13. Rudolph JW, Pian-Smith MCM, Minehart RD. Setting the stage for speaking up: psychological safety and directing care in acute care collaboration. *Br J Anaesth* 2021; **127**: 3–7
14. Koch I, Poljac E, Müller H, Kiesel A. Cognitive structure, flexibility, and plasticity in human multitasking-an integrative review of dual-task and task-switching research. *Psychol Bull* 2018; **144**: 557–83
15. Gui JL, Nemergut EC, Forkin KT. Distraction in the operating room: a narrative review of environmental and self-initiated distractions and their effect on anesthesia providers. *J Clin Anesth* 2021; **68**, 110110
16. Boorman DJ. Reducing flight crew errors and minimizing new error modes with electronic checklists. In: *Proceedings of the International Conference on Human-Computer Interaction in Aeronautics*; 2000. p. 57–63. Toulouse
17. Degani A, Wiener EL. reportHuman factors of flight-deck checklists: the normal checklist. NASA Contractor Report 177549 1990. Available from: https://ti.arc.nasa.gov/m/profile/adegani/Flight-Deck_Checklists.pdf (accessed 17 May 2023).
18. Jelacic S, Bowdle A, Nair BG, et al. The effects of an aviation-style computerised pre-induction anaesthesia checklist on pre-anaesthetic set-up and non-routine events. *Anaesthesia* 2019; **74**: 1138–46
19. Jelacic S, Bowdle A, Nair BG, et al. Aviation-style computerized surgical safety checklist displayed on a large screen and operated by the anesthesia provider improves checklist performance. *Anesth Analg* 2020; **130**: 382–90
20. Domino KB, Bowdle TA, Posner KL, Spitellie PH, Lee LA, Cheney FW. Injuries and liability related to central vascular catheters: a closed claims analysis. *Anesthesiology* 2004; **100**: 1411–8
21. Bowdle A. Vascular complications of central venous catheter placement: evidence-based methods for prevention and treatment. *J Cardiothorac Vasc Anesth* 2014; **28**: 358–68
22. Cherara L, Sculli GL, Paull DE, Mazzia L, Neily J, Mills PD. Retained guidewires in the Veterans Health Administration: getting to the root of the problem. *J Patient Saf* 2018; **17**: e911–7
23. Steelman VM, Thenuwara K, Shaw C, Shine L. Unintentionally retained guidewires: a descriptive study of 73 sentinel events. *Jt Comm J Qual Patient Saf* 2019; **45**: 81–90
24. Vannucci A, Jeffcoat A, Ifune C, Salinas C, Duncan JR, Wall M. Special article: retained guidewires after intraoperative placement of central venous catheters. *Anesth Analg* 2013; **117**: 102–8
25. Williams TL, Bowdle TA, Winters BD, Pavkovic SD, Szekendi MK. Guidewires unintentionally retained during central venous catheterization. *J Assoc Vasc Access* 2014; **19**: 29–34
26. European Society of Anaesthesiology and Intensive Care. *The anaesthetic crisis manual v2*. Available from: https://www.esaic.org/patient-safety/anaesthetic-crisis-manual/. [Accessed 30 May 2023]
27. Emergency Manuals Implementation Collaborative. *General compendia*. Available from: https://www.emergencymanuals.org/tools-resources/free-tools/. [Accessed 30 May 2023]
28. Arriaga AF, Bader AM, Wong JM, et al. Simulation-based trial of surgical-crisis checklists. *N Engl J Med* 2013; **368**: 246–53
29. Jelacic S, Togashi K, Bussey L, et al. Development of an aviation-style computerized checklist displayed on a tablet computer for improving handoff communication in the post-anesthesia care unit. *J Clin Monit Comput* 2021; **35**: 607–16
30. Jaulin F, Lopes T, Martin F. Standardised handover process with checklist improves quality and safety of care in the postanaesthesia care unit: the Postanaesthesia Team Handover trial. *Br J Anaesth* 2021; **127**: 962–70

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Women in pain medicine

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Summary

In the UK more women than men are practicing medicine, and for the first time in the history of the Royal College of Anaesthetists (RCoA), the president of the RCoA, Dean of the Faculty of Pain Medicine, and Dean of the Faculty of Intensive Care Medicine are all women. However, within the subspecialty of pain medicine, there are significantly more men practicing than women, with the most recent UK estimates identifying that only 26.7% of current pain physicians are women. Both historical and modern perspectives illustrate how women often prefer to be cared for by other women, highlighting the importance of increased representation of women in pain clinics and interventional suites. We discuss current trends in pain medicine recruitment within the UK, where most pain physicians are recruited from anaesthesia training programs, including the barriers to women's representation and reasons women enter the subspecialty. We advocate for speaker gender quotas at conferences, diversity considerate workforce planning, peer support groups, adjustments to training programs, and further research to help narrow the gender gap.

Keywords: diversity; gender gap; pain medicine; recruitment; women

The General Medical Council in the UK recently announced that for the first time more women than men are practicing medicine, and for the first time in the history of the Royal College of Anaesthetists (RCoA), the president of the RCoA, Dean of the Faculty of Pain Medicine (FPM), and Dean of the Faculty of Intensive Care Medicine (FICM) are all women.[1] Considering this, the subspecialty of pain medicine must consider that the future of its workforce will require improving its recruitment of women, reflecting the diversity of the wider workforce. Whilst recent news gives us much to celebrate, there is evidence that both doctors who are men and women tend to overestimate women's representation across the medical workforce. As for doctors who are men, the less accurate their estimates were of representation of women within their own specialty, the less supportive they were of gender-based initiatives.[2]

Patient characteristics

Gender balance in pain medicine is an issue that is not only important to the workforce but to patients also. In 2022 the International Association for the Study of Pain (IASP) Global Year Campaign 'Real Women, Real Pain' aimed at identifying the unique barriers that women face when accessing pain treatment.[3] Chronic pain is more likely to affect women than men and more likely to go untreated.[3] Women are more likely to prefer to be treated by a doctor of their own gender.[4] A study in emergency medicine showed that patients preferred a doctor of their own gender for issues they deemed sensitive.[5] Given that 14–24% of women experience chronic pelvic pain, providing women patients with the opportunity to see a woman doctor to discuss their concerns is likely to be beneficial.[6] The medical profession has not always excelled at managing women's suffering, but this has motivated change. Elizabeth Blackwell, a pioneering Victorian doctor, was encouraged to pursue medicine after a friend remarked that she felt she would have not suffered as much had she been treated by a woman. Within pain medicine, had Javert and Harvey been women perhaps they would not have dehumanised women's pain experience through studies subjecting women to second-degree burns during labour to determine the efficacy of analgesia.[7] Although we have made progress, we argue women physicians participating at all levels in pain medicine are vital to the future of the specialty.

Workforce characteristics

Within the UK pain medicine is considered a subspecialty of anaesthesia, with consultant practitioners required to undertake 6–7 yr of anaesthetic training before a year of advanced training in pain medicine followed by the Fellowship of the Faculty of Pain Medicine of the Royal College of Anaesthetists (FFPMRCA) examination. We recognise that internationally there are physicians from a range of parent specialties practicing pain medicine including palliative care, rheumatology, and neurology. This range of expertise is not yet formally reflected in the UK workforce.

Although the RCoA 2022 report The Anaesthetic Workforce: UK State of the Nation Report briefly considered gender issues associated with less than full-time working, wider issues of diversity were overlooked, and there were no data or discussions relating to improving diversity and gender considerations within the workforce.[8]

We obtained a summary of membership data from the RCoA in February 2023. RCoA members (excluding medical students and foundation doctors) were 40% women, whilst fellows by examination were 39% women. Anaesthetists in training and fellows in training were 46.4% women.[9] Gender differences are significantly greater in the Faculty of Pain Medicine where current members (non-trainees) are 26.7% women. These data support the Faculty of Pain Medicine's 2017 workforce report which indicated just 25% of currently practicing pain physicians were women.[10] Encouragingly, this trend may be reversing as the new generation of trainees increase the proportion of women pain physicians, with 31 men and 20 women advanced pain trainees in 2020, and with six men and eight women advanced pain trainees in 2023.[11] The RCoA's engagement with the Widening Participation in Medicine Network may also improve diversity within its workforce and in turn pain medicine.

Internationally, a study of United States physicians by the American Medical Association showed that specialties where women have been officially integrated longer, for example obstetrics, have far better representation by women at 83% of the workforce, compared with pain medicine, where men make up 75.3% of practicing physicians.[12] In Australia in 2016 only 23.9% of pain physicians were women.[13]

Barriers to women practicing pain medicine in the UK

We have identified several recruitment barriers to women in pain medicine in the UK. These relate to structural issues with workforce recruitment and also societal issues around the psychological and financial behaviours.

Competitive recruitment to core training in anaesthesia occurs from the UK foundation programme, with a further, currently highly competitive, round of recruitment into higher specialty training after 4 yr. In the final year of higher specialty training in anaesthesia, advanced training in pain medicine can be undertaken locally as a special area of interest or via application to a fellowship program internationally. These recruitment rounds can also entail a location move, and generally occur at age 25–35 yr, the most common period for university educated women to bear children. Women doctors are more likely than non-doctors to delay having children until their 30s but may nevertheless be put off with continuing a training programme that forces them to move with a young family.[14] Within the UK, run-through training programmes such as ophthalmology, histopathology, general practice, radiology, and paediatrics offer greater locational stability for women than uncoupled training specialties, and the higher

proportions of women working in these specialties may reflect this.

Psychological factors also should not be overlooked; studies of surgical trainees have shown women surgeons more likely to underestimate their technical abilities, whilst men surgeons overestimate.[15] Whilst there is limited evidence on this subject in pain medicine, it is a practical specialty. The lack of confidence that women doctors experience across all specialties and stages of training means that women both as mentors and career models should be promoted.

Financial barriers are also present. The FFPMRCA examinations provide additional financial and educational barriers to trainees hoping to enter the consultant workforce, without considering the time and additional expenditures associated with this. Women trainees are more likely than their men colleagues to be working less than full time, so the financial stresses of exam fees, revision texts, and courses are disproportionately higher for women.

Of course, some impediments to entering the pain medicine workforce are not gender-specific, particularly around the perception of pain medicine amongst anaesthetic trainees, who may have avoided specialties with clinics and more direct patient interaction with a reduction in anaesthetic practice time. Encouraging exposure to the best quality and innovative approaches within pain medicine will undoubtably help more women trainees move into the specialty.

Pain medicine and family responsibilities

Although women trainees across all specialties experience many of the same issues around the timing of pregnancy, duration of maternity leave, breastfeeding, and working unsociable hours whilst caring for an infant or child, there are elements in pain training that potentiate the difficulties associated with choosing to start a family.

Although increasingly regulated, radiation risk in pregnancy is a concern for some women trainees. Guidance gives them the opportunity to reduce their exposure through transfer out of high-dose environments, of which the pain interventional suite is one.[16] In this setting woman must weigh their health against training opportunities and the implications this might have for future job prospects. It is possible some trainees avoid the specialty as a result.

We acknowledge that women who do not have children still experience obstacles associated with their gender when pursuing a career in pain medicine. Both overt and covert sexism is still encountered by women in the workforce and societal pressures also exist, for example expectations that women will act as carers for older relatives.

Whilst exit examinations are common in surgical specialities, it is possible that preparation for the FFPMRCA examination, which is similarly undertaken at the end of training, creates a greater barrier for women than for men. A 2014 self-report study of 1049 physicians in the USA showed men physicians are far more likely to be married to a stay-at-home parent or part-time worker than women physicians.[17] Despite men physicians in this study reporting larger numbers of children, women physicians reported that they undertook 18.6% more domestic and childcare duties compared with their men physician counterparts. The increased home administration burden placed upon women logically impacts on their capacity to utilise their non-work time to prepare for exams or develop a broad knowledge base in a new specialty.

Representation and role models

In the USA, women in leadership positions in pain medicine led to more women fellowship applicants and faculty members,[18] so the 2022 election of a woman Dean of the Faculty of Pain Medicine should provide something to celebrate. Unfortunately, in the world of academia, progress is still slow in women's representation. In a 2021 article by Pellek and Drakulich,[19] interviewees reflected our own experiences attending conferences where men often make up the majority of plenary speakers.

Insights from the Women in Neuromodulation 2022 meeting

Women in Neuromodulation UK (WiNMOD UK) was established in 2019 by a group of women pain medicine specialists undertaking neuromodulation in the UK.[20] Although there were fewer than 10 members initially, women trainees were invited to join the group in 2022 as a mechanism to increase engagement. In addition to education and information sharing, the event provided a forum where candid discussion could be undertaken. The sharing of lived experiences as a woman practicing pain medicine and neuromodulation facilitated not only ways to address the challenges that come with this, but also highlighted the opportunities a career in pain medicine provides in terms of building relationships with patients, broad-ranging research opportunities, complimentary skill development, and work-life balance.

We value how women's spaces such as WiNMOD UK can help create mentor–mentee relationships, provide targeted education, and develop cross-specialty relationships between under-represented groups, for example between women pain physicians and women neurosurgeons. Encouraging more junior trainees into these settings could assuage some of the perceived barriers for women pursuing pain medicine.

Moving forward

Whilst progress is slowly being made within the anaesthetic workforce, more can be done to improve recruitment and retention of women and improve diversity. Future workforce planning reports from the RCoA and Faculty of Pain Medicine should consider issues of diversity and inclusion, including the recruitment and retention of women. Making data on diversity within the workforce more easily available would help relevant organisations demonstrate appropriate gender representation.

Expectation of a 50:50 gender split of podium speakers at pain conferences, with consideration of quotas, should be the norm. Gender quotas increase the rate at which gender disparities normalise and are currently being adopted across politics, science, and business. Women speakers not only improve women representation, but provide greater diversity of role models for junior trainees in the field. The Faculty of Pain Medicine Thrive program, a peer-support system designed for mentoring and career development of doctors undertaking career in pain medicine in the UK, could be even more fruitful if diversity issues are explicitly considered.

Initiatives such as WiNMOD UK can improve access to training and development for women trainees, but such ventures should not be limited to neuromodulation. The Society of Women Innovators in Pain Management was founded in the USA to encourage and support women trainees in pursuing a

career in pain medicine, and at present is free and available for international members.[21]

As the Faculty of Pain Medicine develops credentialling, further engagement in training and restructuring of the faculty would be beneficial. We hope credentialing will increase diversity in UK pain medicine through its expansion to specialties beyond anaesthesia. These changes might include more support of the programme for trainees who are women that would hopefully mitigate the barriers discussed above.

We are aware of no qualitative research about the UK gender gap in pain medicine. We would encourage researchers to explore this topic, which might identify further positive changes that would allow us to bridge the recruitment gap. There is much to be celebrated with the direction that pain medicine is heading in terms of gender equality, and continuing proactive steps will encourage women who are now the largest sector of the medical workforce to the benefit of the specialty and of patients.

Authors' contributions

Collaborated on the remit of the manuscript and basic structure: SS, SB:
Jointly wrote the manuscript: NJ, SS
Reviewed and contributed to drafts and final manuscript: all authors

Declarations of interest

SB has consulting agreements with Nevro Corporation (Redwood City, CA, USA) and Boston Scientific (Marlborough, MA, USA), and has received educational and research grants from Nevro and Boston Scientific. NJ is the trainee representative for the Faculty of Pain Medicine, Royal College of Anaesthetists, and SB is a member of the training and assessment committee for the Faculty of Pain Medicine and Royal College of Anaesthetists.

References

1. GMC. State of Medical Education and Practice in the UK: The Workforce Report. 2022. Available from https://www.gmc-uk.org/about/what-we-do-and-why/data-and-research/the-state-of-medical-education-and-practice-in-the-uk/workforce-report-2022?utm_campaign=13544271_GMC%20news%20for%20doctors%20-%20October%202022%20%28workforce%20-%20general%29&utm_medium=email&utm_source=General%20Medical%20Council&dm_i=OUY,82ATR,5MAHDU,WZZT6,1 (accessed 22 January 2023)
2. Beneny CT, Grossman RC, Ryan MK. Overestimating Women's Representation in medicine: a survey of medical professionals' estimates and their (un)willingness to support gender equality initiates. *BMJ Open* 2022; **12**, e054769
3. International Association for the Study of Pain. *Pain in women* 2021. https://www.iasp-pain.org/advocacy/global-year/pain-in-women/. [Accessed 16 December 2022]
4. YouGov PLC. *Nearly half of women prefer to be treated by a female doctor*. YouGov America 21.08 2018. Available from, https://today.yougov.com/topics/health/articles-reports/2018/08/21/women-prefer-female-doctor
5. Nolan HA, Moore JX, Rodgeres JB, Wang HE, Walter LA. Patient preference for physician gender in the emergency department. *Yale J Bio Med* 2016; **89**: 131–42
6. Stones RW, Price C. Health services for women with chronic pelvic pain. *J R Soc Med* 2002; **95**: 531–5
7. Javert CT, Hardy JD. Influence of analgesics on pain intensity in labor: (With a note on "Natural Childbirth"). *Anesthesiology* 1951; **12**: 189–215
8. Royal College of Anaesthetists. *The anaesthetic workforce: UK state of the nation report* 2022. Available from, https://www.rcoa.ac.uk/policy-communications/policy-public-affairs/anaesthesia-fit-future/anaesthetic-workforce-uk-state. [Accessed 11 November 2022]
9. 22. 08.02.2023 Personal communication: Email CRM Team, RcoA (crm@rcoa.ac.uk).
10. Faculty of Pain Medicine. Workforce Planning. [Internet] 2022 [cited 22.01.2023] https://fpm.ac.uk/careers-workforce/workforce-planning.
11. 21.02.23 Personal communication: Email. Kato-Clarke E, Faculty of Pain medicine. (contact@fpm.ac.uk).
12. Murphy B. *These medical specialties have the biggest gender imbalances*. AMA; Oct 2019. Available from, https://www.ama-assn.org/medical-students/specialty-profiles/these-medical-specialties-have-biggest-gender-imbalances. [Accessed 27 November 2022]
13. Australian Government Department of Health. *Pain medicine 2016 factsheet* Oct 2017. Available from, https://hwd.health.gov.au/resources/publications/factsheet-mdcl-pain-2016.pdf. [Accessed 9 March 2023]
14. Cusimano MC, Baxter NN, Sutradhar R, et al. Delay of pregnancy among physicians vs nonphysicians. *JAMA Intern Med* 2021; **181**: 905–12
15. Flyckt RL, White EE, Goodman LR, Mohr C, Dutta S, Zanotti KM. The use of laparoscopy simulation to explore gender difference in resident surgical confidence. *Obstet Gynecol Int* 2017; **2017**, 1945801
16. British Institute of Radiology. *Pregnancy and work in diagnostic imaging departments*. 2nd Edition 2009 Available from. https://www.rcr.ac.uk/system/files/publication/field_publication_files/Pregnancy_Work_Diagnostic_Imaging_2nd.pdf. [Accessed 7 March 2023]
17. Jolly S, Griffith KA, DeCastro R, Steward A, Ubel P, Jagsi R. Gender differences in time spent on parenting and domestic responsibilities by high-achieving young physician-researchers. *Ann Intern Med* 2014; **160**: 344–53
18. Doshi TL, Richter HC, Salisu M, Samen C. Representation of women in pain medicine fellowships in the United States, 2017–2018. *Pain Med* 2020; **21**: e62–7
19. Pellek A, Drakulich A. Meet the women changing pain medicine. *Pract Pain Manag* 2021: 21
20. Women in Neuromodulation (WINMoD UK) report. *Pain News* 2021; **19**: 11–6. http://sppan_19_1_cover-to-cover.pdf(britishpainsociety.org) (accessed June 2023)
21. The Society of Women Innovators in Pain Management. Our Mission. 2021. Available from: https://www.wipmsoc.org/about-us (accessed 9 March 2023)