers such as limited research funding and fewer opportunities to publish in high-impact journals further exacerbate the issue. These challenges are even more pronounced for women from under-represented racial, ethnic, or socioeconomic backgrounds.[6]

Addressing this under-representation is not only a matter of equity but also essential for the advancement of medical research and patient care. Diverse perspectives in academic medicine lead to more innovative solutions, improved patient outcomes, and a more inclusive scientific community. This paper explores the root causes of gender disparities in academic medicine and scientific publishing, examines the consequences of this imbalance, and proposes actionable solutions to foster a more equitable and inclusive environment for women in academia.

Methodology

This review article adopts a narrative methodology to explore the persistent under-representation of women in academic medicine and scientific publishing. A structured literature search was conducted across major databases, including PubMed, Scopus, and Google Scholar, focusing on publications from 2000 to 2025. The search strategy involved the use of keywords and phrases such as "women in academic medicine," "gender disparity in medical publishing," "female authorship," "gender bias in academia," and "solutions to gender inequality in science." Articles selected for inclusion were peer-reviewed and addressed either the causes or the solutions related to gender disparities in academic medicine and scholarly output. Editorials, systematic reviews, original research, and policy papers were included, while non-English publications and articles unrelated to the medical or academic context were excluded.

Statistics on gender disparity in academic medicine

"At the current rate of progress, it will take another 131 years to achieve gender equality globally."
World Economic Forum, Global Gender Gap Report 2023

The medical field has seen an increase in gender equity over the past decade, with women now constituting the majority of medical school applicants and graduates. Faculty representation has risen from 38% to 45%, with women holding clinical science PhDs outnumbering men at 52%. Additionally, the percentage of women in

leadership roles has grown, accounting for 27% of U.S. medical school deans, 45% of senior associate deans, and 34% of division chiefs. Similarly, women represent 44% of doctors, 56% of National Health Service (NHS) senior managers, and 89% of nursing, midwifery, and health visiting staff. Although these advances are noteworthy, social issues persist that are far from achieving total equality; nearly 30% of women report experiencing some form of gender harassment in academic medicine, whether sexual or otherwise. Globally, the prevalence of sexual harassment among female medical staff varies significantly, often reflecting differences in legal protections and enforcement. For instance, reports indicate that Sudanese female medical staff experience lower rates of sexual harassment compared to their counterparts in Egypt and Nigeria, but higher than those reported in the United States. These variations may be closely tied to the presence or absence of comprehensive legal frameworks addressing sexual harassment. A 2018 World Bank report, which examined legislation in 189 countries, revealed that nearly 60 countries lacked any laws specifically protecting against sexual harassment in the workplace or educational settings. Alarmingly, it also noted that 70 economies, particularly in the Middle East and North Africa, had no legal provisions whatsoever addressing this issue. The absence of protective legislation not only increases vulnerability but also perpetuates a culture of silence and impunity, underscoring the urgent need for global policy reform.[7]

Furthermore, significant pay discrepancies remain, with women receiving lower compensation than their male counterparts. Women in clinical academia continue to encounter unique challenges that contribute to higher attrition rates. These challenges include a scarcity of relatable role models, mentoring that fails to address their specific needs, and a workplace culture that often devalues caregiving responsibilities through an emphasis on constant presence. Additionally, subtle forms of discrimination, such as setbacks during maternity leave, and at times overt harassment or sexist assumptions about women's ambition or competence, further hinder their progression. These issues often reflect broader deep-rooted societal inequalities.[2,8,9] As of 2012, women held only 13% of full professor positions, 32% of associate professorships, and 43% of assistant professor roles. While this imbalance was once attributed to the historically lower number of female medical students, that explanation is no longer sufficient. Over the past decade, the proportion of female residents has risen from 39% to 46%, yet this increase has not translated into proportional representation in senior academic ranks, indicating persistent systemic barriers to advancement.[10]

Gender gap in authorship and citations in medical and scientific publications

In academic medicine, professional advancement is dependent on scholarly recognition and impact, mainly achieved through multiple publications and citations, which are reflected by a researcher's h-index. Chatterjee & Werner (2021) conducted a cross-sectional study on five high-impact medical journals. They discovered a consistent trend of research articles written by women having fewer citations than those written by men. Specifically, women who co-authored with other women as senior authors had the lowest average number of citations, ranging between 15 and 68 (with a median of 33). In contrast, the highest average was seen with men who co-authored with other men as senior authors, with a range of 23 to 149 (and a median of 59).[11]

Several factors have been identified as reasons for this gap, including the fact that women tend to have smaller professional networks and audiences, as well as a more limited reach on virtual platforms, which are gaining increasing relevance as tools for disseminating research. While multiple other factors contribute to the gender gap in research publications, the point remains that these disparities are glaring and must be mitigated.[11]

Importance of equality and diversity in academic medicine and scholarly publications

"Gender equality is more than a goal in itself. It is a precondition for meeting the challenge of reducing poverty, promoting sustainable development, and building good governance."
– Kofi Annan

"Diversity is not about how we differ. Diversity is about embracing one another's uniqueness."
– Ola Joseph

Equality in academic medicine and scholarly publications is not merely a moral imperative but a critical driver of innovation, excellence, and improved patient outcomes. A diverse and inclusive academic environment ensures that a wide range of perspectives, experiences, and ideas are represented, fostering creativity and advancing medical knowledge. When women and other under-represented groups are equally included in academic medicine, the field benefits from their unique insights, which can lead to more comprehensive research, better clinical practices, and more equitable healthcare solutions.[2]

Enhanced Innovation and Problem Solving: Diversity in academic medicine brings varied perspectives to the table, enabling more innovative approaches to complex medical challenges. Research has consistently shown that diverse teams outperform homogeneous ones in problem-solving and creativity. By ensuring equal representation, academic medicine can tap into the full potential of its talent pool, leading to groundbreaking discoveries and advancements.[2]

Improved Patient Outcomes: A diverse academic workforce is better equipped to address the healthcare needs of diverse patient populations. Women and under-represented groups often bring a deeper understanding of issues affecting marginalized communities, leading to more culturally sensitive and effective care. For example, research on conditions that disproportionately affect women, such as autoimmune diseases, has historically been underfunded and under-represented. Greater gender equality in academic medicine ensures that such gaps are addressed, ultimately improving health outcomes for all.[12,13] Additionally, studies have shown that patients managed by female physicians have better outcomes and lower complication rates.[14]

Role Models and Mentorship: Equality in academic medicine creates a pipeline of role models and mentors for the next generation of healthcare professionals. When women and under-represented groups see themselves represented in leadership positions, editorial boards, and as authors of high-impact publications, it inspires them to pursue and persist in academic careers. This cycle of mentorship and representation is essential for sustaining progress toward gender equality.[15]

Fairness and Equity in Scholarly Recognition: Scholarly publications are a cornerstone of academic advancement, yet women are often under-represented as first or senior authors in high-impact journals. This disparity not only limits their career progression but also deprives the scientific community of their contributions. Ensuring equality in publishing opportunities promotes fairness and ensures that the best research is recognized, regardless of the author's gender.[16]

Global Health Impact: Academic medicine plays a pivotal role in shaping global health policies and practices. When women and under-represented groups are equally involved in research and leadership, it leads to more inclusive and equitable health policies. For instance, women researchers are more likely to investigate issues such as maternal health, gender-based violence, and access to reproductive care, which are critical to achieving global health equity.[12]

Economic and institutional benefits: Institutions that prioritize gender equality in academic medicine often experience greater productivity, higher employee satisfaction, and improved retention rates. Diverse teams are more collaborative and effective, leading to better institutional outcomes. Moreover, equitable practices enhance an institution's reputation, attracting top talent and funding opportunities.[17,18]

Reasons For Under-Representation Of Women In Academic Medicine And Publications And Possible Solutions

"Women are not under-represented because they lack ambition or capability; they are under-represented because systemic barriers, biases, and structural inequalities persist in holding them back."
-Sheryl Sandberg
"Gender equality is not a women's issue; it's a human issue. It affects us all."
- Ban Ki-moon.
"Patriarchy is not a natural order—it's a man-made system. And what is man-made can be

unmade."

- Gloria Steinem

Reason: Gender bias in hiring, promotion, and grant allocation

Women in academic medicine have been subject to bias in getting promoted. Despite the increased representation of women in medicine from decades ago, it has been observed that this increased representation is yet to be well established in senior positions in academic medicine. According to a report by the Medical Schools Council, it was revealed that just 26.3% of clinical academics are women. This inequality increases substantially with seniority, with women representing 42.3% of lecturers, 30.1% of Readers/Senior Lecturers, and 15.1% of professors.[2]

Throughout the world, women leave their academic careers in far greater numbers than their male colleagues. One reason may be that women suffer discrimination due to gender. For example, it has been shown that peer reviewers for research grants cannot judge scientific merit without considering gender. The peer reviewers overestimate male achievements and/or underestimate female performance, as shown throughout multiple-regression analyses of the relationship between defined parameters of scientific productivity and competence scores and in a meta-analysis of the peer review process.[19]

Research done by Nonnemaker et al. showed the proportion of women who were reported to have advanced from assistant to associate professor was significantly smaller than the proportion of men who advanced (the disparity was present in both tenure and non-tenure tracks). Similarly, women who had appointments as associate professors were less likely to attain the rank of full professor than their male counterparts.[20]

Solution: Anonymising gender in hiring, promotion and grant allocation processes

This study on anonymizing applications for clinical academic training found that while removing candidate names did not significantly alter overall scores, it led to a notable increase in the proportion of successful female candidates (from 27% to 46%), suggesting that unconscious bias may influence selection even when scoring differences appear minimal. The findings also revealed that female candidates were more likely to choose female supervisors (41% vs. 25% for male candidates), highlighting the importance of gender-concordant mentorship. To address these issues, training programs should implement anonymized application reviews alongside initiatives to increase women's visibility in leadership roles, foster structured mentorship opportunities, and provide bias training for selection committees—ensuring that merit-based evaluation extends beyond initial screening to all stages of career advancement.[21]

It has also been observed that when women apply for senior positions or research grants and their former advisors are co-authors on later scientific papers, the women might be judged as being dependent on the former supervisor, while men might be seen as new partners. To establish an academic career, younger researchers need to show their independence, and it is difficult to get your own research grants if you have been assessed as dependent like the women are in this case.[19] Institutions are therefore advised to adopt strategies to minimize unconscious bias, including gender-blind reviews of job or grant applications. [21]

Solution : Use of structured, unbiased criteria for promotion

Women are frequently overlooked for senior positions, partly because traditional metrics undervalue their contributions to teaching, mentorship, and collaborative research. Institutions should implement structured, criteria-based evaluations for promotions rather than relying on subjective assessments.

Reason: Lack of mentorship and sponsorship opportunities for women

Female physicians have been reported to be less likely to have mentors than male physicians, and the lack of mentoring could negatively affect women's careers. Women with mentors produce more published work, spend more time on research activity, and have higher overall career satisfaction than those without mentors. Role models in academic medicine not only provide guidance, but

their presence also affects promotion rates; furthermore, when women have models to look up to in their field of interest, it increases their pursuit and resilience.

Solution: Mentorship and Sponsorship for women

Mentorship and sponsorship programs are equally vital, connecting early-career women with advocates who can amplify their visibility and endorse their advancement. Leadership training programs, tailored to address the unique challenges women face, can further equip them with negotiation and strategic career-planning skills.[22]

Reason: Societal expectations and gender roles (e.g., caregiving responsibilities)

Despite the growing acceptance of the more modern perspective of shared domestic responsibility between husbands and wives, married female physicians with children spend 8.5 hours more per week on parenting and household duties. This correlates to their shorter work week, which is seven hours less than those of married male physicians with children.[19]

It is difficult for women to weave the traditional household and parenting duties expected of them into the hectic schedule of a medical professional. In a study that interviewed university hospital department chairs in various medical specialties, a large majority (78%) agreed that the demands of the household were a barrier to the advancement of women in medicine.[16,21]

Also worthy of note is that female physicians with children have lower employability and slower career development as compared to their male counterparts.[24] Female physicians also face challenges with their academic work due to a lack of flexible work policies to support their work-life balance.[25] Cultural norms within academia also play a role. Women often bear disproportionate service and teaching loads, leaving less time for research—the very work that propels academic recognition.[26]

Solution: Judicious use of resources, flexible work schedule and family support

In a study by Schueller-Weidekamm and Kautzky-Willer on the creation of career development for women physicians who are mothers and working in leadership positions, they discovered that these female physicians advised that judicious use of resources like time, money, scope of decision-making, and mentorship and networking are the most important factors for achieving work-life balance.[27] Similarly, Treister-Goltzman and Peleg suggested the aforementioned factors and advocated for special factors like flexible work schedules and expanded support for childcare for women in academic medicine. Also, they noticed that female physicians with good spousal support do better in academic environments than people who do not.[28]

Some institutions alleviate this burden by offering faculty reduction in duties, extension of their probationary period, or part-time employment to those female physicians who are struggling to balance their personal responsibilities at home with professional responsibilities at work.[25]

Reason: Hostile work environments and sexual harassment

Women are at a high risk of harassment, especially sexual, and this poses a danger to their career advancement. A study that assessed the challenges and obstacles encountered by female junior physicians in Jeddah, Saudi Arabia, showed that 52% of female residents experienced gender discrimination mostly by their supervisors and 40% were regularly harassed. About 53% of those who agreed to be interviewed were suffering from severe depression, resulting in reconsidering their career in medicine. This study concluded that work dissatisfaction, limited clinical correspondence, higher depression and burnout, stress, and dropout rates were all because of gender discrimination.[25]

Solution: Institutional commitment to eradication of work place hostility and harassment

A comprehensive solution to sexual harassment requires institutional commitment to cultural, policy, and educational reforms. Key measures include establishing zero-tolerance policies,

enforcing accountability through transparent reporting and investigation systems, and providing regular training to recognize and address harassment. Empowering bystander intervention and dismantling hierarchical power imbalances are critical, particularly in male-dominated fields like medicine. Additionally, protecting victims from retaliation and fostering an inclusive workplace climate through leadership engagement are essential for sustainable change.[29]

Reason: Lack of flexible work policies and support for work-life balance and gender bias in peer review and editorial processes

Departments must redistribute service obligations fairly and recognize this labor in promotion criteria. Similarly, family-friendly policies, such as extended tenure clocks for parental leave and on-site childcare, can help retain women in academia rather than forcing them out at critical career stages.[26]

There have been reports of gender inequity in the academic publishing system, with a systematic under-representation of women as authors, referees, and editors. Gender bias in scientific publications and its causes or mechanisms have been studied in different fields. The composition of editorial committees and the pool of referees by sex could make a difference and reduce the bias.[3]

Women are also under-represented in expert groups, peer review panels, and advisory/policy committees. As part of an European Commission project, 443 scientific boards were reviewed and 31% of UK participants were women, which led to a ranking of six out of 27 countries and lagging behind the Nordic countries where scientific boards comprised up to 48% women.[30]

Solution: Double-blinded editorial process

One critical area for intervention is the peer review process. While many journals claim impartiality, studies show that manuscripts authored by women are often subject to greater scrutiny.[31] Adopting double-blind reviews, where neither the author's nor the reviewer's identity is disclosed, can help mitigate unconscious bias. Additionally, editorial boards must diversify; when women and under-represented groups hold decision-making roles, equitable evaluation becomes more likely. Journals should also track and publish gender-disaggregated data on acceptance rates, reviewer invitations, and editorial appointments to ensure transparency.

Conclusion

Gender bias against women in academic medicine and publishing remains a persistent barrier, limiting their representation in leadership, authorship, and research influence. Despite progress, women are still under-represented as first and senior authors in high-impact journals, cited less frequently, and face slower career advancement than their male peers. Addressing these disparities requires systemic changes shifting institutional cultures, reforming editorial practices, and actively supporting women's career trajectories.

Ultimately, sustained change requires accountability. Institutions must collect and publicly report gender equity data, tracking pay gaps, publication rates, and leadership representation. Funding agencies can incentivize progress by prioritizing grants to institutions demonstrating measurable equity improvements. Additionally, individual allies—particularly men in positions of influence—must actively advocate, cite, and amplify women's work.

The path to equity is not about lowering standards but correcting systemic imbalances that have long disadvantaged women. By reforming publishing practices, redefining leadership pathways, and fostering an inclusive culture, academic medicine can better reflect the diversity of talent within its ranks. The goal is not just fairness but excellence—because when women thrive, the entire field benefits.

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