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# Creating caring health professionals: Current challenges and opportunities in medical education

**K Stinson**,[1,2] MB ChB (Stell), PG Dip Fam Med (UCT), MMus (UCT), MPH (UCT), PhD (UCT), Dip HIV Man (SA);
**D Daneman**,[3] OC, MB BCh (Wits), FRCPC, DSc (Med)(Wits), FFPAED(Hons)RCPI

[1] *Retreat Community Health Centre, Western Cape Department of Health and Wellness, Cape Town, South Africa*
[2] *Chariot Health, Cape Town, South Africa*
[3] *Department of Paediatrics, University of Toronto and The Hospital for Sick Children, Toronto, Canada*

***Corresponding author:*** *K Stinson (kathryn.stinson@westerncape.gov.za)*

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*I wish we could encourage on this continent among our best students the habit of wandering. I do not know that we are quite prepared for it, as there is still great diversity in the curricula, even among leading schools, but it is undoubtedly a great advantage to study under different teachers, as the mental horizon is widened and the sympathies enlarged.*[1]

Sir William Osler

Creating caring health professionals remains a significant component of medical education in a rapidly changing world. Models of contemporary healthcare are continually influenced by widening social and economic disparities, environmental threat, technological advances and evolving public expectations of medical professionalism. Therefore, medical education must ensure that graduates have not only adequate scientific knowledge and technical competence, but the ethical sensitivity, social accountability, empathy and reflective capacity required for patient-centred practice.

This narrative review explores current challenges and opportunities that shape medical education, including global health disparities, the legacy of the COVID-19 pandemic, the emergence of artificial intelligence, telemedicine and social media, and changing approaches to professionalism. Particular attention is given to mentorship and role-modelling as mechanisms through which professional identity, moral imagination and caring practice may be cultivated.

Drawing on the work and example of Emeritus Professor Solomon Benatar, we argue that caring health professionals are developed through educational approaches that integrate ethics, humanities, social accountability and meaningful mentorship. While technological advancement offers important opportunities to enhance healthcare service delivery and knowledge acquisition, it is the personal interaction and human relationships that remain central to building compassionate and socially responsive practitioners. We conclude by proposing practical opportunities for strengthening caring professionalism within contemporary medical education.

## What is a caring health professional?

Although caring is widely regarded as a defining characteristic of the health professions, its interpretation remains complex, multifaceted and inadequately studied.[2] Caring involves a commitment to serve others through the application of knowledge, skills and professional judgement while upholding the integrity, dignity and autonomy of the person receiving care.[3] It is grounded in ethical practice, altruism, collaboration and respect for persons. Caring involves recognising the inherent value of every individual while extending concern to the welfare of communities, populations and the environment.[4]

Theoretical frameworks of caregiving propose that caring possesses both instrumental and expressive dimensions. The former relates to what healthcare professionals do for patients, including the provision of competent clinical assessment, diagnosis, treatment and advocacy. The expressive dimension concerns how care is delivered. It involves a human presence that communicates with empathy, compassion and attentiveness, while demonstrating a respect for personhood.[2,5] It is argued that these dimensions are inseparable, particularly in serious illness where trust is built through the recognition of clinical expertise through compassionate communication.[6,7]

While many technical and communicative aspects of care can be taught through education and practice, the distinction between routine service provision and genuine caring practice often lies in the emotional engagement and ethical commitment that underpin professional actions.[3] A caring health professional therefore integrates technical competence with ethical sensitivity and reflective judgement. Such professionals recognise that illness occurs within social, cultural and economic contexts, and they are attentive to the broader determinants of health that shape patients' lives. Caring extends beyond individual clinical encounters to include a commitment to social accountability, health equity and advocacy for vulnerable populations.[8]

The cultivation of caring health professionals is increasingly challenged by contemporary global realities that shape both the contexts in which health professionals practise and the values that medical education seeks to inculcate.[9] Understanding these broader influences is thus essential to appreciating the opportunities for and barriers to fostering caring professionalism.

### The global landscape of disease and its management

Global challenges posed by shifting political trends, pervasive and growing socioeconomic disparity and environmental change have created instability in access to quality universal healthcare. Inequitable access is driven by the commodification of healthcare, a myopic interpretation of human rights, and a lack of political will, evident in the recent disdain expressed by some government leaders for well-proven and safe interventions such as universal vaccination.[10-12]

As healthcare becomes increasingly monetised, caregiving is

contested as a resource-intensive activity that competes with financial and operational priorities that favour economic value and service utilisation.[4,13] This has effected a distinctive misalignment between what patients value as care and what health systems value as performance.[14] Consequently, tensions have emerged between the humanistic aspirations of medicine and the economic imperatives of contemporary healthcare systems. While medical practice once involved a caring profession characterised by scientific engagement, compassion and dedication, it is becoming progressively market driven, and 'care, which used to be associated with a clinician at the bedside, more often is reduced to a basket of services'.[15,16]

The interests of the wealthy and powerful are often defended more vigorously than the collective responsibilities required to promote health equity, social justice and the common good.[8] Furthermore, scientific progress in medicine is fraught with serious ethical concerns. In high-income countries, medical genomics is revolutionising the precision management of inherited diseases and cancers, while low-income countries continue to battle a heavy burden of infectious disease and lower life expectancy at birth.[15,17,18] It is evident that population health cannot improve without addressing upstream factors such as policy, law and ethics, the social determinants of health and the environment.[19] Benatar[8] has argued that the cultivation of moral imagination – the capacity to recognise our shared humanity and responsibilities to each other – is central to addressing these challenges, yet remains a neglected component of professionalism.

## Medical education in a changing world

At the heart of healthcare services are future health professionals who must work with shrinking resources, increasingly diverse communities and a persistent burden of communicable and noncommunicable disease. As healthcare evolves, medical education must also evolve to prepare graduates to provide evidence-based, patient-centred and socially responsive care.[20] Medical students thus require exposure to the full spectrum of healthcare, from prevention and population health to private and public health services.[20-22] During undergraduate training, professional identity formation begins with accumulated experience, guided reflection and participation in patient care, gradually transforming theoretical knowledge into practical wisdom.[23]

Modern medical education was shaped by William Osler, who championed bedside learning and the patient as teacher, and by Abraham Flexner, whose 1910 report established the scientific foundations of university-based medical education.[22,24,25] While these principles remain influential, medical education has undergone a gradual transition in response to social expectations. Contemporary curricula increasingly emphasise value-based healthcare, population health, the social determinants of health, social accountability and lifelong learning, along with scientific competence.[20,26,27-29]

To this end, many medical schools have incorporated the humanities, behavioural sciences and ethics to prepare students for the demands of modern professionalism within a complex health system.[22] Although education models vary internationally, there is increasing recognition that competency-based education should extend beyond knowledge acquisition to include ethical reasoning, empathy, professional judgement and reflective practice.[30-34]

Medical education can no longer solely concentrate on scientific advances; it must also cultivate the professional values that underpin caring healthcare.[9] Technical competence is exercised through legal, policy and social frameworks that often require sound ethical and moral judgement.[35] Patient autonomy, cultural diversity and evolving societal expectations demand that doctors engage respectfully with differing patient beliefs and preferences while maintaining professional integrity.[35] Through his pioneering establishment of the first Bioethics Centre in South Africa at the University of Cape Town, Benatar demonstrated the importance of multidisciplinary engagement with philosophy, law, sociology and the humanities. Such educational approaches depend on teachers as role models, who espouse the professional values that a medical curriculum alone cannot instil.[36-38]

Despite increasing emphasis on professionalism, little attention has been paid to the philosophical foundations of medical education. Educational approaches such as problem-, team- and case-based learning describe methods of teaching rather than the professional values they seek to cultivate.[39] If medical education is to succeed in creating caring health professionals, greater attention must be paid to the relationship between educational processes and professional formation.[40-42,43] Benatar and Daneman[9] argue that this extends beyond acquiring knowledge and technical skills, to cultivating moral imagination and professional values required to care for 'patients as people' within a broader social and ecological context.

### The COVID-19 pandemic

The COVID-19 pandemic had a profound global effect on medical care and education and remains a stark reminder of the need for preparedness in global health emergencies. Long intervals between major pandemics can erode institutional memory and diminish the urgency for preparedness, a challenge compounded by failures to learn from history and to acknowledge perpetual global health inequities and environmental degradation as risk factors for disease.[19]

COVID-19 exposed health system weaknesses, including workforce shortages, overwhelming patient burdens and inadequate supply chains. At the same time, it demonstrated the capacity for rapid innovation through the availability of safe and effective vaccines and remote healthcare.[44] These developments highlighted both opportunities and limitations of technology in healthcare.

Medical education underwent an abrupt transition to virtual platforms. Faculty needed to balance the risks of exposure against the requirement for adequate competency upon graduation.[45] Online teaching rapidly replaced traditional educational activities, while clinical and research groups quickly generated and analysed COVID-19 data with unprecedented speed.[46]

However, concerns emerged regarding the effect of these changes on professional formation.[47] Medicine is relational and team-based, and remote learning cannot adequately mimic real-life situations that give rise to experiential learning through communities of practice. The loss of face-to-face teaching, discussions at the bedside and role-modelling raised concerns about preclinical and clinical development and professional identity formation.[47] Unequal access to virtual learning risked widening global disparities in opportunities, skills, knowledge and confidence. Peer mentoring appeared to mitigate some of these challenges in supporting personal growth, resilience and self-directed learning.[48]

In the aftermath of COVID-19, it is clear that while technology can facilitate learning and healthcare delivery, it cannot replace the relational foundations of professional formation. Medical students reported that decreased personal interaction during their clinical training created a sense of dissonance arising from reduced opportunities to exercise self-efficacy and altruism in patient care.

[49] Although the downstream effect of these disruptions continues to be evaluated, the pandemic underscored the importance of human relationships, solidarity, rights and shared responsibilities.[41,50] Benatar argues that in a post-COVID world, the development of caring health professionals requires a broader appreciation of our interconnectedness. Health crises transcend political and geographical borders, and caring practice demands a global consciousness grounded in compassion and social responsiveness.[9,19]

## The evolution of technology and social media

Certain aspects of medical education remain fundamental: every graduating medical student must be able to take a comprehensive medical history, perform a physical examination, formulate a differential diagnosis and develop an appropriate management plan. However, contemporary healthcare requires additional competencies as digital technologies shape communication, education and clinical practice. Telemedicine, artificial intelligence (AI) and social media have expanded opportunities in healthcare service delivery and learning, while simultaneously raising new ethical and professional challenges.[51]

The growth of telemedicine and digital healthcare has improved access to services, particularly in geographically remote environments, by reducing waiting times, lowering costs and supporting efficient management of acute and chronic conditions.[52-55] AI is a promising technological development with applications ranging from image interpretation and drug discovery to clinical decision support and medical education.[56] AI-assisted tools enhance learning through simulation and knowledge transfer, while also supporting healthcare professionals in diagnosis and management.[57,58] Yet important concerns remain regarding privacy, confidentiality and algorithmic bias. Unequal access to technology in the context of AI could further potentiate existing health disparities.[59-61]

The most significant limitation of digital healthcare is its inability to fully replicate the relational dimensions of care. Despite technology's speed and efficiency, it cannot yet fully respond to human vulnerability through empathy, attentiveness and human connection. Furthermore, the extent to which AI can recognise and respond to the values and needs of caring practice is questionable.[62-64] Many of the competencies central to medical curricula, including ethical reasoning, professional judgement, compassion and patient-centred care are derived from the humanities and are unlikely to be replicated by AI in the immediate future.[54,56,65-67]

While AI shows promise in enhancing medical education, early evidence suggests that human oversight is still required both to ensure that ethical decision-making is honoured and to mitigate against medicolegal challenges. More research using comparison studies to ascertain AI's effectiveness is needed. Caring professionals must appreciate AI's capabilities and limitations, while remaining accountable for clinical decisions.[68-71]

Social media has similarly transformed the rapid dissemination of information, professional communication and public engagement. These platforms offer opportunities for education, collaboration and advocacy. However, there are challenges relating to misinformation, confidentiality, professional boundaries and online conduct. This paradox has led to arguments about the use of social media and its role in promoting traditional core values and ethics of patient-centred care.[72-81] These developments highlight the need to educate future health professionals in digital professionalism, ensuring that responsible online engagement becomes part of caring practice, not a departure from it.[64]

Advances in digital technologies pose an important question for medical education: how can innovation be incorporated without losing the humanistic foundations of healthcare? Risks include practice beyond professional scope, reinforcing inequities, diminishing interpersonal engagement and shifting the focus away from the altruistic and attentional aspects of care.[82] Benatar[21] reminds us that technological progress cannot be separated from the pursuit of justice, human flourishing and our obligations to one another. Technology is shaped by human values, assumptions and priorities. Consequently, it holds the potential to embody moral imagination if used for common good, reduction of suffering and the promotion of health equity.[83] Medical education must therefore prepare future health professionals to use emerging technologies while critically evaluating their ethical implications and ensuring that technology enhances, rather than replaces, compassionate and socially responsive care.

## The mentor in medical education

In 'Flexner revisited: The challenge ahead', Benatar[84] observed that 'role-modelling and life experiences remain vital means of inculcating appropriate attitudes into medical students. Without positive role models and active participation in patient care, classroom instruction on its own is unlikely to be successful'. This observation remains highly relevant to contemporary medical education, where professional formation, caring professionalism and the development of ethical practice are essential outcomes. In addition to formal teaching in the humanities, social sciences and ethics in undergraduate training, effective mentorship has consistently been associated with professional development, personal growth and career satisfaction.[85]

Mentorship is a dynamic, reciprocal relationship that supports mentees in realising their potential through trust, reflection and sustained personal and professional growth.[85,86] Unlike teaching or supervision, mentorship is less directive, more personalised, longitudinal and nurturing, allowing the values of empathy, integrity, humility and social responsibility to be transmitted through experience and example. While formal mentorship programmes have shown value, the most influential mentoring relationships develop informally through shared interest, mutual respect and common values. Virtual mentorship has further expanded opportunities for students from underrepresented and geographically remote communities to access meaningful mentoring relationships.[87-91]

Throughout his career, Benatar has exemplified this mentorship model. Rather than providing simple answers, he has consistently challenged students and colleagues to question assumptions, engage with complexity and consider the broader ethical, social and environmental determinants of health. In doing so, he has fostered the moral imagination required to recognise the interconnectedness of human lives and the responsibilities that arise from that recognition.[8,11,15,19]

Mentorship extends beyond career guidance and education. It provides emotional support, encourages critical reflection and contributes to professional formation and the cultivation of caring health professionals.[88,92,93] Mentoring relationships often develop into lifelong professional ties. Through role-modelling, dialogue and reflection, mentors cultivate the compassion, accountability and integrity that are the foundations of caring practice.[94-96] In an era increasingly shaped by technological innovation, workforce pressures and fragmented health systems, mentorship remains one of the most powerful means of transmitting the values and dispositions that curricula cannot teach, enabling future practitioners to become caring, ethically grounded and socially accountable health professionals.[92]

### Opportunities for creating caring health professionals

The challenges currently facing medical education are substantial, yet they can be reframed as exciting opportunities for imagining how we promote training that fosters caring health professionals with the reflective capacity to deliver socially responsive care. Benatar and others have described how exposure to the humanities, ethics, philosophy, history and the social sciences broadens the understanding of the human condition and the social contexts in which illness occurs.[97] Such disciplines encourage critical reflection on values, power, justice and vulnerability, while fostering empathy and moral imagination that should start with undergraduate training and continue into medical practice.[13,36]

Benatar[98] notes that our ability to empathise with others requires us to examine both our own behaviour and trends in global action, while challenging the status quo of widening disparities in health. The teaching of population health cannot be reduced to a dualism of wealth and poverty. Cultivating an awareness of our interconnectedness with each other and the environment is essential for the development of social accountability for the global health challenges we face currently.[8,9]

The rise of technology in health, in particular AI and social media, requires a broader understanding of professionalism. Benatar *et al.*[99] note that technological development in health is not value free: innovation reflects the priorities, assumptions and values of those who create it. Future health professionals must therefore learn to navigate online environments ethically, balancing engagement with confidentiality, respect and professional integrity. Digital professionalism should be recognised as an extension of caring practice that encompasses ethical communication, responsible care and respect for the dignity of others. Benatar *et al.*[9] also caution against its limitations in providing solutions to the global demographic transition, rising healthcare costs and persistent health inequity. Advances in technology should be approached in light of equity and caring relationships rather than commercial gain, remembering that the social determinants of health shape the true successes of modern medicine.[97,99]

Role-modelling, mentorship and reflection provide important mechanisms through which professionalism is cultivated and transmitted across generations of health professionals. Benatar[100] has argued that professionalism is founded on public trust and the responsibility of health professionals to maintain high ethical and professional standards. Such standards extend beyond technical competence to include integrity, humility, accountability and a commitment to service. His own approach to mentorship exemplifies this philosophy. It is indisputable that he extends beyond the transfer of knowledge, to challenge those around him to question assumptions and to engage with complexity within the broader social, political and environmental determinants of health. Through this process of fostering moral imagination, he instils the caring professionalism needed in contemporary healthcare.

## Conclusion

The formation of caring practitioners requires educational approaches that cultivate ethical sensitivity, reflective practice and social accountability. Professional identity is cultivated through role-modelling, mentorship and meaningful engagement with patients and communities. Benatar invites us to look beyond the boundaries of individual encounters and to acknowledge the interconnectedness of humanity. Central to his philosophy is the cultivation of a moral imagination that encompasses caring with compassion, empathy and a commitment to justice in the face of global health challenges. Ethical practice entails a respect for the uniqueness and individuality of every person while appreciating the value and finitude of human life.[97] In an increasingly complex world, these qualities remain essential to the development of caring health professionals and to the preservation of medicine as a humane and socially responsive profession.

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1. Osler SW. Sir William Osler, 1849-1919: A Selection for Medical Students. Roland CG, ed. The Hannah Institute for the History of Medicine; 1982.
2. Kleinman A. Care: In search of a health agenda. Lancet 2015;386(9990):240-241. https://doi.org/10.1016/s0140-6736(15)61271-5
3. Woodward VM. Professional caring: A contradiction in terms? J Adv Nurs 1997;26(5):999-1004. https://doi.org/10.1046/j.1365-2648.1997.00389.x
4. Kleinman A. Caregiving as moral experience. Lancet 2012;380(9853):1550-1551. https://doi.org/10.1016/s0140-6736(12)61870-4
5. Sebrant L, Jong M. What's the meaning of the concept of caring? A meta-synthesis. Scand J Caring Scie 2021;35(2):353-365. https://doi.org/10.1111/scs.12850
6. Salmon P, Young B. The inseparability of emotional and instrumental care in cancer: towards a more powerful science of clinical communication. Patient Educ Couns 2017;100(11):2138-2140. https://doi.org/10.1016/j.pec.2017.05.019
7. Charon R, Greene MG, Adelman RD. Multi-dimensional interaction analysis: a collaborative approach to the study of medical discourse. Social Sci Med 1994;39(7):955-965. https://doi.org/10.1016/0277-9536(94)90207-0
8. Benatar SR. Moral imagination: the missing component in global health. PLoS Med 2005;2(12):e400. https://doi.org/10.1371/journal.pmed.0020400
9. Benatar S, Daneman D. Disconnections between medical education and medical practice: A neglected dilemma. Glob Public Health 2020;15(9):1292-1307. https://doi.org/10.1080/17441692.2020.1756376
10. Benatar S. Politics, power, poverty and global health: Systems and frames. Int J Health policy Manag 2016;5(10):599. https://doi.org/10.15171/ijhpm.2016.101
11. Benatar S, Upshur R, Gill S. Neoliberalism, power relations, ethics, and global health. In: Benatar S, Brock G, eds. Global Health: Ethical Challenges. 2nd edition. Cambridge: Cambridge University Press; 2021:230-241.
12. Gostin LO, Hodge JG, Bloom BR, et al. The public health crisis of underimmunisation: A global plan of action. Lancet Infect Dis 2020;20(1):e11-e16. https://doi.org/10.1016/s1473-3099(19)30558-4
13. Kleinman A. Catastrophe and caregiving: The failure of medicine as an art. Lancet 2008;371(9606):22-23. https://doi.org/10.1016/s0140-6736(08)60057-4
14. Snowdon A, Schnarr K, Hussein A, Alessi C. Measuring what matters: The cost vs. values of health care. London, Ontario: Ivey Centre for Health Innovation, University of Western Ontario; 2012.
15. Benatar SR. Global disparities in health and human rights: A critical commentary. Am J Public Health 1998;88(2):295-300. https://doi.org/10.2105/ajph.88.2.295
16. Samuel S, Dirsmith MW, McElroy B. Monetised medicine: From the physical to the fiscal. Account, Organ Soc 2005;30(3):249-278. http://doi.org/10.1016/j.aos.2004.02.001
17. Schrecker T, Labonté R. State of global health in a radically unequal world: Patterns and prospects. In: Benatar S, Brock G, eds. Global Health: Ethical Challenges. 2nd edition. Cambridge: Cambridge University Press; 2021:15-27.
18. Aronson SJ, Rehm HL. Building the foundation for genomics in precision medicine. Nature 2015;526(7573):336-342. https://doi.org/10.1038/nature15816
19. Benatar SR. Health in a post-COVID-19 world. S Afr J Sci 2022;118(11-12). http://doi.org/10.17159/sajs.2022/14995
20. Bhutta ZA, Chen L, Cohen J, et al. Education of health professionals for the 21st century: a global independent commission. Lancet 2010;375(9721):1137-1138. https://doi.org/10.1016/s0140-6736(10)60450-3
21. Daneman D, Benatar S. Dynamic tensions following new pedagogy in undergraduate medical education. Acad Med 2019;94(12):1873-1877. https://doi.org/10.1097/acm.0000000000002795
22. Dornan T. Osler, Flexner, apprenticeship and 'the new medical education'. J R Soc Med 2005;98(3):91-95. https://doi.org/10.1177/014107680509800302
23. Hilton SR, Slotnick HB. Proto-professionalism: How professionalisation occurs across the continuum of medical education. Med Educ 2005;39(1):58-65. https://doi.org/10.1111/j.1365-2929.2004.02033.x
24. Flexner A. Medical education in the United States and Canada. Science 1910;32(810):41-50. https://doi.org/10.1126/science.32.810.41
25. Norman G. Medical education: Past, present and future. Perspect Med Educ 2012;1:6-14. https://doi.org/10.1007/s40037-012-0002-7
26. Borkan JM, Hammoud MM, Nelson E, Oyler J, Lawson L, Starr SR, et al. Health systems science education: The new post-Flexner professionalism for the 21st century. Med Teach 2021;43(sup2):S25-S31. https://doi.org/10.1080/0142159x.2021.1924366
27. Frenk J, Chen LC, Chandran L, et al. Challenges and opportunities for educating health professionals after the COVID-19 pandemic. Lancet 2022;400(10362):1539-1556. https://doi.org/10.1016/s0140-6736(22)02092-x
28. Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet 2010;376(9756):1923-1958. https://doi.org/10.1016/s0140-6736(10)61854-5
29. Bhattacharya S. Competency-based medical education: An overview. Ann Med Sci Res 2023;2(3):132-138. https://doi.org/10.4103/amsr.amsr_27_23
30. Frank JR, Karpinski J, Sherbino J, et al. Competence By Design: A transformational national model of time-variable competency-based postgraduate medical education. Perspect Med Educ 2024;13(1):201. https://doi.org/10.5334/pme.1096
31. Gustafson S, Poynter SE, Turner TL, Condus M, Waggoner-Fountain LA. Starting with the end in mind: Transformative curriculum development in competency-based medical education (CBME). Curr Probl Pediatr Adolesc Health Care 2024;54(10):101678. https://doi.org/10.1016/j.cppeds.2024.101678

32. Hawkins RE, Welcher CM, Holmboe ES, et al. Implementation of competency-based medical education: Are we addressing the concerns and challenges? Med Educ 2015;49(11):1086-1102. https://doi.org/10.1111/medu.12831
33. Milosek J, Eady K, Moreau KA. Program evaluation in competence by design: A mixed-methods study. J Med Educ Curric Dev 2025; 12:23821205251321791. https://doi.org/10.1177/23821205251321791
34. Santen SA, Gonzalez-Flores A, Coe CL, et al. Return on investment of three-year accelerated programs for students, medical schools, departments, and community. Med Sci Educ 2024;34(4):919-925. https://doi.org/10.1007/s40670-024-02043-7
35. Benatar SR. Teaching medical ethics. QJM: An Int J Med 1994;87(12):759-767.
36. Benatar SR. Change and coping with change. J R Coll Physicians Lond 1995;29(5):436-431.
37. Passi V, Doug M, Peile E, Thistlethwaite J, Johnson N. Developing medical professionalism in future doctors: A systematic review. Int J Med Educ 2010;1:19-29.
38. Benatar SR, Benatar D. From medical manners to moral reasoning: An historical overview of bioethics in the University of Cape Town's Faculty of Health Sciences. S Afr Med J 2012;102(6):406-408. https://doi.org/10.7196/samj.5575
39. Kirch SA, Sadofsky MJ. Medical education from a theory–practice–philosophy perspective. Acad Pathol 2021; 8:23742895211010236. https://doi.org/10.1177/23742895211010236
40. Thistlethwaite JE, Davies D, Ekeocha S, et al. The effectiveness of case-based learning in health professional education. A BEME systematic review: BEME Guide No. 23. Med Teach 2012;34(6):e421-e444. https://doi.org/10.3109/0142159x.2012.680939
41. Alexander ES, White AA, Varol A, Appel K, Lieneck C. Team-and problem-based learning in health services: A systematic literature review of recent initiatives in the United States. Educ Sci 2024;14(5):515. https://doi.org/10.3390/educsci14050515
42. Campbell AV, Chin J, Voo T-C. How can we know that ethics education produces ethical doctors? Med Teach 2007;29(5):431-436. https://doi.org/10.1080/01421590701504077
43. Cruess S, Cruess R. Teaching professionalism – Why, What and How. Facts Views Vis Obgyn 2012;4(4):259.
44. Lam PW, Andany N, Chan AK, Stroud L, Shadowitz S, Daneman N. Using virtual care to facilitate direct hospital admissions in outpatients with worsening COVID-19 infection. Telemed J E Health 2022. https://doi.org/10.1089/tmj.2021.0640
45. Lucey CR, Johnston SC. The transformational effects of COVID-19 on medical education. JAMA 2020;324(11):1033-1034. https://doi.org/10.1001/jama.2020.14136
46. Stojan J, Haas M, Thammasitboon S, et al. Online learning developments in undergraduate medical education in response to the COVID-19 pandemic: A BEME systematic review: BEME Guide No. 69. Med Teach 2022;44(2):109-129. https://doi.org/10.1080/0142159x.2021.1992373
47. Cullum RJ, Shaughnessy A, Mayat NY, Brown ME. Identity in lockdown: Supporting primary care professional identity development in the COVID-19 generation. Educ Prim Care 2020;31(4):200-204. https://doi.org/10.1080/14739879.2020.1779616
48. Wilcha R-J. Effectiveness of virtual medical teaching during the COVID-19 crisis: Systematic review. JMIR Med Educ 2020;6(2):e20963. https://doi.org/10.2196/20963
49. Byram JN, Frankel RM, Isaacson JH, Mehta N. The impact of COVID-19 on professional identity. Clin Teach 2022;19(3):205-212. https://doi.org/10.1111/tct.13467
50. Benatar S. More eyes on COVID-19: Perspectives from ethics - the most powerful health-promoting forces in COVID-19 are social. S Afr J Sci 2020;116(7-8):1-2. https://doi.org/10.17159/sajs.2020/8492
51. Miguez-Pinto JP, Garcia-Rosa B, Maggitti-Bezerril M, et al. The medical student of the future: Redefining competencies in a transformative era. Front Med 2025;12:1593685. https://doi.org/10.3389/fmed.2025.1593685
52. Perez K, Wisniewski D, Ari A, Lee K, Lieneck C, Ramamonjiarivelo Z. Investigation into application of AI and telemedicine in rural communities: A systematic literature review. Healthcare 2025;13(3):324. https://doi.org/10.3390/healthcare13030324
53. World Health Organization. WHO guideline: Recommendations on digital interventions for health system strengthening. Geneva: WHO, 2019.
54. Ahmed Kamal M, Ismail Z, Shehata IM, et al. Telemedicine, e-health, and multi-agent systems for chronic pain management. Clin Pract 2023;13(2):470-482. https://doi.org/10.3390/clinpract13020042
55. Kuan PX, Chan WK, Fern Ying DK, et al. Efficacy of telemedicine for the management of cardiovascular disease: A systematic review and meta-analysis. Lancet Digit Health 2022;4(9): e676-e691. https://doi.org/10.1016/s2589-7500(22)00124-8
56. Rajpurkar P, Chen E, Banerjee O, Topol EJ. AI in health and medicine. Nat Med 2022;28(1):31-38. https://doi.org/10.1038/s41591-021-01614-0
57. Tomraee S, Hosseini SH, Toosi R. Doctors for AI? A systematic review. Socio-Spatial Stud 2022;6(1):13-26. https://doi.org/10.22034/soc.2022.219431
58. Allen MR, Webb S, Mandvi A, Frieden M, Tai-Seale M, Kallenberg G. Navigating the doctor-patient-AI relationship - a mixed-methods study of physician attitudes toward artificial intelligence in primary care. BMC Prim Care 2024;25(1):42. https://doi.org/10.1186/s12875-024-02282-y
59. Schuitmaker L, Drogt J, Benders M, Jongsma K. Physicians' required competencies in AI-assisted clinical settings: A systematic review. Br Med Bull 2025;153(1):ldae025. https://doi.org/10.1093/bmb/ldae025
60. Kulkarni PA, Singh H. Artificial intelligence in clinical diagnosis: Opportunities, challenges, and hype. JAMA 2023;330(4):317-318. https://doi.org/10.1001/jama.2023.11440
61. Janneker W. The role of AI in transforming healthcare in South Africa. S Afr Med J 2025;115(5B):66-69. https://doi.org/10.7196/samj.2025.v115i5b.3672
62. Dalton-Brown S. The ethics of medical AI and the physician-patient relationship. Camb Q Healthc Ethics 2020;29(1):115-121. https://doi.org/10.1017/s0963180119000847
63. Horton-Deutsch S, Watson J, Griffin C. Caring science as a mature solution to global healthcare challenges. J Adv Nurs 2026;82(5):5556-5565. https://doi.org/10.1111/jan.70237
64. Meier E, Rigter T, Schijven MP, Van Den Hoven M, Bak MA. The impact of digital health technologies on moral responsibility: a scoping review. Med Health Care Philos 2025;28(1):17-31. https://doi.org/10.1007/s11019-024-10238-3
65. Ftouni R, AlJardali B, Hamdanieh M, Ftouni L, Salem N. Challenges of telemedicine during the COVID-19 pandemic: A systematic review. BMC Med Inform Decis Mak 2022;22(1):207. https://doi.org/10.1186/s12911-022-01952-0
66. Rampton V, Mittelman M, Goldhahn J. Implications of artificial intelligence for medical education. Lancet Digit Health 2020;2(3):e111-e112. https://doi.org/10.1016/s2589-7500(20)30023-6
67. Sezgin E. Artificial intelligence in healthcare: complementing, not replacing, doctors and healthcare providers. Digit Health 2023;9:20552076231186520. https://doi.org/10.1177/20552076231186520
68. Sallam M. ChatGPT utility in healthcare education, research, and practice: Systematic review on the promising perspectives and valid concerns. Healthcare (Basel) 2023;11(6). https://doi.org/10.3390/healthcare11060887
69. Hallquist E, Ishank G, Montalbano M, Marios L. Applications of artificial intelligence in medical education: A systematic review. Cureus 2025;17(3). https://doi.org/10.7759/cureus.79878
70. Hazarika I. Artificial intelligence: Opportunities and implications for the health workforce. Int Health 2020;12(4):241-245. https://doi.org/10.1093/inthealth/ihaa007
71. Shiferaw KB, Roloff M, Balaur I, Welter D, Waltemath D, Zeleke AA. Guidelines and standard frameworks for artificial intelligence in medicine: A systematic review. JAMIA Open 2025;8(1):ooae155. https://doi.org/10.1093/jamiaopen/ooae155
72. DeCamp M, Cunningham A. Social media: The way forward or a waste of time for physicians? J R Coll Physicians Edinb 2013;43(4):318-322. https://doi.org/10.4997/jrcpe.2013.411
73. Fenwick T. Social media and medical professionalism: Rethinking the debate and the way forward. Acad Med 2014;89(10). https://doi.org/10.1097/acm.0000000000000436
74. George D, Green M. Beyond good and evil: Exploring medical trainee use of social media. Teach Learn Med 2012; 24:155-157. https://doi.org/10.1080/10401334.2012.664972
75. Gholami-Kordkheili F, Wild V, Strech D. The impact of social media on medical professionalism: A systematic qualitative review of challenges and opportunities. J Med Internet Res 2013;15(8):e184. https://doi.org/10.2196/jmir.2708
76. Guo Z, Simpson E, Bernardi R. Medfluencer: A network representation of medical influencers' identities and discourse on social media. arXiv [Preprint]. 2024. http://doi.org/10.48550/arXiv.2407.05198.
77. Ng IK, Thong C, Tan LF, Teo DB. The rise of medical influencers: The pros and the cons. J R Coll Physicians Edinb 2024;54(3):231-235. https://doi.org/10.1177/14782715241261736
78. O'Donnell NH, Erlichman S, Nickerson CG. Health motivation in the influencer era: analyzing entertainment, personal, and social media role models. Health Commun 2025;40(3):405-416. https://doi.org/10.1080/10410236.2024.2346679
79. Prensky M. Digital natives, digital immigrants. On Horiz 2001;9(5):1-6. http://doi.org/10.1108/10748120110424816
80. Sterling M, Leung P, Wright D, Bishop TF. The use of social media in graduate medical education: A systematic review. Acad Med 2017;92(7):1043-1056. https://doi.org/10.1097/acm.0000000000001617
81. Sunstein C. Democracy and the problem of free speech. Publ Res Q 1995;11(4):58.
82. Maeckelberghe E, Zdunek K, Marceglia S, Farsides B, Rigby M. The ethical challenges of personalised digital health. Front Med 2023;10:1123863. https://doi.org/10.3389/fmed.2023.1123863
83. Friedman B, Hendry DG. Value sensitive design: Shaping technology with moral imagination: MIT Press, 2019.
84. Benatar SR. Flexner revisited – the challenge ahead. S Afr Med J 1987;72(11):731-733.
85. Ramanan RA, Phillips RS, Davis RB, Silen W, Reede JY. Mentoring in medicine: Keys to satisfaction. Am J Med 2002;112(4):336-341. https://doi.org/10.1016/s0002-9343(02)01032-x
86. Nimmons D, Giny S, Rosenthal J. Medical student mentoring programs: Current insights. Adv Med Educ Pract 2019:113-123. https://doi.org/10.2147/amep.s154974
87. Wu J, Olagunju AT. Mentorship in medical education: reflections on the importance of both unofficial and official mentorship programs. BMC Med Educ 2024;24(1):1233. https://doi.org/10.1186/s12909-024-06248-7
88. Stenfors-Hayes T, Hult H, Dahlgren LO. What does it mean to be a mentor in medical education? Med Teach 2011;33(8):e423-e428. https://doi.org/10.3109/0142159x.2011.586746
89. Toh RQE, Koh KK, Lua JK, et al. The role of mentoring, supervision, coaching, teaching and instruction on professional identity formation: A systematic scoping review. BMC Med Educ 2022;22(1):531. https://doi.org/10.1186/s12909-022-03589-z
90. Wright S, Wong A, Newill C. The impact of role models on medical students. J Gen Intern Med 1997;12:53-56. https://doi.org/10.1046/j.1525-1497.1997.12109.x
91. Onyango JM, Bowe SN. Seeing is believing: How social media is challenging physician stereotypes. J Grad Med Educ 2019;11(5):495-497. https://doi.org/10.4300/jgme-d-19-00266.1
92. Burgess A, van Diggele C, Mellis C. Mentorship in the health professions: A review. Clin Teach 2018;15(3):197-202. https://doi.org/10.1111/tct.12756
93. Taylor CA, Taylor JC, Stoller JK. The influence of mentorship and role modeling on developing physician–leaders: Views of aspiring and established physician–leaders. J Gen Intern Med 2009; 24:1130-1134. https://doi.org/10.1007/s11606-009-1091-9
94. Mohtady HA, Könings KD, van Merriënboer JJ. What makes informal mentorship in the medical realm effective? Mentor Tutor 2016;24(4):306-317. https://doi.org/10.1080/13611267.2016.1252111
95. Radha Krishna LK, Renganathan Y, Tay KT, et al. Educational roles as a continuum of mentoring's role in medicine–a systematic review and thematic analysis of educational studies from 2000 to 2018. BMC Med Educ 2019;19:1-19. https://doi.org/10.1186/s12909-019-1872-8
96. Kalén S, Ponzer S, Silén C. The core of mentorship: medical students' experiences of one-to-one mentoring in a clinical environment. Adv Health Sci Educ 2012; 17:389-401. https://doi.org/10.1007/s10459-011-9317-0
97. Benatar S. The humanistic side of medical education. S Afr Med J 2015;105(1):3. https://doi.org/10.7196/samj.9043
98. Benatar SR, Gill S, Bakker I. Global health and the global economic crisis. In: Grodin MA, Tarantola D, Annas GJ, Gruskin S, eds. *Health and human rights in a changing world*. 3rd ed. New York: Routledge, 2013:487-500.
99. Benatar SR, Daar AS, Singer PA. Global health ethics: The rationale for mutual caring. Int Aff 2003;79(1):107-138. http://doi.org/10.1111/1468-2346.00298
100. Benatar S. Professional competence and professional misconduct in South Africa. S Afr Med J 2014;104(7):480-482. https://doi.org/10.7196/samj.8492


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