

EDITORIAL

Unto them a child is born

Hitting the “maternal wall” in medicine

In a linked paper (right),¹ Halley et al describe a thematic analysis of free-text answers from an online survey of female doctors.² Quantitative data already published from this survey, suggest that women perceive discrimination related to motherhood, not just gender. The aim of the qualitative analysis was to identify ways in which doctors experience this maternal discrimination.

The sample was drawn from an online community of women who identify as medical mothers. The Physician Moms Facebook group was established in 2014³ and now has more than 71 000 members, most whom are based in North America.⁴ While the sample is unlikely to be representative of all doctor parents, it does provide a large dataset which the authors analysed using grounded theory techniques to explain patterns within the women’s reported experiences. Emerging themes included varying performance expectations (both higher and lower), fewer opportunities for career development, financial differences, lack of perinatal support, and life-work balance difficulties.¹

Cultural norms

However, there are limitations to the study. Using a questionnaire design, the authors were not able to obtain detailed examples of discrimination. In addition, the all-female authorship did not explore how their perspectives could have influenced the study design and analysis. They conclude that addressing organisational factors (such as parental leave

Mothers were rated less competent than non-parent female and all male colleagues

and childcare) are important. However, the study did not consider how to influence the drivers of discrimination, including societal expectations, medical culture, and how interpersonal interactions affect the relationship between experiences and cultural norms.¹

Finally, the study did not explore psychological barriers that Sandberg has hypothesised can reduce women’s expectations of their own and other’s potential.⁸ Further research should look at this in medicine, including how anticipation of parenthood may affect career decisions.

Perceived commitment

Heilman et al identified that parenthood had negative consequences for both men and women in terms of perceived commitment to work.⁹ In their experiments, however, it was only mothers who were rated less competent than their non-parent female peers and all male colleagues.

Williams has described the effect of motherhood on careers as the “Maternal Wall,”¹⁰ although, as the authors of this study rightly point

out, there has been little research to date within the medical profession. Future research should also focus on employers’ and coworkers’ attitudes to parenthood in health care, including the attitudes of male and female supervisors and trainers. Supporting new parents while providing equal opportunities for professional growth regardless of gender is a nuanced and fine line.

We cannot fully understand the professional lives of women without examining broader societal attitudes to lives outside work. On average, women spend substantially more time on unpaid caring responsibilities and domestic tasks than men globally, creating a “double burden” of work.¹³

Lengthy training, long hours, and high societal expectations mean doctors—parents or not—lead challenging lives. Halley et al’s paper will help identify themes for further exploration, but, as long as parenthood is seen as a women’s issue rather than an issue for us all, maternal discrimination will remain unresolved.

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We cannot fully understand the professional lives of women without examining broader societal attitudes



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Why Mary's boy child may harm her medical path

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Objectives To report woman doctors' experiences, in their own words, of discrimination based on their role as a mother.

Design Qualitative analysis of physician mothers' free-text responses to the open question: "We want to hear your story and experience. Please share" included in questions about workplace discrimination. Three analysts iteratively formulated a structured codebook, then applied codes after inter-coder reliability scores indicated high concordance. The relationships among themes and sub-themes were organized into a conceptual model illustrated by exemplary quotes.

Participants Respondents to an anonymous, voluntary online survey about the health and wellbeing of physician mothers posted on a Facebook group, the Physician Moms Group, an online community of US physicians who identify as mothers.

Results We analysed 947 free-text responses. The themes and relationships from these responses are organised into five broad categories (see box, and tables 1-5).

Conclusions Women physicians report a range of previously uncharacterised ways in which they experience maternal discrimination. While certain aspects of these experiences are consistent with those reported by women across other professions, there are unique aspects of medical training and the medical profession that perpetuate maternal discrimination.

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CATEGORIES OF MATERNAL DISCRIMINATION

- **Experiences**—the diverse ways in which participants experienced discrimination (table 1): gendered performance expectations, limited opportunities for advancement, financial inequalities, lack of support, and challenging work-life balance.
- **Drivers**—the underlying causes of maternal discrimination as perceived by participants (table 2)
- **Interpersonal mediators**—the avenues by which the drivers of discrimination manifest in interactions in the workplace (table 3)
- **Impacts**—themes focused on the downstream effects of maternal discrimination on the women, their families, and the healthcare system (table 4)
- **Modifying factors**—modifying factors that participants pointed to as either perpetuating or mitigating maternal discrimination (table 5)



Table 1 | Experiences of maternal discrimination

Theme and subtheme	Exemplary quotes
Gendered job expectations	
Higher standards for physician mothers	"Despite meeting my RVU goals (even with 10 weeks of maternity leave), I was told I did not qualify for a raise because I hadn't been productive enough"—Participant 234
Lower expectations or presumed disinterest	"My impression is that I'm not invited to some 'extra'-type work things because it's assumed that I'll opt out because I have young children. Basically, someone else is opting out for me"—Participant 978
Limited opportunities for advancement	
Excluded from decision making	"Frequently not included in projects and/or decisions after I announced I was pregnant. Again not included in decisions after I returned from maternity leave"—Participant 202
Excluded from leadership or career advancement	"[I] didn't get chief resident though selected by majority due to pregnancy"—Participant 6
Job or contract changes or termination	"I had my contract changed upon return from maternity leave while on FMLA... Went from working day shifts to night and weekends. They also said while I was gone, they are no [longer] having part time and I would need to work full time. After talking with some lawyers it seemed that even though they were breaking the contract and going against FMLA, it would be a difficult course. I left and got another job after being there for almost 9 years"—Participant 402
Financial inequalities	
Lower pay than equal or less qualified colleagues	"I was given a smaller raise than my male colleague at the same level despite bringing in more revenue. When I asked for a raise my Chair told me that my husband should get a job. When I got back from maternity leave, he had given one of my OR days to another colleague"—Participant 666
More work for no more pay	"As a resident, our GME office decided that residents taking leave (would only apply to maternity leave essentially) would have to make up the time without benefits or pay"—Participant 16
Lack of support during pregnancy or postpartum period	
Maternity leave disparaged	"Told that taking maternity leave was a bother to everyone and that I can't just 'keep going on vacation for 6 weeks'" —Participant 30
"Punishment" for maternity leave	"Unpaid maternity leave AND obligation to make up missed calls. However, partners who take medical leave are not required to repay call"—Participant 150
No support for breastfeeding or expressing	"I was also given extra patients in the ED to compensate for my [expressing] breaks (double hit before I went for my 15 minutes and double hit again when I came back) even though I could see on the tracking board that the other team didn't get any patients"—Participant 66
Challenging work or life balance	
Childcare challenges	"I am part of a leadership group that moved their meeting day to a day I do not work, and therefore do not have childcare. I asked admin if there were a call in option or if I could bring my child to the meeting (it is a paediatrics leadership group, after all). I was told no on both counts"—Participant 49
Taking work home	"I was so completely burned out after 8 years of practice. Charting until midnight, charting on weekends, charting on Christmas. I felt like I was in a burning building and I had to find a place to land when I jumped. So I took a six week sabbatical and came back to work part time." —Participant 286
Lack of alternative work arrangements	"Administration unwilling to consider alternate work arrangements to allow working physician mothers to obtain improved work/life balance"—Participant 508

Table 2 | Drivers of maternal discrimination

Theme	Exemplary quotes
Broader cultural norms	"I have experienced gender discrimination by my administrators: 'You should just stay home and be a mom,' as well as 'Your husband makes enough money; why do you work?'"—Participant 64 "I was told by nursing administration that I should 'smile more,' and that a patient that was unsatisfied with the wait time would likely have not complained if I just 'smiled more'"—Participant 3
Culture of medicine	"As a pregnant 3rd year med student, a male attending on my first rotation told me I had to decide if I was going to be a good mother or a good doctor, that I couldn't be both" —Participant 13 "There was a culture among other residents to complain about female attendings. Although these attendings were contracted for part time, they were often referred to as 'lazy' because they desired spending time with their children"—Participant 114
Structure of medicine	"Had to pump in the bathroom while breastfeeding because it took longer than my 15 min break to get out of the OR, to the one and only pumping room in our huge hospital, set up, pump, and back to OR"—Participant 16 "I work for a hospital that considers 39 hrs/wk part-time, offers absolutely no maternity leave, and does not allow any autonomy in schedule making . . . but only for the female physicians"—Participant 94

Table 3 | Interpersonal mediators of maternal discrimination

Group	Exemplary quotes
Administration or leadership	"Chief of service once told me that he did not want to hire more women because of people being out for maternity leave and calling in sick with kids" —Participant 538
Colleagues	"Many (male) colleagues openly complain about too many women in our group, too many pregnant or could get pregnant women" —Participant 24
Support staff	"My office manager gave me a very hard time about scheduling breastfeeding, especially when a meeting was scheduled during my pumping time and she did not want to reschedule my patients to give me time to pump" —Participant 125
Patients	"Patients and their families sometimes are condescending, ignorant. (They assume I'm not a physician because I'm female)"—Participant 723

Table 4 | Impacts of maternal discrimination

Theme	Exemplary quotes
Psychological	"I was very depressed after my first child because of the stress of going to work so quickly and trying to balance all demands of being a mom, work and fellowship"—Participant 190
Career	"Because I work part time, I cannot be considered for partnership, benefits, etc. my salary was much less, less vacation time, no CME. No option for loan repayment because I'm part time. But I was required to take the same amount of call"—Participant 22
Family	"As a paediatrician, I routinely felt we gave mothers in our academic clinics advice that we as paediatrician mothers were not allowed to follow"—Participant 205
Healthcare system	"I resigned from that position after nearly four years due to significant burnout. I was unwilling to continue to compromise my patients' safety"—Participant 281

Table 5 | Modifying factors regarding maternal discrimination

Modifying factors	Exemplary quotes
Institution	"The institutional culture where I'm doing residency is much much better with work-life balance than my medical school institution . . . I was unofficially advised not to talk about [being a parent]. In retrospect the culture was the problem . . . Being open about my circumstances and priorities in a supportive culture is much better"—Participant 99
Stage of career	"My residency program was very punitive to my getting pregnant in the program. Especially after being told not to get pregnant by the Chair/PD [program director]"—Participant 324
Specialty	"It's tough to advance in academic surgery as a young mom. It's still a male dominated profession [especially] in leadership"—Participant 459

BMJ OPINION Mary E Black

How to counter “manels”

Manels—speaker panels consisting entirely of men—are getting rarer, but still persist. I witnessed an example at a session on the NHS Long Term plan in London. Pretty well all NHS leaders and senior staff are white men, so if you want big names, a manel is what you may well get.

There was a name for all-women gatherings in the past. They were called covens and often the participants were burnt at the stake. Manels suffer a lighter fate and may be awarded the witty “Congrats you have an all male panel” social media stamp. I want speakers to inspire, to model what we would like our organisations to be, and to change things for the better. So how can we circumvent manels?

Know the evidence. There is outright discrimination and implicit bias in organising panels, creating a vicious cycle of women never getting onto the “usual suspects” list. Women from black and ethnic minorities face double jeopardy.

Don’t convene one. Agree in advance that your organisation or conference will convene diverse panels. A kneejerk selection of the usual suspects can be prevented if you consider expert and speaker lists well in advance. There are many good online resources for diverse speakers to consult.

If you are a man, think carefully before sitting on a manel. NHS Digital has taken a stand on this and the *Financial Times* has too, so why can’t the NHS? Ask yourself—does it really have to be me? Men may neither realise nor accept that something they’re involved in has the effect of marginalising women, but isn’t it time they did? Share the podium, give up some power, and explain why you are doing so. You will be admired for it.

Write to organisers if you see a manel forming. Point out that it is 2018. Ask them to try harder.

Protest, but safely. Suffragettes may have needed to throw themselves under horses, but we should be able to resolve these things more easily. Ask a question from the floor during a manel (eg, are there no women who know about this topic?) and see what happens. Lots of seat shifting and adoring references to daughters.

Why am I banging on about manels—am I an awkward, ungrateful harpy? No, I would much rather spend my time being a public health doctor, building my health tech firm, or knitting and applying nail polish (not at the same time).

Recently I pointed out to the eminent male chair of one of my organisations that we had inadvertently convened a manel. He spluttered that he and the other speakers could not help being men and asked if I expected him to balance the genders by turning up in a dress. My mistake was in not immediately replying “yes,” just to see his jaw drop.

Mary E Black is a public health doctor

Oxford Dictionaries @OxfordWords · 16 Dec 2017
No, it's not a man version of a flannel. It's a panel made up entirely of men #manel #WordOfTheYear





Long history of discrimination: the scientist Eunice Foote who addressed the first women's rights conference in New York in 1848, discovered that carbon dioxide became the hottest of various gases under solar radiation. As a woman she was barred from addressing the American Association for the Advancement of Science. The sex equality she called for is still lacking, and Foote's name as an early climate change scientist was buried in obscurity.

ESSAY

The trouble with girls: obstacles to women's success in medicine and science

Female medical practitioners and researchers face specific disadvantages in four key areas, writes **Laurie Garrett**. Childbirth is a common factor, and institutions and funders urgently need to recognise and respond to create a culture that prevents such discrimination

I asked Google who discovered climate change, and its top answer was John Tyndall, who published evidence in 1859 on carbon dioxide heating the Earth's surface.

But Google was incorrect. In 1848 Elizabeth Cady Stanton and Eunice Foote organised the first women's rights conference, in Seneca Falls, New York. Afterwards, Foote, a scientist, measured the temperature of various gases

Women who pursue biomedical careers face biases that men never experience

when subjected to solar radiation. Carbon dioxide became the hottest, and Foote sent her findings to the American Association for the Advancement of Science.

It accepted her paper, but Foote, as a woman, was not allowed to address the meeting, so her paper was read by a man. And the association refused to publish a woman's work in the proceedings, so it was released separately. Foote's work clearly preceded Tyndall's, but her contribution to climate science is buried in obscurity.

In the 1900s the astrophysicist Jocelyn Bell Burnell's male boss received the Nobel Prize for proving the existence of pulsars. Rosalind Franklin died before she could contest the 1962 Nobel Prize in Physiology or Medicine—awarded to James Watson, Francis Crick, and her boss, Maurice Wilkins.

Franklin's x ray crystallography was used, without her consent, by Watson and Crick to decipher DNA's double helix. And, in 2018, Donna Strickland became only the third female honoured with a physics Nobel Prize, raising the total of all female science Nobelists ever to 3%. Only then did Canada's University of Waterloo make her a full professor.

These stories illustrate the barriers experienced by women at the top of scientific and medical achievement. But most women pursuing research in these disciplines encounter hurdles far earlier in their careers.

Sex bias hampers female advancement in medicine and science in four key ways: access to advanced education and appointments, extreme bias in research funding, access to journal publication, and invitations to present at elite meetings.

BIOGRAPHY

Laurie Garrett is a Pulitzer Prize winning science writer, author, and foreign policy analyst, most recently with the Council on Foreign Relations. She is founder of the Anthropos Initiative, a New York based programme working at the interface of climate change and human health. The material presented here is based on her invited presentation to the Women Leaders in Global Health Conference, sponsored by the London School of Hygiene and Tropical Medicine, in London in November 2018.



Early career access to education and appointments

This year Tokyo Medical University revealed that it had for years manipulated women’s test scores and admissions rankings—by as much as 49 out of 100—to ensure that no woman had more than 80 points. Nearly 9% of male applicants won a place, but just 3% of women did so. Japan has one of the world’s lowest female physician ratios, and just 21% of all doctor of medicine degrees were awarded to women in 2016.

Fewer female PhD recipients apply for US academic positions overall, and the gap is wider in Europe. In a 2004 survey women were awarded just 36% of science PhDs, 33% of junior faculty positions, and 11% of tenured senior faculty slots in Europe. An international survey found that women in medical and science academia were far less likely than male peers to become full or associate professors (60% of appropriately trained men versus 31% of women). And women were more likely to fill lower status academic slots: “researcher,” assistant professor, or adjunct teaching positions (about 38% of men in total versus 63% of women). In US medical schools “women make up 38% of faculty members, 21% of full professors, and 15% of department chairs”—despite near parity among younger doctors and medical students.

Once working, female researchers face huge financial bias: a US survey found that the average graduate student stipend was \$30 500 (£24 150) for men but \$26 500 for women. In the UK female scientists earn 20% less a year than men on average, and they tend to earn less from the start.

The trouble with girls

Women who pursue biomedical and other science careers face biases that men never experience. Consider the 2015 speech by the British Nobel laureate Tim Hunt about “my trouble with girls. Three things happen when they are in the lab,” he said in a speech. “You fall in love with them,

Sex bias exists even in disciplines that are overwhelmingly female in number, such as gynaecology, public health, and nursing

they fall in love with you, and when you criticise them they cry.”

University College London forced Hunt’s resignation, but these views are hardly rare in medicine and science. This September Gary Tigges, a Texan physician, wrote in the *Dallas Medical Journal* that female doctors should be paid less: “Female physicians do not work as hard and do not see as many patients as male physicians. This is because they choose to, or they simply don’t want to be rushed, or they don’t want to work the long hours.”

Sex bias exists even in disciplines that are overwhelmingly female in number, such as gynaecology, public health, and nursing. More than 80% of global health undergraduates in the US are female, as are 70% of medical students who hope to engage in global health. Yet just 39% of their faculty, and 24% of directors of the global health programmes they might one day work with, are women. A 2018 US survey of nursing—arguably the most female field in health—found that men averaged \$79 688 salaries, \$6598 more than their female peers. Those who rose to become chief nursing officers averaged \$132 700 if male and \$127 047 if female.

Two thirds of women have been harassed

The US National Academies of Sciences found this year, in an extensive assessment of bias in medicine and the sciences, that a third of women had experienced gender harassment, and a further fifth had also experienced unwanted sexual attention. Just a third of women had never experienced such odious affronts.

Female medical students were the most likely to have been mistreated: 63% had been subjected to gender harassment or sexual assault and demands. The academies found that harassment is corrosive, generally forcing victimised women to flee institutions—and even their careers. Four factors make medicine and the sciences especially vulnerable

to harassment: intimate reliance on mentors; a meritocracy that penalises absence from work for any reason, including harassment; an often “macho” culture; and rumour-mongering in most institutions.

Especially worrisome are allegations of institutional protection of accused abusers, including at institutions founded on principles of human rights, such as UNAIDS. An independent review panel concluded, “The UNAIDS Secretariat is in crisis... leaders, policies and processes... failed to prevent or properly respond to allegations of harassment including sexual harassment, bullying and abuse of power... the evidence... is overwhelming.”

Scrutiny of harassment can backfire. In a recent survey of 3000 male medical leaders three quarters reported being afraid of being labelled a harasser, and most refused to meet alone with women.

Extreme bias in research funding

The gender pay gap among doctors remains startling, regardless of specialty. One report found that US women in 2017 earned \$105 000 less than men on average, worse than the 2016 pay gap of \$91 284. A 2018 *BMJ* survey of NHS employees found a similar gap, largely reflecting the greater likelihood that men fill top management positions and that women fill most low prestige and clerical posts.

In research, pay gaps may reflect difficulty in winning grants from funders such as the UK Wellcome Trust and the US National Institutes of Health (NIH). In 2012, for example, just 30% of NIH grants went to female principal investigators. Worse, these women got smaller grants, with 2012 averages of \$507 279 for men and \$421 385 for women—a gap of nearly \$86 000. The gap is also wide at the Wellcome Trust, where female principal investigators received an average £44 735 less than men in 2000-08.

However, when review committees were blinded to the names (and sex) of principal investigators, they awarded



A pamphlet advertising Eunice Foote’s women’s rights convention in 1848: 170 years later female scientists have still not gained parity with male peers

far more, and larger, grants to women. Wellcome explained that this was “attributable to less favourable assessments of women as principal investigators, not differences in assessments of the quality of science led by women.”

Wellcome says that it is committed to achieving equity by 2023, but it has a long way to go. Men hold nine in 12 top management positions, and only 23% of grant panel members are women. The NIH also says that it wants equity, but the proportion of grants awarded to women in nearly every category has not budged since 1998.

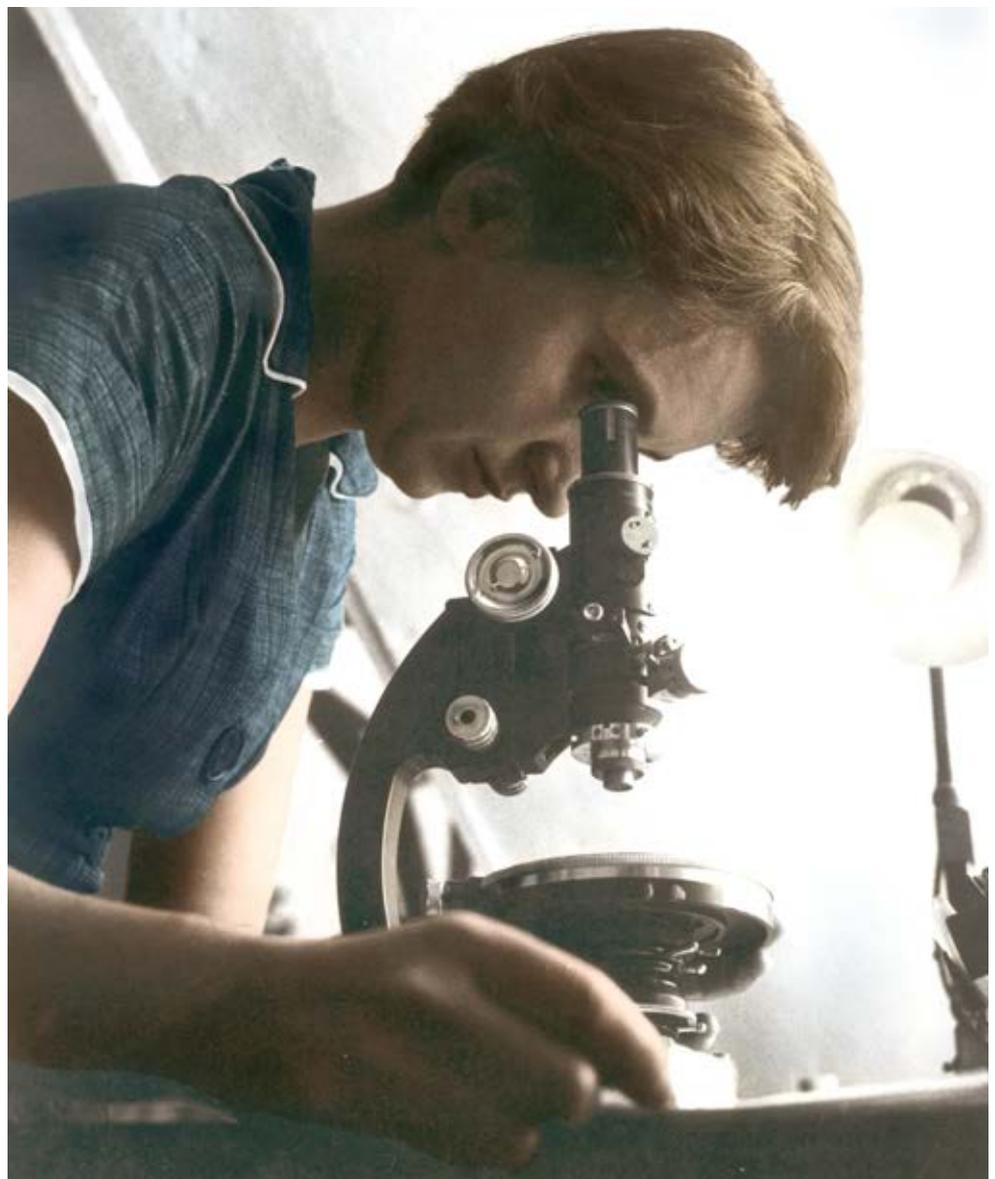
Access to journal publication: publish or perish

Careers are made or broken on rates of publication in journals, a journal’s prestige, and how frequently an author’s work is cited. From 1994 to 2014 the number of papers with a female first author jumped 37%, but actual publication rates plateaued well below those of men.

This year *Nature* reviewed its own performance: “Manuscripts from female authors... are accepted with a lower rate than those from male authors.” The 10 *Lancet* journals also found that none approached gender parity in publishing female first or last authored papers: overall, about a third of papers have a female primary author. And *Science* found a similar distribution in its publications.

In *Nature* only a third of solicited editorials and commentaries were female authored in 2017, up from 19% a decade previously. A similar increase has occurred at the *Lancet*, where in 2018 a third of commissioned papers were female authored, says its executive editor, Jocalyn Clark.

Peer reviewers perhaps hold the real power: at *Nature* 80% of these were male in 2017. None of the most influential medical or science journals has female reviewer representation above 28%, and most are closer to just 17%, says Clark. The male domination of the process reflects who is invited, not a higher refusal rate by women.



Rosalind Franklin’s x ray crystallography work was used without her consent to decipher DNA’s double helix. James Watson, Francis Crick, and Maurice Wilkins, Franklin’s boss, were awarded the Nobel Prize after her death

Not invited to present at elite meetings

Careers also depend on addressing major medical and scientific meetings. Here, too, bias is so evident that the *Oxford English Dictionary* has defined a new word: the “manel.” These all male panels are causing outrage.

Recently, the annual meeting of the International Federation of Gynecology and Obstetrics opened with a panel of nine men and one woman. The 2014 Global Summit of Women opened in Paris with a panel of

The proportion of NIH grants awarded to women in nearly every category has not budged since 1998

six men. Brigham Young University’s “Women in Math” meeting featured four speakers, all male. And this year’s Global Health Summit in Berlin was widely mocked for including several all male panels.

An analysis of speakers at the top four annual virology conferences concluded that, at the current rate of “improvement” in the number of female speakers invited, it “may take decades to reach parity” without “sustained effort.” A survey of 3652 speakers invited to address major universities in 2013-14 found clear bias in every category and concluded, “Women don’t choose not to talk. They simply aren’t invited to do so as often as they should be.”

Recognising the childbirth bias

One factor above all others is key to these obstacles: childbirth. Ages 21 to 35, the most critical for career development, are precisely when women are most likely to start a family.

With each birth, a woman takes time off from work while her male peers move ahead. By the time a woman has had three children, the men who finished medical school with her may well have soared ahead, leaving her behind in a lower paying, less prestigious role.

When most Western women reach a career/children juncture in their late 20s their choices tend to reflect those their mothers made a generation earlier. Although men and women view their careers as equally attainable, women seem to place far more weight on “life goals.” Overall, women find power “less desirable” than family and lifestyle.

In recognition of this childbirth bias, some grant making agencies are beginning to consider the time and energy that prospective grantees invest in rearing a family. Recently, for example, the NIH announced that it would automatically extend “early stage investigator” status, allowing researchers to apply for additional support without penalties if the scientist gives birth during her grant period.

A host of organisations have sprung up to battle manels and other forms of bias, including 500 Women Scientists, Gender Avenger, and women’s caucuses within the UN. Professional societies for journal editors have passed resolutions aimed at fighting bias in publishing, although little has come of them in practice. Women Leaders in Global Health, formed in 2017, has held two international meetings to explore how to increase female clout.

The German Cancer Research Center has taken perhaps the biggest step: this year it hid the

identities of all authors who applied to speak at its conference, leaving only one basis for judging entries: the merit of the work. The result? A whopping 82% of invited speakers at the October gathering were women.

As women fill a greater number of science, medicine, biotechnology, and engineering posts their value to the disciplines becomes obvious. But this does not inevitably lead to improvements in the balance of power, prestige, and pay—as the examples from nursing, public health, and many medical specialties show. Pay equity, publication, and power aren’t simply given: they must be fought for and defended. The positive initiatives at national academies, the NIH, Wellcome, and key publications must be backed by ongoing pressure from the medical and scientific communities. In all disciplines, including those with proportionally few women, manels should be denounced and considered disgraceful.

It is not in any society’s interests to pit the value of education and training against family: both are necessary. It makes no sense to invest in training smart women only to snatch their advancement away because they bear and raise babies. All institutions, from universities and research funders to health services and laboratories, will thrive if they stop penalising women for childbirth and reward men for time spent with family.

In 1856, Eunice Foote had to listen to a man present her paper because of her sex. In 2019, women undoubtedly have greater access to academic training, support, and mentorship than in the mid-19th century. But the ultimate and fundamental sex equality that Foote and her colleagues called for in 1848 has yet to be achieved in medicine, nursing, public health, and the sciences.

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Toying with inclusivity

Efforts to represent disability in the toy box must go beyond tokenism, say **Desmond O’Neill and colleagues**

Toys remain an integral element of the Christmas experience. The centrality of toys to the childhood experience since ancient times has had relatively little impact on the biomedical literature, other than references in paediatric literature to hazards such as flammability and choking.¹ This is surprising, as the potent symbolism of playthings provides a window into rich sociological and psychological narratives, most tellingly in studies of gender and ethnicity.²

Representing disability

Less well recognised is how toys reflect, or fail to reflect, disability and inclusion. For example, adapting toys has been shown to facilitate play routines among children with a disability.³ And toys that represent disability can reduce the anxiety and prejudice that children without disabilities may experience towards peers with disabilities.⁴

But there’s been little headway in representing disability in the toy industry. Here we reflect on the attempts at representing disability in the toy box and possible ways to achieve this. The inclusion of toys reflecting disability is a recent phenomenon: analysis of a catalogue from a major US toy retailer found only two disability themed toys from 1930 to 1963.⁵ This absence led to movements such as #toylkeme, founded in 2015. The impulse for this is eloquently expressed by one of the movement’s founders, Rebecca Atkinson: “When I was growing up, I never saw a doll like me. What does that say to disabled children? That they aren’t worth it? That they’re invisible in the toys that they play with? That they’re invisible in society?”

An interesting experiment by a toy maker in the 1990s provides an illuminating perspective on the challenges of inclusivity and mainstreaming disability through toys. In 1997, coinciding with new disability legislation in the US, Mattel produced a variant of its Barbie doll.⁶ Working with the National Parent Network on Disabilities, the company produced a cousin for Barbie: Share-a-Smile Becky.

Becky used a realistically scaled wheelchair that accommodated a backpack (figure). From a clinical perspective the origin of her disability was not clear, as her tone and muscle mass were strikingly similar to her able bodied cousin, Barbie. But her introduction was initially welcomed widely

It makes no sense to invest in training smart women only to snatch their advancement away because they bear babies

in the media and among disability activists as an enlightened expansion of diversity in an influential sphere of human experience.

However, storm clouds soon began to gather. As anyone who uses a wheelchair will know, despite advances in promoting universal design our society still presents multiple barriers to people with disabilities in almost every environment. Barbie's house and cars were no exception and, akin to her human counterparts, her home and car were found to be inaccessible to Becky. The doorways in the Barbie house would need to be increased by an estimated 30% to accommodate Becky and her wheelchair.

Various advocacy groups began to agitate for adaptation of the Barbie milieu, and Mattel made reassuring noises about reconfiguring the environments for Becky. This would presumably have entailed an increase in cost, and it never happened. Instead, eight months later when the hue and cry had abated, the company dropped Becky from its product line.

Becky's demise raises interesting reflections on advocacy for inclusive toys, particularly the challenges of timing and unintended consequences. Few would doubt the righteousness of the advocates' concerns, but the disappearance of a figure with a visible disability from a mainstream range of toys is disappointing, as was the fleeting appearance of old age in the shape of Grandma Barbie and Grandpa Ken—grey haired but remarkably trim and toned examples of healthy ageing.

Moral need

Might a gentler tone and a subtler advocacy strategy have preserved Becky and provided an opportunity for discussion, advocacy, and awareness for future generations of children? One of the Grimm brothers' fairy tales, *The Old Man and His Grandson*, uses this approach to demonstrate how children perceive ageism through playthings. We should expect toy makers to produce a diverse range of toys because they should pay attention to the moral need for such toys, incorporate research showing how important it is, and understand that they are marketing to the future.

In addition to the value of corporate social responsibility,⁷ one potential agent of change is a growing awareness of the commercial advantage of inclusive design and advertising.⁸ Advertising campaigns demonstrate the increasing power of the "purple pound" (the spending power of people with disabilities, now estimated in the UK at £21.2bn). The fashion chain River Island launched one such campaign in 2018 called Labels are for Clothes, and Marks and Spencer launched an "easy dressing" range the same

Such toys enable children without disabilities to think positively about interactions with peers with a disability

year. The movement towards mainstreaming education for people with disabilities is also likely to open new markets.

Children's views

The perspectives of children with disabilities are also relevant. When faced with a choice of dolls with features of Down's syndrome or dolls without, children with Down's syndrome preferred to play with, and attributed more positive traits to, dolls without the Down's syndrome features.⁹ As the authors of this piece note, this finding points to a need to investigate the stigma that children with Down's syndrome face: did their doll preference reflect internalised stigma or a desire to fulfil the social ideal?

While the interpretation of doll studies in the context of race has been shown to be challenging,¹⁰ as noted by an emerging researcher¹¹ in the area of toys and disability, it would be perverse to fail to interpret this study and not reflect on the importance of toys representing diversity to all children, with wider and better representation of diversity.¹¹ Campaigns such as #toylkeme—whose petition in 2016 garnered 20 000 signatures—have highlighted the desires of children with disabilities to see themselves represented in toys. Such representation is likely to have reciprocal benefit for those without disabilities, as such toys enable children to think positively about interactions with peers with a disability.⁴

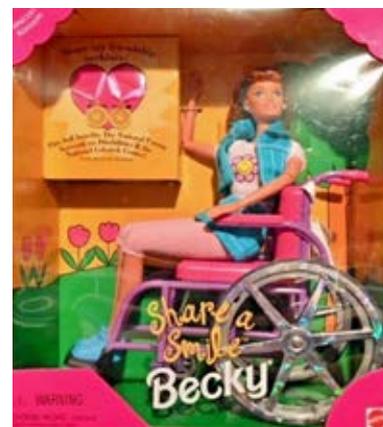
A possible path for the future lies in providing disability aids such as wheelchairs and crutches developed by third party companies for Barbie, Ken, and other similar dolls. Alternatively, it's encouraging that Lego launched a city set that included a child in a wheelchair, without fanfare¹²: the flexibility of the bricks would facilitate universal design,¹³ through elements such as larger doorways, for new generations of children. These could be introduced sensitively into national programmes for information about diversity in educational settings¹⁴—arousing curiosity, awareness, and the will to do better in adapting our environment to inclusive design.

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Share-a-Smile Becky was dropped by Mattel when it was realised her wheelchair did not fit into Barbie's home or car



Old age was not well represented by the fleeting appearance, grey haired but toned, of Grandma Barbie and Grandpa Ken

Children with Down's syndrome preferred to play with dolls that did not have the facial features of Down's syndrome

