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MEETING REPORT

Critical Issues and the Impact of Technology in Healthcare Professional Education in Low-and-Middle Income Countries: A Call for Transformation

Report of the First Annual Symposium on Healthcare Academic Professionals Education (SHAPE) 2024

Tarik Tihan[1,6] · Nazan Canbulat[1] · Can Aktaş[1] · Sibel Ölmez[1] · Fahriye Oflaz[1] · Hakan Abacıoğlu[2] · Erol Gürpınar[3] · Dilek Kitapçıoğlu[4] · Mehmet Emin Aksoy[4] · Gökhan Gönenli[1] · Sevilay Çelik[1] · Mehmet Kaya[1] · Murat Sözer[1] · Ferah Özer Aker[1] · İskender Sayek[5] · participants of the First Symposium on Healthcare Academic Professionals Education 2024

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Abstract
Health Professionals Education symposium, organized by the Koç Academy of Medical Education Research (KAMER), convened in October 2024 to discuss the evolving role of technology and social accountability in health professions education. The symposium adopted the concept of "healthcare professionals' education" as a unifying framework for synchronizing the training of medical and nursing students within a continuum of holistic healthcare education in low-and-middle income countries. The rationale for the symposium was to call on the dire need to improve healthcare professionals' education to reduce the increasing gap between the global north and global south. The discussion topics involved critical and current issues such as social accountability, health advocacy, and professionalism. Study groups explored aligning education with societal needs, addressing healthcare disparities, and integrating professional values into medical and nursing curricula. Presentations also focused on the integration of technology into healthcare education. Participants examined big data, artificial intelligence, simulation technologies, and digital learning platforms, identifying challenges and opportunities for their implementation. The symposium highlighted the transformative impact of interprofessional education, health advocacy, and technology in shaping socially accountable, patient-centered healthcare systems. Key recommendations included integrating community-oriented curricula, leveraging data-driven strategies for program enhancement, and expanding access to advanced educational technologies. This manuscript summarizes the symposium's conclusions and emphasizes the need to transform healthcare professionals' education in low-and-middle income countries to align with contemporary societal demands and to reduce the disparity gap.

Keywords Healthcare education · Professionalism · Artificial intelligence · Health advocacy · Social accountability · Symposium

Introduction

The Symposium on Healthcare Academic Professionals Education (SHAPE) 2024 was the first gathering organized by the Koç Academy of Medical Education Research and was held at Anadolu Medeniyetleri Araştırma Merkezi (ANAMED) in October 11–12, 2024. The symposium brought together healthcare education professionals from various disciplines—including physicians, nurses, educators, administrators, and trainees—to discuss the evolving role of technology in health professions education. One of the main goals of the symposium was to consider the critical changes needed in medical and nursing education in Turkey and low-and-middle income countries (LMIC) to overcome the increasing gap between global north and global south in using advance technology in education. There is ample

Extended author information available on the last page of the article

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evidence to promote the synchronous education of medical and nursing students as the initial phase of a more holistic education program for all healthcare professionals [1–6]. From this perspective, the symposium constituted a first in our country in using the term "healthcare professionals' education" instead of "medical education" to consider all professionals who participate in establishing and maintaining healthcare education. Critical topics, and emerging concepts, particularly the impact of technology on healthcare professionals' education were discussed. Presentations and discussions focused on social accountability (Dr. Iskender Sayek), health advocacy (Dr. Hakan Abacioglu) and professionalism (Erol Gurpinar). The group discussions lead by moderators focused on the issue of technology integration in healthcare education. This report summarizes the conclusions of the symposium in an effort to direct attention to the key challenges facing the education of healthcare professionals in our country and in LMIC. We hope that this manuscript may engender interest in these critical topics and initiate further efforts on how to effectively incorporate them into healthcare education curricula. A list of participants who have actively contributed to focus groups is provided in the Appendix.

Critical Topics in Healthcare Professional Education

The initial discussions included three major topics selected as "critical" by the Scientific Advisory Board [7]. The first topic was social accountability and historical perspectives of social accountability in medical education in Turkey. The lead discussants in this topic were Drs Iskender Sayek, Hakan Abacioglu, Tarik Tihan and Nazan Canbulat. The second topic focused on health advocacy and healthcare professionals as advocates in the advancement of public health and elimination of disparities. The lead presenter was Dr. Hakan Abacioglu. Finally, we concentrated on the concept of professionalism and teaching professionalism in medical and nursing schools. Presentations were made by Drs, Erol Gurpinar and Dilek Kitapcioglu with Sibel Olmez and Dr. Nazan Canbulat moderating.

Social Accountability in Healthcare Education (Lead: Dr. Iskender Sayek)

The symposium session on social accountability in medical education examined how training can better align with societal needs. Prof. Sayek (IS) emphasized integrating social accountability principles into education to address evolving *healthcare* challenges. Discussions covered key transformations in education and healthcare institutions, accreditation standards, and revised goals for medical education in Türkiye as a member of LMIC.

Requirements for Twenty-First-Century Healthcare Education

Modern medical education must adapt to complex healthcare landscapes by prioritizing community-oriented training programs that can immerse students in public health challenges to enhance real-world impact [8, 9], covering effective health solutions to improve both individual and community health outcomes [10, 11], and ensuring that training curricula meet community health needs through transparent, quality-focused education [12]. Understanding social determinants is essential for equitable healthcare. Socially accountable education equips students to address disparities and advocate for systemic change [13–16]. Traditional medical education focuses on curative, high-tech care, often neglecting prevention. A shift toward community-centered, preventive healthcare is needed to control costs and reduce disparities [17–19].

Future Vision for Healthcare Education

The symposium called for reforms to (a) Enhance Quality & Equity: Programs must align with societal priorities and evidence-based practices, (b) Redefine Health Professional Roles: Training must adapt to evolving healthcare demands, (c) Demonstrate Community Impact: Institutions should show measurable improvements in health outcomes [20], d) (Address Inequalities: Socially accountable education must prioritize affordable, community-centered care, particularly in low-resource settings [21].

Responsibilities of Healthcare Educational Institutions

Medical schools must design curricula that directly address public health needs. Collaborating with policymakers and communities ensures research and training yield accessible, high-quality care [13, 22, 23]. Institutions should integrate accountability into operations by aligning education with local health needs, partnering with healthcare stakeholders, preparing professionals for their evolving roles, implementing outcome-based education, maintaining transparent, responsible governance, ensuring quality through accreditation and continuous improvement as well as balancing global healthcare standards with local needs and engaging communities to enhance educational impact.

Aligning Accreditation with Social Accountability

Accreditation ensures medical education meets public expectations [24–26]. Global frameworks, including

THEnet and ISAAC, emphasize community-centered education and research and integrating local practitioners into education. Recruiting students from "high-need" populations, prioritizing primary care training and focusing on service-based, student-centered teaching should be reflected in curricula [27, 28].

Socially Responsible Curriculum Improvement in Türkiye as a Member of Global South

Since 2010, TEPDAD (the Association for Evaluation and Accreditation of Medical Education Programs) has led efforts to establish socially accountable healthcare education standards in Türkiye [23]. Its objectives emphasize a human-centered approach, integrating nature, society, and individual well-being into medical training. Socially accountable medical education is a key focus, promoting community-based learning and ensuring that students remain at the core of practical and integrated education.

Governance in medical education should be professional and merit-based, while technology must be employed rationally to enhance, rather than replace, fundamental learning experiences. Educational environments should prioritize well-being for all, fostering interprofessional collaboration and teamwork across specialties. Lifelong professional development is another cornerstone, ensuring that medical professionals continuously refine their skills and adapt to evolving healthcare needs.

Additionally, medical education should generate knowledge that benefits society, reinforcing the idea that science serves the public good. A culture of continuous quality improvement must be embedded within institutions, ensuring that education, healthcare delivery, and research evolve in response to contemporary challenges. At its core, social accountability is not just a principle but a responsibility—one that medical schools must embrace to drive meaningful change in both education and healthcare.

Health Advocacy Education (Lead: Dr. Hakan Abacioglu)

The discussion on health advocacy in medical and nursing education emphasized the growing commitment to integrating advocacy into healthcare training [29–32]. Educators stressed that graduates must be equipped to address public health needs, promote healthcare equity, and influence policy [33, 34]. Prof. Abacıoğlu's lecture highlighted the role of advocacy in shaping competent, compassionate professionals and underscored the need for its integration into curricula to enhance community health outcomes.

The Importance of Health Advocacy

Health advocacy is essential for addressing disparities and ensuring equitable healthcare. Advocates bridge the gap between medical services and communities, helping patients navigate systemic barriers while influencing policy and healthcare delivery [29, 33, 35]. Participants emphasized the importance of instilling advocacy skills early in the course of medical and nursing education, shaping professionals who are both clinically skilled and socially responsible.

Key Benefits of Advocacy in Healthcare Education

Health advocacy empowers professionals to influence healthcare systems, improve patient outcomes, and advance public health goals. By integrating advocacy into education, graduates become agents of change, addressing social determinants of health and driving health system reforms.

Principles of Health Advocacy in Education

SHARE 2024 identified core principles that should guide advocacy education. Training must be community-oriented, allowing students to engage with diverse populations and understand real-world health challenges. Patient-centered care should be emphasized, ensuring a holistic approach that considers physical, emotional, and social well-being. Medical schools must embrace social accountability, producing graduates equipped to assess and address societal health needs. Advocacy training should also promote interprofessional collaboration, ethical responsibility, and respect for human rights [29, 33, 36].

Implementing Advocacy in Medical and Nursing Education

To embed advocacy into healthcare curricula, institutions must redesign programs to incorporate social determinants of health, public policy, and health system reform. Experiential learning, such as community-based clinical rotations, allows students to apply advocacy skills in real-world settings. Faculty should model advocacy in their work, reinforcing its importance through mentorship and public health engagement. Assessment methods should evaluate students' advocacy competencies to ensure graduates are prepared to serve as effective advocates.

Advancing Healthcare Education through Advocacy

The symposium emphasized that integrating advocacy into medical and nursing education is key to developing professionals committed to public health, social justice, and patient-centered care. Graduates should be responsive to community needs, equipped to influence policy, and

dedicated to lifelong advocacy. By prioritizing advocacy training, healthcare institutions can cultivate a workforce capable of addressing health disparities, improving accessibility, and driving systemic change.

Professionalism in Medicine (Leads: Drs. Erol Gurpinar and Dilek Kitapcioglu)

The symposium explored the historical context, evolving definitions, and integration of professionalism in medical education. Prof. Gürpınar emphasized that professionalism, rooted in the Latin profess—meaning to take an oath—has shifted from a religious commitment to a secular expectation of competence and ethical integrity. Discussions examined whether professionalism is an inherent trait or a teachable competency and how medical curricula are shaping its development.

Conceptualizing Professionalism in Medicine

Over the past three decades, research on professionalism in medicine has expanded significantly [37–39]. While no universal definition exists, core elements include respect, ethical standards, accountability, and a commitment to excellence [40, 41]. Professionalism is broadly recognized as a behavior expected across professions, with specialized knowledge at its core.

Key Aspects of Professionalism

Professionalism in medicine is often categorized into three domains: clinical competence, which encompasses the skills and knowledge necessary for effective healthcare delivery; humanistic qualities, including respect, empathy, and communication; and reflective capacity, which involves self-assessment, adaptability, and ongoing professional growth [42, 43].

Integrating Professionalism into Medical Education

Participants proposed a phased approach to incorporating professionalism into medical curricula, combining theoretical learning, experiential practice, and reflection. Symbolic rituals, such as the white coat ceremony and the Hippocratic Oath, reinforce professional commitment. Education begins with foundational courses on professionalism's principles, followed by orientation sessions, mentorship, and career planning to foster professional identity. As students advance, case-based discussions and small group interactions encourage internalization of values. Role modeling plays a crucial role, with students observing faculty, mentors, and senior practitioners to differentiate professional and unprofessional behaviors. Professional communication skills are developed through simulations and real-patient interactions, with structured feedback refining students' ethical decision-making and interpersonal skills.

Learning Models and Assessment in Professionalism Education

Experiential learning, reflective practice, and self-assessment are central to professionalism education [44]. Reflection-in-action encourages critical thinking during clinical encounters, while reflection-on-action fosters post-encounter analysis, helping students refine their behaviors and attitudes in complex settings. Assessing professionalism remains a challenge due to its multifaceted nature. Reliable evaluation methods include structured simulations, direct observation, 360-degree feedback, and patient assessments. These tools provide insight into students' professional behavior, allowing for formative assessment and continuous professional development.

Technology Integration in Healthcare Education

The second day of the symposium was conducted through focus groups in which all the attendees participated. Each group was led by moderators and the conclusions were presented to the general audience. In addition, there was a lecture aimed at framing the critical issues prior to focus group discussions. The analytical review of technology integration began with a presentation by Prof. Mehmet Emin Aksoy on the role of technology in medical education, using the CASE center at Acıbadem University as an example [45, 46]. A group study followed, breaking the topic into focused discussions on the benefits, challenges, and ethical considerations of integrating advanced technologies into medical and nursing education. The goal was to identify opportunities for incorporating current and emerging tools while addressing barriers to implementation.

Big Data and Artificial Intelligence in Health Education (Lead Moderators: Iskender Sayek, Sibel Olmez)

Discussions centered on how big data and artificial intelligence (AI) can enhance medical training, with a focus on current applications, future potential, and ethical concerns. While Türkiye's use of big data in medical education remains limited, platforms like E-Nabız® could provide valuable insights for curriculum development and workforce planning. AI offers promising opportunities for personalized learning, helping educators tailor content to individual student needs. However, concerns were raised about AI potentially diminishing essential soft skills. Ethical challenges, including data privacy and the reliability of AI-generated

content, underscored the need for clear guidelines and monitoring mechanisms.

Participants recommended integrating big data into performance assessments and curriculum planning, using E-Nabız to analyze healthcare trends and workforce needs. AI tools should be incorporated into education while ensuring they support, rather than replace, human interaction. Institutions must establish ethical frameworks for AI use, protecting data security and maintaining professional integrity.

Simulation Technology and Virtual Reality (Lead Moderators: Gokhan Gonenli, Can Aktas)

As student numbers grow and clinical training opportunities become more limited, simulation and virtual reality (VR) are emerging as essential tools for bridging the gap between theory and hands-on practice [47–49]. Simulations provide safe, controlled environments where students can develop clinical skills without risking patient safety. Patient safety remains a key driver for simulation-based training, as real-life practice carries inherent risks even under supervision. The use of simulation allows students to make and learn from mistakes in a no-risk setting, reinforcing quality care standards [50, 51]. A survey conducted during the symposium revealed that most participants spend over ten days per month in simulation-based training, highlighting its growing role in medical education. Simulation and VR enhance learning by offering repetitive practice, exposure to rare clinical cases, and immersive experiences that develop decision-making and stress management skills. However, challenges remain, including high initial costs, limited access to advanced facilities, and resistance to change among educators accustomed to traditional bedside training. To expand the use of simulation and VR, participants suggested hybrid training models that combine VR with hands-on practice, interdisciplinary simulations to improve teamwork, and cloud-based VR modules for remote learning. AI-driven personalized feedback systems could further enhance simulation training by providing real-time performance assessments. Despite the challenges, confidence in the future of simulation technology remains high, with participants rating their optimism at 4.6 out of 5.

Ethical and Social Considerations

The integration of simulation technology raises ethical and social concerns. While simulations reduce reliance on live patients, informed consent remains necessary in certain clinical training settings. Trust and transparency are crucial, ensuring that patients and healthcare institutions recognize simulation-trained professionals as competent for real-world care. High-stakes simulated scenarios can also cause stress for students, necessitating built-in stress management strategies. Additionally, disparities in access to expensive VR tools may create inequalities in training quality, particularly in under-resourced regions.

Conclusion

Simulation and VR are transforming medical education, providing immersive, risk-free environments that enhance clinical skills and patient safety. However, high costs, resistance to adoption, and access disparities must be addressed to maximize their impact. Future efforts should focus on scalable, accessible solutions that prioritize ethical considerations, improve competency-based learning, and ensure equitable access to cutting-edge training technologies.

Digital Learning Platforms and Online Resources (Lead Moderators: Fahriye Oflaz, Mehmet Emin Aksoy)

The discussion focused on the role of digital learning platforms and online resources in health education, examining their effectiveness, limitations, and the key features necessary for an optimal learning experience. Participants explored the most commonly used platforms, analyzed their impact on student learning, and identified areas for improvement to ensure accessibility, interactivity, and alignment with educational objectives.

Current Platforms and Their Role in Learning

Participants identified several widely used digital platforms, including Blackboard, Moodle, Zoom, and Google Meet, which facilitate various aspects of medical and nursing education. These platforms support content delivery, foster communication between students and instructors, and enable collaborative learning experiences. However, their effectiveness varies depending on factors such as institutional resources, faculty training, and platform design. Some institutions benefit from fully integrated digital ecosystems that enhance learning, while others struggle with fragmented systems that lack cohesion and user support.

Challenges and Limitations of Digital Learning

Despite the advantages of digital platforms, several challenges hinder their effectiveness in health education. One major concern is the lack of standardization across institutions, leading to inconsistencies in how students access and engage with learning materials. Unequal access to digital resources further exacerbates disparities, particularly in underfunded institutions where students may not have the necessary technology or internet connectivity to fully

participate in online learning. Another issue is the tendency for technology-driven approaches to prioritize platform functionality over student-centered learning. In some cases, digital tools focus more on content delivery than on fostering critical thinking, interactive engagement, and experiential learning. Ethical concerns were also raised regarding the commercial motivations behind certain platforms, as financial incentives could influence curriculum design and pedagogical decisions in ways that do not necessarily align with the best interests of students.

Key Features of an Effective Digital Learning Platform

An effective digital learning platform should prioritize ease of use, allowing students and faculty to navigate resources efficiently without unnecessary technical barriers. Interactive learning tools, such as virtual simulations, case-based learning modules, and discussion forums, should be integrated to promote deeper engagement with course material. Platforms must also offer robust assessment and feedback mechanisms, enabling educators to monitor student progress and adapt instruction accordingly. Additionally, digital learning environments should encourage active participation, providing opportunities for students to apply knowledge rather than passively receive information.

Recommendations for Improving Digital Learning in Health Education

To enhance the effectiveness of digital learning, institutions should work toward standardizing the use of learning platforms across programs. A more unified approach would reduce fragmentation, improve accessibility, and create a seamless learning experience for students and educators alike. Furthermore, digital learning should shift toward a student-centered model, where learners take an active role in their education, with instructors serving as facilitators rather than solely content providers. Platforms should be designed to foster independent learning, critical thinking, and problem-solving skills rather than simply delivering lecture materials.

Equity and accessibility must also be prioritized to ensure that all students, regardless of their institution's financial resources, have equal opportunities to benefit from digital education. Schools should invest in the necessary infrastructure, provide training for both students and faculty, and implement policies that address disparities in technology access. By adopting these strategies, digital learning platforms can become more effective tools for preparing future healthcare professionals, ensuring that technological advancements support, rather than hinder, the educational experience.

Discussion

The general conclusions summarized by lead moderators of each activity of the symposium underscored the transformative potential of technology in healthcare education while highlighting the need for careful implementation to maximize benefits and address challenges. A recurring theme across all discussions was the importance of ethical oversight and equitable access to technological advancements. Participants' feedback was obtained for the general outlines of the conclusions at the final session and each consensus point was noted.

Participant feedback reflected a range of perspectives on the symposium's structure and impact. Some valued the exposure to new ideas, while others expressed a preference for more interactive sessions over traditional lectures. Many found the focus group discussions particularly productive, suggesting that future symposia could benefit from a more practical, discussion-based approach. There was also a strong interest in a more multidisciplinary format, with participants emphasizing the need for broader representation, including increased involvement from nursing professionals.

The enthusiasm for exploring technology's role in education was evident, with several participants advocating for continued discussions through follow-up sessions or specialized focus groups. However, concerns were raised about the ethical implications of digital tools and AI, particularly regarding data privacy, student-instructor dynamics, and the risk of technology-driven approaches overshadowing human-centered learning. Additionally, accessibility remained a critical issue, as disparities in digital resources could widen gaps in educational quality.

Recommendations

To enhance future initiatives, healthcare education programs should prioritize hands-on workshops and interactive group discussions over lecture-based formats, fostering deeper engagement with the material. A multidisciplinary approach should be encouraged, ensuring a diverse range of perspectives that reflect the realities of modern healthcare. Institutions must also establish clear ethical guidelines for technology use, addressing concerns related to data security, AI integration, and professional standards. Equally important is the need to bridge accessibility gaps by ensuring that students and educators—particularly those in under-resourced settings—have the necessary tools and support to fully engage with digital learning. International collaborations with technologically advanced countries may also provide a facilitated and more affordable way to implement novel technologies.

The symposium concluded with a shared commitment to integrating socially responsible healthcare, advocacy, and professionalism into education programs for future generations. If implemented thoughtfully, technology has the power to not only enhance knowledge and skill acquisition but also reinforce the ethical and humanistic principles that define the 21 st-century healthcare professional.

Appendix. SHAPE 2024 Symposium contributor list

	Name, Last Name	Institution
1	Levent Altıntaş	Acıbadem Mehmet Ali Aydınlar University
2	Sibel Sakarya	Koç University School of Medicine
3	Ayişe Karadağ	Koç University School of Nursing
4	Sebile Güler Çekiç	Koç University School of Medicine
5	Ceren Ünal	Koç University School of Medicine
6	Ebru Çelik	Koç University School of Medicine
7	Özlem Yalçın	Koç University School of Medicine
8	Behice Pehlivan	Koç University Gender Equality Office
9	Gökhan Gönenli	Koç University School of Medicine
10	Emel Gönen Baş	Koç University School of Medicine
11	Mehtap Bekhan	Koç University School of Medicine
12	Serçin Karahüseyinoğlu	Koç University School of Medicine
13	Işıl Uzel	Koç University School of Medicine
14	Arzu Baygül Eden	Koç University School of Medicine
15	Alev Arat Özkan	Koç University School of Medicine
16	Ümit Mutlu	Koç University School of Medicine
17	Erol Tülümen	Koç University School of Medicine
18	Mert Veznikli	Koç University School of Medicine
19	Büşra Nur Barmanbay	Yıldız Technical University Department of Biochemistry
20	Ayşenur Çetin Üçeriz	Haliç University School of Medicine
21	Semra Nurkalem	Marmara University School of Medicine
22	Haldun Akoğlu	Acıbadem Mehmet Ali Aydınlar University
23	Özgen Yaşar	Koç University Graduate School of Health Sciences
24	Pınar Bostan	Acıbadem Mehmet Ali Aydınlar University
36	Wegdan Muhammed	Bahçeşehir University School of Medicine

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Authors and Affiliations

Tarik Tihan[1,6] · Nazan Canbulat[1] · Can Aktaş[1] · Sibel Ölmez[1] · Fahriye Oflaz[1] · Hakan Abacıoğlu[2] · Erol Gürpınar[3] · Dilek Kitapçıoğlu[4] · Mehmet Emin Aksoy[4] · Gökhan Gönenli[1] · Sevilay Çelik[1] · Mehmet Kaya[1] · Murat Sözer[1] · Ferah Özer Aker[1] · İskender Sayek[5] · participants of the First Symposium on Healthcare Academic Professionals Education 2024

✉ Tarik Tihan
tariktihan@miami.edu

[1] Koc Academy of Medical Education Research, Koc University Schools of Medicine and Nursing, Koç University Hospital, Maltepe Mahallesi, Davutpaşa Caddesi, No:4, Topkapı, 34010 Istanbul, Türkiye

[2] Izmir University of Economics, Sakarya Caddesi No:156, 35330 Balçova, İzmir, Türkiye

[3] Department of Medical Education, Faculty of Medicine, Akdeniz University, Dumlupınar Bulvarı, 07058 Konyaaltı, Antalya, Türkiye

[4] Acıbadem University, Kerem Aydınlar Kampüsü, İçerenköy Mah. Kayışdağı Cad. No:32, Ataşehir, 34752 Istanbul, Türkiye

[5] Tıp Eğitimi Programlarını Değerlendirme ve Akreditasyon Derneği (TEPDAD) Kazım Dirik Mah. Ankara Cad. Doktorlar Sitesi, A Blok, No:231 Daire:2, Bornova, İzmir, Türkiye

[6] Department of Pathology and Laboratory Medicine, University of Miami, Miller School of Medicine, 1120 NW 14 th Street, Room 1430, Miami, FL 33136, USA