Gender Equity in Clinical Practice, Research and Training: Where Do We Stand in Rheumatology?

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1. Introduction

In recent decades, there has been great progress towards gender equity in medicine. Research in developmental psychology has shown that girls perform as well or sometimes superior to boys in of science, technology, engineering and mathematics (STEM) topics and report a strong interest in pursuing STEM careers.[1] Admission to medical school on both sides of the Atlantic is now approximately 50% women [2, 3], and in some European countries 60% women [4]. Increased levels of gender equity can positively contribute to medical training and clinical practice because studies show that women perform equally well or even outperform men in medical knowledge, professional skills, and clinical judgement [5]. The current trend towards gender equity in medical school admissions is likely to continue despite notable setbacks. One prestigious Japanese medical school deliberately lowered the examination scores of female applicants for over a decade to favour male applicants. This controversial policy was only reversed following an unprecedented backlash from the public and global medical community [6]. Despite this clear demonstration of support for gender equity, in most countries, women are still underrepresented at many levels in medicine, especially, in leadership roles [4, 5]. In this paper, we will discuss some of the reasons and potential solutions to this ongoing inequity.

2. What is the evidence for gender inequity in medicine and rheumatology?

As in other areas of STEM, there is a lack of gender equity in medicine at many levels [4, 5]. In rheumatology, the proportion of women is expanding. In the US, there is currently a shift underway from a majority of male rheumatologists to female, with the majority of fellows in training who are women [7]. However, this recent shift means that many more women are in junior roles as trainees and junior consultants whilst proportionally more men are in senior positions.

Whilst increasing numbers of women are choosing rheumatology, women remain even more underrepresented in academic roles in medicine. This is particularly true in senior academic leadership roles where gender equity has not been achieved [8, 9]. Proportions have improved recently in general medicine [2, 10] but there is still an unmet need to ensure that women can succeed on an equal basis to men [11].

The outdated social norms and professional barriers preventing women from choosing academic careers in medicine lead to a waste of intellectual capital to direct detriment to the individuals and medical profession [12]. Beyond this at a societal level, there is a resultant lack of diversity in the research agenda which can adversely impact on future health practices and medical innovation [13, 14].

3. Why does gender inequity exist?

Reasons for this are multifactorial. While the effects of the historically late entrance of a large number of women into medicine [15] gradually wear off, the salience of gender stereotypes and unconscious bias, the persistence of work-family conflict based on the assumptions of the traditional male breadwinner and female homemaker norms in broader society [16][17], and a scarcity of female mentorship and physician-scientist role models still hold back progress towards gender equity. Research in academic medicine shows that inequity is reflected in lower income (despite similar roles), specialisation into lower paid and potentially undervalued areas of medicine, weaker reference letters for medical school faculty positions and a decreased likelihood of being addressed by one's professional title compared to men [18]. Despite governmental funding and set pay scales, a gender pay gap remains in medicine linked to choice of specialisation, differential involvement in leadership roles, overtime payments and bonuses (paid in the UK via clinical excellence awards)[19]. Further research has shown that a combination of many subtle societal factors and professional barriers push women out of the academic career path with consistent discrimination and bias

against women seen at every stage of their professional life [18]. One study has summed it up as "The many small discriminatory events take a cumulative toll, becoming the "ton of feathers" that destroys or corrupts a career"[20]. This discrimination is potentially even higher for women of colour, low socioeconomic class, and women who are disabled or non-heterosexual, where additional biases may be additive.

Whilst we would not advocate for positive discrimination for women, awareness of unconscious biases against women in medicine shows that careers, promotions and advancement criteria may not be defined in gender-neutral meritocratic terms, and that meritocratic criteria may relate more to ascribed criteria than achieved. One study found that female post-doctoral researchers must be, on average, 2.5 times more productive than the average male candidate to be appointed[21]. Applications for grant funding from women are significantly less likely to be funded when the grant programme has an explicit focus on the calibre of the principal investigator, even when the research question and quality of research are similarly rated [22]. This raises the concern that the current systems may be unconsciously undervaluing women and other minority groups.

In medicine, a number of studies have investigated the underlying reasons for gender inequity in academic medicine. A 2016 systematic review published in the Lancet identified 52 papers addressing why women choose or reject careers in academic medicine and identified four consistent themes with conflicting evidence for an additional four themes (figure 1).

Despite the research in medicine as a whole, there is a paucity of data and robust scientific evidence addressing the gender inequity in academic rheumatology. Research performed by the American College of Rheumatology (ACR), surveyed rheumatologists about barriers and facilitators to a career in academic rheumatology. This survey had over 50% female respondents, but responses were not reported separately for men and women [23]. The most significant barriers for both genders revolved around grant funding and protected time for research, whilst the most significant

facilitators were mentorship and department/divisional support. As a result of this survey, the ACR are now developing an inter-institutional mentoring programme in adult rheumatology.

4. What can be done to address gender inequity in medicine?

Within a recent themed issue of the Lancet, a review article sought to provide solutions to improving gender diversity and inclusion in medicine [24]. They argued that national or international guidelines around bias could change practice and overcome habits and biases [18], similar to progress made in other areas in medicine. They suggested five potential solutions shown in box 1.

A second review concurred with the need for organisational culture change and inclusive leadership, but also highlighted the potential role for academic societies. Major scientific and medical societies were encouraged to "present a united voice on the need for equity, diversity and inclusion in science and medicine" [25]. One commentary pointed out that despite holding the power and influence to create substantial change, men are often absent in the efforts to advance gender equality. Drawing on the experience of Male Champions of Change in Australia, the authors argued that "engaging decent and influential men to work beside women to accelerate gender equality in STEM is a major strategic opportunity and priority"[26].

5. What further work can be done to address gender inequity in rheumatology?

In the US, the Association of Women in Rheumatology (AWIR) was founded in 2015. This group runs networking events and is active in advocacy in rheumatology in the US. In some individual European countries, there are existing national societies such as ReDO (Reumatologhe Donne, www.reumatologhedonne.it) in Italy. This group aims to establish an inter-institutional network of female rheumatologists to highlight and address the unmet clinical and scientific needs of women. Whilst some individual countries have networks in place to promote gender equity, such as the

Athena SWAN programme (www.ecu.ac.uk/equality-charters/athena-swan/) in the UK, there is no consistent approach alongside rheumatology training. In Europe, both individual national rheumatology societies and the European League Against Rheumatism (EULAR) could offer structure and support to such an initiative.

Career development programmes exist in many countries to accelerate women's advancement and leadership in STEM subjects including medicine. Research has shown that academic medical trainees feel that they can learn new skills in a number of areas, particularly, interpersonal skills, leadership, negotiation, and networking [27]. Studies have also found that different skills or different levels of skills are required at different levels of career suggesting that interventions need to be personalised depending on career phases. For example, assistant professor level attendees found that training supporting career planning was key for those planning to apply for associate professor posts [27].

EULAR has an extensive educational programme available to rheumatologists and allied health professionals, but the focus of this to date has been knowledge based rather than skills training. The Emerging EULAR Network (EMEUNET) was established within EULAR in 2009 'to bring on board high quality, young generation contributors in all EULAR activities'. The EMEUNET group contains 2224 young rheumatologists, scientists and health professionals of whom 62% who have disclosed their gender at registration (n=525) are women. The EMEUNET working group members currently consist of 26 men and 24 women and 7 of the 11 chairs have been women. This is in contrast to the EULAR executive committee where only 11/30 members are women and the majority of these are representatives of health professionals or the patient group (PARE). Of 35 past EULAR presidents, only one women has held the post. A large survey of nearly 600 EMEUNET members in 2015 showed support for a broad range of educational initiatives comprising of clinical training programmes but also skills based training including research and presentation skills [28]. The survey respondents were 68% women reflecting the increasing number of female trainees in the speciality and also a likely response bias. A further EMEUNET survey of 248 respondents was used to establish

the need for mentoring programmes in rheumatology and again the majority of respondents were women. This identified an unmet need in the field particularly around mentorship for career development/planning, capacity building and communication skills [29]. As a result of this, EMEUNET has now developed a mentorship programme offering face to face mentoring meetings and peer review training for early career and post-doctoral researchers.

6. EULAR task force on gender equity in rheumatology

In 2019 and beyond, there is a plan for EULAR to establish a task force to address the unmet need for support of gender equity in rheumatology, specifically for women in academic rheumatology. The task force will conduct EMEUNET and EULAR exploratory research to determine the extent of unmet needand potential societal differences between different European countries, to identify potential training gaps, and to establish what opportunities exist for EULAR to develop a comprehensive programme of gender equity interventions in rheumatology. Ideas suggested to date are shown in box 2. A dedicated ResearchGate social networking site is planned to provide updates on emerging activity, gather further ideas, and facilitate feedback and external peer review from academics, clinicians, patients, and the public (https://www.researchgate.net/project/EULAR-task-force-on-gender-equity-in-rheumatology).

The proposed EULAR programme of gender equality interventions in rheumatology would clearly benefit individuals but would also be of benefit to society. Specifically, the programme closely aligns with the strategy of Responsible Research and Innovation in the European Research Area to improve the scientific quality and societal relevance of the produced knowledge, technology and innovation in patient care by fostering gender balance in research teams; ensuring gender balance in decision-making; and integrating the gender dimension in research and innovation content [30].

7. Conclusions

It is clear that achieving gender equity in both medicine and rheumatology specifically needs a wide variety of approaches including organisational, structural and individual initiatives. According to the Horizon 2020-funded project SAGE (Systemic Action for Gender Equality, www.sage-growingequality.eu), four main areas of action can guide the implementation of "Gender Equality Plans":

1) Engendering Knowledge: to incorporate gender-sensitive practices, processes and procedures in research;
2) Institutional governance: to develop balanced representation of women and men in decision-making;
3) Work-life balance: work should adapt to life not *vice versa*;
4) Career progression: to engage healthcare and academic leaders to promote gender equity (see the #BeEthical campaign whose call is "Ending Gender Workforce Disparities is an Ethical Imperative, www.sheleadshealthcare.com) and preventing the loss of female representativeness as the career ladder progresses ("leaky pipeline").

Scientific journals and social/scientific networks are instrumental in raising awareness about gender issues and promoting advocacy for gender equity, diversity and inclusion. Rheumatology can be considered as a "female" specialty in the sense that the majority of patients are women. Therefore, the achievement of gender equity in clinical practice, research and training is likely to benefit not only individual physicians but also patients and wider society.

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Figure 1 – Studies supporting and refuting overarching themes on women's choice or rejection of careers in academic medicine according to Edmunds et al[9]

Box 1 – Potential solutions for achieving gender equity in medicine according to Kang et al [18]

1.	Treat gender equality as an innovation challenge with innovation and experimentation to identify solutions that work.
2.	Change institutional norms ideally with change guided by group leaders as they have powerful influence.
3.	Create a culture in which people feel personally responsible for change, rather than perceived coercion with mandatory diversity programmes.
4.	Implement behavioural guidelines and action plans to support specific changes in behaviour with measurable targets.
5.	Create organisational accountability for change in a comprehensive approach.

Box 2 – Potential opportunities within a proposed EULAR programme of gender equity interventions

- Senior sponsorship and peer mentorship
- High-impact scientific writing masterclasses
- Editing and peer-review webinars
- Grantsmanship workshops
- Academic conference circuit
- Professional networking
- Leadership strategies
- Promotion and salary negotiation
- Effective career planning
- Fulfilling work-life balance
- Personality insights, e.g. Insights Discovery®
- Gender-sensitive clinical practice, research, and training
- Male champions of change
- #SheLeadsRheumatology or similar social media campaign

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