



Teaching Professionalism during and Post-Pandemic to Surgical Trainees: A Survey of the Impact of a Workshop on Trainers and Trainees

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Abstract

Introduction: Focused professionalism training improves surgical trainees' communication, information gathering, and counselling skills. This study reviews the impact of a professionalism workshop for surgical trainees within a large trust in the United Kingdom developed during the pandemic to support the trainees and help them develop resilience and appropriate behaviours during the time of increased pressure.

Methods: A workshop involving case-based discussions and reflections on professionalism was developed from the themes and methods of training noted to be effective on a literature search of Medline, EMBASE, and PsycINFO databases carried out in May 2020. The impact of Covid on surgical trainees and educator's professionalism training and the techniques of training preferred by trainees was evaluated by a survey of trainees and trainers after the intervention to evolve future training initiatives. During the workshop, a behavioural marker checklist was used to improve feedback on the observed behaviours.

Results: 83 trainers and trainees were surveyed following a professional behaviour workshop training 63 surgeons at various stages of training. Surgical list availability had reduced by at least 5-10 a month for all the trainees within the trust during the pandemic. Most trainees surveyed (49 (60%)) felt that this had reduced the opportunities to train technical skills and develop professional non-technical skills like teamwork and communication skills, adversely impacting the trainee's clinical performance. The increased support offered by the workshop helped 50 trainees (80%) to improve non-technical skill performance objectively by referencing to behavioural markers and this was felt to have become embedded in practice when surveyed 4 weeks later in 38 trainees (60%). The majority of those surveyed (47 (75%)) felt trainers and trainees had acted professionally during the pandemic and subsequently. The workshop discussions also helped (56 (67%)) trainers and trainees to consider how best to engage professionally with new ways of working as work, and training switched to virtual or telemedicine platforms during the pandemic.

Conclusion: Professionalism-based education facilitates surgical trainee development, making them stronger team members and helping to restore team working skills and embrace new working practices.

Keywords: Teaching; Professionalism; Surgical trainees; Survey

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Introduction

Developing professionalism in trainee surgeons requires the acquisition of appropriate values (1), whilst remaining humane (2) and having independent judgment to enable freedom of action (3). Training on surgical professionalism improves safety, promotes team working, and reduces the number of behaviour-related complaints (4). Professionalism education helps the trainee surgeons develop an appreciation of the limits of their professional capabilities and helps them adhere to the guidelines and ethical principles set by employers, subspecialist associations, and professional and regulatory bodies like the General Medical Council (GMC) (5, 6) and is now recognised as a core competency in surgical curricula (ISCP 2007) (6). However, specific training has not been implemented consistently, and a rise in behaviour-related complaints further calls for an increase in professionalism education (7-9). Developing professionalism during medical training is crucial because the professional behaviours established during these formative years continue in clinical practice (10).

A national emergency was declared in response to the COVID-19 crisis on the 30th of January 2020 with elective surgery being cancelled on the 17th of March (11). A lack of operative index cases made it difficult for trainees to demonstrate progress in surgical competencies despite continuing to work within a stressed system (12). Training externally on courses or learning from meetings provided externally by the surgical colleges or societies stopped as the shutdown came into force (13). The pandemic also stretched the trainee's physical and mental reserves and these impacted the professional behaviour (14). Trainees followed the senior colleagues as a role model for appropriate behaviours in the crisis (15) and for help with training recovery (16). It was recognized by the authors that there was an opportunity to deliver non-technical skills training, while there was less clinical work available for surgical trainers and trainees. The aim of the study was to review effective techniques used to teach professionalism to surgical trainees (17, 18) and design an effective training package and support group within a workshop setting deliverable at this time based on best practice to support trainees during the pandemic and later.

Methods

In this interventional study, a workshop was designed to teach professionalism to trainee surgeons based on the most effective methods

found in a systematic literature review undertaken at the beginning of the pandemic. The workshop focused on professionalism training available within the literature and then some scenarios were designed to highlight the pitfalls observed in the current surgical practice. There were also reflections from the experiences of the trainers and trainees recorded anonymously to contribute to future training. The scenarios were role played, and the behaviours observed were evaluated using an abbreviated behavioural marker system by the trainers derived from Non-Technical Skills for Surgeons (NOTSS) to help structure feedback to the trainees (4).

The workshop started with a definition as professionalism definitions vary between different groups in society, surgical trainers, and specialities (19-21). In this review, professionalism was defined as the expression of values and behaviours within a context dependent upon the stage of a surgeon's career, underpinned by the moral principles of excellence, humanism, accountability, and altruism (22-24).

The systematic literature review identified relevant articles using the algorithm ("teaching" OR "medical education") AND ("professionalism") AND ("surgeon*" OR "surgical trainees" OR "surgical" OR "surgery") AND /OR COVID pandemic in Medline, EMBASE, and PsycINFO by a specialist librarian in January 2017 originally as part of a different piece of work on professionalism teaching and again in the pandemic in May 2020 to maximise sensitivity (20, 25). Inclusion and exclusion criteria are listed in Table 1 (26). The reference lists of the included studies were screened to identify the missed eligible studies (27). The number of studies excluded at the title, abstract and full text screening stage were recorded systematically with reasons such as 'non-surgery' or 'wrong study design'. Three researchers were involved in both titles, abstract and full-text screening stages (ENS, IML, NA), and where there was uncertainty in the study eligibility, a consensus decision was made by at least two screeners. Endnote was used to capture and manage the references at each stage of screening. Data extraction was done using a table to facilitate assessment of the quality and eligibility of the papers when screening the full article, using an inductive rather than deductive stance based on previously identified themes (28, 29). Thematic analysis by a constant comparison method was used to synthesize the findings (20, 28) into a format deliverable within the workshop.

Workshops

The workshops included 6-14 trainees and

Table 1: Inclusion and exclusion criteria

	Inclusion	Exclusion
Population	Surgeons in training (i.e. postgraduate surgical residents or equivalent), their mentors, or programme directors.	Did not include postgraduate surgical residents, mentors, or programme directors.
Intervention	Participants who completed, mentored on, or directed a formal professional curriculum or professionalism education as part of a broader curriculum for example, professionalism, role modelling, and mentorship for professionalism.	Lacked a professionalism educational intervention component.
Environment	Accessible to trainees either in hospital, online or in a clinical workshop in an education centre or simulator.	External course.
Outcomes	Reported on outcomes related to the perception, learning, teaching, or evaluation of professionalism.	Described only assessment tools or definitions of professionalism.
Design	Both randomised and non-randomised controlled trials and single-group design studies.	Did not report empirical data or was a literature review only. Not in English.
Published	After the work of Cruess & Cruess (12) in 1997, which highlighted a lack of professionalism training for doctors.	Published before Cruess & Cruess in 1997 (12).

two trainers starting with a background lecture to set the scene of professionalism training from the themes identified by the search. The workshop was run twice a year starting from 2020. Reflections were noted to improve the training content and relevance. The trainers then role modelled good and bad behaviours they had witnessed and discussed solutions with trainees. The trainees were divided into groups of 2-3 to model the scenarios and each group discussed what went well and strategies for improvement using the behavioural marker system as a template. A survey was sent 4 weeks after the workshop to understand if there had been any impact on the trainee's practice. The survey was designed following principles outline by Glasgow (2005) (30). Likert scores were grouped into poor and no impact (1, 2) in comparison to some impact and good (3, 4) which was interpreted as being beneficial.

An iterative process was undertaken both with trainers and trainees to develop a sensitive behavioural marker system based on the NOTSS communication and teamworking elements for use in the workshop (4). This was scored using Likert scale to develop a rating of perceived professionalism (Table 2). Descriptors were used

as reference and free text sections were used to help structure feedback from trainers from the pandemic (Table 3). The themes from feedback were incorporated in future training packages.

Results

Systematic Review of Effective Professionalism Training Methods

In total 125 full texts were screened; of them, 110 were excluded for the following reasons: 23 were without educational content; 48 were reviews, letters, or commentaries; 13 described the development of assessment tools; and 26 were descriptive articles about professionalism lacking any teaching evaluation. 16 eligible studies were identified; 12 studies were identified in the original search (4, 24, 31-40), and an additional further four studies were found in the updated search (41-44). A total of 3 195 participants out of 3, were analyzed in fifteen eligible studies. Participants were from a range of surgical disciplines and training levels. The smallest study recruited 12 participants (41) and the largest consisted of 2,442 (9 Otolaryngology and 2,433 Military personal) (44). No study used an a priori sample size calculation, reflecting the type of study design used by most of the eligible

Table 2: Behavioural Marker System for Professionalism Workshop

Category	Rating	Element	Rating Element	Observed Behaviour
Situation Awareness		Observant Reflective Proactive		
Professionalism		Models' Behaviour Reinforces		
Teamwork		Cohesion Trust/Leads Supports		
Communication		Clarity Understanding		

Rating 1-5 (Poor requires structured debriefing, areas for improvement, standard, good can show areas shared learning, exemplary).

Table 3: Behavioural Marker System for Professionalism Workshop Descriptors

Category	
Situation Awareness	
Observant	Awareness of team members / wider team and impact of actions. Considers own and other actions / skills.
Reflective	Considers how behaviour impacts on team / patients.
Proactive	Changes behaviours or mental model to adapt to the situation presented. Manages time and resources available effectively.
Professionalism	
Models' Behaviour	Role models appropriate behaviours. Walks the walk.
Reinforces / Leads	Will acknowledge good and bad behaviour. Attempts to deliver consistent good behaviour.
Teamwork	
Cohesion	Brings team members together. Understands the whole is bigger than parts.
Trust	Delivers tasks and actions that requested. Does not need monitoring.
Supports	Seeks to build, inclusive, listens.
Communication	
Clarity	Communication understandable, jargon free, unambiguous.
Understanding	Closed loop, ensures heard.
Rating 1-5 (Poor requires structured debriefing, areas for improvement, standard, good can show areas shared learning, exemplary)	

studies. Thus, which professionalism strategies should we adopt for the workshop?

Face-to-face discussion

Most studies (53%) implemented a professionalism-based educational intervention that was administered face-to-face (24, 31-33, 37, 38, 40, 41) as trainees value being able to discuss professionalism issues with a trainer. Five studies that employed face-to-face professionalism training completely (24, 31-33) or at least partially (44) reported improvements in either professionalism knowledge, skills, or perceived performance. Hultman, et al. (33) observed that 23 plastic surgery trainees' knowledge of professionalism concepts statistically (mean increase: 22%) and the ability to recall all six core competencies (pre-post-intervention recall improvement: 51%) improved after a 6-week, 12-h professionalism course. Just over half (57%) of residents felt that the course was a good use of time, recommending it to others (83%), with the majority (74%) believing it would help them become a better professional.

A 9-week course combining basic surgical skills and Canadian Medical Education Direction for Specialists (CanMEDS) roles (communication, professionalism, collaborator, and manager) received positive evaluation (37). Surgical residents preferred live demonstrations instead of videos. The syllabus had good content, effectiveness, and improved confidence in the trainees. Only one topic ("bench model fidelity") was rated below four out of five by the residents.

In another study, professionalism and communication skills of 15 surgical residents

(years 1-3) were assessed using a 6-station Objective Structured Clinical Examination (OSCE) before and after attending a Surgical Professionalism in Clinical Education (SPICE) curriculum consisting of 6-sessions of face-to-face delivery, that encompassed the core competencies of professionalism and communication (31). Compared to baseline, after completing SPICE, the residents were scored statistically better in 'overall professionalism', 'use of an interpreter', and 'delivering bad news'. In comparison, no statistical improvement was observed in 'accountability' or 'being sensitive to the patient'.

In a follow-up study, Hochberg, et al. reported no statistically significant improvements in 'professionalism skills' three years after the implementation of SPICE, but they found statistically significant increases in 'perceived professionalism'. However, Hochberg, et al. (32) observed statistical improvements in overall communication, information gathering, patient education, and counselling after the SPICE professionalism curriculum.

In a study (41) 11 participants representing six out of the nine surgical disciplines were surveyed after a 2-day pilot course on patient-centred plus interprofessional communication and teamwork. All course elements were deemed useful or highly useful except 'communicating whilst operating' and 'informed consent scenario'.

Lectures with a clinical emphasis

Joyner and Vemulakonda (24) reported improved professionalism knowledge after a professionalism training lecture although these

changes were relatively small (mean increase range across 3 questions: 4-7%) in urology residents. Also, Selden, et al. (40) assessed the perceived effectiveness of the Society of Neurological Surgeons boot camp courses designed specifically for PGY1 neurosurgical residents. All participants believed that the course satisfied their purpose and objectives, but the individual lectures, 'professionalism, supervision, and pearls for the junior resident' and 'patient safety and communication' had the lowest ratings (rated 'excellent' by 52% and 56%, respectively). Conversely, two lectures relating to clinical skills were given the highest ratings (71% rated as 'excellent'). It was notable that participants particularly valued simulated and other hands-on skills training. Interestingly, faculty members assigned more importance to non-clinical competencies than their residential counterparts.

Blending (online for factual content with face-to-face for discussion)

The STEPP (Surgical training and Education Promoting Professionalism) intervention used by Schulz, et al. was multidimensional and included both online and face-to-face tuition, a method of teaching that has become more accepted post pandemic. Schulz, et al. (44) found a statistically significant improvement in the recall of five Otolaryngology-Head and Neck Surgery (OHNS) division values after the STEPP intervention (improvement: 46.3%).

Remote learning

Corbett Walsh found that an improvement in 50 postgraduate orthopaedic residents' knowledge gained when using material converted to an online platform from the Academy of Orthopaedic Surgeons (AAOS) ethics scenarios three months after course completion (42).

Also, Kumar, et al. (34) found that surgical residents who watched an American College of Surgeons (ACS) DVD on professionalism were more likely to achieve a higher average score ($P < 0.01$) on a professionalism survey than those who read the ACS Code of Professional Conduct and those without access to either the DVD or reading. Effects differed slightly depending on the postgraduate level of residents; Junior and senior residents performed better after watching the DVD compared with interns, whereas interns scored higher than juniors or seniors after reading the code of conduct.

Simulation

Based on a simulation-based curriculum,

Larkin et al. (36) investigated the impacts of the curriculum containing communication skills, systems-based practice and professionalism on the communication skills and teamwork practices among surgical residents. Residents statistically improved in empathic communication after 5 simulated case scenarios, each lasting three hours in duration, but not teamwork.

Khandelwal, et al. (43) reported comparable findings after a programme consisting of five 8-minute simulations, with two educational components: 1) a multi-media self-study package and 2) a 4-hour session at a simulation centre. Compared to their pre-workshop survey, 76 - 81% of the residents improved in practicing professionalism, understanding the characteristics of professionalism, describing the social contract, playing the role of the code of conduct, and using principles of professionalism in challenging situations.

Apprenticeship

In an apprenticeship rotation designed by Kwakye, et al. (35), each chief resident selected an attending surgeon to work with for four weeks. Mentors ($n=12$) and residents ($n=13$) perceived that both professionalism and non-technical skills had improved by similar amounts over the study period (mean: 3.69 vs. 3.56 and 3.62 vs. 3.63, respectively; where 0=lowest and 5=highest). All surgical residents who completed the month-long apprenticeship rotation believed that the rotation met their expectations (35). Residents particularly felt that the apprenticeship was most useful for developing a mentoring relationship, career advice, gaining medical knowledge, and improving technical operative skills. Most residents and faculty deemed the skills acquired on the course relevant to their intended career or training, and to training and recommended continuing the apprenticeship for future residents (both 85% and 88%, respectively). Perhaps most promisingly, nearly all residents (92%) believed mentors met their expectations, and all the residents would likely recommend their mentors to other residents.

NOTTS

A randomised controlled trial by Yule, et al. (4) reported the effects of non-technical skills coaching that included professionalism and related competencies (e.g., communication), on both non-technical skills and core competencies. The authors allocated 16 senior surgical residents to receive either a Non-Technical Skills for Surgeons (NOTSS) coaching intervention or a self-reflection only control condition. Four

professionalism-related NOTSS categories (situational awareness, leadership, decision making, and communication and teamwork) and clinical skills were assessed during a simulated laparoscopic cholecystectomy on five different patients. The authors reported statistically significant improvements occurred in overall non-technical skills scores (professionalism was not reported separately) in the coaching group, but not the controls.

Patient satisfaction, complaints, and professionalism behaviour

Hultman, et al. (33) measured unique patient complaints and the number of sentinel events. The authors found a 5% increase in patient satisfaction and six fewer unique patient complaints in the 6-month period directly after attending a 6-week professionalism course, compared to the six months before it. Similarly, the number of sentinel events dropped from 12 before the course to three during the six months after it.

Results of the Professionalism Survey after the Workshop

There was a total of 63 responses from a survey sent to the participants of the workshop, a response rate close to 59% within 4 weeks of the workshop run biannually between 2020 and 2022 (Table 4). In addition, 20 surgical trainers with an average experience of 7.9 years (1 to 25) were surveyed to understand a trainer's perspective on professionalism training of surgical trainees during the same period.

Feedback after the workshop was that it had helped 41 out of the 63 trainees (65%) to be able to discuss behavioural and professionalism issues more freely with peers and trainers. Immediate feedback during the workshop was that all felt further training and discussion was useful and

all felt it had impacted them positively. Only 15 (24%) found the behavioural marker system useful during the workshop, with all finding the face-to-face discussions about cases the most effective. In addition, 42 (66%) of them found that the lectures and theory were informative and felt this element should remain included.

The availability of the surgical list had declined by at least 5-10 a month for all the trainees within the trust during the COVID-19 pandemic. According to most trainees who were surveyed (49 (60%)), it was felt that this situation had caused them to lose the opportunities to learn technical skills and develop professional non-technical skills such as teamwork and communication skills; this in turn adversely affected their clinical practice. The enhanced support which was offered by the workshop assisted 50 trainees (80%) in improving non-technical skill performance, as observed by the trainers; also, this was felt to have become embedded in practice when we surveyed 38 trainees (60%) 4 weeks later.

Most of the participants studied (47 (75%)) indicated that the trainers and trainees had acted professionally during and after the pandemic. Moreover, the discussions during the workshop helped (56 (89%)) trainees to recognize how best to act professionally with new ways of working as work and training changed to virtual or telemedicine platforms during the pandemic.

Professionalism Themes from Comments on Survey

There was an adverse perception by a large cohort of trainers that trainees lacked engagement with training opportunities that remained during the pandemic to improve technical skills or in other educational opportunities. Some trainees were considered by trainers as choosing not

Table 4: Survey Outcomes

	Trainee	Trainer
Number Surveyed	63	20
Experience (years in post)	3.5 (2-7)	7.9 (1-25)
Positive Impact of Professionalism Training	41	8
No Impact of Professionalism Training	19	12
Preferred Method of Professionalism Training		
Role Modelling	48	20
Case base Discussion	42	15
Lectures	41	10
Simulation	46	8
Impact of Pandemic on Professionalism Behaviours		
Positively	47	15
Negatively or Not At All	16	5
Training Mitigating the Impact of New ways of Working or Redeployment		
Positive	56	8
Negative or Not at All	7	12

‘to turn up’ or frequently rescheduling virtual training. However, a significant number of trainees accepted that they were redeployed and took the opportunities to find new ways of working which was found to be challenging but rewarding. The main barrier to training was seen as a lack of face-to-face interactions and a drop in case numbers, interfering with the quality of training opportunities.

In a similar way, the trainers’ behaviour changed due to being short tempered and forgetful as to their responsibilities for colleagues and patients while they focused on their own well-being. Overall, the trainers found the lack of training opportunities challenging with few cases that were often felt to be more complex.

Only a minority of trainers (40%) believed that introducing a professionalism training package was necessary for improving the perceived professionalism of trainees. Face-to-face discussion of issues was felt to be important (75%), with all trainers wanting professional behaviours to be role modelled. A structured approach to training was preferred rather than online learning or unstructured passive apprenticeships with ad-hoc work-based reflections.

It was indicated that to improve training, allocation of sufficient time for more active teaching modalities of professionalism was even more important.

Trainers themselves remained positive but felt challenged by the lack of resources available to achieve adequate training of all topics and particularly to help mould professionalism training for trainees who were being challenged by the Covid pandemic.

Discussion

Professionalism training has in the past involved relatively passive methods, such as role modelling by seniors (15), discussion of ethical principles (24, 45), and professional behaviour lectures (31). Few instructors have received formal training in teaching professionalism (23) and tend to be influenced greatly by societal norms (46) and subspecialist guidance (21) or simply the way they were taught (47). The nature of surgical intervention poses unique ethical, technical, and psychological issues (48), emphasizing that training programmes should enable reflection on professionalism learning experiences (46, 49). Training opportunities have always been limited by workload (50, 51), and this has been adversely affected by the Covid pandemic for surgical trainees because of reduced patient admissions and the availability of fewer trainers and trainees (11, 12, 14).

Implementing a professionalism educational intervention has been seen to improve professionalism-based knowledge and values significantly (24, 33, 34, 42, 44). Similar targeted interventional studies have led to improvements in professionalism performance (32, 35, 43), but improvements in knowledge and performance can be achieved for interventions when professionalism teaching is incorporated in other trainings (37, 38, 40). It remains unclear how much training is needed to be effective and how frequently this may be required.

Low quality evidence indicates that professionalism-based education may also improve communication skills (31, 35, 36), information gathering, and patient education and counselling (31). The participants themselves see this as being effective and/or adding value, with most trainees stating that professionalism courses met their expectations (33, 35, 37, 40, 41).

Professionalism education has led to statistical improvements in patient satisfaction and a fewer complaints (31, 33, 38). The importance of professionalism training remains though it is being increasingly recognised (32) to be of benefit to patients’ safety. Professionalism teaching for surgeons is included in the UK surgical curriculum; while there appears to be a clear need for it (52), high-quality evidence appears to be lacking as to the method or type of intervention that will develop it effectively. Previous studies have failed to draw any meaningful conclusions (53).

Although other reviews on professionalism teaching are not specifically directed at surgeons, a systematic review on teaching - has shown the importance of ensuring that such teaching is in context, delivered by well-trained faculty, and follows an embedded curriculum within a network of practice (54). Teaching humanism together with technical skills to medical students at an early stage (55) has been identified as being key to professional development in anaesthesiology (56). It is likely that a similar approach is required for surgeons who work in similar environments. Clearly, perspective and context are important, especially for surgical trainees who try hard to see the value of professionalism training on operative surgical skills although the trainers had the opposite view (35). Other studies including cross-sectional surveys have demonstrated value in small group discussions of professional challenges that appear to resolve conflicting professional views between surgical trainers and trainees (57), facilitating the ‘complex process of socialisation’ (58).

Deptula and Chun (59) reviewed the literature to see how professionalism training could be

incorporated into a surgical curriculum and noted that the first step would be to define professionalism in relation to tangible behaviours before proceeding to develop a suitable curriculum, which may involve classroom or simulation-based teaching, role modelling by faculty, and evaluation of residents' behaviour through multisource feedback. Other reviews also agree that teaching should start with the fundamentals of professionalism, like 'do the right thing' (34), and this can be delivered effectively within the classroom (20, 60). Courses that teach professionalism within a surgical training program (33) should canvas for different trainees' opinions, to ensure that professionalism training remains relevant and that it is well received by surgeons, as each subspecialty views its training in professionalism differently (21, 24). Surgical educators must minimise the impact of behaviours contradicting the professionalism teaching curriculum being taught (formal) or modelled (informal), known in the literature as the 'hidden curriculum' (24, 31), and this conforms with findings across all disciplines and for students (61).

Learning professionalism is required for safe and effective clinical practice (7) and sits at the top of Miller's pyramid (62), requiring trainees to show professionalism by their 'actions in practice'. The most effective teaching methods in medical professionalism have included role modelling, mentoring, discussion of the hidden curriculum, reflective practice, and methods to facilitate effective communication (61, 63). While negative role models undermine the teaching of professional behaviour (33), those with a positive impact leave a lasting impression. Professionalism role modelling should be a conscious active process for trainees with more 'plasticity', especially early in surgical training, rather than a passive 'by chance' informal activity (64). Behaviours need to be explained in the context of surgical practice and societal norms, with trainees reflecting on case discussions and what it means for their practice (23). To encourage the development of appropriate role models, a supportive environment with repeated training in professionalism, faculty development and evaluation needs to be supported with appropriate resource allocation by employing institutions (46). Adults learn best when they are actively involved in the learning process, with past experiences helping the trainees develop future strategies that make them more effective professionally (23). It remains difficult to teach professionalism as this involves introspection and personal transformation (20, 65). However, it is a professional responsibility to maintain high

standards (66) and all training programmes should have a clear definition (21), syllabus, and trained faculty to develop this competency (58, 67).

Coaching (4, 35) and apprenticeship (35) facilitate professionalism training with educators flipping between these roles depending upon the circumstances. Specific coaching techniques include 'feedback, validation, support, and reassurance', which need to be pitched at the appropriate level for the surgical trainee. Coaching changes habits and ingrains good behaviour, improving technique, reducing errors, and shortening surgical learning curves (4).

Professionalism mentorship increases academic productivity, job satisfaction, and core competency achievement when modelled well by mentors (35). Situated learning remains a powerful way of educating trainees, leading to memorable lifelong learning experiences (68). Trainees may be unaware of the professionalism skills required, but opportunistic feedback from faculty during practice-based learning helps it develop (69).

Participating in a professionalism education can lead to higher overall stress scores in surgical trainees which are high at this time with increasing work pressures (36, 38); thus, a gentle approach is required to ensure it is handled sensitively (70). Burnout is being seen in surgeons at all stages of practice and professionalism training can be used as a way of exploring the challenges surgeons face to help develop strategies fostering resilience in practice (71).

What is also unclear is the impact of the training on different disciplines within surgery as not all surgical disciplines are represented evenly currently within the literature (72). Future trials could specify the surgical discipline of trainees to facilitate interdisciplinary comparison or look at the impact in individual specialities (73).

There remains substantial heterogeneity in the delivery of professionalism education interventions, but face-to-face or simulated scenarios remain the most frequent method as the active discussion element seems to help include (24, 31-33, 44) improvements in professionalism knowledge, skills and perceived professionalism performance. Trainees exhibit more 'altruism' and 'patient sensitivity' (32), improving patient communication. This benefits the organisation (33) and improves the surgeons' and mentors' non-technical skills (35). Better team working reduces adverse events and technical errors that harm the patients who have undergone surgery (4). Patient satisfaction remains high, with reduced patient complaints and fewer professional misconduct issues (31, 33, 38). Further studies on

precisely which delivery method is most effective comparatively would be valuable. Online learning or a mix of online and face-to-face tuition, however, was only feasible during lockdown for some surgical trainee education, so the impact of this or the effect of professionalism training by this method remains important (13) but still requires further evaluation (67). Surgical skills and behaviours often need to be demonstrated through a process of 'deliberate practice' by expert faculty (40). Trainees who struggle during their surgical placements value focused teaching for the areas they find difficult technically and professionally incorporating targeted feedback (38). Boot camps allow standardised teaching to be delivered regionally - using the material developed nationally - in a controlled, simulated environment (40). Simulators also allow deliberate practice coaching more than traditional clinical settings (4, 37).

Professionalism evolves with clinical experience (4) and should remain 'high up on the list of lifelong learning' (24). This makes teaching professionalism more difficult early on, and evaluating the impact of any intervention as a surgeon becomes more experienced. Medical students undergo a transition to an expert, and their teachers should help them get prepared for practicing independently (35, 73).

Implications for practice and research

Face-to-face training is well received by trainees but can be difficult for all organisations to deliver reproducibly because of time constraints and the costs involved (43). However, some residents remain troubled with stress (36) despite their professionalism training. Understanding the links between professionalism, and the impact of teaching professionalism on stress in surgical trainees is of critical importance, but further work is required.

Also, the beneficial effect on trainees' examination performances - where they have struggled previously (38) - may not have such an effect on trainees who perform well in examinations. The trainees involved in the research come from heterogenous groups and represent a small group of all trainees, so the transferability of the research may require further work.

Some delivery of professionalism training can be achieved with success via an online course (42) or a course DVD (34) which the trainees can access at times that suit them, with more senior trainees benefitting from written information. Work is still required to develop a 'Code of Conduct' with definitions of professionalism (34), competencies (31), and national benchmarks

for professionalism behaviours helps training programs, trainees and surgical educators develop, and the authors recommend that these should be made more robust.

More research is required in this area to clarify the impact of teaching professionalism more explicitly, preferably using randomized controlled trials to attribute any differences to the intervention more clearly.

National and sub-specialist surgical associations should provide the framework for professionalism teaching, including a professionalism definition, syllabus, and tools to deliver training consistently (34). Developments in this direction have started with the fundamentals of professionalism being taught in boot camps in America (40). Laying down the principles early on allows the trainees to reflect early on in their professional development and more is needed to include it within surgical training.

It remains difficult to demonstrate behavioural change at higher Kirkpatrick levels. Some authors review complaints or patient satisfaction surveys, but these do not fully capture the context of professional issues or the potential for learning (33). Expectations of what constitutes a competent surgeon have transformed over time (37), and the faculty require formal professionalism training based on best practice (24), or recommendations from national bodies like the AGCME (74). Surgical educators often explicit in their behaviours or reasoning in this competency to effectively teach it (24).

Teaching professionalism relies on the faculty 'observing, coaching, and giving feedback' (69). Professionalism teaching content should focus and discuss the 'challenging' professionalism issues that residents face in their daily work (34).

Organisation of hospital staffing levels and workloads affect training opportunities and behaviour (75). Poor handover between the shifts affects professional development and can lead to medical error (50). Effective organizations have a nurturing and enabling culture and avoid professional, departmental, and 'institutional apathy'. The faculty who fail to address lapses in professionalism become 'their own worst enemies', especially given the influence of role modelling (76). Managing unprofessional behaviour maintains the correct environment for training and reduces any adverse impact from the 'hidden curriculum' (24, 77). Group discussions help the trainees and trainers achieve a change in professional culture within institutions (32) and are preferred to lectures by the trainees - although lectures provide clear foundations for professionalism teaching if done carefully

(24, 34), by trainers concentrating on ‘fostering knowledge’ translatable into professional behaviours (35).

The balance between standardization of basic principles and learning interactively still needs to be determined. Trainees benefit from evaluation that stimulates professional self-reflection with summative assessments to show competency achievement. Self-reflection leads to self-regulation which will prevent lapses in professionalism during a surgeon’s career (24). OSCEs are a reliable, valid, and objective way of assessing clinical performance and providing formative feedback including communicating professionally (78) but they are costly and time consuming to set up (79). One institution used OSCEs but failed to change the scenarios when assessing professionalism teaching (32); consequently, improved professionalism may not measure just the trainees’ ability to remember the OSCE.

Few studies report the reliability and concurrent or predictive validity of the tools used to measure professionalism. Whilst their content validity is better established, the overall utility of these tools remains low in its ability to measure and guide changes to surgical professionalism (80). Assessment remains useful as it enables structured feedback during professionalism teaching to drive learning (37). Further work is required to improve assessment tools but is beyond the scope of this review.

Conclusion

There is evidence for professionalism education interventions improving knowledge and recall, and certain teaching methods have proved more effective in teaching professionalism to surgeons with face-to-face discussions and scenarios being favoured. A workshop bringing surgical trainees together with trainers is effective as in-depth discussions into professionalism issues, reflections about surgical practice, and methods to facilitate effective communication improves non-technical skills. Implementing training provides the trainees and trainers with an opportunity to discuss important issues and support each other, especially in times of increased stress.

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