International Journal of Obstetric Anesthesia (2019) **39**, 88–94
0959-289X/$ - see front matter © 2019 Elsevier Ltd. All rights reserved.
https://doi.org/10.1016/j.ijoa.2019.02.003

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ORIGINAL ARTICLE

Exploring the challenges of task-centred training in obstetric anaesthesia in the operating theatre environment

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ABSTRACT

Background: Task-centred learning forms the basis of procedural training in obstetric anaesthesia. We observed that our residents were not building their competence from experiential practice in the operating theatre. We used a broad-based framework to explore the challenges encountered by the residents and clinical supervisors in the learning and teaching of obstetric anaesthesia.

Methods: The study was conducted at the KK Women's and Children's Hospital, Singapore, from 1 December 2016 to 30 June 2017. A semi-structured interview format was used in the focus group and individual interviews. Information collection continued until data saturation was reached. The interviews were analysed and the challenges were identified. Fourteen residents and five clinical supervisors participated in the focus group and individual interviews respectively.

Findings: The operating theatre constituted a stressful learning and teaching environment for the participants. Five categories of challenges were identified: (1) clinical conditions, (2) concerns about maternal risk and outcomes, (3) reluctance of the residents to vocalise their learning needs, (4) poor feedback, and (5) lack of opportunities for inter-professional practice. These collective challenges reduced the quality of task-centred learning and the effectiveness of supervisor teaching. We described some strategies to overcome these challenges (dedicated trainee lists, obstetric anaesthesia reflective diary, active mentoring system and in-situ simulation).

Conclusions: Our study described the challenges of obstetric anaesthesia training in the operating theatre environment in an Asian healthcare setting. Research is needed on the influence of supervisors' concern about maternal risks and their teaching behaviours.
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Keywords: Obstetric anaesthesia; Challenges in task-centred training; Operating theatre environment

Introduction

Task-centred learning forms the basis of procedural training in obstetric anaesthesia and analgesia.[1] Our residents build their expertise in the performance of epidural and spinal injections for operative maternal anaesthesia and analgesia. The operating theatre provides an authentic learning environment for their experiential learning, in the development of both clinical and non-clinical skills.[2,3] It is known that the operating theatre environment can be stressful and may impact learning negatively.[4] The focus of our study was to explore how the challenges in our setting influence the quality of obstetric anaesthesia training in Singapore.

Our residents gain their obstetric anaesthesia learning experience in two separate three-month' rotations during the first three years' training. The Accreditation Council for Graduate Medical Education International (ACGME-I) stipulates that each resident should fulfil a minimum case experience of 40 spinal and 40 epidural injections (obstetric and non-obstetric) in the three years of junior residency. Deliberate practice for the achievement of these procedural expertise is facilitated through the communication of clear goals and protected clinical opportunities.[5]

Despite the implementation of the deliberate practice strategy, we observed that our residents were not building their competence from the repeated experiential practice in the operating theatre. They struggled to apply their theoretical knowledge in the clinical management of the parturient and to build knowledge from the clinical experience. Reflective learning and the ability to formulate the obstetric anaesthetic plan were poor. These observations were supported by the program evaluation reports and the evaluations from the clinical supervisors. Preliminary information from our residents revealed some challenges, including high clinical loads, rapid case turnovers and stress in the operating theatre environment.

Our knowledge of the challenges influencing anaesthetic teaching and learning in the operating theatre environment remains limited.[6] Much of our understanding

Accepted February 2019
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is based on the extrapolation of information from other professions (surgery) and educational settings (undergraduate education).[7,9] These findings may not be contextually appropriate or relevant to anaesthesia. Our anaesthetic practice mandates one-to-one physician-based monitoring of the patients, which requires the team to find a balance between clinical care and education.[10] Sudden and rapid deterioration in maternal and fetal status could impose sudden clinical stresses on the team.[11] Tensions with other professionals could arise in these volatile, stressful situations that are commonly compounded by communication lapses.[12]

We aimed to identify the challenges encountered by our residents and their supervisors in the operating theatre environment. As this study was the first of its nature in obstetric anaesthesia, we adapted a broad-based framework, first proposed by Lyon.[13] This framework (Fig. 1) allowed us to analyse our educational setting holistically. Three domains were described in the management of working and learning in the operating theatre environment; managing the physical environment and the emotional impact of surgery as work; educational tasks and learning objectives; and the social relations of working in the operating theatre. While the authors originally conceived this framework for undergraduate students, we opined that the domains were applicable to our residents and their clinical supervisors in their educational roles.

Our research questions were as follows: 1. What are the challenges encountered by the residents and their supervisors in obstetric anaesthesia training in the operating theatre environment? 2. How did these challenges affect the residents' learning experience?

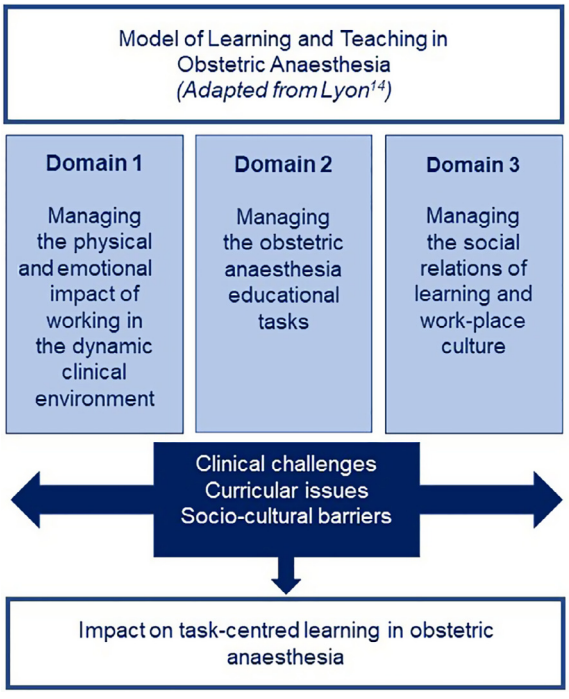

Fig. 1

Methods

We conducted this qualitative study to explore the experience of the residents and the supervisors from 1 December 2016 to 30 June 2017. Semi-structured interviews were used as the method of data collection.[14] An inductive and iterative process of information collection, analysis and thematic classification was used to derive our understanding of the challenges. The study was undertaken at the SingHealth Anaesthesia Residency Program in Singapore. Institutional ethics review and approval were obtained from the Department of Women's Anaesthesia, KK Women's and Children's Hospital, Singapore. The hospital is the national tertiary centre for obstetric and gynaecologic care, with an annual clinical load of 11 000 deliveries. Of these deliveries, approximately a quarter were caesarean sections performed under spinal or epidural anaesthesia.

The inclusion criterion for the resident participants was a junior resident in their second or third year of training and during the three-month obstetric anaesthesia rotation. The residents required direct supervision and instruction and had not fulfilled the ACGME-I required number of regional anaesthesia insertions. The residents were informed of the study during the residency teaching and were invited to participate by electronic mail. The inclusion criterion for the clinical supervisor participants was a specialist anaesthetist in the department. Each specialist had at least three years' experience in teaching the residents. The supervisors were informed of the study and invited during the senior staff meeting.

We used focus groups to explore the residents' perceptions of the challenges to learning.[15] Two of our investigators (RG, FI) conducted the interviews. Through the interactions with the resident during the interviews, we observed and noted both consensus and debate about the group opinion. Individual interviews were conducted for the clinical supervisors as it was anticipated that sensitive issues (i.e. concerns about clinical risks, patient complaints, performance outcomes) would be discussed. All participants received the study information form and consent was obtained prior to participation. We anticipated that a sample size of 20 residents and 10 supervisors would be necessary for the study.

We recorded participants' variables, including their demographic profile such as gender, age, stage of training or time as an anaesthetic specialist. The opening questions were semi-structured in nature and the interviewers could elicit elaboration of the key aspects using the pre-prepared probe questions. All interview sessions were audiotaped and transcribed verbatim by an independent transcription staff member. The interviews with the residents and supervisors continued until data saturation was obtained. The transcripts were read by

two researchers independently and codes were assigned to each finding. Several meetings were held to compare the codes, identify the emerging themes and to discuss possible interpretations of the data. An independent reviewer checked the coding and the classification of the themes. The information was also analysed to shape the questions for subsequent interviews. Various strategies were employed to establish and ensure quality in the study.[16] To ensure transferability, we described the context of our educational environment in detail. In our discussions, we compared our findings with existing studies from similar and different educational settings. To achieve credibility for our information, we collected the data until no new themes emerged from the interviews (data saturation). We analysed the information iteratively to inform the needs and directions of the subsequent interviews (iterative data collection). To ensure the credibility of our conclusions, we triangulated our findings with the end-of-posting results (data triangulation). We maintained the objectivity by means of discussion of our findings with the specialist anaesthetists at the research meeting (peer debriefing).

Results

Fourteen residents (nine females, five males) participated in the study. Their ages were between 26 and 29 years. The resident focus group interviews lasted 55 and 65 min while the follow-up group interview lasted 30 min. Five supervisors (two females, three males) participated in the study. Their ages were between 38 and 59 years and they had been supervisors for five and 25 years. Three of the supervisors underwent local training in Singapore, while the two others were trained in Ireland (S1) and the United Kingdom (S4). Two of the three supervisors who trained in Singapore (S3, S5) had the opportunity to work in overseas centres for one year. The supervisor interviews lasted between 25 and 35 min.

We identified five main challenges and presented their associated factors in Table 1. Narrative quotes were labelled as (R) for the resident and (S) for the clinical supervisor.

Challenges in Domain 1: Clinical stressors and concerns with clinical risks

The operating theatre constituted a stressful learning and teaching environment for the participants. The team had to balance the clinical management of the parturient and the educational needs of the residents constantly. *"Multiple factors can compromise your teaching. The operating theatre may not be a particularly good environment to teach due to the clinical necessity." (S2)*

The team experienced high levels of stress in managing the high obstetric loads and the over-scheduling of operative cases. Time pressures, concurrent administrative tasks and expectations of efficient turnovers further contributed to the tension. The supervisors felt anxious and frustrated whenever the balance between clinical and educational goals could not be achieved.

Table 1 Classification of the challenges and associated factors

Domains	Challenges	Associated factors
Domain 1 Managing the physical and emotional impact of working in the dynamic operating theatre environment	Clinical stressors	• High obstetric load • Time pressures • Multiple administrative tasks and distractions • Changes in maternal clinical status
	Concerns with maternal risks and outcomes	• Concerns about poor outcomes, in particular dural tap and neurological complications • 'Failed' or inadequate block, necessitating conversion to general anaesthesia • Concerns about complaints and litigation
Domain 2 Managing the obstetric anaesthesia educational tasks	Socio-cultural factors influencing the interactions of the resident and supervisor	• Asian 'culture' • Feeling vulnerable in revealing deficiencies • Concerns about training progression and career prospects • Strong hierarchical structure
	Poor feedback and reflective practice	• Shortcomings of prior education • High expectations and narrow margin for errors in obstetric anaesthesia • Learning reflections stimulated by medical errors and critical incidents • Low-quality feedback • Lack of faculty and resident training
Domain 3 Managing the social relations of learning and workplace culture	Working in 'silos'; the need to understand the focus of the other professions	• Time pressure • Lack of the awareness of professional roles • Limited opportunities for interprofessional practice and collaboration beyond patient care

"It's really the clinical load. When you have a lot of cases waiting, you feel obligated to get on with it, and can't teach in a way that you would like to." (S4)

The well-being of the parturient had a direct bearing on team dynamics. Sudden changes in maternal status (refractory hypotension, high spinal blocks, change in mental status, haemorrhage) and failed regional blocks were identified as possible aggravating factors. The residents, being less experienced practitioners, reported being more affected by these events. The novice learners (in the first three-month obstetric anaesthesia rotation) seemed more affected than the more experienced learners. There was greater reluctance to resume their learning, even as the status of the parturient started to improve. The residents also experienced anxiety, uncertainty and guilt whenever there was a less favourable patient outcome. These emotions could affect the resident's motivation to learn for days to weeks. *"When you know that the patient already has unhappiness towards the whole experience, that would hinder you from learning. Sometimes, when everybody is stressed, I tend not to articulate (my needs) or discuss." (R6)*

The supervisors were concerned about clinical risks, including complications, patient complaints and litigation. *"I am concerned about clinical risks, all the time. I worry about long-term sequelae where there could be numbness or weakness of the legs. One of my patients experienced disturbing and traumatic paraesthesia for weeks." (S2)*

These challenges were inter-related and affected training in three ways. Firstly, no teaching or feedback was available to the resident in the absence of the supervisor. This situation occurred when the supervisor had to manage other clinical or administrative tasks. Under these circumstances, the resident had to perform the procedure under indirect supervision, on occasions under tremendous pressure by the surgeons. Secondly, teaching could be opportunistic and hurried under these conditions. The supervisors reported taking less time and attention in teaching the steps of the procedure fully. As a result, the residents felt that they did not have their questions answered fully. Thirdly, being concerned with the clinical risks, the supervisors were less willing to allow multiple repeated attempts by the residents. In order to avoid complications, they would take over the procedure, and these occurrences affected the residents' learning and morale. *"When the supervisor takes over, without much explanations or instructions, I don't learn as I do not really know what went wrong" (R4)*

Challenges in Domain 2: Articulation of learning needs and feedback

The residents did not feel secure enough to speak up freely. They were reluctant to ask questions, clarify their doubts and explore the topics with the supervisor. Of concern, they stated they would rather leave questions unanswered. Several reasons were offered by the participants. The reason 'Asian culture' was offered as their initial response. *"Culture. I think it's the Asian culture. The Asians are generally more reticent than the Westerners where they are a bit more vocal. Even in schools, even the education system doesn't really encourage us to vocalise or speak our mind." (R9)*

On further exploration, the residents expressed their concerns about appearing deficient. They were also cognisant of the strong hierarchical structure in Singapore. As a result, the residents avoided discussing the variations of practice they had observed with the supervisor. The supervisors opined that it could have been ingrained in the learners from their early years in the local educational system. *"I think culturally they tend not to be open, for fear of being judged. There is a mindset that speaking up may affect their training or progression. So, they would rather maintain a low profile without revealing their feelings. There is a strong hierarchical issue as well." (S2)*

The participants shared their experiences in providing and receiving feedback. The supervisors acknowledged that positive feedback was easier to deliver, although they seldom gave positive feedback. The supervisors opined this could be related to our speciality, whereby expectations of the residents' performance were high and good performances taken for granted. They reported their tendency to only provide feedback if there was a mistake or need for corrective measures and opined that training was necessary. The residents perceived the feedback to be of low quality, providing limited information for their learning and reflections. *"It's the environment, setting and tone of the feedback. There's a technique to give proper feedback." (R14)*

The reluctance to articulate and receive feedback impacted resident learning significantly. Firstly, teaching could not be as effective, as the residents did not verbalise their learning needs. Secondly, the effect of "bottling up" of the questions and uncertainties, which meant that the wrong practice could have gone uncorrected. Thirdly, in the absence of feedback, the residents seldom reflected on their daily performances. With limited learning, the residents struggled to formulate their anaesthetic goals for progressive cases and relied on the supervisors for clinical decisions. The supervisors opined that these challenges presented lost opportunities for learning.

Challenges in Domain 3: Working in 'silos'

The participants shared that the other professions (surgeons, nurses) could impact on the quality of task-centred learning. They recognised the importance of communications with the obstetric team that could have been improved. From the residents' point of view, some surgeons could have been unduly impatient, especially when there was no medical indication for the haste. On the other hand, they agreed that the time taken for

the procedure, the conditions of the parturient and fetus could have been overlooked while focusing on the performance of the block. The supervisors utilised their good working relations with the surgeons and nurses to manage the clinical and educational goals. The participants agreed that there were opportunities for interprofessional practice and that collaboration could be improved.

Discussion

Our results confirmed the existence of multiple challenges in our operating theatre environment. Learning and teaching were impacted negatively whenever the conditions were not adequately managed. The clinical stressors in our setting were consistent with other educational settings.[17–20] Clinical pressures described included a high clinical load, time constraints, high turnovers, the severity of patients' illness, stress and tensions and concurrent duties. The main stressors experienced by our supervisors included providing supervision in multiple locations, teaching of multiple learners, completion of documents and concurrent administrative duties. These distractions, coupled with poorer resident training, could affect maternal and fetal safety in the short and long term.[20]

Although complications in obstetric anaesthesia are well described, there is currently no information in anaesthesia on how concerns about clinical risks might influence teaching behaviours.[21–23] Our findings concurred with a study in which internal medicine supervisors were similarly concerned about clinical risks and resident training.[24] Out of 270 supervisors, 33% of the respondents stated they would limit the opportunities for the residents to perform invasive procedures. We opine that the concerns of our supervisors are valid, particularly in anaesthesia and in the obstetric population. Further research into the use of innovative technology (such as virtual reality-assisted training) is needed to ameliorate the clinical risks and allow for skill-based training.[25]

We confirmed that the interactions between the learner and teacher could be shaped by socio-cultural influences and workplace culture. Beneath the commonly perceived 'Asian culture' label was a complex interplay of factors that hampered resident articulation and feedback.[26] Asian learners have been found to have very different communication styles compared with their western counterparts.[27] They were perceived to have an "excessive regard for authority" and were reticent in asking questions.[28] The hierarchical structures in the Singapore healthcare system remained very strong and this could have impeded open communications. The residents were evidently worried about their training progression. As specialist anaesthetic jobs in Singapore become competitive, they were concerned about losing their competitive edge. These fears were largely unfounded, as the ACGME-I resident evaluation system was objective and involved multiple assessors.

According to Maslow's framework for learning motivation, a learner needs to feel secure in the environment before they pursue their higher motivations (i.e. the sense of belonging, self-esteem, self-actualisation).[29] Our results demonstrated that creating a safe learning culture was as essential as controlling the physical conditions of the learning environment. Feedback in our setting remained a challenge and the omission of timely information for improvement could result in adverse patient sequelae.[30] We found similar barriers to good feedback, including time pressures, cultural traits, the fear of appearing deficient and the avoidance of giving negative feedback.[31–34] In our situation, there is a need to create a trusting culture for timely and constructive feedback and teacher-learner training.[35]

We identified the need to cultivate interprofessional (obstetric, nursing, allied health) team practice and collaboration.[36] Under stressful clinical conditions, understanding each stakeholder's focus can help improve communication and collaboration amongst the team members.[37] Training in interprofessional collaboration and learning should be part of the obstetric anaesthesia training program. Our residents should understand their clinical and non-clinical roles in organising and leading the operative team.[38]

Based on our findings, we have instituted a series of strategies (Table 2) for improved learning and teaching.

Table 2 Strategies to overcome the challenges and improve task-centred training

Domains	Strategies
Domain 1	• Dedicated "trainee" obstetric theatre, whereby only two caesarean sections per day could be scheduled to allow closer guidance of the anaesthetic and obstetric residents • A stepwise, progressive epidural insertion training system, whereby the resident is expected to fulfil 10 supervised simulated insertions on the insertion trainer, followed by 10 patient insertions through direct observations of procedural skills (DOPS)
Domain 2	• An active orientation and mentoring system to create a safe environment for learning and to encourage open conversations and feedback • The use of the obstetric anaesthesia reflective diary, whereby the resident completes their experience for key events (for example, first epidural insertion, first 'code' activation) and discusses their learning with the mentor
Domain 3	• The use of in-situ simulation training to encourage interprofessional collaborations and learning

Dedicated 'training lists' have proven useful for both anaesthetic and obstetric residents to learn under controlled clinical conditions.[39] The supervisors from both specialties were rostered (without the need to supervise at other locations) to provide dedicated teaching. In-situ simulations were conducted for interprofessional practice, whereby each profession had a clearer understanding of each other's role. A reflective practice curriculum was introduced using the obstetric anaesthesia reflective diary.[40] There is ongoing research on the effectiveness of the obstetric anaesthesia diary in stimulating reflective learning and feedback.

Our study had two limitations. Firstly, the study was conducted in a large maternity hospital with a high patient load in Singapore. As the challenges of teaching and learning are context dependent, we urge our readers to recognise this limitation and assess the transferability of our results to their own educational environment. Differing clinical and training processes in other settings may yield varying challenges and outcomes. Secondly, differences in socio-cultural beliefs and workplace cultures can influence learning and teaching uniquely.

This study described the challenges of obstetric anaesthesia training in the operating theatre environment in an Asian healthcare setting. We confirmed that the conditions in the physical and social learning environment could impact learning and teaching directly. While some challenges were evident before the study was conducted, less apparent factors were uncovered with the use of an evaluation framework. Hence, we encourage our readers to adopt the same broad investigative approach in the analysis of their educational environment. Further research is needed on the influence of supervisors' concern about maternal risks and their teaching behaviours.

References

1. Francom GM, Gardner J. What is task-centered learning? *TechTrends* 2014;**58**:27–35.
2. Spencer J. ABC of learning and teaching in medicine: Learning and teaching in the clinical environment. *BMJ* 2003;**326**:591–4.
3. Flin R, Patey R, Glavin R, Maran N. Anaesthetists' non-technical skills. *Br J Anaesth* 2010;**105**:38–44.
4. Lyon PMA, Brew A. Reflection on learning in the operating theatre. *Reflective Pract* 2003;**4**:53–66.
5. Ericsson KA. Deliberate practice and acquisition of expert performance: a general overview. *Acad Emerg Med* 2008;**15**:988–94.
6. McIndoe AK. Modern anaesthesia training: is it good enough? *Br J Anaesth* 2012;**109**:16–20.
7. Mahoney A, Crowe PJ, Harris P. Exploring Australasian surgical trainees' satisfaction with operating theatre learning using the "Surgical Theatre Educational Environment Measure". *ANZ J Surg* 2010;**80**:884–9.
8. Mukhopadhyay S, China S. Teaching and learning in the operating theatre: a framework for trainers and advanced trainees in obstetrics and gynaecology. *J Obstet Gynaecol* 2010;**30**:238–40.
9. Zundel S, Wolf I, Christen HJ, Huwendiek S. What supports students' education in the operating room? A focus group study including students' and surgeons' views. *Am J Surg* 2015;**210**:951–9.
10. Gelb AW, Morriss WW, Johnson W, Merry AF. World Health Organization-World Federation of Societies of Anaesthesiologists (WHO-WFSA) international standards for a safe practice of anesthesia. *Anesth Analg* 2018;**65**:698–708.
11. Doleman B, Blackwell J, Karangizi A, et al. Anaesthetists stress is induced by patient ASA grade and may impair non-technical skills during intubation. *Acta Anaesthesiol Scand* 2016;**60**:910–6.
12. Lingard L, Reznick R, Espin S, Regehr G, DeVito I. Team communications in the operating room: talk patterns, sites of tension, and implications for novices. *Acad Med* 2002;**77**:232–7.
13. Lyon P. A model of teaching learning in the operating theatre. *Med Educ* 2004;**38**:1278–87.
14. Dicicco-bloom B, Crabtree BF. The qualitative research interview. *Med Educ* 2006;**40**:314–21.
15. Stalmeijer RE, McNaughton N, Van Mook WNKA. Using focus groups in medical education research: AMEE Guide No. 91. *Med Teach* 2014;**36**:923–39.
16. Shenton AK. Strategies for ensuring trustworthiness in qualitative research projects. *Educ Inf* 2004;**22**:63–75.
17. Kieu V, Stroud L, Huang P, et al. The operating theatre as classroom: a qualitative study of learning and teaching surgical competencies. *Educ Health* 2015;**28**:22–8.
18. Hoffman KG, Donaldson JF. Contextual tensions of the clinical environment and their influence on teaching and learning. *Med Educ* 2004;**38**:448–54.
19. Jothiraj H, Howland-Harris J, Evley R, Moppett IK. Distractions and the anaesthetist: A qualitative study of context and direction of distraction. *Br J Anaesth* 2013;**111**:477–82.
20. Campbell G, Arfanis K, Smith AF. Distraction and interruption in anaesthetic practice. *Br J Anaesth* 2012;**109**:707–15.
21. Howells ACL. Neurological complications in obstetric regional anaesthesia. *Anaesth Intensive Care Med* 2013;**14**:331–2.
22. Maronge L, Bogod D. Complications in obstetric anaesthesia. *Anaesthesia* 2018;**73**:61–6.
23. Szypula K, Ashpole KJ, Bogod D, et al. Litigation related to regional anaesthesia: an analysis of claims against the NHS in England 1995–2007. *Anaesthesia* 2010;**65**:443–52.
24. Reed DA, Windish DM, Levine RB, et al. Do fears of malpractice litigation influence teaching behaviors? *Teach Learn Med* 2008;**20**:205–11.
25. Kuehn BM. Virtual and augmented reality put a twist on medical education. *JAMA* 2018;**319**:756–8.
26. Hofstede G. A European in Asia. *Asian J Soc Psychol* 2007;**10**:16–21.
27. Lee KB, Vaishnavi SN, Lau SKM, Andriole DA, Jeffe DB. Cultural competency in medical education: demographic differences associated with medical student communication styles and clinical clerkship feedback. *J Natl Med Assoc* 2009;**101**:116–26.
28. Hynes G, Rich P, Katz F. A comparison of South-East Asian and Australian first-year students' views on university. *Aust J Soc Issues* 1971;**6**:128–44.
29. Taormina RJ, Gao JH. Maslow and the motivation hierarchy: Measuring satisfaction of the needs. *Am J Psychol* 2013;**126**:155–77.
30. Ende J. Feedback in clinical medical education. *JAMA* 1983;**250**:777–81.
31. Ramani S, Post SE, Könings K, et al. "It's Just Not the Culture": A Qualitative study exploring residents' perceptions of the impact of institutional culture on feedback. *Teach Learn Med* 2017;**29**:153–61.
32. Delva D, Sargeant J, Miller S, et al. Encouraging residents to seek feedback. *Med Teach* 2013;**35**:e1625–31.
33. Anderson PM. Giving feedback on clinical skills: are we starving our young? *J Grad Med Educ* 2012;**4**:154–8.
34. Branch WT, Paranjape A. Feedback and reflection. *Acad Med* 2002;**77**:1185–8.

35. Chowdhury RR, Kalu G. Learning to give feedback in medical education. *Obstet Gynaecol* 2004;**6**:243–7.
36. Collin K, Paloniemi S, Mecklin JP. Promoting inter-professional teamwork and learning - the case of a surgical operating theatre. *J Educ Work* 2010;**23**:43–63.
37. Booij LHDJ. Conflicts in the operating theatre. *Curr Opin Anaesthesiol* 2007;**20**:152–6.
38. Larsson J, Holmström I, Lindberg E, Rosenqvist U. Trainee anaesthetists understand their work in different ways: Implications for specialist education. *Br J Anaesth* 2004;**92**:381–7.
39. Derbyshire L, Siddiqui A, Zeiton M, Pollard J, Jones D. Consultant-supervised, core surgical trainee-led theatre lists-successfully maximising learning opportunities in the time available. *Int J Surg* 2014;**12**:S80–1.
40. Korthagen F, Vasalos A. Levels in reflection: core reflection as a means to enhance professional growth. *Teach Teach Theory Pract* 2005;**11**:47–71.