

Why do women leave surgical training? A qualitative and feminist study



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Summary

Background Women are under-represented in surgery and leave training in higher proportions than men. Studies in this area are without a feminist lens and predominantly use quantitative methods not well suited to the complexity of the problem.

Methods In this qualitative study, a researcher interviewed women who had chosen to leave surgical training. Women were recruited using a purposive snowball strategy through the routine communications of the Royal Australasian College of Surgeons and Royal Australasian College of Surgeons Trainee Association over a 3-week period, and were interviewed over the following 4 months in the past 4 years in person or by telephone. More specific details are available on request from the authors. Supported by male and female co-researchers, and in dialogue with study participants, she then coded the findings and defined themes. An explanatory model was developed by integrating findings with different theories and previous literature. The research team developed three aspects of the model into a visual analogue.

Findings 12 women participated in the study, with all Australian states and territories, and New Zealand, as well as five medical specialty streams, represented. The time spent in training ranged from 6 months to 4 years, and all participants, except two, had trained in both metropolitan and rural locations. The findings confirmed factors identified in earlier reports as reasons women leave surgical training, and contributed six new factors: unavailability of leave, a distinction between valid and invalid reasons for leave, poor mental health, absence of interactions with the women in surgery section of their professional body and other supports, fear of repercussion, and lack of pathways for independent and specific support. The relationships between factors was complex and sometimes paradoxical. The visual analogue is a tower of blocks, with each block representing a factor that contributed to the decision to leave surgical training, and with the toppling of the tower representing the choice to leave. The visual analogue indicates that effective action requires attention to the contributory factors, the small actions that can topple the tower, and the contexts in which the blocks are stacked.

Interpretation Women might be best helped by interventions that are alert to the possibility of unplanned negative effects, do not unduly focus on gender, and address multiple factors. This should inform interventions in surgical training, with attention to local social context, health-care setting, and training programme structure.

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Introduction

Women are under-represented in the surgical profession, despite the Ottawa 2010 consensus¹ that specialist training should aim to produce a workforce that is broadly representative of the population that they are serving. In the UK and Australasia, women account for just 11% of consultant (specialist) surgeons.^{2,3} A particular concern is that a higher proportion of women leave surgical training than men,⁴ despite evidence that women might be more able applicants on entry to the training programmes.⁵

Attempts to attract and retain women in surgery have been confounded by poor understanding of the problem.⁶ Most researchers have used quantitative methods to investigate contributory factors. These methods have resulted in lists of possible factors, such as insufficient role models, insufficient institutional support, gender discrimination and harassment,⁷ sleep deprivation, adverse

interactions with seniors,⁸ pregnancy and childbirth,^{9,10} and childrearing duties.¹¹ Two limitations of quantitative studies are that they are very good at describing the problem, but not as good at explaining why or how the problem exists. Additionally, quantitative studies are not designed to investigate phenomena that are not yet described.

Qualitative research has the potential to address these limitations. The small amount of qualitative research in this area shows that women pretend to enjoy sexualised banter in the operating theatre to give them credibility in a male-dominated world, which might violate their personal norms;¹² women have to demonstrate masculine traits to become a legitimate woman surgeon;¹³ and trainees who choose to leave are less tolerant of the priority given to service provision over education, considering it a breach of the informal contract on which clinical education depends.¹⁴

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Research in context

Evidence before this study

Women are under-represented in surgery, accounting for just 11% of consultant surgeons in the UK and Australasia, and a higher proportion of women leave surgical training than men. The problem is poorly understood, with most previous literature using quantitative methods that adequately capture simple relationships but are not well suited to complex problems.

Added value of this study

We used a novel application of qualitative methodology to capture complexity, including paradoxical effects related to why women choose to leave surgical training. Six new contributing factors emerged: inaccessibility of leave, a distinction between valid and invalid reasons for leave, poor mental health, absence of interactions with other women in the surgery section and

other supports, fear of repercussion, and insufficient pathways for independent and specific support.

Implications of all the available evidence

We synthesised our findings and existing quantitative and qualitative literature into an explanatory model. Bourdieu and feminist theories provided additional novel insights into the paradoxical relationships between the factors that contribute to women leaving surgical training. We found individual factors act in an additive way and exhibit a threshold effect at three to four factors, which can be represented as a tower of blocks. Women might be best helped by interventions that are alert to the possibility of unplanned negative effects, do not unduly focus on gender, and address multiple factors.

In our research, we interviewed women who had chosen to leave surgical training. We use the phrase chose to leave, rather than the usual term attrition, to avoid the pejorative connotation of its definition, “the process of reducing something’s strength or effectiveness through sustained attack or pressure”.¹⁵

Methods

Approach

Qualitative research can “represent complexity well”¹⁶ and shed light on culturally situated problems, when fixed-choice surveys cannot. The richness of language, coupled with a researcher’s openness to paradoxical observations and interpretations, can frame problems in previously unimagined ways.¹⁷

We were guided by social theory. Pierre Bourdieu was a social theorist who developed the concept of habitus—the deeply ingrained habits, skills, and dispositions that develop through life experiences (panel 1). For example, an appropriate surgical habitus in a particular institution might include an assertive manner, a preference for direct and immediate communication, and the ability to take part in robust discussions with seniors. Habitus is often mistaken for natural ability; however, it is culturally developed. This means that there is an unconscious bias towards others with perceived ability, which is a preference for others with similar cultural background. Individuals with a different habitus must do additional work to be considered as able as those whose cultural background means they already have the required habitus.¹⁸

Feminist theory holds that institutions like surgery, which have been created by men and traditionally dominated by men, are defined by the absence of embedded roles for women. Female roles cannot simply be added to existing institutional structures.¹⁹ Faced with the absence of a gender-congruent role, women must choose between identifying as a woman and remaining outside the traditional structures of surgery, or identifying as a surgeon in traditionally masculine

terms.¹³ A research implication of feminist theory is that tacitly sexist assumptions might be embedded in measurement instruments, so quantitative research can perpetuate injustice rather than challenge it. Qualitative research, on the other hand, lays researchers’ interpretations, and reasons for making them, more open to critical scrutiny.^{20,21}

By taking a participatory qualitative approach, we actively involved women in the research process and the co-creation of understandings and potential solutions.²² This approach made sense given the intelligent and articulate participant group. Participatory research methods have a tradition in feminist research because they challenge the assumption about the objective distance between the researcher and the research subject, and the convention that the researcher gains knowledge of the subject, but not vice versa. By contrast, feminist participatory research seeks a more authentic understanding by engaging the researcher and subject as equals who mutually share knowledge.²³ The interviewer (RL) deliberately maintained contact with participants who indicated their willingness to do so, shared preliminary findings with them, and involved them in data analysis, essentially making them additional members of the research team (appendix).

Procedure

We publicised our intention to interview women who had left surgical training through the routine communications of the Royal Australasian College of Surgeons (RACS) and the RACS trainee association, inviting members to refer women known to them who had chosen to leave surgical training. We sent potential participants an information and consent form. Participants chose to be interviewed in person or by telephone; all but one chose a telephone interview. Recruitment and interviewing was done by RL and continued until a suitably varied group of participants had been interviewed, and the absence of new themes showed the

See Online for appendix

sample was sufficient. Women were recruited using a purposive snowball strategy through the routine communications of the Royal Australasian College of Surgeons and Royal Australasian College of Surgeons Trainee Association over a 3-week period, and were interviewed over the following 4 months in the past 4 years in person or by telephone. More specific details are available on request from the authors.

RL started interviews by reconfirming participants' written consent, including permission to audiotape and transcribe the conversations. Following interviews, she shared transcripts with the participants, inviting them to check the contents and delete portions if desired. RL updated the interview guide after each interview (as shown in the appendix) to elaborate on the themes.

The authors independently open-coded the transcripts for themes, and RL recursively developed and refined a thematic structure. We maintained confidentiality by not involving participants until we had generated themes. We gave participants de-identified extracts relating to themes, but not original transcripts, other than their own. We then combined themes from this study, insights from Bourdieu and feminism, and interpretations from existing literature to build a model that explained how the social conditions in surgical training influenced women to choose to leave. We developed three aspects of the model into a visual analogue that explained why women chose to leave, and identified further actions for institutional leaders and further research. For more detail of our procedure, please refer to the Consolidated Criteria for Reporting Qualitative Research checklist in the appendix.

Ethical approval for this study was granted by the institutional review board of the University of Melbourne, Australia. A psychiatrist was recruited to be available if required to support participants.

Role of the funding source

The funder of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Results

12 women participated in the study. All the Australian states and territories, and New Zealand, were represented among the interviewed participants. Five of the nine specialty streams were represented, and one participant had experience of two specialty streams, having been accepted from general surgical training into a different subspecialty training programme. The time spent in training ranged from 6 months to 4 years, and all participants, except two, had trained in both metropolitan and rural locations. No participants required support from the psychiatrist. No further themes emerged after 11 interviews, with a 12th participant interviewed for

Panel 1: Key concepts

Habitus

A concept developed by the social theorist Pierre Bourdieu. The deeply ingrained habits, skills, and dispositions that develop through life experiences. A surgical habitus might include an assertive manner, a preference for direct and immediate communication, and the ability to take part in robust discussions with seniors.

Feminist theory

Feminist theory positions women as the norm. A feminist stance defines institutions such as surgery by the absence of embedded roles for women. Women must choose between identifying as a woman, and remaining outside the traditional structures of surgery, or identifying as a surgeon in traditionally masculine terms.

Feminist research methods

Qualitative research is often preferred because it avoids tacitly sexist assumptions that may be embedded in quantitative measures, such as measuring work volumes that are more easily achieved by men working without career breaks, instead of the quality of that work. Participatory co-creation challenges the assumption about the objective distance between the researcher and the research subject, and the patriarchal stance that the researcher gains knowledge of the subject, but not vice versa. Participatory research treats the researcher and subject as equals who mutually share knowledge.

confirmation. Eight of 12 participants chose to co-participate in the data analysis to differing degrees, and five remained involved until the end of the study.

Reasons women leave surgical training, as described by previous researchers and confirmed in this study, are shown in panel 2. Six reasons newly identified in this study are shown in panel 3. One of which was unavailability of leave, such as for sickness or bereavement, sometimes in contravention of institutional leave policies. Another related reason was other staff judging some reasons for leave valid and other reasons invalid. An additional reason was poor mental health, which could be so severe that two participants reporting being suicidal at the time of their decision. This directly contributed to the decision to leave surgery, even when other factors that could affect mental health, such as fatigue and bullying, existed but were tolerable. Absence of interactions with women in the surgery section in which our participants worked, and absence of other support, was a surprising reason participants left surgical training, given that the surgery section is said to be very active. Instead, participants expressed that they would have appreciated knowing of it and receiving its support. Another reason reported in our study, fear of repercussion, had been heightened by recent publicity about the negative effects arising from the reporting of

Panel 2: Factors described in previous literature confirmed in this study**Long working hours**

"I didn't understand how we could have a team of eight people, we would all be there from 6:30 in the morning until 8 o'clock at night. I thought it was a bit unnecessary and perhaps we could have devised a way [to better manage fatigue]. That turned into: Well you can just go home then." (Participant G)

"I remember one weekend in [hospital name] being on call for 72 hours and you got 2 or 3 hours of sleep each night... I was wrecked... I didn't have time to brush my teeth. Little things became big things." (Participant J)

Fatigue and sleep deprivation

"...the reason I ended up withdrawing [from training] is that my priorities changed and being able to control things like getting enough sleep and exercising and actually eating regularly and those kind of things became more important than continuing my surgical training." (Participant A)

"...they think... that we'll just cover for it and nobody will die, kind of thing because everybody else just copes but they cope... by everyone being unhappy and tired and stressed and that's not a healthy workplace." (Participant I)

Unpredictable lifestyle

"I just felt very much like my whole life was completely out of my control... it was to the extent of: We could call you one day and say this job is now someone else's and you're moving 4 hours away tomorrow." (Participant B)

"Are you going to be moved to the country, that type of thing that you don't have any control over where you go... particularly when your partner has not got as flexible a job arrangement as your own. That's hard." (Participant G)

Impact on relationships

"...in the 6 months... we had one afternoon where we were both home in time to have a cup of coffee together. Only once in 6 months. And we were sitting there that afternoon going: What are we doing? Is this going to be what our life is...?" (Participant B)

"...there were lots of rocky patches... I didn't really realise it until I stepped out of it, how rough that was... I came to understand a lot more how hard that is on a relationship... it improved our relationship, stepping out [of training]." (Participant F)

Lack of learning opportunities

"My supervisor at the time who I really like and clinically I learnt from, would not let me operate. He did not have the patience to teach someone how to operate so I worked long hours for him... and didn't really learn anything procedurally." (Participant H)

"He was pleasant enough but just didn't allow either of us primary operating experience, even assisting we were not allowed to do anything. The most I did that term with him was apply silver nitrate to someone's ingrown toenail." (Participant G)

Bullying

"...he kept yelling at her with the [whole theatre team] there and he's just like saying 'No you idiot. Don't do it like this'. Just not constructive, not helpful, not appropriate... They just blamed her for everything, even if it wasn't her fault." (Participant I)

"[the bullying culture] was set by the consultants and you could see it because the Fellow and the senior trainee both felt it as well. You could see them get reprimanded and their heads would hang... I was like: OK it's not just me, I'm not [the only one] being victimised here... It didn't make it any better." (Participant E)

Impact of pregnancy and childbirth

"...if being female, you're the one who has the baby and if you decide to breastfeed and... regardless a lot of the initial stuff falls to the Mum when you have kids and so not making any effort to put us in the same place as a family, played a big role in me choosing to leave." (Participant D)

"The Chair of the Board in [location] said on our welcome meeting with her that if we got pregnant we couldn't expect any support from her." (Participant H)

Impact of childrearing duties

"...bosses have said to them, to their face, I don't think there's any point in me training you because you're going to get married and have kids and then what use are you going to be to this surgical service?" (Participant A)

"I certainly did get a few comments about the unwise, the antiwisdom of having children during training... 'I don't know. These trainees who think they can have babies and just go on... and just expect us to manage when their kid is sick', was one comment" (Participant I)

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sexual harassment during surgical training.²⁴ Lack of independent and specific support, reported by most of our participants, is distinct from the fear of repercussion, and demonstrates the importance of independent structures for trainee feedback.

Each of the new themes were supported by multiple participants, ranging from poor mental health (supported strongly by two participants and partially by two participants) to fear of repercussion (supported strongly by eight participants). In qualitative research,

the strength of a theme does not depend on the proportion of participants who support it, because the research process aims to capture the full range of the phenomenon, and the most informative examples might be minority outliers. This is a consideration when researching socially situated problems; history shows that social justice movements often begin with voices that are initially in the minority.

The appendix classifies all the previously known and newly identified factors in an explanatory model

(Panel 2 continued from previous page)

Insufficient role models

"...once I left [my sole female role model] where I did my intern years... I actually didn't have another female consultant until I was a registrar [specialty trainee]. So all through my PHO [non-training registrar] time, they were all male consultants so it wasn't even an option." (Participant B)

"Females, I guess the ones that I worked with, because they could do it: what's your excuse? Do it. Meaning because they can be mums and surgeons, it's doable... so what's your excuse sort of thing... females in surgery aren't exactly the most sensitive specimens around. They are quite... what's the word, they've got tough skin and... they're just quite rigid." (Participant F)

Sexism and discrimination

"If a male surgeon were to raise his voice in theatre because something he wants wasn't prepared... the nurses would quickly try to find the instrument that he wants... but if a female surgeon wants to do the same, there would be a lot of

talk in the tea room about how badly she behaved in theatre afterwards." (Participant C)

"...sexist jokes are widely seen to be acceptable and you're considered overly sensitive, and thus not well suited to the profession if you think otherwise." (Participant K)

Sexual harassment and assault

"...in one of the hospitals there is a picture of sex positions up on the wall and I find it odd that it needs to be up in a professional health-care service registrar office." (Participant L)

"...he was notorious for smiling and winking at female trainees and that always made me feel extremely uncomfortable... I never had anything more than winking and smiling and the occasional elbow nudge, but that was enough. That, to me, was definitely inappropriate and was not done to the boys." (Participant B)

"...waving his chest in my face saying 'come on [name]. Touch my nipples. Touch my nipples. You know you want to.'" (Participant D)

summarising social contexts of surgical culture, and mechanisms triggered by these contexts, which resulted in women choosing to leave surgery.

Many of the participants had developed an early identity as a future surgeon, usually at medical school, and in one case as a teenager before medical school. This early identification meant they had spent up to 10 years of preparing for surgical training, and yet most participants we interviewed made the decision to leave within 6–18 months of starting specialty training. Two factors newly identified in this study (ie, the unavailability of leave and the distinction made between valid and invalid reasons for leave) help to explain why the additional work required of women more easily reaches a crucial level within the time-limited surgical training programme.

Invalid reasons were often so-called female reasons, such as psychological distress, pregnancy, maternity leave, and childrearing duties. The invalidity arose through incongruence with the expected surgical habitus, even if the reason was clearly congruent with modern social norms and institutional policies. At the intersection of Bourdieu and feminist understandings, gender appeared to be a more dominant determinant of appropriate habitus than the actual reason for the leave request. One participant noted for example, that a male colleague had been granted leave to train part-time to accommodate childrearing, while women were being dissuaded from applying for leave for the same reason.

Although surgeons of both genders are coming to expect a balance between their personal and professional lives,²⁵ some of our participants had unexamined assumptions that they were the primary caregivers or that their careers were secondary to their partner's

careers. This assumption would increase the gap between identifying as a woman and identifying as a surgeon.

"As a mother, something may have to give. You've got a sick child at home and you've got a theatre list, the patient's booked, they're fasted and ready to go".

Participant J

"For me it has been difficult balancing that because his career is just as challenging as mine is, but for me there's been the pull between home life and work life".

Participant H

Interactions between social contexts, mechanisms triggered, and outcomes were complex and sometimes paradoxical, as detailed more fully in the appendix. Gender-based affirmative action remains framed within existing male-dominated institutional structures and works to maintain them; a form of "benevolent sexism"²⁶ in which "seemingly liberal thematic motifs serve as a benign cover for a selectively hostile and exclusionary disciplinary practice".²⁷ In our study, participants expressed concern that interventions specifically for women implied that women required special or additional treatment, amplifying differences between genders and implying that women were not as able as men.

"There's not a big gaping issue around women in surgery that needs a solution of dinners and support. If anything, I actually cringe a bit at that, thinking we don't want to be highlighted more".

Participant J

Amplification of gender differences tended to inhibit male mentorship, teaching, and socialisation. This

Panel 3: New factors identified in this study**Unavailability of leave**

"When my father died, I was only allowed 3 days off work... I had to go to work the morning of his funeral." (Participant K)

"[The Director of Training] said: You guys, we're short staffed this term. There's going to be no leave in the first 4 months of this [6 month] term. If you're sick, I won't be finding replacements for you... that's not my job... you'd better get each other's numbers." (Participant E)

"All these years I've spent all my annual leave on work—either studying or attending a course or a conference or doing something related to work and not actually going home to visit or doing something else for a holiday." (Participant C)

A distinction between valid and invalid reasons for leave

"I definitely used the ankle injury as an excuse [to get leave] rather than the psychological distress [about bullying] I was feeling." (Participant L)

"...[colleague unable to take leave despite] horrendous morning sickness and sitting in theatre looking green and still getting up to operate and stuff like that. It just looked like really hard work and then I think one of her babies, she only took 4 weeks maternity leave because of the way that it had all been." (Participant D)

"I got a pretty clear picture from a lot of the older surgeons that it's not right for a mum to be a surgeon... [but] a male colleague of mine went part-time just because he wanted to spend more time with his wife and child. He got away with it because he was a male, Anglo male, lovely guy." (Participant J)

Poor mental health

"Ultimately I didn't see more than two choices: kill myself or leave." (Participant K)

"I'd seriously considered driving my car off the road, twice... The thing that stopped me... was that I was the trauma reg[istrar] on call... I'd be the one they'd have to call." (Participant E)

Absence of interactions with Women in Surgery section and other supports

"I think what would have made a huge difference for me would have been the opportunity to actually sit down with a group of female consultants from various specialties, just to gauge in a very frank conversation about time commitments, work life balance and those sorts of things." (Participant B)

"I'd have loved the social support of something like this... Perhaps it would prevent the downward spiral of social isolation from developing." (Participant K)

Fear of repercussion

"If I say something, that's the end and I can never go back... I think that's why a lot of people haven't reported issues that they have had... for fear that ends their options forever." (Participant B)

"...most people I know won't complain about bullying... because there is so much fear about talking about it, particularly on the program or [if] you're wanting to get back on the program." (Participant D)

"...they felt it wasn't worth their career to support [a bullied colleague] to that level. They were prepared to verbally say: Yes, it was terrible. It was horrible, the things that they did to you. But when it came to actually giving any tangible support, they weren't willing to." (Participant I)

Lack of pathways for independent and specific support

"Who do you talk to if you're having issues with your supervisor at work? Because you can't really go to the director of the department that you've worked for... maybe having some kind of channel where you can express your grievances." (Participant A)

"There needs to be functional channels to be able to report bullying that's not internal because at the moment I have a bit of a chuckle at some of the press releases because the people who were speaking have reputations as being some of the biggest bullies in surgery." (Participant D)

limited, according to our participants, the support systems available to female trainees and perpetuated the exclusion of women from the traditional structures of surgery. This is consistent with studies showing that women are less likely to identify role models²⁸ and be socially included.²⁹

"They'd go out for lunch and do this and do that. I was like: you bastards...I didn't really feel like I was part of the gang. They're all boys. I was the only girl on the team."

Participant E

More worryingly, defining a surgical trainee by their female gender necessarily highlighted their feminine characteristics, creating the setting for sexual harassment and discrimination. Previous research consistently shows that women experience these behaviours in higher proportions than men.^{9,30,31}

"I'm like: Yeah I'm a girl. [imitating higher voice] Of course I'm going to get around in my heels and my handbag... I think probably when I was a resident and deciding to do surgery, I experienced more gender stereotyping..."

Participant D

The interactions of the various reasons for leaving surgical training had several striking features. While factors were additive, the final impetus to leave could be relatively small, and small interventions could have prevented this. Our visual analogue is a tower of blocks (figure). Blocks represent factors that contributed to the decision to leave, with the toppling of the tower representing the choice to leave. There is a threshold effect after three to four blocks, with the last block causing the entire tower to fall. This represents the three to four factors that act in an additive way, after which a choice

to leave surgical training becomes more likely in the same way that a tower is more likely to topple the higher it is built.

The tower of blocks, although a simple analogue, acts as a bridge to understanding the higher proportion of women choosing to leave surgical training. When the potential factors comprising the blocks are considered, it can be seen that pregnancy affects women only, whereas others affect women predominantly, such as sexual harassment,³⁰ effect of childbearing,¹⁰ too few role models,^{7,28} and inaccessibility of leave for invalid gender-related reasons. Women have more blocks to deal with than men in the real-world context of surgical training and are more likely to have the requisite three to four blocks already stacked. A factor that causes additional stress to a male trainee is more likely to be the final block that causes a woman to leave.

Just as a tower of blocks can be rebalanced with small adjustments, our study indicates that relatively small interventions (eg, a cup of tea or a supportive chat) could have been effective in preventing them from choosing to leave.

“I had a phone call from one of the consultants... Is there anything I can do to convince you to stay? I was like, well you could have friggin’ told me all these nice things back when I was working for you.”

Participant 1

A tower at the threshold, with several blocks already stacked, can be toppled by small actions, even if no further blocks are added. This reflects the finding that the final impetus to leave was sometimes seemingly minor (eg, a poor interaction with a senior, or a declined leave application). Context also matters because the same factor might have different outcomes depending on the context; eg, participants considered long working hours acceptable in the context of providing patient care in a busy rotation, but less acceptable to satisfy the demands of a bullying senior.

These considerations are important when supporting trainees at risk of leaving, when attention should be paid to the daily interactions that can act as small toppling actions, as well as the large factors that constitute the blocks themselves, and the contexts in which those blocks are being stacked. Meeting these requirements are worthwhile because, once fallen, the tower cannot be rebuilt simply by removing the last block or reversing the last small action. In other words, once the choice to leave surgical training has been made, it cannot be reversed simply by addressing the final event.

Discussion

We need to move beyond single-factor interventions and work in more complex, multifactorial, and contextual ways to improve institutional environments and support women to stay in the surgical profession. The tower of blocks should be transferable to other contexts of surgical training, regardless of location, health-care setting, or

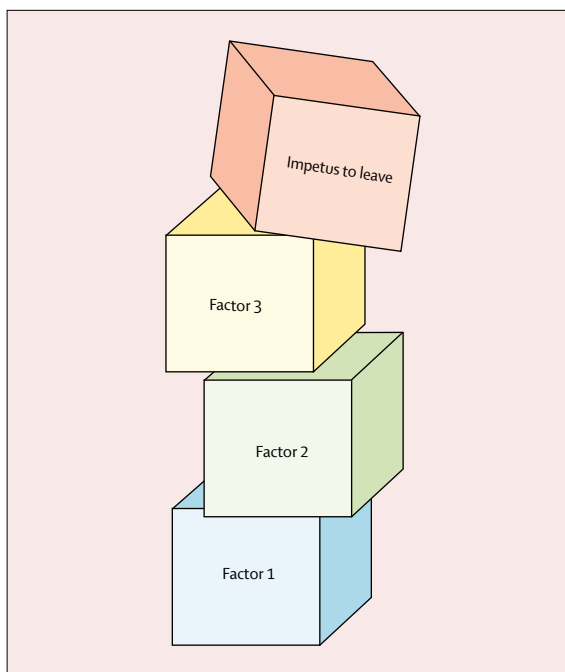


Figure: The tower of blocks

training programme structure. The contributory factors might differ according to context and can be elucidated by local research, but their additive effect indicates that interventions targeting single factors will only be partially effective at best. Efforts to improve the retention of women in surgical training should address multiple factors to avoid toppling the blocks for any individual woman.

Our findings suggest that women might be better helped by interventions that do not focus unduly on gender. Such interventions are likely to improve surgical training for both women and men because many factors, such as long working hours and unpredictable lifestyle affect all trainees, and changing societal expectations mean that previously female factors, such as childrearing, are increasingly shared. There is also a sense of equality in the idea that work done to advance the cause of women in surgery need not do so at the expense of their male colleagues.

The specific actions flowing from our findings that might be effective in different settings will again depend on the local context. These actions may be implemented informally and immediately without substantial cost or changes in surgical training structures. Our explanatory model (appendix) suggests many areas that could be targeted; eg, distinction between valid and invalid reasons for leave could be addressed by strengthening leave policies and the workplace culture to prevent value judgments on the validity of the reason for the leave request, whereas lack of independent and specific support could be addressed by planned meetings with mentors from outside the immediate surgical team.

The model suggests other potential solutions that require further research. Is it possible to stack blocks better by helping trainees to develop resilience and coping mechanisms? Could addressing disrespectful workplace behaviours of seniors and leaders be more effective than individual trainee actions, by providing the context to stabilise the towers for multiple trainees in a unit or institution? Are consultants able to stack more blocks than their trainees and, if so, what strategies or skills allow them to do so? Or do consultants exhibit the same threshold of three to four blocks, and could this inform interventions for consultants approaching burnout? Do blocks unstack with time (eg, through better access to leave, more supportive environments for women, and part-time training)?

The main limitation of this study is the small number of women interviewed. From a methodological stance, rigour depends on reflexivity and the use of pre-existing theories, rather than recruiting a predetermined number of participants.¹⁷ Recruiting more participants and increasing the size of the dataset would have done as much to compromise the depth of the analysis as to increase its breadth. From a sampling viewpoint, the total target group (women who have chosen to leave surgical training in Australasia) was estimated at only 80 because of existing gender disparities. Another possible limitation is that the role of RL as a consultant surgeon might have introduced biases due to a power differential to which she remained unaware. RL is a young consultant and a near-peer to the participants who, having already entered and subsequently left surgical training, were advanced in postgraduate years. It is possible that participants left things unspoken; however, the frankness displayed in the interviews, including the disclosure of extremely personal events, suggests that any perceived power differential was effectively addressed.

The strengths of this study are that it shows gathered rich data from a target group whose small size limits the power of quantitative methods, used qualitative methods in a novel way to synthesise data into an explanatory model, and maximised the contribution of participants through a participatory co-created paradigm.

With these strengths and limitations in mind, the next steps should include research to examine and contrast the factors affecting men choosing to leave surgical training. With the exception of pregnancy, factors typified as female, such as sexual harassment and childrearing, also affect men. Literature tends to either foreground women^{13,28} or to treat the genders equally.^{8,32} For example, we do not know whether or not men have unexamined assumptions about their gender role.

The voices of other genders and sexualities are also absent. Surgical specialties are ranked as the least inclusive of sexual and gender minorities,³³ and efforts to conceal orientation³⁴ could be considered additional work to achieve a surgical habitus. Feminist theory has a

tradition of embracing diversity through the examination of institutional structures that are predominantly male and heterosexual.¹⁹ If the findings of this study are transferable, it would be reasonably expected that interventions targeting minority genders or sexualities in surgery might result in unplanned negative effects, through the same mechanisms of exaggerating otherness resulting in negative attention and loss of collegial and social supports.

The reasons women leave surgical training are complex and context dependent. Women might be best helped by interventions that are alert to the possibility of unplanned negative effects, do not unduly focus on gender, and address multiple factors. Individual factors act in an additive way, exhibit a threshold effect, and can be easily understood as the tower of blocks.

Contributors

RL conceived the study, and RL, DN, and TD contributed to the study design. RL did the data collection, and RL, DN, and TD analysed the data. RL, DN, TD, and the study participants contributed to the interpretation of the results. RL wrote the first draft of the Article and all authors contributed to subsequent revisions.

Declaration of interests

RL reports a grant from the Royal Australasian College of Surgeons, through an Ian and Ruth Gough Surgical Education Scholarship. TD and DN declare no competing interests.

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