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Why are women still leaving academic medicine? A qualitative study within a London Medical School

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ABSTRACT

Objectives To identify factors that influenced women who chose to leave academic medicine.

Design and main outcome measures Independent consultants led a focus group of women in medicine who had left academia after completion of their postgraduate research degree at Imperial College London Faculty of Medicine. Thematic analysis was performed on the transcribed conversations.

Participants and setting Nine women physicians who completed a postgraduate degree (MD or PhD) at a large London Medical School and Academic Health Sciences Centre, Imperial College London, but did not go on to pursue a career in academic medicine.

Results Influences to leave clinical academia were summarised under eight themes—career intentions, supervisor support, institutional human resources support, inclusivity, work–life balance, expectations, mentors and role models, and pregnancy and maternity leave.

Conclusion The women in our focus group reported several factors contributing to their decision to leave clinical academia, which included lack of mentoring tailored to specific needs, low levels of acceptance for flexible working to help meet parental responsibilities and perceived explicit gender biases. We summarise the multiple targeted strategies that Imperial College London has implemented to promote retention of women in academic medicine, although more research needs to be done to ascertain the most effective interventions.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This is a qualitative study of the barriers to academic career progression, uniquely engaging with women who chose to return to clinical medicine (rather than asking for the perspective of those who stayed in academia).
⇒ The focus group was run by independent institutional culture consultants.
⇒ Verbatim transcription of the focus group and thematic analysis ensured reported themes were accurate and representative of individual experiences.
⇒ A summary of themes and list of suggested organisational interventions are produced, with a clear future need to identify how different approaches can improve retention of women in academia.
⇒ This study mainly focussed on gender biases. Further work is needed to explore the effect and consequences of other prejudices.

INTRODUCTION

More women than men have entered UK medical schools since 1996, peaking in 2003 when women made up 61% of medical school entries, although this has subsequently returned to a more even split.[1] However, women continue to earn significantly less than men[2 3] and be under-represented in certain specialities; for example, 14% of Cardiology consultants were women in 2018/2019, compared with 79% of Palliative Care consultants.[4] The gender disparity extends into academic medicine, with a stark decline in proportions of women with increasing seniority and in leadership positions.[5 6] National data from the Medical Schools Council showed women made up 44% of clinical lecturer grade posts but only 19% clinical professors in 2017.[7] Similarly, women made up only 31% of board members of international endocrinology organisations.[8] Institutional commitment to the Athena SWAN (Scientific Women's Academic Network) charter for gender equality has had some impact on retention of women in academia, but less than might be expected for a profession that attracts so many women at entry.[9]

Attrition experienced by women along a career trajectory is often referred to as the leaky pipeline. In academic medicine, this most commonly occurs at the mid-career level—in the UK this is often after completion of a postgraduate (doctoral) research degree (MD or PhD), which is typically undertaken during the later stages of specialty training.[10] The reasons cited for this leaky pipeline are varied and complex. Aggressive, male-dominated hierarchies, assumptions about women's ambition, poor work–life balance and career uncertainty have been cited as key

challenges contributing to the stalling of progression of women in academia.[11–14]

Even less evidence is available for interventions that are proven to tackle the issue. Existing literature largely consists of surveys[15 16] or reviews[14 17 18] that identify and explore core issues. There have been comparatively fewer interviews or focus groups with women who have already chosen to leave academic medicine.[19] To our knowledge, there has been no dedicated UK-based research of this type. This group is particularly important to capture, since they arguably provide the viewpoint of people who may have felt the push most keenly to leave academic medicine.

In 2018, we hosted a focus group for women physicians who had completed a postgraduate research degree (MD or PhD) at Imperial College London (ICL) over the previous 5 years, but had subsequently left academia. We use a qualitative approach to determine key issues that influenced their decision to leave. Based on this feedback, we summarise a range of strategies adopted at ICL to promote retention and development of women in academic medicine.

METHODS

Study design

This was a qualitative analysis of a focus group involving women who had left academic medicine. A qualitative methodology acknowledged that our participants' experiences would be subjective and individual. For example, quantitative trends may allow us to associate maternity leave with leaving clinical academia, but qualitative analysis of how the particular demands of childcare and a clinical academic job interact to cause attrition may better aid the development of effective interventions. This study used the SRQR (Standards for Reporting Qualitative Research) reporting guidelines for qualitative research.[20]

The focus group approach facilitated a natural reflection of our participants' individual experiences while also encouraging an interplay of thoughts and dialogue between the women themselves. This format also helped capitalise on the presence of commonalities to strengthen group dynamics and improve depth of discussion.[21] While one-to-one interviews may have provided greater depth and insight into each individual's journey,[22 23] we adopted a group approach to tap into a dynamic of mutual support. Creating this environment of mutual support and honest sharing was an important element of our chosen approach to this study.[24–26] A focus group guide (table 1) was developed in conjunction with two of the authors (VS and CP) and was phrased to encourage the constructive expression of concerns in a non-leading manner.

We hired independent organisational development consultants (two women facilitators) to lead the focus group since we did not wish for the principal investigators, who themselves remained in clinical academia, to influence the focus group discussion. The moderators guided reflection on both positive and difficult aspects of the participants' time at ICL. They explored participants' experiences of their department and the wider institutional culture, and how these experiences contributed to their decision to leave academia. While we felt that the overall benefits of trained, external, non-academic consultants added greatly to the ability of the focus group attendees to speak openly and honestly, it is important to recognise that their lack of exposure to academic medicine may have inadvertently caused additional core but subtle issues to be overlooked.

Participant recruitment

We approached women who had undertaken their postgraduate research degree (PhD or MD) during their clinical training years, and had then discontinued on the clinical academic career route. All of these women had undertaken their higher research degree at ICL,

Table 1 The focus group guide—predetermined questions to guide participant discussion which was moderated by external institutional culture consultants

Experience	What was your overall experience of your time at ICL within your department?
	What was positive/valuable: what were the opportunities available to you?
	What was tricky or difficult: what barriers existed for you?
	How does gender relate to the experiences described?
	How did these experiences (positive and negative) impact on the career choices you have made?
Institutional and wider academic culture	Do you think the purpose and values of your department were aligned with your own?
	What would have made it possible/desirable for you to have continued your career at ICL rather than find employment elsewhere?
	What needs to change more widely in academic culture to enable women to remain in academia?
Future focused	What do you think would help now to increase the number of women continuing their careers at ICL?
	(Follow-up—thinking about the experiences described and perspectives on ICL's culture/culture of academia more widely).

ICL, Imperial College London.

within the Faculty of Medicine. ICL is a research-intensive university with close links to teaching hospitals under the umbrella of Imperial College Healthcare NHS Trust and the associated Academic Health Sciences Centre.

To identify potential participants, we obtained a list of women who were clinical research fellows and clinical lecturers, and had left ICL between January 2013 and January 2018 from Faculty Central administration. This list did not specify whether the women had left for non-academic positions. We checked the on-line professional profiles of these women to obtain their publicly available email addresses. We then contacted these women by email to explain the study and ask them to participate, if they had left academia. Compensation was not provided other than refreshments on the day and travel expenses if required.

Ethics approval statement

This piece of work came about as a collaborative effort between the ICL Faculty of Medicine Vice Dean (who is responsible for culture) and the Athena SWAN/EDI (Equality, Diversity and Inclusion) committees for the two largest departments in the Faculty of Medicine at the time: the Department of Medicine and the Department of Surgery and Cancer. Therefore this piece of work, including the ethical and data protection elements, was reviewed by the office of the Vice Dean and both departmental Athena SWAN committees, which are composed of a mix of academics and professional support staff. All agreed that the study met appropriate standards. In particular, the following standards were met:

- Women who had left ICL clinical academia over the previous 5 years were emailed using their publicly available email addresses based on internet searches.
- A single invitation was sent.
- Attendees received a written information sheet prior to the focus group.
- Informed consent was given on the day including the option to ask for their comments to be removed from the transcript up to a month after the analysis, after which they could be used in an anonymised fashion in a report for internal or external publication.

Participant involvement

Participants' contributions heavily guided the direction of the focus group's conversation. As a result, the themes were not predefined and represented participants' personal experiences of their time in academia. A report, written up by the same independent facilitators who led the focus group, outlined the key findings. All participants received a copy of the original (internal report) and a copy of this manuscript but did not provide any edits.

Patient and public involvement

No patients were involved in this research.

Qualitative analysis

Qualitative description with a pragmatic approach was our method of choice, as we aimed to formulate a practical understanding of the real-world issues faced by women in our organisation, that might feed into actionable conclusions.[27 28] DH transcribed and anonymised the focus group conversation. An iterative process of inductive coding and identifying themes was independently performed by all authors, involving three rounds of meetings during which our own values and experiences were also reflected on. With repeated discussions, themes were finalised with supporting quotes.[29] The entire process was performed manually.

RESULTS

Nine women participated in the focus group with lasted three and a half hours on a single afternoon. The majority had continued with clinical medicine, and were either senior registrars in training or consultants in their respective specialities. Both surgical and medical fields were represented, with most continuing clinical practice in the National Health Service (NHS) with the exception of one, who had moved into Industry (table 2). The time since they had left clinical academia till the focus group in 2018 ranged from 1 to 5 years and the time since they started their research career at ICL ranged from 8 to 12 years. These 9 women represented 10% of the cohort of women leavers that we had identified in our inclusion criteria for invitation.

Eight key themes were identified, with pertinent quotes for each theme shown in table 3.

Institutional human resources support

All participants perceived a shift in identity during the transition from clinical (NHS Trust) to academic (University). This was associated with a loss of seniority (as they moved from relatively experienced clinical roles into a new academic environment) that was compounded by a sense of loss of protection and continuation of service. Some reported insufficient advance appreciation of the overall negative financial impact, including ramifications for sick pay or maternity pay. All participants perceived poor job security and, given the pressure of publishing and acquiring grants, no compensation for overtime (FG9—'if you don't get another grant or you don't produce the papers, they say see you later…there's no support.') Furthermore, they reported a reluctance to voice concerns and described colleagues advising them against speaking out about discriminatory behaviour. There were poor conduits to external HR managers if they wished to escalate problems (FG8—'the advice is to always stay off the radar, work hard, keep your head down…everybody would counsel you against raising an issue.') and the perception that such a complaint would backfire (FG5—'we have all heard tales about people who essentially whistle-blow and it never turns out well.').

Table 2 Clinical specialisms of each participant, the stage they left academia and their current career path.

Focus group code	Clinical family	Stage of departure from academia	Current career path
FG 1	Specialty within general medicine	After senior lecturer	Industry
FG 2	Specialty within general surgery	Completion of MD	Full-time clinical work (NHS)
FG 3	Specialty within general surgery	Completion of PhD	Full-time clinical work (NHS)
FG 4	Paediatrics	Completion of PhD	Full-time clinical work (NHS)
FG 5	Specialty within general medicine	After completion of clinical lectureship	Full-time clinical work (NHS)
FG 6	Specialty within general medicine	After completion of clinical lectureship	Part-time clinical work (NHS)
FG 7	Specialty within general surgery	After completion of clinical lectureship	Full-time clinical work (NHS)
FG 8	Specialty within general surgery	Completion of PhD	Full-time clinical work (NHS)
FG 9	Specialty within general surgery	Completion of PhD	Full-time clinical work (NHS)

Data have been kept to a minimum in order to protect anonymity.
NHS, National Health Service.

Work–life balance

There was a global consensus that academia did not allow for a good work–life balance and that there was a constant pressure to publish. This pressure was permanently present and pervasive and made switching off much more difficult. Participants struggled to disconnect at home, with anecdotes that gave the sense that they were always 'on-call' in academia. Many wanted to work more from home but felt that this was not accepted culturally. The women reported that in academia, being physically present in the department was deemed to represent a good work ethic. More striking was the impact of research on family life and mental health. Most agreed that women, even in dual career families, still take on a greater share of the mental load at home (FG2—'one of my supervisors said, 'when I used to try do my exams, I used to come home and say to my wife, take the children upstairs because I am doing my exams'. And I'm like 'excuse me, but I am the wife….I wish I had a wife'.'). Participants with children felt there was little flexibility, relying heavily on local childcare services and struggling to negotiate their children's routine around work (FG3—'family circumstances change, there isn't the flexibility in the department to allow you to change, it's very rigid.'). They found it tiring and although part-time research was an option, it was felt to be practically impossible given the expectations and workload (FG4—'when I do research, I am still going a bit on the side when the kids are into bed and you're doing it till midnight or 1am. It's not sustainable, it's so tiring.').

Pregnancy and maternity

Pregnancy and maternity leave were major issues, with negative attitudes (explicit or implied) from supervisors being a marked source of discontent. There were multiple anecdotes of participants fearing the work consequences of pregnancy and being made to feel guilty when actually announcing their maternity (FG9—'a colleague introduced me to a Professor who I went to meet. And the first question he asked me was 'Was I going to become pregnant?'). There were clear examples of opportunities being withdrawn from women because of this, even if this was well-meaning. Others reported being suggested to reduce the duration of their entitled maternity leave or feeling obliged to work while they were away (FG4—'I did collect my data and I had a baby and I had time off. I was told I was taking too long.').

Inclusivity

All the participants had positive memories of their time at ICL. A pair of participants were contemporaries in the same group and described their joint struggle but ultimate victory, acknowledging the validation and prestige associated with completing a PhD (FG2—'…incredible experience, really prestigious…We were like Charlie's Angels but a different sort.'). However, deeper issues persisted, including that of perceived discrimination. While some felt out of place for unidentifiable reasons (FG9—'I haven't had any overtly negative experience, it's just that I didn't fit.'), others described explicit sexism—that they felt they were not treated as equal to their male colleagues (FG6—'….a need to justify you are the same as male colleagues.'). Importantly, overt sexism was experienced as much on the clinical side too (FG7—'what I found with the…MDT list, they'll have all the consultant's surnames and there's one female consultant and her first name and second name will always be put on the sheet. There's just a little thing of disrespect.'). Several people mentioned a sense of isolation with no base or team in their academic setting. Those with both clinical and academic elements during their research years felt that the hospital environment was more comfortable, although sometimes also felt excluded by clinical colleagues because of their new academic identity.

Mentors and role models

A key issue identified by this focus group was the particular lack of mentors who could also act as positive role models with regards to work–life balance or motherhood. Related to this was the perception of a dearth of

Table 3 Quotes by participants divided by identified themes. Focus group codes (i.e., the level and specialty of the contributor) are expanded in table 2

Environmental and institutional factors				Leadership factors		Individual factors	
A. Institutional human resources support	**B. Work–life balance**	**C. Pregnancy and maternity leave**	**D. Inclusivity**	**E. Mentors and role models**	**F. Supervisor support**	**G. Expectations**	**H. Career intentions**
1. FG 6. "Unfortunately, a lot of us end up losing the cumulative years of service that you have done that protects you…"	1. FG 2. "one of my supervisors said, when I used to try do my exams, I used to come home and say to my wife, take the children upstairs because I am doing my exams. And I'm like "excuse me, but I am the wife….I wish I had a wife."	1. FG 7. "I got pregnant 3 months after finishing my PhD and I was thanked for not being pregnant during my PhD…"	1. FG 2. "…incredible experience… really prestigious…" " We were like Charlies Angels but a different sort!"	1. FG 3. "…it wasn't just a gender thing. I just didn't see anybody that had the life that I wanted."	1. FG 5. "…my supervisor, once again, I was very lucky, they were fantastic, very supportive and helped dragged me through my PhD which I found very difficult…"	1. FG 2. "…big difference between the surgeons and the psychologists because they would say to us just stay at home, just don't come in so I never used to go in on a Thursday. But the surgeons would be like 'What?! You're not coming in?!'"	1. FG 9. "…the reason we do it is because everyone else before us did it."
2. FG 7. "Love of the science is not enough when you're working 50 hours a week plus. You have got to have some compensation."	2. FG 4. "…When I do research, I am still going a bit on the side when the kids are into bed and you're doing it till midnight or 1am. It's not sustainable, it's so tiring…"	2. FG 9. "…a colleague introduced me to a Professor who I went to meet. And the first question he asked me was 'Was I going to become pregnant?'"	2. FG 9. "…I haven't had any overtly negative experience, it's just that I didn't fit…"	2. FG 7. "…most of the time, there is no one to identify with…"	2. FG 2. "….tough road, a road that you were determined to stay on and having a positive supervisor really assisted that…"	2. FG 7. "…go meet with Prof now and justify your existence…"	2. FG 1. "…it was a stepping stone that you were expected to do… you had to do it to get a number…that's how the system was"
3. FG 6. "…your grant goes by the university pay grade and you start at the bottom of the ladder."	3. FG 7. "…I don't think it's something you can do part time because it is a race. I don't think you can sprint part-time…"	3. FG 9. "…you do feel like 'have I slightly betrayed the trust they've put in me by having a baby?'….they have said they don't like employing women."	3. FG 3. "It's very much a monoclonal environment and it's a lack of appreciation for anybody that is different to that…"	3. FG 9. "there are not enough women who are going up in the hierarchy to provide support…"	3. FG 2. "…we had a very, very nice professor of psychology who supervised our PhD and that's how we got there…it would have been difficult if I had solely a surgical supervisor…"	3. FG 1 "…they expect certain things you have to publish, certain number of high impact papers, you have to get a certain amount of money every year… and if you don't do that, you're out. There is a human price to it…"	3. FG 1. "…getting a consultant job, you really had to have some research…it was a path that a lot of people would go through"
4. FG 9. "if you don't get another grant, or you don't produce the papers, they say see you later…there's no support…"	4. FG 5. "…nature of academia doesn't lend itself to part time staff so easily because you can't leave it alone…"	4. FG 4. "…I have had experience where someone said they were going to stop giving grants to women because they get pregnant and don't do their projects…"	4. FG 6. "…a need to justify you are the same as male colleagues…"	4. FG 8. "…not enough women are going into academic positions to be taking leadership."	4. FG 4. "…my supervisor was someone that was also involved in clinical training…"	4. FG 9. "…on paper you go down as part-time when you are actually doing a clinical commitment on top… trying to do a clinical post a week and still meeting your deadlines for your research is actually quite tough…"	4. FG 2. "I did have an idea that I will become a lecturer, a senior lecturer, a professor one day…"
5. FG 3. "…there is no one you can go to if you felt undermined or bullied or overtly discriminated against because of the choices you made…"	5. FG 5. "…it's always there, there's always papers to write, always stuff to do. I couldn't switch off."	5. FG 7. "…In my cohort, there were two girls who got pregnant and weren't allowed to do PhDs. One was told that their quality of work was poor but she got an independent adjudicator who said it was fine…"	5. FG 9. "…I didn't want to work with someone who sees me as a baby machine…"	5. FG 8. "…we don't have enough women who are co-supporters of other women, and that goes for even at consultant's position."	5. FG 8. "…very rarely do you find a supervisor that actually sympathises with not just having a baby or pregnancy, but having a child by yourself, running around looking after a child, doing school drop-offs and pick ups…"	5. FG 6. "…you can be there for hours and no-one asks 'don't you have a kid to go back to?' and if you don't keep up, you're out…"	5. FG 1. "…I had gone into medicine thinking that I would be more research driven than clinical but turned out to be the complete reverse…"

Continued

Table 3 Continued

Environmental and institutional factors				Leadership factors		Individual factors	
A. Institutional human resources support	**B. Work–life balance**	**C. Pregnancy and maternity leave**	**D. Inclusivity**	**E. Mentors and role models**	**F. Supervisor support**	**G. Expectations**	**H. Career intentions**
6. FG 8. "the advice is to always stay off the radar, work hard, keep your head down…everybody would counsel you against raising an issue"	6. FG 5. "…academic work spill over a lot more into my personal life, more than I was willing to let…"	6. FG 4. "I did collect my data and I had a baby and I had time off. I was told I was taking too long…"	6. FG 7. "what I found with the …… MDT… list…they'll have all the consultants surnames. And there's one female consultant and her first name and second name will always be put on the sheet. There's just a little thing of disrespect"			6. FG 8. "…a lot of my male counterparts had children during their PhD and they too were expected to not have any kind of lull or change in performance…."	6. FG 1. "…their treatment was approached in a very academic way. It was interesting, we had really interesting grand rounds…I was interested in academia and it got me into it a bit more when I was there…"
7. FG 6. "…perception is that if you bring in a lot of money and you publish a lot, it doesn't matter how you behave…"	7. FG 3. "…family circumstances change, there isn't the flexibility in the department to allow you to change. It's very rigid…"	7. FG 1. "…I had to have an interview for the consultant post and the head of the … unit said to me that I had been on maternity leave so I had to retrain…"	7. FG 6. " I would never have a male consultant colleague at the…refer me a private patient, rarely. They refer to each other, its like a gang."			7. FG 7. "…when I came back from maternity leave, I did 2 free weeks of work in my hospital. I was scared of being on call as the only surgeon in the building…I totally undermined myself…"	7. FG 1. "…it wasn't an active choice …if you were in that place, you seemed to be a hard worker, fairly bright, they would say actually come and do some research with us"
8. FG 5. "…we have all heard tales about people who essentially whistleblow and it never turns out well… Everybody would counsel you against raising an issue."			8. FG 7. "If you guys scrubbed at the ……one changing room has a male sign on it and says doctors. The female changing rooms says nurses."				

advocates for more women in academic medicine. The general impression was that culture change is possible, particularly with more women attaining senior positions and more men who have themselves taken on a greater responsibility at home. However, during their time at ICL, our focus group contributors did not identify with anyone, irrespective of gender, who had the optimal balance of a happy family life, an academic career and a clinical career (FG3—'It wasn't just a gender thing. I just didn't see anybody that had the life that I wanted.').

Supervisor support

Having a supervisor who was ready to support emotional and physical well-being, in addition to the academic input, was particularly well received. Related to this was the suggestion that more than one supervisor could help provide coverage for a wide range of needs. For example, some women were grateful to have a clinically trained supervisor, who understood and helped to accommodate the demands of continued clinical service provision or training (FG5—'my supervisor, once again, I was very lucky, they were fantastic, very supportive and helped drag me through my PhD'; FG2—'we had a very, very, nice Professor of psychology who supervised our PhD and that's how we got there.'). Conversely, unsupportive supervisors, particularly those displaying no empathy for those having to juggle clinical duty, research and childcare, were cited as a significant factor in the decision to leave (FG8—'very rarely do you find a supervisor that actually sympathises with not just having a baby or pregnancy, but having a child by yourself, running around looking after a child, doing school drop-offs and pick-ups').

Expectations

Alongside the lack of flexibility, all participants felt the pressure of high expectations. Interestingly, most of these were inferred, largely via unspoken cultural norms. This was typified by the excessive weighting placed on research output and presenteeism. Some recall weekly lab meetings as deeply stressful experiences where participants felt that they needed to present their work as a means of justifying their role, with the impression that they were dispensable (FG7—'…go meet with Prof now and justify your existence.'). They felt that the demands of parenthood were not a valid excuse for periods of lower productivity (FG8—'A lot of my male counterparts had children during their PhD and they too were expected to not have any kind of lull or change in performance.'). Others recalled their apprehensions in returning to these expectations after maternity leave, with the insight that many of these fears created some performance anxiety (FG7—'when I came back from maternity leave, I did 2 free weeks of work in the hospital. I was scared of being on-call as the only surgeon in the building…I totally undermined myself.').

Career intentions

All participants took time out from their (postgraduate) clinical training, as specialty registrars, to pursue their research degree (PhD or MD) at ICL. Some of the women who participated in this focus group were clear that they chose to undertake a research degree to enhance their competitiveness for senior clinical-only roles (FG9—'the reason we do it is because everyone else before us did it'). However, six members of the focus group had active intentions to pursue a research career—in one case, the interest grew from observing physician-scientists during their junior clinical practice and finding their work intellectually stimulating (FG1—'their treatment was approached in a very academic way. It was interesting, we had really interesting grand rounds….I was interested in academia and it got me into it a bit more when I was there').

DISCUSSION

This study asked women in medicine who left UK clinical academia to reflect on the major factors that contributed to their departure. We identified eight interdependent themes that are in accord with other studies reporting career development barriers for women within academia.[15 18 19 30] The women who came back to talk to us had experienced clinical academic life between the years 2013 and 2017. Based on their feedback, we instigated a wide-ranging effort to stem the leaky pipeline. table 4 summarises current initiatives in the Faculty of Medicine at ICL that have been funded and championed in order to address some of the issues raised by the women in this focus group and beyond.

Environmental and institutional factors

Our participants reported multiple accounts of stigma and discrimination associated with maternity leave and caring commitments. In some cases, the duration of maternity leave was conveyed as being negatively correlated with competence. Women still carry most of the mental load of home responsibilities, even in dual career families,[31 32] and other studies have corroborated the influence of childcare commitments on the decision for women to leave academia.[33 34] Furthermore, women continue to take on more caring responsibilities for the sick, disabled and elderly; the 'Will I Care?' report by CarersUK in 2019 showed that women made up 58% of UK carers and on average, provided care 11 years earlier than men.[35] So, the sense that caring responsibilities and career aspirations are incompatible extend into multiple stages of a woman's career. In career pathways that are often time restricted and measured by the number of outputs, periods of reduced productivity seem to be particularly discriminated against in academic medicine. Some of this pressure is centred around resistance from departments, real or perceived, to enable flexible working. Adherence to core working hours is difficult in medicine, especially while accommodating for clinicians

Table 4 The focus group identified a number of issues that had acted as pushes away from a career in academia for our clinicians who had been associated with Imperial between the years 2006 and 2018. In response to this, Imperial College Faculty of Medicine has funded and developed these initiatives to provide greater support for women in clinical academia.

	ICL Faculty of Medicine Initiatives
Environmental and institutional factors	
Institutional human resources support	Expectation, along with Faculty administrative resource, that all departments aspire to a minimum Silver Athena SWAN award. Continued push for uptake of Active bystander and Unconscious bias training. Promotion of mechanisms for staff to report concerns including 'Have your say', Staff Surveys, and the Bullying and Harassment reporting tool. Improved access to Senior Faculty leaders via virtual Q&A sessions with the ability to ask anonymous questions. Ratified mutuality in terms of continuation of service for clinical trainees moving between Imperial College University and NHS Trust
Inclusivity	Imperial College policy disallow meetings with speakers of a single gender. Championing of research from women clinical academics to improve visibility. Improved gender balance in chairing of meetings, and subsequent concentration on achieving a better gender balance in questions chosen from audience.
Pregnancy and maternity	Active promotion of Maternity Leave policy with clear plan for how staff's academic role will be protected / supported while they are on maternity leave. Workshops and buddy schemes for prospective parents—focussing on how to realign work and new home commitments. Breastfeeding facilities and baby change on all campuses. Continued promotion of fellowships designed to support return from maternity leave. Development of College Nursery facilities, including development of a new facility to support a new campus.
Leadership factors	
Supervisor support	Improved supervisor training to push for consideration of staff's wider circumstances when discussing research plans, with mandate to refresh this training every 6 years. Explicit expectation in the (public) job description of senior academics to promote healthy research culture and career development. Mentors to provide more targeted support as required. Training Programme Directors (who oversee clinical trainees) to be better informed about the needs of clinical academic trainees, particularly those wishing to purse less than fulltime working or requiring structured return to clinical training that facilitates ongoing research expectations.
Mentors and role models	Imperial College Mentor scheme including more targeted mentorship of women clinical academics using mentors from outside Department or Faculty where required. Improved visibility of women role models across faculty. Creation of the Women in Academic Medicine (WiAM) support group, to complement other women academic support networks, and provide greater opportunities for networking and mutual support.
Individual factors	
Career intentions	Funding for the Clinical Academic Training Office—outreach and information days (for junior doctors contemplating a research degree at ICL) always include a talk from a women academic with an opportunity to discuss work life balance.
Work life balance/expectations	Better role modelling of family friendly behaviour including actively encouraging staff to adapt working lives to fit childcare needs. Promotion of shared parental leave. Concentration on improved job planning (both clinical and academic) to ensure that responsibilities are compatible with working hours and managerial and teaching responsibilities do not negatively impact on research output.

NHS, National Health Service.

who have operating lists or clinics during the normal working day; nevertheless explicit expectations about working times may help employees feel empowered to succeed even if they have caring responsibilities. Many of the women in our study also expressed how leaving the NHS to join academic medicine came with significant financial sacrifices, including loss of statutory employee benefits and income reductions due to the disrupted contribution to healthcare provision. Reciprocity agreements between NHS and Academic employers of clinical academic trainees are vital to ensure that continuity of service is maintained such that loss of maternity pay does not present an absolute barrier to choosing a particular career path. In addition, proactive measures such as nurseries, breastfeeding spaces and provision for emergency care have all been shown to demonstrate an institution's willingness to maintain staff well-being.[36] It will be interesting to observe any legacy effect of the COVID-19 pandemic on attitudes to presenteeism, working from home and engagement patterns.

Examples of explicit sexism were recalled by all women in our study, including those without children. They recounted an underlying expectation to carry on, regardless of the stress load, and to fear the repercussions if concerns were voiced. Accounts of bullying, harassment and discrimination in the working environments of women in academia have been widely reported before.[15 19] This has extended to inequality in opportunities and lower

financial rewards despite long working hours.[17 19] Many of the issues women face are not exclusive to clinical academia but are present in other male dominant sectors, such as surgery or finance.[37 38] Potential solutions have been identified, with reports by The British Medical Association and Medical Schools Council focussing on progression of women in academic medicine.[39 40] More generally, institutions must develop initiatives to tackle discrimination. In attempt to create a safe space, ICL has connected with an external service for staff to receive advice on aspects of work and life ('Have Your Say' and 'Report and Support'). Alongside this, staff receive Active Bystander training,[41] which encourages them to speak out against inappropriate behaviour among their colleagues. Together, these interventions aim to provide opportunities for staff to promote change in their own working environments in a constructive manner.

Leadership factors

Good supervisors are those that acknowledge and help overcome challenges, personal and professional. The value of external support to overcome the experience of isolation, performance pressure, intolerance of flexible working and lack of empathy for caring responsibilities was highlighted by our participants. Women with caring responsibilities expressed particular gratitude for advice and understanding from senior colleagues, and appreciated those who displayed insight or sympathy for their particular struggles. This corroborated other reports which suggest that access to such support aids progression and enjoyment of academic medicine.[11 19] The career uncertainty felt by almost everyone that chooses a research-intensive academic route is profound, as tenured positions lessen in favour of more competitive funding models.[42] The cumulative effect of poor support and a lack of career guidance seem to converge to create a working culture many women perceive to be unsustainable and unattractive.

All the women in our cohort actively reported an absence of mentors or role-models during their time in academia. Many noted the paucity of women in senior leadership and felt this hindered the championing of women to take up progressive positions. The absence of authentic mentors and role-models has been noted to be a serious issue for all under-represented groups.[43 44] Mentoring has been consistently reported as a key intervention to support clinical academic career progression,[15] although these types of relationships do not always develop organically and, indeed, championing of juniors by senior faculty members may be suffused with unconscious biases. Studies have shown the benefits of formal mentoring schemes that actively match pairs, including increased publication output, improved emotional support and significantly greater career satisfaction.[45] Although the women in our cohort expressed a need for a mentor regardless of gender, other groups have found that having a mentor of the same gender seems to add the additional element of role modelling, and women being mentored by women were more likely to go on to occupy senior roles themselves.[46] A US-based postal survey demonstrated how progression of women through the academic ranks was likely to be prolonged compared with an equally qualified man, especially with parental responsibilities dominating the early academic years[47]; mentors would be well placed to provide regular reassurance and facilitate acceleration when required. At ICL, the internal mentoring scheme allows junior faculty to be connected with senior colleagues that are distant from their line manager, who can provide general advice during their research period. This has extended to a parent mentoring scheme where employees can seek advice and support from senior departmental members (both men and women) who have personally engaged in sharing parental commitments or adopted flexible working. In order to better address the visibility of role models, the provision of regular panel discussions with senior faculty members describing their personal career hurdles is a means of extending these discussions. The Faculty of Medicine also supports a number of specialty-specific Women Academic Support Networks whereby women are able to provide peer support and mentoring, since evidence suggests that this type of forum is perceived as a safe space and empowers women to discuss particular issues positively.[48]

Individual factors

Some of our participants only ever intended to undertake a PhD because of the perception that it would aid their clinical competitiveness, a phenomenon itself that is worthy of future enquiry. However, the majority of our cohort entered academia with a view to becoming research active for the rest of their careers and ICL is a research-intensive university. This is in contrast to a common assertion that women lack the ambition to pursue a role as Principal Investigator or academic Group leader.[49] Some studies have also suggested that women are more attracted to academic careers in teaching,[50] and although this was not felt to be a primary driver in our cohort, this may represent a gendered push away from research-only environments which are perceived to be less accommodating. More broadly, the themes that were identified in this study were largely related to institutional culture and process, and less was spoken of intrinsic issues pertaining to self-esteem and confidence. We recently demonstrated that even in gender-balanced academic arenas, women are significantly less likely to be authoritative in public,[33] but that this can be overturned by altering the make-up of panels or encouraging opening comments from women. This supports the notion that rather than expecting women to 'lean in' more, institutions have a responsibility to create more inclusive environments and to make efforts to understand career intentions from the start. Organisational changes, as opposed to individual-focused interventions, will better help ensure tailoring of learning opportunities and utilisation of personalised career development pathways.

Limitations

The evidence-base for the impact of the interventions discussed here needs further work,[47 51 52] and given the outcomes of our study, clearly requires a multifaceted approach to ensure all contributing factors are simultaneously addressed. This study was small, but quite unusual in that it identified women who had, arguably, more keenly felt the 'push' away from academia. It is feasible that including women who did a PhD simply as a means of enhancing their clinical promotion prospects meant that the results were diluted. However, a PhD might also be an opportunity to capture women's interest in pursuing an academic career, and there was a great deal of alignment across all of the participants. The participants had also only worked at ICL prior to their departure from academia, which may have uncovered institution-specific problems, although the core themes identified here have been supported by the literature globally. Lastly, since our study mainly focused on gender biases, other factors such as race or disability were not explored and may have had a cumulative effect on a woman's decision to leave clinical academia. Further work would be needed to better delineate the effect and consequences of other prejudices.

CONCLUSION

Clinical academia is an inherently challenging career option for those in medicine, with greater stresses due to the performance expectations of research-intensive institutions, high levels of competition, insecure funding and poor sense of job security compared with clinical-only pathways. Women in clinical academia have faced several additional challenges that seem to promote particular attrition. These include a lack of authentic role models, mentoring that is ill-adapted for their specific requirements, intolerance of caring responsibilities in a culture of presenteeism, subtle discrimination such as losing traction during maternity leave and, occasionally, frank harassment or sexist attitudes about ambition or ability. Institutions have a duty to eradicate these factors, many of which are the manifestation of deep-rooted societal inequalities, but such attempts may help to break the perpetuating cycle of under-representation. Here, we present the range of responses that ICL has instigated which, in line with wider societal feminist movements, are beginning to breakdown many of these barriers. There needs to be more work to understand what are the most effective strategies to help maximise and retain talented women and, indeed, people from all other under-represented groups.

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Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved by This study was ethically approved by Imperial College London office for the Vice Dean of Institutional Affairs which does not have a reference number system. All volunteers were provided with an information sheet in advance of the study day and provided written consent for the conversation to be recorded, anonymously transcribed and anonymously published. Participants gave informed consent to participate in the study before taking part.

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