



Early View

Research letter

Equal or not? Women hold less prestigious roles at respiratory medicine conferences than men

Mayurapriya Raviskanthan, Megan Rees, Jo Douglass, Katherine Sleeman, Irene Higginson, Natasha Smallwood

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Equal or not? Women hold less prestigious roles at respiratory medicine conferences than men

Mayurapriya Raviskanthan, Megan Rees, Jo Douglass, Katherine Sleeman, Irene Higginson,
Natasha Smallwood

Introduction

The gender imbalance in medicine has been a topic of increasing interest and discussion. There are increasing proportions of graduating female medical students globally, with 41.1% of Australian doctors, 47% of UK doctors and 46% of US medical residents being female (1,2). However, in positions of influence, the proportions change, such that in the US only 21% of medical professors and 16% of medical deans are women (3). Postulated reasons for this include implicit and unconscious gender bias and fewer promotion opportunities available to women.

Similarly in Australia, across 'STEM' (science, technology, engineering and mathematics) disciplines, women comprise 55% of bachelor degree matriculates in sciences and mathematics, and 46% of PhD students, however this translates to only 20% of senior professors being female (5). Attempts to correct this gap in medicine have been made, including the Athena SWAN Charter, enacted in the UK in 2005, to advance the careers of women in medicine, and "SheNote Speaker", a database designed to increase visibility of women in respiratory and cardiovascular research (6), a factor that is key to career progression.

The exact gender balance in respiratory medicine is currently unclear. This study aimed to analyse the current state of gender distribution in research within respiratory medicine.

Methods:

Using a methodology similar to Sleeman et al (7), one author reviewed information from publically available online conference programmes regarding attendance and participation at one large

international respiratory conference (the European Respiratory Society congress (ERS) in 2017) and two smaller national respiratory meetings (the British Thoracic Society winter meeting (BTS) in 2017, and the Thoracic Society of Australia and New Zealand annual scientific meeting (TSANZ ASM) in 2018). These three conferences were purposefully chosen as they attract delegates from different parts of the world and vary considerably in size, with the ERS congress receiving over 22 000 delegates in recent years, whereas the BTS and TSANZ meetings attract a few hundred each year. The genders of participants assuming the roles of invited speaker at sessions or symposia, session or symposium chairperson, and first author or last author for oral and poster presentations, were compared. Gender was determined by the participant's name and, where this was unclear, a search for the person or the first name was undertaken using internet and research database searches to establish gender.

Data are reported as counts and frequencies. The chi test was used to examine associations between gender and conference role, with comparisons made between the difference conferences. $P < 0.05$ was taken to indicate statistical significance. Repeat presenters were not accounted for in the tallied results.

Results

Of all participants (approximately 23 500) at the three conferences, 10 560 assumed "*active*" roles as invited speakers, presenting oral or poster research abstracts (first and last author) or chairing sessions/symposia. For the individual conferences there were 9,605 active participants at the ERS congress, 811 at TSANZ ASM and 273 at the BTS winter meeting. The pooled results from all three conferences demonstrate a significantly larger proportion of men compared to women held roles as chairperson and invited speakers (Figure 1). For poster and oral presentations, there were significantly more female first authors, with 1713 female and 1562 male ($p = 0.008$). However,

significantly more men (2057 males and 1202 females, $p < 0.001$) were listed as last authors on presentations, with this position representing the most senior member of the research team.

Compared to the other two conferences, at the ERS congress there was the greatest gender imbalance for participants assuming the roles of invited speaker (23% women (225), $p < 0.001$), or session chairperson (31% (367), $p < 0.001$). At the BTS winter meeting, fewer invited speakers were women (35%, 34 $p = 0.004$), however similar numbers of men and women were invited to chair sessions (45% women, 76, $p = 0.19$). At the TSANZ ASM, similar numbers of men and women were invited to speak (49% women, 297, $p = 0.8$) and to chair sessions (46%, 76 $p = 0.2$).

Of those participants with more than five conference presentations or roles, only one third were women (200/605, $p < 0.005$). Similarly, only 20% of participants with more than 10 presentations or roles were women (21/105, $p < 0.005$).

Gender could not be determined by name for 9% of the active participants at the three conferences. However, a sensitivity analysis, in which it was assumed that all the missing names were women, did not significantly alter the study findings.

Discussion

At the entry level of academic research (first author conference presentations) in respiratory medicine, women participate significantly more than men. However, a gender gap appears and widens significantly as the conference role becomes more senior and prestigious, with fewer women involved. Importantly these findings are not isolated to respiratory medicine. A similar analysis examining the roles of women at the European Association of Palliative Care conferences in the

preceding five years demonstrated that while more women (84%) were speakers at free communication sessions, only 26% of invited plenary speakers (a more prestigious role) were female (7).

Notably, in this study there was a clear difference in women's participation between the three conferences. While anecdotally it has been suggested that women may be more reluctant to travel an increased distance to actively participate in an international conference such as ERS, it should be noted that delegates attending the TSANZ conference, which is held in Australia or New Zealand, regularly travel vast distances (four hours or more by aeroplane to fly from east to west Australia alone), and this does not affect women's participation. Furthermore there is no current evidence suggesting that women in respiratory medicine are more anxious than men regarding presenting at international conferences or using a foreign language.

Alternatively, the policies of each specialist society (ERS, BTS and TSANZ) regarding gender balance ensure gender balance at conferences may partially explain the differences in women's participation between the three conferences, although these were not publically available. Notably, freely available online data suggests that both the ERS and TSANZ have strong active women in leadership positions. Six (46%) of the 13 TSANZ board members are women, and 5 of 7 branch presidents are currently women. Similarly within the ERS, the board comprises six women and 8 men, and the current president-elect is a woman. While the TSANZ has a specific policy of gender balance for invited plenary speakers, it is unknown if the ERS and BTS have similar policies. Importantly these results would suggest that both stringent policies advocating for gender balance in conference leadership roles, and women holding leadership positions within each society, are extremely important to close the current gender gap.

Importantly gender imbalance is not simply an issue related to conference programming or specialist societies' policies. The causes for the disparity between men and women in both specialist medical practice and academic medicine are multifactorial. Previous studies have determined that women tend to have a greater interest in teaching than research, and that the gender bias and lack of adequate mentorship contributes to the disparity of genders in academic medicine (8). Surveys of medical students demonstrate that female students have lower interest in undertaking research compared with male counterparts (9). Bullying and sexual harassment have also been identified as important issues in both clinical and academic medicine, and present barriers to career advancement for women (10).

Programs such as the Athena SWAN program have been successful. Enacted in 2005, the program acts as an award system to educational institutions who demonstrate gender equity. It has increased support for women's careers, provided mentoring and increased access to funding, and has improved visibility of women in academia. However, the ability of the program alone to change intrinsic bias and the culture of scientific medicine has been questioned (11), with a persistence of the gender bias in the UK after 12 years of this program, and concerns regarding ongoing pay gaps and power imbalances. It is likely that institutional and societal changes are also needed, to provide support for women in childcare and other duties, and to further address gender pay gaps, in addition to support in research.

Targets moving forward will require a greater understanding of why this disparity is ongoing, the impact of culture and gender bias, and its contributory factors. Globally, support is needed for women to advance their careers, through sponsorship programs, access to funding, and incentivising the return to academia post maternity leave. Conference organisers could consider enforcing gender ratios amongst invited chairs and speakers at events. Bullying and sexual harassment must be

penalised appropriately, and appropriate reporting systems should be instituted. Promoting academic medicine to women should start early, from medical school, and mentors and sponsorship should be instituted.

Importantly the data obtained in this study provides a fixed-time point analysis of the current state of gender balance in academic respiratory medicine at conferences at the national and international level in the 2017-2018 period, therefore cannot be used to assess trends of change. However trend data will be important in the future to determine if any active interventions have been effective. In addition, the differences in size of conference results in the tallied figures being heavily skewed by the findings of the ERS conference.

Conclusion

The gender gap in academic respiratory medicine is evident at national and international conferences. Without fostering academia and maintaining excellence in all clinicians, we are compromising our focus on evidence based medicine. Further research to monitor the efficacy of current programs that aim to support women and implementation of new programs is required to ensure that all doctors, regardless of gender, have equal opportunities in career progression.

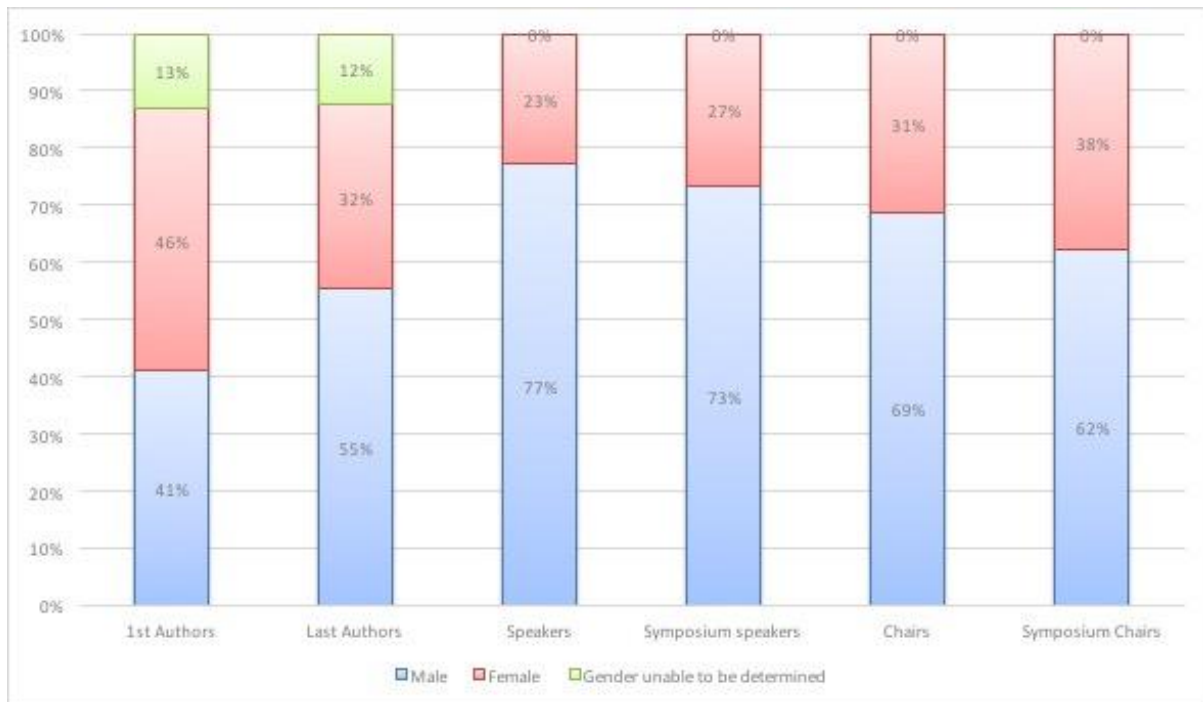


Figure 1: Overall gender proportions characterised by role in conference (pooled results for the three conferences)

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