6

Medical Training

Louise Stone, Paul McGurgan, Rose Petrohilos, Rebecca Fisher, Simon Fleming and Tim Senior

INTRODUCTION

Medical training is physically, emotionally and ethically demanding. (1–4) Medical students train in a rapidly changing world, and educators constantly face the challenge of adapting training to meet the needs of today's students and tomorrow's patients. This means responding to evolving community expectations, expanding population needs, evolving teaching tools and techniques, and diminishing economic resources. Globally, governments are grappling with rapidly rising health care costs, rising demand, increasing inequity and threats to patient and health professional safety. (5) There are also global challenges to health, with climate change being the most obvious. (6)

Many patients now expect to be treated as partners in care, forming their own ideas of what constitutes good treatment based on their interpretation of available data. (7–10) There are shifts in what constitutes 'evidence' in a 'post-truth' world, (11, 12) an issue that became abundantly clear during the COVID-19 pandemic. (13) The community want safer care, with more dignity, autonomy and compassion, and this means that consumers and carers are becoming more integral to medical training. (14, 15) Public expectations of doctors continue to grow. (7, 16)

At the same time, there is diminishing trust in institutions and experts, (16) with increasing risk of occupational violence towards professionals like doctors. (17, 18) The need to train new health professionals must be balanced with service obligations in health care settings, with doctors in training experiencing increasing levels of burnout as they attempt to meet both training and service obligations. (19, 20) Governments are taking a greater role in the regulation and governance of health professionals. In many countries, ideas around professionalism and professional conduct have evolved from systems where the profession itself had significant autonomy to codes of conduct with 'tightly enforced rules devised in a culture of suspicion about doctors'. (21) Around the world, doctors are training in environments where there is diminishing trust.

At the same time, shifts in community expectations have made learning to become a doctor more complex. Curriculums are constantly being rewritten, and trainers need

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

continuous professional development to keep up with the latest requirements and expectations. (22–24) Cohorts of senior doctors, who are medicine's traditional trainers, learned their own skills at times and in places where professional values and competencies were different or less explicit. Interprofessional learning and working is now expected, (5) adding additional competencies in team work, communication skills and leadership to an already overcrowded curriculum. (5) Worldwide, there are significant variations in medical training. In an increasingly globalised world where medical migration is common, (25, 26) it can be challenging for a country to decide what competencies an immigrant doctor may hold and what training they require to meet the medical needs of their new local context. (27, 28)

The medical workforce has always faced rapid shifts in knowledge, but the pace of change is increasing. Technological innovations, including Artificial Intelligence (AI), are changing how medical work is learned and enacted. (29, 30) The COVID-19 pandemic has accelerated pedagogical and clinical change, as clinicians, managers, educators and students found ways to adapt their practice to better meet the needs of their populations during a time of unprecedented demand for health services, coupled with the need to maintain quarantine restrictions. (31–35) These fundamental shifts in medical work have impacted training and altered the ways doctors teach and learn.

In this chapter, we examine medical training in all its complexity, and describe the professional environment that makes doctors in training vulnerable to sexual harassment. In doing so, we recognise different forms of power and privilege, conscious and unconscious, (36) and present contemporary challenges to the design and implementation of medical education strategies to address the problem.

THE STRUCTURE OF MEDICAL TRAINING

Although the way doctors train varies considerably across the world, medical training generally occurs in three stages.

First, medical student training includes an undergraduate degree, or an undergraduate and postgraduate degree. Training generally occurs in a medical school within a university. These schools can be public or private, and provide on-campus teaching as well as workplace-based learning using a range of hospital and community-based medical teams to supervise and teach. (37)

The emphasis on workplace-based learning in medical school differs significantly around the world. Many medical schools, like in Argentina, introduce clinical training late in the learning cycle, after biomedical training. (38) Other schools have built their curriculum around early clinical exposure, believing this approach enhances clinical competencies. Countries adopting this approach include Ethiopia, (37) Indonesia, (39) India, (40) Iran, (41) and many countries in Europe. (42) However training occurs, medical students enter the workforce as doctors at the end of this stage of training. (37)

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

Second, an internship and/or residency is undertaken between medical school and speciality training. Doctors at this stage may be called interns (in their first year), house officers, medical officers or residents. During this time, doctors may need to complete a period of mandatory clinical service. Residents usually follow a generalist curriculum, which may or may not include an academic component, such as a Masters or Doctoral degree. (43, 44) At the end of their residency, doctors may apply for specialty training. In some countries, doctors can remain as generalists without further training, and work in hospitals or in the community. (37)

Third, speciality training is undertaken. This varies between disciplines, medical contexts and countries. (45) Doctors at this stage of training are called registrars or senior residents and take senior roles in hospitals or community practice. Their supervisors are usually specialists, who are known as attendings, consultants, specialists or physicians, or by their speciality title (e.g. paediatricians, surgeons or general practitioners). Specialists may or may not be employees of health care institutions. Often they will only be available at certain times of the day, leaving the bulk of the decision making to their registrars.

Training, assessment and curriculum vary, but once qualified, registrars become specialists themselves. Most doctors train for at least ten years to gain their specialist qualifications and may train for longer if they enter a particularly challenging specialty. Specialty training may take place in universities, hospital networks and/or specialty colleges. The assessments at this stage are often expensive, arduous and lengthy. Registrars often form deep relationships with their supervisors that are essential to their career progression.

Continued professional development is also a requirement for all health professionals. Part of the role of medical training is to drive a commitment to lifelong learning, but also to normalise lifelong teaching. Every health professional teaches and learns from a range of people, including patients and their families.

Future medical educators are often identified early in training, when they are performing the teaching role appropriate to their own stage of learning. (46) Like other roles in medicine, mentorship is critical, and this can be why unconscious bias can mean some doctors have more opportunities for career progression than others in medical education. (47) Over time, this may lead to a faculty of teachers that does not reflect the diversity of learners they teach, a common problem in medical training. (48, 49)

THE REGULATION OF MEDICAL TRAINING AND THE CHALLENGE OF MEDICAL MIGRATION

Doctors train to serve the needs of their communities. This means medical schools set different curriculums, accommodating their social, political, cultural, and health contexts. There is significant variation in the way doctors are trained across the world

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

and the variety of workplaces in which they learn (see chapter 5). In an increasingly globalised economy, this can pose some challenges when doctors migrate.

Medical migration is growing. The Organisation for Economic Co-operation and Development (OECD) estimates that one in six doctors in 2016/17 were overseas trained, with many more locally trained but born overseas. This figure has risen by 70% since 2000. (50) There have been calls to embed globalised standards in medical education, (51) as qualifications are rarely comparable between countries, meaning doctors who immigrate need to update their qualifications to meet local requirements. Training variations pose a challenge for the educational and regulatory systems of the countries involved.

Over the last twenty years, the International Association of Medical Regulatory Authorities has encouraged sharing of international approaches to training and regulation.(52) Those interested in a more global approach to standards of competence argue that this will drive best practice educational design (53) and facilitate medical migration. (51) However, there are concerns that sociocultural differences between countries optimise curriculums and training for their own context. There is some concern that homogenising medical training across the world could lead to imperialist standards that don't meet the needs of all communities they are meant to serve. (54) This is not merely an academic concern; it impacts the way international medical graduates (IMGs) from one country are perceived and treated in another. IMGs already experience high levels of discrimination and harassment. (55–57) Differences in professional culture, expectations and training make IMGs more vulnerable and increase their cognitive and emotional load. (58, 59)

The regulation of medical training varies considerably across the world, and within individual countries. Some countries have consistent standards for specialty training, which are monitored by medical councils or other regulatory bodies, and some seek accreditation through the World Federation of Medical Education (WFME). (45, 60, 61) However, there are countries where training is highly variable. Lack of globally consistent training means that IMGs often face a lengthy and expensive assessment and accreditation process in their chosen country before they are able to practice.

China is addressing this challenging by seeking WFME accreditation. China has the world's largest medical education system with 420 undergraduate institutions graduating over 480,000 doctors in 2019. (62) Achieving consistent educational outcomes across such a broad range of institutional settings is challenging, but China has now achieved accreditation status with WFME. China also sponsors students to undertake their studies abroad, with annual budgets reserved for sustaining students' mobility. (63)

Other countries report difficulties maintaining consistent training across their networks, often due to limited resources available for accreditation. Brazil is an example of a country with lower resources, where the rapid expansion of medical education facilities outstrips the resources available to ensure universal quality of

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

training. (64) The regulation of learning environments is challenging, and this has an impact on the mastery of curriculum by learners.

CURRICULUM

There are two types of curriculums, and both are over-crowded. (65, 66) The formal curriculum is often grounded in national standards, ensuring certain competencies are achieved by all learners. This curriculum is hotly contested, (67) partly because emphasis in the curriculum is associated with academic prestige. (67) More teaching can mean more funding, more status, and attraction of more students to the discipline itself.

The Formal Curriculum

Space in the formal curriculum is at a premium. Most educators bemoan the fact that while it is easy to argue for inclusion of a subject, lecture or experience, it is much more difficult to remove one. (65, 66) This is not simply an academic problem. The overcrowded curriculum leads to overload in the students and academic staff. Student mental health is clearly declining, a worrying trend which has direct relevance to their risks of bullying and harassment. (68–70) Students who are struggling with their mental health may have difficulty focusing on learning interpersonal skills, including recognising and responding to interpersonal aggression. (71–74) Overloaded staff may also lack the capacity to respond appropriately to interpersonal issues, 'turning a blind eye' to harassment. (75)

One challenge with the written curriculum is commonly described in general practice, where 'the curriculum walks through the door'. (76, 77) This means that a supervisor has little opportunity to curate the learning experience for a doctor in training, because students' exposure to different patient demographics and disease presentations may be highly variable across training. For most students, the relative chaos of workplace-based learning is a deep challenge, as they are unable to discern the 'skeleton' of their learning. They do not have a matrix on which to 'hang' learning experiences, and can feel like they are building this as they go, an experience similar to building a plane while already in flight.

Many medical schools, including in Egypt, (77) India, (78) the US, (79; 80) Brazil and Germany, (81) are shifting to a competency-based curriculum, focusing on developing the skills needed to transition from learning to practice. Canada (82) has been instrumental in designing a broad curriculum framework that focuses on organising these competencies into a structured curriculum, called the CanMEDS framework. (83) CanMEDS introduced curriculum objectives related to the various roles a doctor takes in their professional career: Medical Expert (the integrating role), Communicator, Collaborator, Leader, Health Advocate, Scholar and Professional. (84)

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

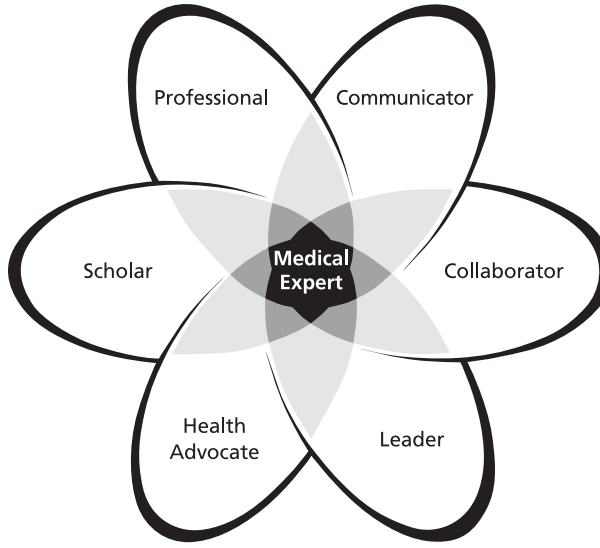


FIGURE 6.1 The CanMEDS framework.

The international shift to competency-based curriculum has had significant ramifications for the teaching and assessment of professionalism. There are concerns that by breaking down training into measurable competencies and 'atomising' the curriculum (85), essential and important professional skills that cannot be captured as competencies are being lost. (86) Competencies in professionalism, systems organisation and leadership have been added to various competency frameworks including those of Israel, (86) the US (86; 87) and Singapore (86). Some countries are introducing individualised learning plans that focus on personal development to capture these professional competencies. (88) Nevertheless, there remains concern that competency based medical programmes designed around analysis of tasks and roles may not address tacit knowledge, context specific skills or inter- and intra-personal knowledge, skills and attitudes that support appropriate professional identity formation. (87)

Professionalism has been codified in regulatory frameworks. (89) The problem with codes, however, is that it is easy to incorporate aspirational goals that are poorly defined, resulting in standards that are difficult to interpret and impossible to meet. For instance, the Medical Board and Australian Health Professionals Regulatory Agency (AHPRA) provide a code of conduct for all medical doctors and students. (90) This code requires doctors and medical students to provide 'constructive and respectful feedback to colleagues, trainees, international medical graduates and

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

students, including when their performance does not meet accepted standards'. (91) This statement is almost impossible to operationalise unless there is a recognition of established hierarchies, acceptable modes of communication (including interprofessional communication) and a high degree of existing psychological safety, none of which are likely to be present for junior members of the team.

The Hidden Curriculum

Underneath this overt curriculum is a curriculum that is less well defined but equally powerful, the so-called 'hidden' curriculum. The hidden curriculum is built into the training culture and professional relationships they experience. Professional identity is about who they are as doctors, not just what they do. Doctors in training develop their professional identities by absorbing values, norms and behaviours unconsciously through cultural immersion (the hidden curriculum) and consciously (the overt curriculum).

Students need to assume shared professional attitudes, behaviours and values to effectively function in their sociocultural roles as doctors. (92) Unfortunately, this means professionalism training can easily replicate existing ideologies and stratified relationships that further marginalise the most vulnerable members of the profession, worsening unprofessional attitudes and behaviours. (93–95)

Although medicine is changing, the professionalism codes present what Michalec and Hafferty see as a 'nostalgic' view of professionalism, with doctors expected to deliver highly individualised, bespoke care in resource-poor environments. (93) The growing distance between what is taught in the formal curriculum and what is learned in the hidden curriculum, what is said and what is done in policy, and what is expected and what is achievable in clinical practice can result in doctors distrusting organisational statements, policies, processes and codes. When there is a gulf between what is expected and what can be delivered, moral distress worsens and the willingness of a doctor to report professional misconduct is significantly reduced, because the survivors lack confidence in the processes of the organisation. (96) The hidden curriculum and its relationship to professionalism and professional identify formation is explored in further depth in chapter 14.

Student-Led Learning and the Role of Technology

Medical students have always undertaken self-directed learning. However, the opportunities to learn outside of a peer- or teacher-led environment means medical schools may be able to make medical learning more efficient and effective. There have been some early attempts to set up virtual medical schools, and China has used Massive Open Online Courses (MOOCs). (97) It seems likely that technology will enable more globalised and efficient training programmes in the future. It is not clear how this will impact the development of interpersonal skills and team-based learning, or the capacity to recognise and respond to conflict.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

One interesting question is around equity. While students from less privileged communities may be able to access cheap and accessible learning (like MOOCs), (98) there is always the risk that students will be offered a 'colonial' curriculum that is decontextualised, further moving medical education away from the communities it is meant to serve. (99, 100) In the interests of efficiency, it may easily become normal to teach using materials that do not meet the needs of diverse communities.

AI systems are already known to be biased towards patients with privilege. (101) For diverse medical students, the move to more standardised educational programmes, delivered by a narrower group of professional virtual educators, may mean even less exposure to diversity in training. (102, 103) This may mean they lack opportunities to refine their interpersonal skills in complex settings, the most common scenario they will have to manage as qualified doctors.

In the past, doctors in training have learned and practised their skills under supervision with patients, predominantly in public institutions like hospitals. This obviously has implications for patient safety. Immersive technologies like virtual reality enable students to learn procedural skills and complex kinaesthetic tasks safely. (104, 105) Simulation is not new, and there is a large body of evidence documenting effectiveness in medical education. (106) Increasingly, sophisticated simulation tools can provide a safe environment to practice complex tasks in teams. Some medical educators use gamified teaching tools, including engaging experiences like escape rooms. (107) Singapore has been particularly active in this space, pioneering transformative change in technology enabled learning. (34)

However, there is always the question of whether virtual teaching displaces professional identity development, acquisition of advanced interpersonal skills and team interaction that face-to-face learning enables. (108) Medical educators and academics from Singapore have discussed the transformation that needs to occur to utilise technology safely and effectively in learning, noting that digital technologies need to be integrated into the curriculum and utilised by skilled educators to be effective. (34) Given the rate of change of available technologies, this poses a challenge for clinicians, who are also needing to manage the rapid changes in clinical technologies. (34)

As doctors undertake more independent learning, the opportunity to evaluate their interpersonal behaviours drops. The question remains whether the shift from the ward to the tutorial space or individual computer reduces the capacity of medical educators to detect and manage the doctor in training who demonstrates poor interpersonal conduct, or the doctor in training who is the target for abuse.

THE ART OF MEDICINE AND THE ROLE OF REFLECTIVE PRACTICE

Reflection is a metacognitive process that creates greater understanding of self and situations to inform future action. (109) Reflective practice has been enshrined in medical training for decades, particularly in disciplines such as general practice and psychiatry, where doctors have prolonged and extensive relationships with their

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

patients. (110–113) Medical educators use reflective practice to help learners build the values, knowledge and skills necessary for the ethically, socially and cognitively complex situations that characterise clinical practice. Moderated reflection is particularly helpful when learners face situations that are confronting or emotionally charged. (109) This includes interpersonal harassment, abuse or violence.

Medical practice in hospitals has become increasingly transactional, rather than relational. The language around evidence-based care, outcome measurement and quality improvement encourages a view of medicine that privileges interventions over interactions. The focus on skills and competencies has created a market for simulations in areas such as communication, professionalism and teamwork. However, there is concern that this may create doctors who can simulate empathy but have no authentic connection with their patients. (114; 115) Performative empathy bears a strong resemblance to what the Dutch call 'monkey tricks', the capacity to mimic empathy without experiencing an authentic connection with patients. A lack of authenticity can impoverish therapeutic relationships. (115)

In order to authentically experience, understand and manage the traumatic and confronting interpersonal experiences that are common in medicine, learners need to be comfortable learning from reflection, alone or with peers or educators. (109) Without a vocabulary to discuss their discomforts and emotional needs, junior doctors are left isolated and vulnerable, hidden in a culture of silence that protects abusers and suggests that their experience is not valid or not real.

It is difficult to create opportunities for protected time for reflection, and it is equally difficult to incorporate reflection into a curriculum that is competency based. Some Canadian authors, particularly Whitehead, have questioned whether CanMEDS has removed the important role of 'Doctor as Person' in creating the existing framework. (114; 115) To be effective, reflective practice needs to be authentic, normalised and safe. With insightful educators, and time to teach and reflect, hidden assumptions can be examined, named and managed. Without reflection the doctor in training may lack the words and concepts to make sense of their experience and cannot question the cultural assumptions they have absorbed, (116; 117) including the idea that abuse is an expected part of medical training and practice.

Workplace-Based Learning and Teamwork

Most doctors train in a series of rotations over many years, and may only stay with a team for a few months at a time. During these placements, they are expected to demonstrate applied specialist knowledge, but also to acclimatise and adapt to the specific work culture of each rotation. This model of training is designed to increase patient safety by exposing doctors in training to a 'generalist' medical education, preparing them to operate in many different clinical contexts. However, the rapid team shifts it requires creates a high degree of stress and vulnerability. (21) Learning in the medical workplace can be chaotic, and opportunities to learn depend on the

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

patients who present while the learner is on the ward or in the clinic. It is not always possible to start with the 'easy' cases and work up to the 'difficult' ones, and it is impossible to ensure every learner is exposed to all the situations they need to master in a single term. (77)

Learners may undertake different rotations in a different sequence to their peers, and must seek out their own learning experiences in the workplace. They need to discern which learning experiences matter most, and balance these with their service obligations. This is a relational challenge, convincing supervisors, teams and even patients to allow them to practise a skill, refine a technique or master a clinical reasoning challenge.

Doctors work and learn with and from other professions. (118–120) Interprofessional learning is common and effective in embedding a variety of skills, including teamwork. (119; 121) However, the structure of training has interpersonal challenges. Doctors in training are 'itinerant workers', engaging fleetingly with these nested systems. Short rotations give little opportunity for them to build trust and understanding within a workplace, or to develop a sense of belonging and integration into teams comprised of more permanent members in each clinical placement. (21; 122) These nested systems of team and workplace have more permanence for members like nurses who can expect to 'outlast' the doctor in training. Doctors in training are short-term investments: they enter a team which has its pre-existing systems of power and privilege already firmly in place, and then they leave, to become 'someone else's problem'. The more permanent team members are fluent in the currencies of informal power that flow in that team and workplace, while doctors in training are necessarily just starting to learn the language. (123; 124)

The challenge of team learning is that doctors depend on their supervisor and team evaluations and recommendations for career progression. The implications for this form of social power are discussed below.

THE CULTURE OF MEDICAL TRAINING

Medical training may vary around the world, but health care workplaces have cultural elements in common. Doctors train in hierarchical organisations with dependent relationships. (125; 126) Medicine is a competitive industry, and training can be brutal, with long hours and high expectations. (127) Doctors tend to be perfectionistic and self-critical, with high rates of anxiety, (128) and help-seeking tends to be discouraged.

Although there is increasing emphasis on patient-centredness in training, doctors experience declining empathy over the time of their training, partly due to moral distress, burnout and crippling workloads. (129) They also experience increasing levels of occupational violence from patients and their family members. (130) In short, there are multiple ways in which doctors in training experience discrimination, harassment and inter- and intra-personal conflict.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

The Theory of Beneficial Mistreatment

Like many hierarchical professions, medicine has a long history of requiring unsustainable workloads from their junior doctors. (131–134) The 'theory of beneficial mistreatment' is a construct that appears in many hierarchical organisations where trainees are expected to undergo feats of physical endurance to prove their capacity to survive the profession. In many ways, this forms a rite of passage, and survivors perpetuate the practice, partly to justify their own harms. (135; 136) Self-sacrifice is a core construct for doctors, and overwork plays into this narrative. (137; 138)

Proponents of this style of learning genuinely believe that training is a kind of 'professional warm up', acclimatising learners to the environment and building their capacity. In this environment, bullying and harassment become yet another test of whether a learner is 'tough enough to do medicine'. (130) The argument is that those who cannot tolerate this form of mistreatment may not be a good 'fit' for medicine. (137)

One study in Nigeria described the culture of shaming residents. The medical students interviewed in the study described how they avoid eye contact with residents while they are being 'grilled' by their senior colleagues so they don't add to the resident's shame. In doing so, they also protect themselves from imagining their own future. The students described being at the mercy of their examiners, with one student explaining 'if they don't like you, you are done'. (139)

At the moment, there are parallels with the NHS in the UK, where workloads are becoming unmanageable. (140; 141) Junior doctors do not feel valued or supported by the NHS, and describe a culture of 'blaming and shaming'. This finding is not new, and authors have been describing the impact of bullying, harassment and exploitation of junior doctors for decades. (142) Toxic cultures of blame can have the opposite effect as well, with some junior doctors learning to ignore valid feedback on their performance to avoid criticism. (143) Both have an impact on patient care.

Competition and Collaboration

Medicine is a prestigious profession, and there has always been competition to secure training places. Argentina is one of the many countries where competition within the medical programme is particularly fierce. There is a law that protects the rights of all Argentinian citizens to have 'free and unrestricted' access to university. The consequence of this policy is that the first year of medicine attracts a massive intake, but the numbers are reduced rapidly, with the cohort shrinking after each examination round. (38) A consequence of this policy is an extraordinarily competitive programme, with high stakes examinations. Competition is expressed differently in different contexts. In the US, the financial cost of training makes it unattainable for many students, and the debt that students take on is growing in Canada, Australia and New Zealand. (144–147)

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

Doctors in training also compete for training opportunities. (148) In return for learning and positive formative assessments, some will be expected to donate labour, including the ubiquitous unpaid overtime. (149; 150) In some cultures, exploitation is formalised as patronage, where a patron may expect their junior colleague to assist with domestic tasks, such as shopping, cooking, or childminding, in return for learning opportunities. Bribery is not uncommon. (151) When exploitation is normalised, and hierarchical systems are not clear, junior colleagues are vulnerable to other forms of abuse, including sexual exploitation.

Safety and Trust

Occupational violence against doctors is a growing problem around the world. (18; 152–154) In China, there is a specific form of workplace violence called 'Yi Nao', a specific type of violence against health workers aimed at achieving financial benefits. (155; 156) This form of violence can be verbal, physical and/or sexual, and is usually perpetrated by the families of patients or criminal gangs hired by them, to force hospital administrators to provide financial compensation for perceived malpractice. (157) Most health professionals have experienced this form of violence, and it is becoming more common. (156) There have been instances of murder, with understandable deterioration in staff–patient relationships, and quality of care. (157)

In Afghanistan, women doctors are at high risk of harm. Ongoing conflict has damaged hospitals and medical schools, and the care of Afghan women has been profoundly affected by prohibitions against training women doctors. Female patient examination by a male doctor is also prohibited, and is considered cultural misconduct (158; 159) In the last two decades, training programmes have been re-instituted, but the admission of women into medicine has been banned at various times in recent history, meaning Afghan women have had difficulties accessing medical care. (158; 160; 161) In a qualitative study of women medical students, isolation from male peers and male attending physicians is seen as a significant impediment to training. Women are reluctant to seek the opinions or advice of men because of the strict laws around male–female interaction. Women doctors are then restricted in their capacity to learn collegially. (161)

Occupational aggression can be more subtle. In the UK, there is growing criticism of doctors, particularly GPs, in the mainstream media, (162) and this has paralleled an increase in abuse in GP surgeries. 'Negative media coverage matters not just because it is inaccurate and unfair', write Mroz, Papoutsi and Greenhalgh, 'It may also reduce patients' confidence in general practice and prevent or delay them seeking care. There is emerging evidence that it also contributes to workforce stress and the retention crisis.' (162)

Justice and Equity

The educational hierarchy is often the place where sexual harassment occurs because learners are vulnerable. However, doctors in training are not equally

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

vulnerable. Systemic injustice is present across all social institutions, and is particularly problematic for First Nations doctors and International Medical Graduates. Lack of representation among leadership can permit the perpetuation of discrimination, racism and microaggressions from patients, colleagues and other staff. (163; 164)

There are other ways that discrimination impacts learning. Formative assessment can be challenging if the learning environment is not considered fair. In South Africa, medicine has a strong recent history of discrimination and harassment on racial grounds. (165; 166) It is one reason why students resist the implementation of workplace-based learning, citing the risks of bias, victimisation and favouritism. (167; 168) Marginalised doctors in training are often asked to do the work of championing equity, diversity and inclusion. When people who have been harmed by a culture are asked to fix it, they are expected to donate extra cognitive and emotional labour. This work has been termed the 'minority tax'. (163)

One approach to unequal access to learning has been taken in Cuba. Following the 1955 revolution, Cuba reoriented its approach to medical education to focus on primary care, interdisciplinary learning and community participation, focusing on training doctors who could meet the needs of their own populations. (169) By working with poor and disadvantaged communities in primary care teams in other countries, Cuba has had a substantial population health impact in Africa, Asia, South America and the Pacific. (169) Much of the training is in rural polyclinics as part of a primary care team, giving students a community and primary care orientation for a large part of their training. (170).

Compassion and Empathy

The combination of discrimination, harassment, bullying and other forms of interpersonal conflict leads to deterioration in self-compassion and empathy for others, including patients. (171–173) This is an international phenomenon, although the qualitative experience varies by gender and context. (174–176) One concerning aspect of this finding is that doctors in training are both expected to demonstrate high levels of empathy and also manage significant levels of vicarious trauma and occupational violence. For doctors in training, traumas are part of the job. Medical students and doctors in training witness humanity at its most vulnerable and authentic, experiencing suffering, grief, loss and death, perhaps for the first time. The doctor is expected to tolerate this emotional, philosophical and potentially spiritual load, be a stable support for the patient and those around them, and then 'get on with their job'. (177–179)

Doctors are familiar with the concept of 'setting yourself on fire to keep others warm'. (180) Self-sacrifice is a common core value health professionals have, but it can easily leach into their perspective of personal trauma. Once it is normal to dehumanise and compartmentalise the accepted horrors of a career in medicine, it

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

is not unusual to do the same with personal trauma. Unfortunately, maladaptive coping strategies like avoidance lead to burnout, which can erode empathy further. (181, 182) One concerning aspect of medical training is the current focus on individual responsibility for wellbeing. Wellness programmes that emphasise resilience without addressing systemic causes can lead to doctors blaming themselves for their own trauma, (163) what some call 'weaponising wellness'. (183–185)

Another concern is the assumption that increasing empathy will reduce occupational violence. (186) In China, one paper calls for health workers exposed to significant occupational violence to 'respond to emotional labour through deep acting, expressing their true feelings instead of faking the desired emotions required by jobs'. (157) The authors assert that patient-centred care with a more empathic approach will enhance understanding between patients and health care workers and 'further increase staff confidence in managing violence'. (157) Genuine emotional connection often requires vulnerability, which can be challenging in threatening situations. Doctors who are under threat may have difficulty managing self-protection and empathy simultaneously.

CONCLUSION

Doctors in training learn in teams and within medical education systems with hierarchical power dynamics and high stakes assessments. Contexts and roles change throughout training, and doctors in training can be faced with goals that seem to act in opposition.

On the one hand, medical training is trending towards tightly defined competencies that meet well-defined standards. At the same time, communities expect individualised care that requires significant interpersonal skill. Doctors are exposed to discrimination, harassment and occupational violence, but must demonstrate equitable care that is empathic and patient-centred. There is often a discrepancy between encoded policies and enacted behaviours, and despite public commitment to equity, diversity and inclusion, doctors in training frequently experience a highly discriminatory workplace.

In an environment of high workload, resource constraints and escalating regulatory standards, doctors in training can struggle to meet the multiple and often contradictory requirements of their chosen profession. Doctors have high expectations of themselves, and this can affect their confidence. Unfortunately, this makes them vulnerable when they are subject to discrimination, harassment or abuse.

REFERENCES

1. Smith CR. Exploring the pressures of medical education from a mental health and wellness perspective: IGI Global; 2017.
2. Ishak W, Nikravesh R, Lederer S, Perry R, Ogunyemi D, Bernstein C. Burnout in medical students: a systematic review. The clinical teacher. 2013;10(4):242–5.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

3. Grech M. The effect of the educational environment on the rate of burnout among postgraduate medical trainees – a narrative literature review. Journal of medical education and curricular development. 2021;8.
4. Yavari N. Does medical education erode medical trainees' ethical attitude and behavior? Journal of medical ethics and history of medicine. 2016;9:16.
5. Gantayet-Mathur A, Chan K, Kalluri M. Patient-centered care and interprofessional collaboration in medical resident education: where we stand and where we need to go. Humanities and social sciences communications. 2022;9(1):206.
6. Philipsborn RP, Sheffield P, White A, Osta A, Anderson MS, Bernstein A. Climate change and the practice of medicine: essentials for resident education. Academic medicine. 2021;96(3):355–67.
7. Grover S, Fitzpatrick A, Azim FT, Ariza-Vega P, Bellwood P, Burns J, et al. Defining and implementing patient-centered care: an umbrella review. Patient education and counseling. 2022;105(7):1679–88.
8. Jeffrey DI. The future: empathy-based ethics (EBE) and humane medical practice. In Empathy-based ethics: a way to practice humane medicine (pp. 135–45): Springer International Publishing; 2020.
9. Ospina NS, Toloza FJ, Barrera F, Bylund CL, Erwin PJ, Montori V. Educational programs to teach shared decision making to medical trainees: a systematic review. Patient education and counseling. 2020;103(6):1082–94.
10. Elwyn G, Frosch DL, Kobrin S. Implementing shared decision-making: consider all the consequences. Implementation science. 2016;11(1):114.
11. Brashier NM, Marsh EJ. Judging truth. Annual review of psychology. 2020;71:499–515.
12. Chinn CA, Barzilai S, Duncan RG. Education for a 'post-truth' world: new directions for research and practice. Educational researcher. 2021;50(1):51–60.
13. Barzilai S, Chinn CA. A review of educational responses to the 'post-truth' condition: four lenses on 'post-truth' problems. Educational psychologist. 2020;55(3):107–19.
14. Cochrane BS, Ritchie D, Lockhard D, Picciano G, King JA, Nelson B. A culture of compassion: how timeless principles of kindness and empathy become powerful tools for confronting today's most pressing healthcare challenges. Healthcare management forum. 2019;32(3):120–7.
15. Singh P, King-Shier K, Sinclair S. The colours and contours of compassion: a systematic review of the perspectives of compassion among ethnically diverse patients and healthcare providers. PLoS One. 2018;13(5):e0197261.
16. Miles A, Asbridge JE, Caballero F. Towards a person-centered medical education: challenges and imperatives (1). Educación médica. 2015;16(1):25–33.
17. Liu J, Gan Y, Jiang H, Li L, Dwyer R, Lu K, et al. Prevalence of workplace violence against healthcare workers: a systematic review and meta-analysis. Occupational and environmental medicine. 2019;76(12):927–37.
18. Mento C, Silvestri MC, Bruno A, Muscatello MRA, Cedro C, Pandolfo G, Zoccali RA. Workplace violence against healthcare professionals: a systematic review. Aggression and violent behavior. 2020;51:101381.
19. Dyrbye L, Shanafelt T. A narrative review on burnout experienced by medical students and residents. Medical education. 2016;50(1):132–49.
20. Galaiya R, Kinross J, Arulampalam T. Factors associated with burnout syndrome in surgeons: a systematic review. The annals of The Royal College of Surgeons of England. 2020;102(6):401–7.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

21. Bernabeo EC, Holtman MC, Ginsburg S, Rosenbaum JR, Holmboe ES. Lost in transition: the experience and impact of frequent changes in the inpatient learning environment. Academic medicine. 2011;86(5):591–8.
22. Daneman D, Benatar S. Dynamic tensions following new pedagogy in undergraduate medical education. Academic medicine. 2019;94(12):1873–7.
23. Irby DM. Excellence in clinical teaching: knowledge transformation and development required. Medical education. 2014;48(8):776–84.
24. Odongo CO, Talbert-Slagle K. Training the next generation of Africa's doctors: why medical schools should embrace the team-based learning pedagogy. BMC medical education. 2019;19(1):403.
25. Botezat A, Ramos R. Physicians' brain drain – a gravity model of migration flows. Globalization and health. 2020;16(1):7.
26. Adovor E, Czaika M, Docquier F, Moullan Y. Medical brain drain: how many, where and why? Journal of health economics. 2021;76:102409.
27. Shiffer CD, Boulet JR, Cover LL, Pinsky WW. Advancing the quality of medical education worldwide: ECFMG's 2023 medical school accreditation requirement. Journal of medical regulation. 2019;105(4):8–16.
28. Mohammed Ahmed R, Syed Moyn A, Kadambari D. Decolonising medical education regulation: a global view. BMJ global health. 2023;8(6):e011622.
29. Zhang W, Cai M, Lee HJ, Evans R, Zhu C, Ming C. AI in medical education: global situation, effects and challenges. Education and information technologies. 2024;29(4):4611–33.
30. Chan KS, Zary N. Applications and challenges of implementing artificial intelligence in medical education: integrative review. JMIR medical education. 2019;5(1):e13930.
31. Daniel M, Gordon M, Patricio M, Hider A, Pawlik C, Bhagdev R, et al. An update on developments in medical education in response to the COVID-19 pandemic: a BEME scoping review: BEME Guide No. 64. Medical teacher. 2021;43(3):253–71.
32. Chan MMK, Yu DS, Lam VS, Wong JY. Online clinical training in the COVID-19 pandemic. The clinical teacher. 2020;17(4):445–6.
33. Alsaywid B, Lytras MD, Abuzenada M, Lytra H, Sultan L, Badawoud H, et al. Effectiveness and preparedness of institutions' E-learning methods during the COVID-19 pandemic for residents' medical training in Saudi Arabia: a pilot study. Frontiers in public health. 2021;9:707833.
34. Goh PS, Sandars J. A vision of the use of technology in medical education after the COVID-19 pandemic. MedEdPublish. 2020;9:49.
35. Binks AP, LeClair RJ, Willey JM, Brenner JM, Pickering JD, Moore JS, et al. Changing medical education, overnight: the curricular response to COVID-19 of nine medical schools. Teaching and learning in medicine. 2021;33(3):334–42.
36. Walsh K. Medical education: a new pedagogy of the oppressed? Medical teacher. 2014;36 (2):175–6.
37. Wijnen-Meijer M, Burdick W, Alofs L, Burgers C, ten Cate O. Stages and transitions in medical education around the world: clarifying structures and terminology. Medical teacher. 2013;35(4):301–7.
38. Falasco SI, Angel Falasco M. Formación de especialistas en Latinoamérica: Argentina. Educación médica. 2018;19:4–11.
39. Shah C. Early clinical exposure – why and how? Journal of education technology in health sciences. 2018;5(1):2–7.
40. Rawekar A, Jagzape A, Srivastava T, Gotarkar S. Skill learning through early clinical exposure: an experience of Indian medical school. Journal of clinical and diagnostic research: JCDR. 2016;10(1):JC01.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

41. Mafinejad MK, Mirzazadeh A, Peiman S, Khajavirad N, Hazaveh MM, Edalatifard M, et al. Medical students' attitudes towards early clinical exposure in Iran. International journal of medical education. 2016;7:195.
42. Simmenroth A, Harding A, Vallersnes OM, Dowek A, Carelli F, Kiknadze N, Karppinen H. Early clinical exposure in undergraduate medical education: a questionnaire survey of 30 European countries. Medical teacher. 2023;45(4):426–32.
43. Strout Kemper NR, Cavallario JM, Walker SE, Welch Bacon CE. Athletic trainers' experiences developing and maintaining contemporary expertise. Athletic training education journal. 2023;18(4):297–309.
44. Giesler M, Boeker M, Fabry G, Biller S. Importance and benefits of the doctoral thesis for medical graduates. German medical science journal for medical education. 2016;33(1): Doc8.
45. Weggemans MM, van Dijk B, van Dooijeweert B, Veenendaal AG, Ten Cate O. The postgraduate medical education pathway: an international comparison. German medical science journal for medical education. 2017;34(5):Doc63.
46. Gordon D, Karle H. The state of medical and health care education: a review and commentary on the Lancet Commission report. World medical & health policy. 2012;4(1):1–18.
47. Kramer M, Heyligers IC, Könings KD. Implicit gender-career bias in postgraduate medical training still exists, mainly in residents and in females. BMC medical education. 2021;21(1):253.
48. Boatright D, London M, Soriano AJ, Westervelt M, Sanchez S, Gonzalo JD, et al. Strategies and best practices to improve diversity, equity, and inclusion among US graduate medical education programs. JAMA network open. 2023;6(2):e2255110-e.
49. Verdonk P, Janczukowicz J. Editorial: diversity in medical education. MedEdPublish. 2018;7:1.
50. Socha-Dietrich K, Dumont J-C. International migration and movement of doctors to and within OECD countries – 2000 to 2018. OECD health working papers no. 126, Organisation for Economic Co-operation and Development: Directorate for Employment, Labour and Social Affairs Health Committee. 2021. www.oecd.org/els/health-systems/health-working-papers.htm.
51. Karle H. Global standards and accreditation in medical education: a view from the WFME. Academic medicine. 2006;81(12):S43-S8.
52. Reid A, Leistikow I, Paniagua M, Udekwu P, Letlape K. Expecting the unexpected: how regulators can prepare for serious events. Journal of medical regulation. 2021;107(3):28–33.
53. Tackett S, Zhang C, Nassery N, Caufield-Noll C, Van Zanten M. Describing the evidence base for accreditation in undergraduate medical education internationally: a scoping review. Academic medicine. 2019;94(12):1995–2008.
54. Rashid MA. Altruism or nationalism? Exploring global discourses of medical school regulation. Medical education. 2023;57(1):31–9.
55. Ulusoy H, Swigart V, Erdemir F. Think globally, act locally: understanding sexual harassment from a cross-cultural perspective. Medical education. 2011;45(6):603–12.
56. Crutcher RA, Szafran O, Woloschuk W, Chatur F, Hansen C. Family medicine graduates' perceptions of intimidation, harassment, and discrimination during residency training. BMC medical education. 2011;11(1):88.
57. Fnais N, Soobiah C, Chen MH, Lillie E, Perrier L, Tashkhandi M, et al. Harassment and discrimination in medical training: a systematic review and meta-analysis. Academic medicine. 2014;89(5):817–27.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

58. Chen PG, Curry LA, Bernheim SM, Berg D, Gozu A, Nunez-Smith M. Professional challenges of non-US-born international medical graduates and recommendations for support during residency training. Academic medicine. 2011;86(11):1383–8.
59. Kehoe A, McLachlan J, Metcalf J, Forrest S, Carter M, Illing J. Supporting international medical graduates' transition to their host-country: realist synthesis. Medical education. 2016;50(10):1015–32.
60. Perez MM, Cuff PA. Exploring the role of accreditation in enhancing quality and innovation in health professions education. Proceedings of a workshop. 2017.
61. World Federation for Medical Education. WFME global standards for quality improvement in post-graduate medical education: World Federation for Medical Education; 2023.
62. Wang W. Medical education in China: progress in the past 70 years and a vision for the future. BMC medical education. 2021;21:1–6.
63. Jiang Q, Sun H, Yuan F, Duan W, Wu Y, Liu S. Internationalisation of medical education in China: a 10-year overview of students' outward mobility. Innovations in education and teaching international. 2023;60(6):799–809.
64. Antunes dos Santos R, Nunes PT. Medical education in Brazil. Medical teacher. 2019;41 (10):1106–11.
65. Slavin S, D'Eon MF. Overcrowded curriculum is an impediment to change (part A). Canadian medical education journal. 2021;12(4):1–6.
66. Slavin S, D'Eon MF. Overcrowded curriculum is an impediment to change (part B). Canadian medical education journal. 2021;12(5):1–5.
67. Wong SH, Gishen F, Lokugamage AU. 'Decolonising the medical curriculum': humanising medicine through epistemic pluralism, cultural safety and critical consciousness. London review of education. 2021;19(1):1–22.
68. Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C, et al. Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. Journal of the American Medical Association. 2016;316(21):2214–36.
69. Dyrbye LN, Lipscomb W, Thibault G. Redesigning the learning environment to promote learner well-being and professional development. Academic medicine. 2020;95(5):674–8.
70. Wasson LT, Cusmano A, Meli L, Louh I, Falzon L, Hampsey M, et al. Association between learning environment interventions and medical student well-being: a systematic review. Journal of the American Medical Association. 2016;316(21):2237–52.
71. Richman JA, Flaherty JA, Rospenda KM. Perceived workplace harassment experiences and problem drinking among physicians: broadening the stress/alienation paradigm. Addiction. 1996;91(3):391–403.
72. Nerobkova N, Kim SY, Park E-C, Shin J. Workplace mistreatment and health conditions prior and during the COVID-19 in South Korea: a cross-sectional study. International journal of environmental research and public health. 2022;19(20):12992.
73. Yukawa K, Shimanuki M, Eguchi H. Prevention and future issues of karoshi and suicide by overwork in Japan. Journal of the National Institute of Public Health. 2024;73(1):16–31.
74. Tuckey MR, Chrisopoulos S, Dollard MF. Job demands, resource deficiencies, and workplace harassment: evidence for micro-level effects. International journal of stress management. 2012;19(4):292.
75. Nassar AK, Waheed A, Tuma F. Academic clinicians' workload challenges and burnout analysis. Cureus. 2019;11:1–4.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

76. Strasser R, Hogenbirk JC, Minore B, Marsh DC, Berry S, Mccready WG, Graves L. Transforming health professional education through social accountability: Canada's Northern Ontario School of Medicine. Medical teacher. 2013;35(6):490–6.
77. Strasser R. Learning in context: education for remote rural health care. Rural and remote health. 2016;16(2):1–6.
78. Chacko TV. Moving toward competency-based education: challenges and the way forward. Archives of medicine and health sciences. 2014;2(2):247–53.
79. Albanese MA, Mejicano G, Anderson WM, Gruppen L. Building a competency-based curriculum: the agony and the ecstasy. Advances in health sciences education. 2010;15:439–54.
80. Iobst WF, Sherbino J, Cate OT, Richardson DL, Dath D, Swing SR, et al. Competency-based medical education in postgraduate medical education. Medical teacher. 2010;32 (8):651–6.
81. Roland K, Hannah F, Lilian K, Heidrun S, Cláudia M, Luiz Vianna S, et al. A post-Flexner comparative case study of medical training responses to health system needs in Brazil and Germany. BMJ global health. 2022;7(3):e008369.
82. Nousiainen MT, Caverzagie KJ, Ferguson PC, Frank JR, Collaborators I. Implementing competency-based medical education: what changes in curricular structure and processes are needed? Medical teacher. 2017;39(6):594–8.
83. Frank JR, Danoff D. The CanMEDS initiative: implementing an outcomes-based framework of physician competencies. Medical teacher. 2007;29(7):642–7.
84. Royal College of Physicians and Surgeons of Canada. CanMEDS: better standards, better physicians, better care Canada2024. 14 April 2024. Available from www.royalcollege.ca/en/canmeds.html.
85. Huddle TS, Heudebert GR. Taking apart the art: the risk of anatomizing clinical competence. Academic medicine. 2007;82(6):536–41.
86. Frank JR, Snell LS, Cate OT, Holmboe ES, Carraccio C, Swing SR, et al. Competency-based medical education: theory to practice. Medical teacher. 2010;32(8):638–45.
87. Combes JR, Arespacochaga E. Physician competencies for a 21st century health care system. Journal of graduate medical education. 2012;4(3):401–5.
88. de Heer MH, Driessen EW, Teunissen PW, Scheele F. Lessons learned spanning 17 years of experience with three consecutive nationwide competency based medical education training plans. Frontiers in medicine (Lausanne). 2024;11:1339857.
89. Bird H, Gilligan G. Health professional regulation in Australia. Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3716677.
90. Medical Board. Good medical practice: a code of conduct for doctors in Australia. 2020.
91. Australia MBo. Good medical practice: a code of conduct for doctors in Australia: Medical Board of Australia Melbourne; 2014.
92. Wren DJ. School culture: exploring the hidden curriculum. Adolescence. 1999;34 (135):593–7.
93. Michalec B, Hafferty FW. Stunting professionalism: the potency and durability of the hidden curriculum within medical education. Social theory & health. 2013;11(4):388–406.
94. Margolis E. The hidden curriculum in higher education: Psychology Press; 2001.
95. Chuang AW, Nuthalapaty FS, Casey PM, Kaczmarczyk JM, Cullimore AJ, Dalrymple JL, et al. To the point: reviews in medical education – taking control of the hidden curriculum. American journal of obstetrics and gynecology. 2010;203(4):316.e1–e6.
96. Musto L, Rodney P. What we know about moral distress. In CM Ulrich, C Grady (eds.), Moral distress in the health professions (pp. 9–20): Springer International Publishing; 2018.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

97. Gao J, Yang L, Zou J, Fan X. Comparison of the influence of massive open online courses and traditional teaching methods in medical education in China: a meta-analysis. Biochemistry and molecular biology education. 2021;49(4):639–51.
98. Bakkum MJ, Hartjes MG, Piët JD, Donker EM, Likic R, Sanz E, et al. Using artificial intelligence to create diverse and inclusive medical case vignettes for education. British journal of clinical pharmacology. 2024;90(3):640–8.
99. Zou J, Schiebinger L. Ensuring that biomedical AI benefits diverse populations. eBioMedicine. 2021;67.
100. Fosch-Villaronga E, Drukarch H, Khanna P, Verhoef T, Custers B. Accounting for diversity in AI for medicine. Computer law & security review. 2022;47:105735.
101. Leslie D, Mazumder A, Peppin A, Wolters MK, Hagerty A. Does 'AI' stand for augmenting inequality in the era of covid-19 healthcare? British medical journal. 2021;16(372):1–4.
102. Buery-Joyner SD, Baecher-Lind L, Clare CA, Hampton BS, Moxley MD, Ogunyemi D, et al. Educational guidelines for diversity and inclusion: addressing racism and eliminating biases in medical education. American journal of obstetrics and gynecology. 2023;228(2):133–9.
103. Porayska-Pomsta K, Rajendran G. Accountability in human and artificial intelligence decision-making as the basis for diversity and educational inclusion. In J Knox, Y Wang, M Gallagher (eds.), Artificial intelligence and inclusive education: speculative futures and emerging practices (pp. 39–59): Springer Singapore; 2019.
104. Barteit S, Lanfermann L, Bärnighausen T, Neuhann F, Beiersmann C. Augmented, mixed, and virtual reality-based head-mounted devices for medical education: systematic review. JMIR serious games. 2021;9(3):e29080.
105. Zhao G, Fan M, Yuan Y, Zhao F, Huang H. The comparison of teaching efficiency between virtual reality and traditional education in medical education: a systematic review and meta-analysis. Annals of translational medicine. 2021;9(3):252–60.
106. Chernikova O, Heitzmann N, Stadler M, Holzberger D, Seidel T, Fischer F. Simulation-based learning in higher education: a meta-analysis. Review of educational research. 2020;90(4):499–541.
107. Guckian J, Eveson L, May H. The great escape? The rise of the escape room in medical education. Future healthcare journal. 2020;7(2):112–15.
108. Papapanou M, Routsi E, Tsamakis K, Fotis L, Marinos G, Lidoriki I, et al. Medical education challenges and innovations during COVID-19 pandemic. Postgraduate medical journal. 2021;98(1159):321–7.
109. Sandars J. The use of reflection in medical education: AMEE Guide No. 44. Medical teacher. 2009;31(8):685–95.
110. Akhigbe T, Monday E. Reflection and reflective practice in general practice: a systematic review exploring and evaluating key variables influencing reflective practice. Journal of advances in medicine and medical research. 2022;34(3):34–44.
111. Mjølstad BP, Getz LO. 'They never mentioned this in medical school!' A qualitative analysis of medical students' reflective writings from general practice. Scandinavian journal of primary health care. 2023;41(4):417–26.
112. Stuart E, O'Leary D, Rowntree R, Carey C, O'Rourke L, O'Brien E, et al. Challenges in experiential learning during transition to clinical practice: a comparative analysis of reflective writing assignments during general practice, paediatrics and psychiatry clerkships. Medical teacher. 2020;42(11):1275–82.
113. Thompson S, Thompson N. The critically reflective practitioner: Bloomsbury Publishing; 2023.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

114. Dagnone JD, Takahashi SG, Whitehead CR, Spadafora SM. Reclaiming physician identity: it's time to integrate 'Doctor as Person' into the CanMEDS framework. Canadian medical education journal. 2020;11(4):e97-e9.
115. Whitehead C, Selleger V, van de Kreeke J, Hodges B. The 'missing person' in roles-based competency models: a historical, cross-national, contrastive case study. Medical education. 2014;48(8):785–95.
116. Schön DA. The reflective practitioner: how professionals think in action: Routledge; 2017.
117. Schön DA. Knowing-in-action: the new scholarship requires a new epistemology. Change: the magazine of higher learning. 1995;27(6):27–34.
118. Kururi N, Tozato F, Lee B, Kazama H, Katsuyama S, Takahashi M, et al. Professional identity acquisition process model in interprofessional education using structural equation modelling: 10-year initiative survey. Journal of interprofessional care. 2016;30(2):175–83.
119. Mette M, Baur C, Hinrichs J, Narciß E. Gaining interprofessional knowledge and interprofessional competence on a training ward. Medical teacher. 2021;43(5):583–9.
120. Østergaard HT, Østergaard D, Lippert A. Implementation of team training in medical education in Denmark. Postgraduate medical journal. 2008;84(996):507–11.
121. Reeves S, Fletcher S, Barr H, Birch I, Boet S, Davies N, et al. A BEME systematic review of the effects of interprofessional education: BEME Guide No. 39. Medical teacher. 2016;38(7):656–68.
122. Gafson I, Sharma K, Griffin A. Raising concerns in the current NHS climate: a qualitative study exploring junior doctors' attitudes to training and teaching. Future healthcare journal. 2019;6(3):156.
123. Nataraj N, Tome J, Ratelle JT. Teaming in graduate medical education: ward rounds and beyond. Journal of medical education and curricular development. 2024;11:23821205231225588.
124. Janss R, Rispens S, Segers M, Jehn KA. What is happening under the surface? Power, conflict and the performance of medical teams. Medical education. 2012;46(9):838–49.
125. Crowe S, Clarke N, Brugha R. 'You do not cross them': hierarchy and emotion in doctors' narratives of power relations in specialist training. Social science & medicine. 2017;186:70–7.
126. Braithwaite J, Clay-Williams R, Vecellio E, Marks D, Hooper T, Westbrook M, et al. The basis of clinical tribalism, hierarchy and stereotyping: a laboratory-controlled teamwork experiment. BMJ open. 2016;6(7):e012467.
127. Rios IC. The contemporary culture in medical school and its influence on training doctors in ethics and humanistic attitude to the clinical practice. International journal of ethics education. 2016;1(2):173–82.
128. Gerada C. Doctors, suicide and mental illness. BJPsych bulletin. 2018;42(4):165–8.
129. Samra R. Empathy and burnout in medicine-acknowledging risks and opportunities. Journal of general internal medicine. 2018;33(7):991–3.
130. Vento S, Cainelli F, Vallone A. Violence against healthcare workers: a worldwide phenomenon with serious consequences. Frontiers in public health. 2020;8:570459.
131. Ishikawa M. Relationships between overwork, burnout and suicidal ideation among resident physicians in hospitals in Japan with medical residency programmes: a nationwide questionnaire-based survey. BMJ open. 2022;12(3):e056283.
132. Azhar GS, Azhar AZ, Azhar AS. Overwork among residents in India: a medical resident's perspective. Journal of family medicine and primary care. 2012;1(2):141–3.
133. Shen Y-F, Hao X-Y, Guo T-K. Physician deaths from overwork should arouse greater attention in China. International journal of cardiology. 2018;256:23.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

134. Schaufeli WB, Bakker AB, van der Heijden FM, Prins JT. Workaholism among medical residents: it is the combination of working excessively and compulsively that counts. International journal of stress management. 2009;16(4):249.
135. Padiyath A, Bolin E, Daily J. Recommendations for millennials on successfully navigating medical training. MedEdPublish. 2019;8:143.
136. Fothergill A, Edwards D, Burnard P. Stress, burnout, coping and stress management in psychiatrists: findings from a systematic review. International journal of social psychiatry. 2004;50(1):54–65.
137. Colenbrander L, Causer L, Haire B. 'If you can't make it, you're not tough enough to do medicine': a qualitative study of Sydney-based medical students' experiences of bullying and harassment in clinical settings. BMC medical education. 2020;20:1–12.
138. Picton A. Work-life balance in medical students: self-care in a culture of self-sacrifice. BMC medical education. 2021;21:1–12.
139. Awire E, Okumagba MT. Medical education in Nigeria and migration: a mixed-methods study of how the perception of quality influences migration decision making. MedEdPublish. 2020;9:1.
140. Dominic C, Gopal DP, Sidhu A. 'It's like juggling fire daily': well-being, workload and burnout in the British NHS – a survey of 721 physicians. Work. 2021;70:395–403.
141. Florence Katie L, Daniele C. Factors affecting the UK junior doctor workforce retention crisis: an integrative review. BMJ open. 2022;12(3):e059397.
142. Ruth R, Marta B, Farina K, Kevin T, Anya G, Anna KT, et al. Sources of work-related psychological distress experienced by UK-wide foundation and junior doctors: a qualitative study. BMJ open. 2021;11(6):e043521.
143. Kroll L, Singleton A, Collier J, Rees Jones I. Learning not to take it seriously: junior doctors' accounts of error. Medical education. 2008;42(10):982–90.
144. Asch DA, Grischkan J, Nicholson S. The cost, price, and debt of medical education. New England journal of medicine. 2020;383(1):6–9.
145. Monique Simone P, Adon Toru A, Stephen B, Morganne W, Seth WP, Ma-Li W, Julio L. Effect of medical student debt on mental health, academic performance and specialty choice: a systematic review. BMJ open. 2019;9(7):e029980.
146. Bacchi S, Asahina A, Wang D, Wagner M, Pisaniello M, French J, et al. The associations among medical student debt, distress and resilience in the early years of medical school: an international cross-sectional study. Australasian psychiatry. 2020;28(4):468–9.
147. Webster C, Ling C, Barrow M, Poole P, Henning M. A cross-disciplinary assessment of student loans debt, financial support for study and career preferences upon graduation. The New Zealand medical journal. 2017;130(1459):43–53.
148. Kodikara K, Seneviratne T, Godamunne P, Premaratna R. Challenges in learning procedural skills: student perspectives and lessons learned for curricular design. Teaching and learning in medicine. 2024;36(4):435–53.
149. Tallentire VR, Smith SE, Facey AD, Rotstein L. Exploring newly qualified doctors' workplace stressors: an interview study from Australia. BMJ open. 2017;7(8):e015890.
150. Derrick SA. Time well spent: modelling education and service activities of junior doctors under the European Working Time Directive: University of Plymouth; 2009.
151. Blunt P, Turner M, Lindroth H. Patronage, service delivery, and social justice in Indonesia. International journal of public administration. 2012;35(3):214–20.
152. Al-Shaban ZR, Al-Otaibi ST, Alqahtani HA. Occupational violence and staff safety in health-care: a cross-sectional study in a large public hospital. Risk management and healthcare policy. 2021:1649–57.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

153. Nikolić D, Višnjić A. Mobbing and violence at work as hidden stressors and work ability among emergency medical doctors in Serbia. Medicina. 2020;56(1):31.
154. Cebrino J, Portero de la Cruz S. A worldwide bibliometric analysis of published literature on workplace violence in healthcare personnel. PLoS One. 2020;15(11):e0242781.
155. Jiao M, Ning N, Li Y, Gao L, Cui Y, Sun H, et al. Workplace violence against nurses in Chinese hospitals: a cross-sectional survey. BMJ open. 2015;5(3):e006719.
156. Zhang L, Stone TE, Zhang J. Understanding the rise of Yinao in China: a commentary on the little known phenomenon of healthcare violence. Nursing & health sciences. 2017;19(2):183–7.
157. Tang N, Thomson LE. Workplace violence in Chinese hospitals: the effects of healthcare disturbance on the psychological well-being of Chinese healthcare workers. International journal of environmental research and public health. 2019;16(19):3687–701.
158. Azimi MN, Balakarzai AT. Nation building through higher education system resurgence in Afghanistan. In Handbook of education systems in South Asia (pp. 747–68): Springer Singapore; 2021.
159. Mannion S, Chaloner E, Homayoun F. Medical education must be rehabilitated in Afghanistan. British medical journal. 2002;324(7341):848.
160. Stanikzai MH, Wafa MH, Akbari K, Anwary Z, Baray AH, Sayam H, Wasiq AW. Afghan medical students' perceptions, and experiences of their medical education and their professional intentions: a cross-sectional study. BMC medical education. 2023;23(1):569.
161. Schexneider K. Stethoscopes and headscarves: female medical students in present-day Afghanistan. Military medicine. 2010;175(1):21–4.
162. Mroz G, Papoutsi C, Greenhalgh T. UK newspapers 'on the Warpath': media analysis of general practice remote consulting in 2021. British journal of general practice. 2022;72 (725):e907-e15.
163. Siad FM, Rabi DM. Harassment in the field of medicine: cultural barriers to psychological safety. CJC open. 2021;3(12):S174-S9.
164. Olsson C, Toropova A, Jensen I, Björklund C. Sexual harassment, bullying, burnout and organisational support during the COVID-19 pandemic in Swedish medical faculty – a survey study. Studies in higher education. 2025;50(2):406–18.
165. Khine AA, Hartman N. Strategies in overcoming racial and socio-cultural differences in the learning environment of post-graduate medical specialty training in South Africa. MedEdPublish. 2018;7.
166. Bezuidenhout A, Cilliers FVN. Burnout, work engagement and sense of coherence in female academics in higher-education institutions in South Africa. South African journal of industrial psychology; 2010;36(1).
167. Mash B, Edwards J. Creating a learning environment in your practice or facility. South African family practice. 2020;62(1):e1-e5.
168. Ras T, Stander Jenkins L, Lazarus C, van Rensburg JJ, Cooke R, Senkubuge F, et al. 'We just don't have the resources': supervisor perspectives on introducing workplace-based assessments into medical specialist training in South Africa. BMC medical education. 2023;23(1):832.
169. Reed G. Cuba's primary health care revolution: 30 years on. Bulletin of the World Health Organization. 2008;86(5):327–30.
170. Cooper RS, Kennelly JF, Ordunez-Garcia P. Health in cuba. International journal of epidemiology. 2006;35(4):817–24.
171. Neumann M, Edelhäuser F, Tauschel D, Fischer MR, Wirtz M, Woopen C, et al. Empathy decline and its reasons: a systematic review of studies with medical students and residents. Academic medicine. 2011;86(8):996–1009.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009

172. Paro HB, Silveira PS, Perotta B, Gannam S, Enns SC, Giaxa RR, et al. Empathy among medical students: is there a relation with quality of life and burnout? PLoS One. 2014;9(4):e94133.
173. Thomas MR, Dyrbye LN, Huntington JL, Lawson KL, Novotny PJ, Sloan JA, Shanafelt TD. How do distress and well-being relate to medical student empathy? A multicenter study. Journal of general internal medicine. 2007;22:177–83.
174. Calzadilla-Núñez A, Díaz-Narváez VP, Dávila-Pontón Y, Aguilera-Muñoz J, Fortich-Mesa N, Aparicio-Marenco D, Reyes-Reyes A. Erosion of empathy during medical training by gender. A cross-sectional study. Archivos Argentinos de Pediatria. 2017;115 (6):556–61.
175. Youssef FF, Nunes P, Sa B, Williams S. An exploration of changes in cognitive and emotional empathy among medical students in the Caribbean. International journal of medical education. 2014;5:185.
176. Okoye O, Nwachukwu D, Maduka-Okafor FC. Must we remain blind to undergraduate medical ethics education in Africa? A cross-sectional study of Nigerian medical students. BMC medical ethics. 2017;18:1–8.
177. Newell JM, MacNeil GA. Professional burnout, vicarious trauma, secondary traumatic stress, and compassion fatigue. Best practices in mental health. 2010;6(2):57–68.
178. Finklestein M, Stein E, Greene T, Bronstein I, Solomon Z. Posttraumatic stress disorder and vicarious trauma in mental health professionals: Oxford University Press; 2015, pp. e25–e31.
179. Al-Mateen CS, Linker JA, Damle N, Hupe J, Helfer T, Jessick V. Vicarious traumatization and coping in medical students: a pilot study. Academic psychiatry. 2015;39:90–3.
180. Pagel C, Palmer E. 'We are setting ourselves on fire to keep everyone else warm' – what does the recovery look like for NHS staff? British medical journal. 2021; 372.
181. McCain RS, McKinley N, Dempster M, Campbell WJ, Kirk SJ. A study of the relationship between resilience, burnout and coping strategies in doctors. Postgraduate medical journal. 2017;94(1107):43–7.
182. Bittner IV JG, Khan Z, Babu M, Hamed O. Stress, burnout, and maladaptive coping. Bulletin of the American College of Surgeons. 2011;96(8):17–22.
183. Kohler D. NHS staff wellbeing has already been weaponised. British medical journal. 2023;381.
184. Salisbury H. Helen Salisbury: Wellbeing shouldn't be weaponised. British Medical Journal Publishing Group; 2023.
185. Stone L. Normalising exploitation. British journal of general practice. 2024;74(739):81–2.
186. Hahn S, Hantikainen V, Needham I, Kok G, Dassen T, Halfens RJ. Patient and visitor violence in the general hospital, occurrence, staff interventions and consequences: a cross-sectional survey. Journal of advanced nursing. 2012;68(12):2685–99.

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 17 Nov 2026 at 09:10:33, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009673037.009