RESEARCH

Using Hofstede's framework to explore surgical cultures and their impact on female surgeons

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Abstract

Context: Workplace diversity improves outcomes, yet surgical cultures have long been identified as a deterrent for women considering surgical careers due to male-dominated traditions. Our study explores the impact of surgical cultures and their influence on gender through the analytical lens of Hofstede's cultural dimensions framework. We apply this in a novel way to gain deeper insights into how masculinity and other cultural dimensions intersect.

Methods: For this qualitative study—part of a larger study exploring gender in surgery—we conducted semi-structured interviews with 29 female surgeons, 18 male and female colleagues of female surgeons (surgeons, anaesthetists, nurses and physician associates) and 13 patients of female surgeons. We analysed the data using framework analysis, with surgical cultures being identified as a central theme. We drew on Hofstede's cultural dimensions theory to deeply interrogate how cultural dimensions intersect to shape the surgical environment, thereby disadvantaging women.

Results: Competition, achievement and heroism associated with masculinity were thought to be pervasive and hindered progression, particularly for female surgeons. Unequal power distributions were reported to lead to female surgeons working harder to earn respect. Female overseas doctors narrated the challenges of being respected by male colleagues from their own collectivist countries. Long-standing 'old boys' club' traditions associated with uncertainty avoidance were thought to maintain the gendered status quo. Long-term orientation and restraint were reported to impact female surgeons with career breaks. However, our analysis indicated novel interplays between masculinity and the other five cultural dimensions, with some dimensions overlapping (e.g., long-term orientation and restraint) and others contradicting (e.g., power distance and collectivist values).

Conclusion: This study, drawing on Hofstede's cultural dimensions, illustrates the complexity of interacting cultural dimensions, serving to maintain inequities for female surgeons. We therefore provide recommendations for multiple interventions to enable surgical culture change, based on these intersecting six cultural dimensions.

1 | INTRODUCTION

Surgical cultures have been identified as deterrents for women considering careers in surgery.[1–4] Unequal treatment of males and females in surgery can affect trainee morale adversely and result in most female graduates pursuing different careers. Surgical cultures can impact women's unique experiences during training.[5,6] For example, Peters et al[7] argue that machoism in surgery is fundamental to women's lack of interest in the speciality, with female surgical trainees feeling that they do not fit expectations.[7] Gender-based discrimination during medical school, residency and practice, leading to obstacles in progression, lack of mentorship/sponsorship, leadership, work-life balance and pay equity, are some of the cultural factors that significantly impact women surgeons.[8–11] While increasing research has explored women's experiences of surgical careers over the last decade,[12–18] few have examined in-depth what intersecting aspects of surgical cultures especially disadvantage women. Exploration of surgical cultures is, therefore, still warranted. We adopt a social constructionist perspective to explicitly focus on surgical cultures, drawing on Hofstede's cultural dimensions innovatively as a sensitising lens, to better understand intersecting surgical cultures and provide recommendations for improvements.

1.1 | Hofstede's theory

Hofstede's cultural dimensions theory, developed by Dutch social psychologist Geert Hofstede, is a framework for understanding how cultural values influence behaviour in a society, especially in the context of society, organisations and workplace dynamics. The theory identifies six cultural dimensions: masculinity versus femininity, power distance, individualism versus collectivism, uncertainty avoidance, long versus short-term orientation and indulgence versus restraint.[19] Hofstede worked on national,[19–25] and organisational cultures,[26–30] which have been widely used in studies to understand these dimensions. According to Hofstede, national culture is deeply ingrained, determined by values, shaped early in life and relatively stable over time, whereas, at the organisational level, culture is determined by practices, influenced by norms, leadership, policies and habits.[26] For our subjective study, employing social constructionism, we use Hofstede's cultural dimensions theory to provide a novel analytical lens to gain deeper insights into intersecting dimensions of surgical cultures across two countries, recognising the tension between national values and organisational practices and their influence on gender.[31] Furthermore, we do so recognising espoused limitations of Hofstede's cultural dimensions theory, including subjectivity, oversimplification of cultural differences and the presumption of culture as static instead of dynamic.[32,33]

1.1.1 | Masculinity versus femininity

Masculinity and femininity refer to the social roles, behaviours and meanings prescribed for men and women in society.[34] 'Masculinity' relates to ambition as a driving force, valuing wide-ranging attributes including assertiveness and competitiveness, while 'femininity' focuses on quality of life, harmony and process versus results-orientation.[31] Masculine cultures may enable continued gender inequalities, with structures thought to favour men, who, for example, receive more research funding in academia than women.[35,36] Within the context of academic surgery, Thomas et al[37] found that male surgical trainees' academic profiles were more robust than those of women, e.g., more higher degrees (83.8% versus 16.2% women), publications (8 vs. 5.5) and first-author publications (4 vs. 3).[37] Brown et al[38] found that despite spending less time in surgical training, men appeared to accelerate their academic profiles, choosing to pursue research and study for higher degrees five times more frequently than women.[38]

1.1.2 | Power distance

'Power distance' relates to power distribution within a culture, from relatively egalitarian cultures (small power distance) to those with unequal power (large power distance). In large power-distance societies, hierarchy is evident, with consequent reluctance to disagree with those in charge. Medicine has traditionally displayed a large power distance, with patients treating doctors as superiors and doctors controlling consultations. Hierarchy and the 'God complex' are not uncommon, sometimes leading to abuses of power amongst senior surgeons.[39–41] This hierarchy can also propagate gender discrimination and sexual harassment, creating barriers to progression for female surgeons.[39,42–45]

1.1.3 | Individualism versus collectivism

In 'individualist societies', people prioritise looking after themselves and their direct family, with their social behaviour determined by personal goals, attitudes and values. In 'collectivist societies', people prioritise their in-groups, taking care of the group in exchange for loyalty, with their social behaviour determined by shared goals, attitudes and values.[46] Doctors from collectivist cultures can face significant challenges when moving to individualist cultures due to cultural differences, as well as biases, in the workplace. Such biases may decrease with increased representation of minority groups in the workforce.[47]

1.1.4 | Uncertainty avoidance

'Uncertainty avoidance' examines a society's tolerance for uncertainty, flexibility, change, ambiguity and unstructured situations. In weak uncertainty-avoiding nations, people are more tolerant of different opinions. Uncertainty-avoiding behaviour preserves the status quo, maintaining gender bias and discrimination.[48] In strong uncertainty-avoidant societies, research has reported less attention on rapport-building, with doctor roles being prioritised over nursing roles, even though more nurses are present.[21,31,49,50]

1.1.5 | Long-term versus short-term orientation

'Long-term orientation' values thrift and perseverance. Such societies take a more pragmatic approach by prioritising future achievement over the long-term, postponing immediate success. Low scores indicate valuing the short-term, for example, expecting quick results. Interestingly, this dimension interplays with male trainees being exposed to more training opportunities than females,[51,52] especially given part-time/flexible postgraduate training being introduced for married women in the UK in 1966,[53] and in 2013 in Ireland.[54]

1.1.6 | Indulgence versus restraint

An indulgent society is thought to allow relatively free gratification of human drives related to enjoying life and having fun, while a restrained society is thought to suppress such gratification, instead regulating such needs through strict social norms.[19] This dimension can relate to the sacrifices made by surgeons to remain in surgery for extended training periods. Surgery's long training period has been reported to have negative implications for women in terms of career sacrifices.[52,53,55,56] For example, training is on average six months longer for women, despite the operative learning curve trajectories being similar to men, and some data demonstrating that female trainees progress a little quicker towards competence.[37,38] Taylor et al,[57] however, found little or no difference in career progression between men and women who worked full-time.[57]

Hofstede's dimensions have been used widely in healthcare to explore topics such as overseas medical graduates' transition to the UK,[50] professionalism,[24,58] and the influence of national culture on medical curricula.[59] Our literature review found studies using Hofstede's cultural dimensions to analyse workplace culture, leadership, ethics and decision-making in workplace conflicts,[27] clinical performance during clinical placement,[60] and workplace practices of overseas medical graduates.[50] However, we found no studies employing Hofstede's dimensions to consider surgeons' experiences of workplace cultures. Yet, reading the above papers,[27,50,60] the different dimensions strongly resonated with the preliminary reading of our data, continuing to do so during our preliminary framework analyses. We therefore use this theory as an explanatory tool, employing this theoretical lens post-hoc (i.e., after collecting our data) to help us analyse cultural aspects.[61,62] (See Figure 1 for a summary of Hofstede's six dimensions and their overlaps, discussed later in the results section).

2 | STUDY AIMS AND RESEARCH QUESTIONS

Our study addresses a pressing gap in the literature exploring surgical cultures, drawing on Hofstede's cultural dimensions in a novel way. This paper, part of a programme of research exploring women in surgery,[63,64] explores intersecting dimensions of surgical cultures to
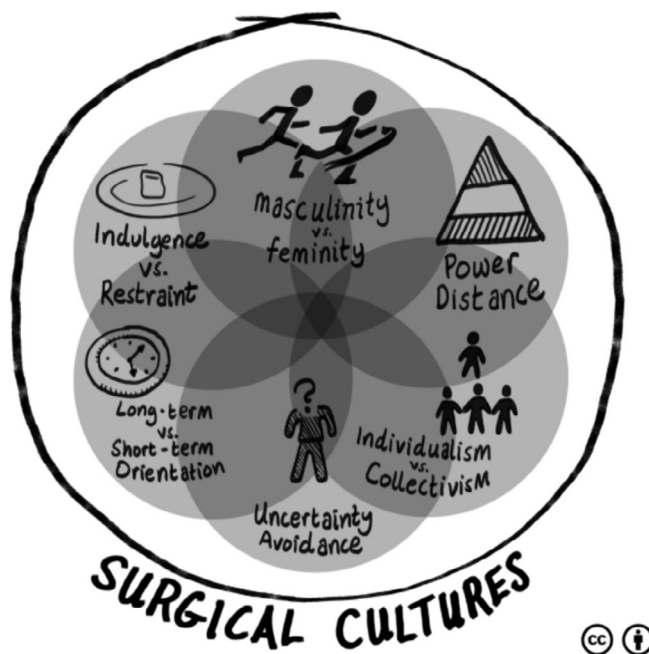

FIGURE 1 Illustration of surgical cultures underpinned by Hofstede's cultural dimensions. *Each dimension can potentially intersect with all other dimensions.

help us address the question: How do cultural dimensions intersect to impact female surgeons? Exploring this question enables us to gain deeper insights into surgical cultures and their impacts on female surgeons' careers, and to provide recommendations for culture change.

3 | METHODS

3.1 | Study design

We adopted an exploratory qualitative methodology underpinned by social constructionism and drawing on Hofstede's cultural dimensions theory.[19] The lead author conducted all interviews using a semi-structured approach to elicit participants' experiences.

3.2 | Context

Our research study was conducted in the context of postgraduate surgical training in Ireland and Scotland. Both countries' surgical training programmes consist of two years of core surgical training with 4–6 years of subsequent specialist training (duration dependent on subspecialty). The Certificate of Completion of Specialist Training allows trainees to become fully trained surgical consultants (equivalent to attending surgeons in other jurisdictions, e.g., USA). Previous research has suggested that both Ireland and Scotland lean towards the following nationwide cultural dimensions: masculinity, low power distance, individualism, low uncertainty avoidance, long-term orientation and indulgence.[31,46,50] Our study uses Hofstede's cultural dimensions

theory to explore the intersections between cultural dimensions (i.e., masculinity with five other dimensions) at the level of surgical rather than national cultures.

3.3 | Sampling and recruitment

Following ethics and institutional approvals, participants were invited through emails, posters, snowballing and a clinical reference group (see acknowledgements) across Ireland and Scotland. We used maximum variation sampling to identify diverse views and experiences[65] from three different cohorts – 29 female surgeons, 18 male and female colleagues of female surgeons (surgeons, anaesthetists, nurses and physician associates) and 13 male and female patients of female surgeons—the 60 interviews produced 36 hours of rich interview data, providing sufficient *information power*.[66] The study had a focused aim (i.e., to better understand surgical cultures), moderate sample specificity (i.e., female surgeons, their colleagues and patients), high-quality researcher-participant dialogue via semi-structured interviewing and used established theory (i.e., Hofstede's cultural dimensions),[19] and a team-based approach to data analysis.[66,67] Our female surgeon participants were consultants and higher-stage surgical trainees with at least five years of surgical training, to ensure rich data reflective of diverse experiences of surgical cultures.

3.4 | Data collection

Data collection occurred between November 2016 and April 2019. This protracted period was due to the time-consuming nature of securing ethics approvals from multiple HRECs in two countries, and the interviews being conducted solely by the lead author as part of her part-time PhD. In addition, the recruitment and data collection involved a large and diverse qualitative sample, including surgeons, colleagues and patients. The interviews were conducted by the lead author for consistency. Interview questions included participants' experiences in the surgical field in relation to teamwork and leadership. (Interview schedules are available on request from the corresponding author.) All participants completed a personal details questionnaire to elicit demographics. All interviews were audio-recorded with permission and transcribed. Participants were assigned unique identifiers to maintain their anonymity.

3.5 | Data analysis

This current paper is part of a larger PhD study exploring gender in surgery.[63,64,68] The full dataset was analysed using a five-step Framework Analysis approach,[69] including (1) familiarisation, (2) framework development, (3) indexing, (4) charting and (5) mapping.

3.5.1 | Familiarisation

Interview transcripts and related notes were imported into NVivo (Version 12). The lead author familiarised herself with the data by repeatedly reading the transcripts, listening to audio files and noting initial ideas.

3.5.2 | Framework development

The lead author then developed a coding framework with the whole research team. The key study themes identified were gendered transitions (reported elsewhere),[64] intersecting identities (reported elsewhere)[63] and surgical cultures (the focus of this paper).

3.5.3 | Indexing

In relation to the surgical cultures theme, the lead author coded the data using NVivo, with the other authors checking coding portions. The team discussed and agreed on any new sub-themes identified through the analytic process.

3.5.4 | Charting

The lead author explored patterns in the coding, using NVivo's query function and carried out post-coding interrogation of the data.

3.5.5 | Mapping

The final analysis step involved mapping and interpreting the coded data aligned with Hofstede's cultural dimensions.[19] Key sub-themes from the surgical culture theme are presented with illustrative quotes, allowing us to answer the RQs. Note that none of the included quotations have been published previously.

3.6 | Qualitative rigour

We established qualitative rigour via a team reflexivity exercise, acknowledging differences amongst team member perspectives, backgrounds, positioning and experiences, enabling a better understanding and contributing to a more rigorous analytic process.[70] Our authorship team includes three females, the lead author being a female surgeon of colour and the other authors being non-clinical, white, female medical education experts. There was a range of experience in the team with qualitative methodologies and gender research (one expert, one intermediate and one novice).

4 | RESULTS

4.1 | Demographics

The demographic data are reported in Table 1. Twenty-nine female surgeons participated (8 consultants, 13 trainees and 2 staff grades, middle-grade permanent doctors, along with 6 doctors who had transitioned out of surgery to other medical careers). The colleagues [male surgeons (n = 5), male surgical trainees (n = 4), female anaesthetists (n = 3), physician associates (1 male, 1 female) and female clinical nurse specialists (n = 4)] had all worked with a female surgeon for more than a year. The female surgeons and their colleagues came from wide-ranging female- and male-dominated surgical specialities and anaesthesia (see Table 2). The patients had all undergone a surgical procedure by a female surgeon in the previous two years (two years maximum to ensure good recall of experiences).

4.2 | Surgical cultures influencing female surgeons' careers

As mentioned above, the theme 'surgical cultures' was prominent in the data of all three participant groups. Furthermore, we did not find any differences in our data from Scotland or Ireland, so we did not do a comparative analysis of national cultures. Instead, we present our findings on surgical cultures, drawing on Hofstede's six cultural dimensions for the whole sample together, to better understand the different and interacting dimensions of surgical cultures impacting female surgeons. Mindful of the paper's length, we present only a sample of our data. For further quotes and analysis, we refer readers to the full PhD thesis.[68]

4.2.1 | Surgical cultures and masculinity

Our participants narrated how it was essential to enact competitiveness throughout training to progress in surgery. Both female and male surgeons articulated needing academic and educational advantages over other doctors (e.g., several higher degrees) to be sufficiently competitive for surgical training positions:

> "I had publications and a higher degree [MD] … I wasn't even shortlisted for an interview … And then I applied

TABLE 2 Specialities of female surgeons, surgical and non-surgical colleagues.

Speciality	Female surgeons (n = 29)	Colleagues (n = 18)
Anaesthesia	0	3
Breast surgery	4	5
Colorectal surgery	2	1
Vascular surgery	2	0
General surgery	4	3
General trauma surgery	0	1
Neurosurgery	0	1
Orthopaedic surgery	4	1
Paediatric surgery	2	0
Plastic surgery	8	0
Transplant surgery	2	0
Upper gastrointestinal surgery	1	1
Urology	0	1
Otolaryngology	0	1

TABLE 1 Demographics of study participants.

	Female surgeons (n = 29)	Colleagues of female surgeons (n = 18)	Patients of female surgeons (n = 13)
Age range:			
18–29	0	5	0
30–39	15	3	4
40–49	11	3	3
50–59	3	5	1
60–69	0	2	4
70+	0	0	1
Ethnicity:			
White	23	17	13
Middle Eastern	2	1	0
Asian	4	0	0
Gender:			
Female	29	8	7
Male	0	10	6
Country:			
Ireland	11	13	10
Scotland	18	5	3

*again in a year and then applied again the next year …
and the year I actually got in was the last year I decided
to apply because I was in my last year of my PhD"*
(ID 54, Scottish Female *Surgical Trainee, Aged 40–49*).

In other medical specialities, additional qualifications typical for surgical careers were seen as exceptional, indicating that this was a surgical speciality-specific issue. For example, in the following quotation, a resigned female surgeon found that her considerable achievements during surgical training enabled her to be highly competitive when transitioning into a non-surgical speciality:

*"Sixteen applied for [a non-surgical speciality] that year
… and only two spots were given… surgery had made my
CV so competitive… I had a PhD, a degree in [names post-
graduate degree], I won [a prestigious international aca-
demic research prize] … There was no question
apparently… because my points were so far ahead of
everybody else in [non-surgical speciality]"* (ID 80, Irish
Resigned Female Surgeon, Aged 30–39).

The competitiveness of surgery aligns neatly with Hofstede's masculinity dimension. Ironically, despite this female discussing her transition out of surgery, she talks through the masculine lens of surgery, with its preferences for achievement (*'I had'*, *'I won'*), heroism (*'my CV was exceptional'*) and competition (*'my CV was so much better than everyone else's'*, *'my points were so far ahead of everyone else'*). Competitiveness in surgery was described across all training stages, with the competition for consultant jobs often creating a *'very nasty atmosphere'* within the surgical training environment. Both male and female surgeons described constantly trying to prove their worth, exemplifying a masculine culture and how this systemic competition served as a barrier to collegiality (e.g., kindness).

4.2.2 | Surgical cultures and power distance

Societal disrespect towards women can feed into ongoing gender biases within workplace cultures, with men often perceived (consciously or unconsciously) as superior. This patient provides a historical example illustrating this:

*"I had a shocking experience. It was just after having a
baby. He was only 3 weeks old at the time, and he
[consultant surgeon] was so insulting … It was horri-
ble… he's wobbling my tummy and saying, 'What does
your husband think of that?', now I swear. He did. I'll
never forget that … No female doctor would say that
to you"* (ID 76, Irish Patient, Aged 60–69).

Power distance was also illustrated in our data through hierarchical and interprofessional relationships in surgical cultures, for example, between male surgeons and female nursing colleagues. Female surgeons were reported to need to work harder than their male counterparts to be recognised and respected:

*"The males seem to be a little bit more accepted for
their opinions … If they're in charge of the team… the
team seems to respect them that little bit more and
seems to give them that little bit more encourage-
ment… In contrast, a woman, if she's got a different
opinion, seems to almost have to fight that little bit
more to get her opinion listened to …"* (ID 68, Irish Col-
league Nurse, Aged 30–39).

Furthermore, professionalism lapses enacted by male surgeons, such as sexual assault, harassment and discrimination, offered evidence of a pervasive gendered hierarchical culture. Interplaying with the masculine cultural dimension outlined above, we saw examples in our data of male surgeons abusing their power over female patients as well as over female junior colleagues, with these seniors reportedly having negative impacts on trainees:

*"… all the male consultants were sitting around the table
… and I came in to discuss a case with the consultant… He
then said something to me … and I fairly naively leant
across him, and he … pulled me onto his knee … Touching
my thigh, I remember him going, 'Oh, you're lovely,' some-
thing really creepy and horrible and uninvited and I kinda
pushed him off and laughed at him and went away … this
was in a coffee room full of people … no one said a word"*
(ID 26, Scottish Female *Surgical Trainee, Aged 30–39*).

The female surgeon laughing off this incident publicly rather than raising her concerns and the others' silence serves to illustrate how systemic gender discrimination and humiliation of women within the surgical workplace culture can be normalised. Powerful surgical hierarchies interplaying with masculine cultural dimensions are evident here.

4.2.3 | Surgical cultures and individualism/collectivism

This dimension was particularly relevant to international medical graduate surgeons from collectivist cultures (e.g., those that privilege group membership) who were training and/or working in Ireland and Scotland (traditionally individualist cultures). Our findings indicated that doctors from countries where collectivism prevailed sometimes appeared less assertive and more subservient in their relationships with senior surgeons. Interestingly, one female surgeon from a collectivist culture suggested that male surgeons from traditionally collectivist cultures could find female surgical leadership challenging:

*"… people of my own country… who are either in the
same age group as me or even younger … there is a
group of men who are from [names an overseas*

country with collectivist culture], they would not listen [even if you are clinically more senior than them] … So, they would isolate me … they hate me because I am a woman, and it makes me feel that they hate me because I am a strong, independent, westernised woman" (ID 38, Irish Female Surgeon Staff Grade, Aged 40–49).

This illustrates how national cultures based on collectivism could transcend those surgical cultures based on the cultural dimension of power distance (related to training hierarchies). Furthermore, we can also see a tension here for this female surgeon with the competition inherent in masculine cultural dimensions, alongside tensions between her personal individualism ('I am a strong, independent westernised women') and her collectivist heritage.

4.2.4 | Surgical cultures and uncertainty avoidance

Participants commonly noted that intolerance of uncertainty in surgeons (i.e., high uncertainty avoidance) could lead to significant challenges for female surgeons *new* to surgical cultures, who reported feeling unwelcome and excluded in what was essentially a '*boys' club*':

> "He [male consultant surgeon] loved taking people out, going shooting or having meals and parties at his house, and he'd invite everyone in the room and turn and say, 'Not you obviously (says her name)' and walk out …" (ID 26, Scottish Female Surgical Trainee, Aged 30–39).

Another quotation also illustrates exclusion from a work-related social gathering, this time because she is a 'girl' (infant child). If she was allowed to attend, she would have her clothing controlled (and interestingly, feminised/sexualised) by the male surgeons—demonstrating her further marginalisation, deprofessionalisation and othering:

> "So, I didn't enjoy that … particularly sexist unit where there were lots of going to boys' clubs … where you couldn't go if you were a girl and if you did you had to wear a skirt… you know it was ridiculous, but it was only a 3-month attachment" (ID 49, Scottish Female Surgeon Consultant Aged 40–49).

Interplaying with the masculinity cultural dimension, female surgeons and their colleagues discussed how seniors appeared committed to maintaining the gendered status quo in surgery (and therefore gendered certainty):

> "I had one particularly poor experience when I was pregnant the first time … the general surgical team … It was just awful. I couldn't do anything [operate]. They [male consultants] kept saying, 'Well, you won't be able to do this; you're pregnant,' although they were happy

for me to do a Hartmann's [Bowel resection operation] at two in the morning on my own (laughter) … You know, they were dreadful, but they had a reputation for it anyway, and I don't know if I felt it more keenly because I was pregnant and female …" (ID 49, Scottish Female Surgeon Consultant Aged 40–49).

Finally, the following trainee calls out inherent biases against not only females, but ethnic minority groups, and individuals from lower socio-economic backgrounds. These non-traditional candidates with atypical demographics within surgical cultures could potentially create ambiguity for those seniors craving certainty, thereby affecting fair and merit-based recruitment processes, with seniors wanting to recruit more surgeons in their own image—white, male and socially privileged:

> "… they would pretend to be all this fair and square and equal opportunity blah blah blah… but there really is a lot of discrimination. They want white public schoolboys, even if they don't have research, if they don't have anything" (ID23, Scottish Female Surgical Trainee, Aged 40–49).

4.2.5 | Surgical cultures and long-term orientation

Both female and male surgeons narrated challenges experienced during training, including extensive training periods and long work hours. This long-standing tradition of time-based apprenticeship training was commonly questioned by participants, however, irrespective of gender, as illustrated by this male consultant surgeon:

> "But that was really, really hard … we did a one in three on-call then, so every third weekend, I was away for two weeks, and I didn't see them [family] for two weeks" (ID24, Scottish Male Consultant Surgeon, Aged 50–59).

Time-based training was especially seen as a barrier to progression for women in surgery, disenabling them from being more competitive, interplaying with the masculine cultural dimension discussed earlier. However, the reluctance to change these long-standing surgical traditions was evident, demonstrating uncertainty avoidance, as reported by the following female patient, who was a medical doctor, and offered thoughtful insights into Irish surgical training:

> "… the training … hasn't been innovated … emphasis on the number of hours put in equal competence, which is a misconception… offering far more flexible training needs to be there, but that won't happen unless there is a significant shift in culture … this perception that 'I can't progress in this career because the hours required of me are not realistic if I want to have a family'…" (ID 77, Irish Female patient, Aged 30–39).

This quotation illustrates one of the long-standing traditions in surgery—that of presenteeism, which sits at the core of challenges with implementing more flexible surgical training programmes for all trainees (women and men), especially those with children.

4.2.6 | Surgical cultures and restraint

Many participants, including patients of female surgeons, described the numerous sacrifices made by surgeons to achieve their goals of becoming surgical consultants. The surgeons repeatedly reported delaying gratification (thus illustrating restraint). Interestingly, contrary to comments in the previous dimension, the following female consultant agreed that time is required to gain confidence and gratification as a surgeon:

> "… exposure is the best way to learn … if you really want to be confident … in what you do when you are at a consultant level; you need to put in the hours" (ID53 Irish Female surgeon consultant, Aged 40–49).

The following female surgeon shows considerable restraint in controlling her desires and impulses throughout her training and examinations, with the support of her husband, for the much bigger reward at the end:

> "I was studying during my pregnancy… I stopped working 3 weeks before he was born, so I had two weeks to study more and then I passed the written part … The oral is obviously more tricky … I was actually commuting in that … hospital ninety kilometres away. So, I was coming back late, and I had to study. My husband was a lot hands-on. That was a hard time for him" (ID 41 Irish Female Surgeon Consultant, Aged 40–49).

While Hofstede's model classifies people in indulgent societies (such as the Scotland and Ireland) as willing to realise their impulses, this contrasts starkly with the restraint dimension reported within surgery and surgical training, where participants typically narrated restraint, expressing obstacles to them 'enjoying life' (e.g., family life) due to multiple exams, prolonged training periods and long working hours (as discussed also in relation to the long-term orientation cultural dimension).

5 | DISCUSSION

5.1 | Summary of key findings

Surgical cultures appear more complex beyond the one dimension (i.e., masculinity) classically discussed in previous literature.[14,71–75] For example, we found data aligning with all six of Hofstede's dimensions, as well as data illustrating the intersections between those cultural elements (both overlaps and contradictions), showing the cultural dimensions to be a useful analytical lens through which to explore the impacts of surgical cultures on female surgeons. In summary, our study identified surgical cultures of masculinity, high power distance, individualism, high uncertainty avoidance, long-term orientation and restraint. Masculinity served to create a culture of **competition**, which was perceived as nasty, unkind and non-collegiate. A large power distance served to create a culture of **hierarchy** with abuses of power and professionalism lapses affecting female patients and surgeons (e.g., gender discrimination and harassment) and barriers to raising concerns. Individualism served to create a **non-collectivist** culture, perceived as particularly challenging for international graduates. Uncertainty avoidance served to create a **status quo** culture reflective of a 'boys' club', which typically marginalised, de-professionalised and othered female surgeons. A long-term orientation created a culture of **commitment and presenteeism**, disproportionately affecting working mothers negatively. Restraint served to create a culture of **sacrifice**, with surgical careers impacting negatively on family life. Moreover, our study illustrates how these cultural dimensions intersect (overlap or contradict) to create continuous barriers for female surgeons, resulting in their training often taking longer, and indeed, some females exiting surgery altogether to pursue alternative medical careers. More specifically, the masculinity dimension seemed to interplay with all other cultural dimensions except restraint in our data. Power distance also interplayed with the individualist/collectivist cultural dimension, while uncertainty avoidance and long-term orientation cultural dimensions overlap, as do long-term orientation and restraint dimensions. Therefore, by drawing on Hofstede's dimensions, we can better understand these complex, multiple and intersecting cultural dimensions beyond masculinity alone, providing new insights into existing literature.

5.2 | Contributions to the literature

Many studies (often atheoretical) have explored long-standing traditions of surgery as a male-dominated (and thus masculine) speciality.[71,72,76–79] However, to our knowledge, our study is the first to examine surgical cultures through Hofstede's cultural dimensions employed in a novel way to bring additional insights to the literature.[19] Our individual findings largely support existing literature on surgical cultures of competition, hierarchy and long-standing traditions of male-dominated specialities within surgery.[42,80,81] However, our findings provide a more comprehensive and complex picture of surgical cultures negatively impacting female surgeons than previous literature. To our knowledge, our study is the first of its kind to show how cultural dimensions (often discussed at the national level but here presented at the organisational level in surgery) are multiple and intersecting, with dimensions overlapping and/or contradicting one another in surgical education. One dimension (e.g., collectivism) sometimes trumps another (e.g., high power distance). In terms of the **masculinity** dimension, participants spoke of the need for extra degrees to competitively secure a surgical training place, supporting previous research demonstrating how men have better publication metrics

compared with women.[37,82] Regarding the high **power distance** dimension, participants spoke of how the surgical hierarchy created conditions for professionalism lapses (often unchallenged), similar to findings on harassment and bullying in surgery.[42] In terms of the **uncertainty avoidance** dimension, our study aligned with the findings of gender bias experienced in cultures maintaining the status quo of the male-dominated nature of surgery.[48] Regarding **long-term orientation**, the issue of presenteeism raises the need for more flexible surgical training programmes.[56,83] Finally, concerning **restraint**, participants spoke about their numerous sacrifices in surgery to progress their career and how this leads to gendered decision-making, consistent with previous research.[79] However, this study builds on existing research by illustrating the **individualist/collectivist** dimension, demonstrating the challenges of international medical graduate surgeons from collectivist cultures, training and/or working in individualist societies and how collectivism can transcend those surgical cultural dimensions based on power distance. Furthermore, surgical culture is not just about masculinity; this cultural dimension intersects with most other cultural dimensions, showing the complexity of how surgical cultures impact adversely on female surgeons.[19] Our data supports the cultural dimensions postulated by Hofstede but in its novel application to the context of surgical cultures rather than national cultures in Ireland and Scotland.

5.3 | Methodological strengths and limitations

Our study has several methodological strengths, including the voluminous data collected (over 36 hours) from semi-structured interviews across two healthcare systems (Ireland and Scotland). We engaged in a rigorous and reflexive team-based approach for the data analysis. There was a diverse sample including practising surgeons and those who had exited surgery, colleagues and patients. However, our study only focused on two relatively similar national cultures (according to Hofstede's dimensions and rating), so our data were analysed together and arguably had limited geographical scope and thus lack of transferability.[19,31,46] Our smaller patient sample size and thus illustrative quotes limit the transferability of our findings to the broader patient population. While Hofstede's cultural dimensions provide valuable insights, they have several theoretical limitations when applied to workplace cultures. Hofstede provides a simplified and rigid view of national culture, which may not fully reflect workplace dynamics. Alternative theories, for example, Acker's Gendered Organisation Theory,[84] could provide an alternate lens to our analysis and would likely sensitise us to other aspects of our data. We, therefore, urge future research to integrate organisational culture frameworks, as this may reveal further aspects of surgical cultures and their impacts on female surgeons.[84,85]

5.4 | Study implications

Our key findings highlight that different dimensions of surgical cultures pose significant challenges for surgeons during their learning and working, especially for females. While much has been done by the Royal Colleges, including the recent recommendations to improve representation, mentorship, data collection and fairness in career progression, action is needed to ensure meaningful change and disestablish the boys' club culture.[86] Based on our findings, surgical stakeholders (e.g., surgeons, colleagues, healthcare managers, educators, patients, etc.) need to become more aware of the multiple and intersecting dimensions of surgical cultures, drawing on Hofstede, as well as their various negative impacts.[19]

Indeed, surgical cultures could shift towards the other ends of the continua represented by Hofstede's dimensions (i.e., femininity, low power distance, collectivism, uncertainty tolerance, short-term orientation and indulgence). Organisational culture change, especially in healthcare, is a complex and dynamic process, influenced by numerous factors and thus requires multiple approaches to achieve change.[87]

Therefore, we recommend the following specific interventions (addressed to surgical college constituents) to enable surgical culture change, taking into account all six cultural dimensions and their intersections.

1. Cultural competency training to address masculine **competitiveness** in surgery should involve key stakeholders (surgeons, educators, managers, colleagues, patients) recognising that surgical cultural challenges extend beyond the 'boys' club', so they should consider all six intersecting dimensions.
2. Mentorship programmes and leadership training with surgical consultants and other key stakeholders to reduce **power distance** and hierarchy, thereby promoting ethical and empathic leadership, as well as enforcing zero tolerance for power abuses.
3. Equality, Diversity and Inclusion training should foster collaboration and teamwork to address **individualism/collectivism** and **uncertainty avoidance** in surgical cultures that can perpetuate a perceived status quo of white and socially privileged male surgeons.
4. More flexible training pathways and structured parental leave policies should be explored to mitigate challenges inherent in the interplay between the cultural dimensions of **long-term orientation** and **restraint,** which still suggest rigid expectations around career commitment and presenteeism, disproportionately impacting female surgeons, particularly working mothers.

CONFLICT OF INTEREST STATEMENT

The authors have no conflict to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

This study was reviewed and approved by the East of Scotland Research Ethics Committee (16/ES/0082), Galway University Hospital (C.A. 1697), The Adelaide and Meath Hospital, Dublin [2017–02 CA (16)], St. James Hospital, Dublin (Expedited approval), Sligo University Hospital (Expedited approval), University Hospital Limerick (064/17) and Beaumont Hospital (17/30). All participants (clinicians and patients) provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

GO, SS and CER designed the study. GO obtained ethical approval, recruited the participants, collected the data and wrote the manuscript. GO conducted this research as part of her part-time PhD at the Centre for Medical Education, University of Dundee, with SS and CER as her supervisors. All authors were involved in data analysis, editing and commenting on various iterations of the manuscript.

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