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FORUM

Underrepresentation and undertreatment of women in hematology: An unsolved issue

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Abstract

Gender disparity is pervasive and persisting in research. Despite gender being recognized as one of the primary determinants of health, inadequate representation of women in clinical trials has resulted in a deficit pertaining to equity in health care. This gross underrepresentation has exposed women to unforeseen health-related outcomes, and as evident through historic records, unequal distribution of opportunities has further widened this gender gap in health care.

KEYWORDS
female, gender identity, underrepresentation, hematology, women's health

1 | INTRODUCTION

Gender disparity is pervasive and persistent in research. Despite gender being recognized as one of the primary social determinants of health, inadequate representation of women in clinical trials has resulted in a deficit pertaining to equity in health care. This gross underrepresentation has exposed women to unforeseen health-related outcomes. Further, an unequal distribution of opportunities for women in medicine has further widened this gender gap in health care.

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2 | UNDERREPRESENTATION OF WOMEN IN CLINICAL MEDICINE

Women have been historically underrepresented in hematology and related specialties such as medical oncology and cardiology. They comprise less than 15% of practicing cardiologists and less than 40% of hematologists and oncologists.[1] This disparity is particularly evident in leadership roles, wherein only four presidents of the American Society of Hematology were women in its first 50 years.[2] Further, women in hematology are less likely than men to receive recognition and awards for their contributions to education, research, and clinical practice.[3] It follows that the wage gap for women in medicine persists, beginning in residency and extending to senior faculty roles.[4–6] The existing gender inequity in hematology is multifactorial and rooted in an insidious societal foundation of devaluing women in the workforce.[7] Manifestations of this culture that impact women in hematology include bias, overt discrimination, limited mentorship opportunities, tumultuous workplace culture, and work–life balance constraints. Organizations such as the Women in Hematology Working Group of the American Society of Hematology and *Research and Practice in Thrombosis and Haemostasis* are working to offset this imbalance by providing career development opportunities, community support, guidelines on equity in publishing, and scholarships for women in hematology.[8,9] However, the appointment of women as presidents of international hematology reference societies or associations remains infrequent. For example, over the past 50 years, only four women have presided over the ISTH.[10] Similarly, the European Hematology Association has elected only four women as leaders, though the current president is, promisingly, a woman.[11] Likewise, the current and past president of the International Society for Laboratory Hematology are women, as well as the president-elect of the Society of Hematologic Oncology.[12,13] Yet the gender disparity in this field is still pervasive and extends to clinical studies in which women are less likely than men to be included as both lead investigators and patients.[13,14]

3 | UNDERREPRESENTATION OF FEMALES IN ANIMAL STUDIES

Though gender cannot be measured in animal research, sex can act as a close proxy. With the exception of reproductive biology and immunology, literature shows that female subjects have gravely been underrepresented in animal studies across several disciplines. This has been significant enough that the National Institutes of Health has had to institute a policy to avert this trend that includes having gender as a variable when drafting research proposals, carrying equal weight as other variables in animal studies. In fact, even in diseases chiefly affecting female patients, only 12% of animal studies employed the use of female animals during the preclinical phase. This disparity has been attributed to several factors inclusive of the expense associated with an increased sample size, but more significantly the anticipated hormonal variations associated with the female sex. Consequently, female biology, physiology, and pathophysiology remains more poorly understood than the male counterpart, with a reported decline in treatment and disease prognosis in the former.[15–17]

4 | UNDERREPRESENTATION OF WOMEN IN CLINICAL TRIALS

Guidelines based exclusively on literature focused on treating men are limited in their consideration of gender-specific factors. It is therefore critical that the practice of evidence-based medicine be informed by clinical trials that include women.[18] Yet participants in hematological clinical trials are predominantly men. This discrepancy persists when adjusting for disease prevalence and burden.[19] There are several reasons that women have been historically excluded as clinical research participants. These include perceptions that women in clinical trials may become pregnant or experience hormone variations that impact trial outcomes.[20] In fact, in 1977 the US Food and Drug Administration recommended that women of childbearing potential be excluded from early clinical trials. The consequences of this exclusion are deleterious, as it has been well established that there are differences in pharmacokinetics between men and women.[21] If prescription practices are based on clinical trials primarily conducted in men, women may be over- or underprescribed important hematological pharmaceutical agents. Consequently, underrepresentation of women in hematology clinical trials is a major contributor to undertreatment of women in clinical practice. Thus, it is essential that organizations such as the National Institutes of Health have developed policies on including women in research.[22]

5 | UNDERTREATMENT OF WOMEN IN MEDICINE

Gender disparities affect women's health negatively and extend beyond biology alone. There are clear sociocultural practices that put women at a greater disadvantage. One example of structural gender disparities can be found in the rates of hospital admissions. Gender ratios for overnight hospital stays and emergency admissions are almost equivalent in high-income countries.[23,24] In low- and middle-income countries (LMICs), women present less frequently in similar medical circumstances (male-to-female ratios of 2:2 for emergency abdominal surgeries and 1:4 for general admissions, excluding obstetric care).[25,26] In an American study, elderly women had fewer hospital stays (adjusted odds ratio, 0.79) and physician visits (3.07 vs. 3.30 median visits within 2 years) than men with similar health and demographic profiles.[27] It was also noted that older women not only have more frequent reports of functional impairment but were also twice as likely to live alone compared to men. Thus, they are more isolated, limiting their ability to obtain medical care. A similar scenario was reported from India as well. According to a study conducted at the All India Institute of Medical Sciences in New Delhi,[28] women get

marginalized when it comes to accessing the highest level of public health care (sex ratio of the patient visits was 1.69 men to every woman). Access to specialized services of women's health is also scarce in nonmetropolitan areas. It is also worth mentioning that in circumstances in which disease prevalence is equal among men and women, gender roles, and attitude toward specific gender, may contribute to inequalities in health. Scientific evidence shows that women receive fewer guideline-based treatment and interventions in various aspects of medicine compared to men.[29-31] In a study by Humphries et al., women with atrial fibrillation received less anticoagulation treatment with warfarin in spite of having a greater risk for stroke than men.[32,33] Overall, women's health care encompasses both physical and psychological health. The current body of medical literature identifies missed opportunities for preventive as well as therapeutic medical care for women. Very few targeted interventions to promote preventative and therapeutic services for women exist. In LMICs, most health care policies have adopted an increased focus on maternal health. Further strengthening of local health care services is required to address health issues of younger and elderly women, who are mostly neglected.[27,28] Another example is the lack of breast cancer screening services in these countries, which results in late stage of presentation and overall poor disease outcome compared to those populations where screening services do exist. More of these targeted interventions are absolutely essential to bring down the disparity.

6 | CONCLUSIONS

Women remain underrepresented in preclinical and clinical medicine, not only as health care practitioners but also as patients. They are less likely to be included in clinical trials and are often undertreated. Urgent measures are needed to close this gender gap. Future strategies should focus on the development of diversity, equity, and inclusion task forces in all sectors of health care and research as well as evaluating their efficacy in creating a gender-equitable environment.

AUTHOR CONTRIBUTIONS

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RELATIONSHIP DISCLOSURE

The authors have no conflicts of interest to disclose.

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