Editorial

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Physiology Teaching Trends in Current Nepali Medical Schools: Navigating the Road Ahead in the AI Era

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Nepal, nestled in the Himalayas, faces unique challenges in medical education. As the world embraces technological advancements, Nepali medical schools must adapt their teaching methodologies to prepare future physicians effectively, especially in the wake of experiences with the challenges of the COVID-19 pandemic.[1] In this editorial, we explore the current trends in physiology teaching and envision the role of artificial intelligence (AI) in shaping medical education. Nepali medical schools recognize the importance of humanistic values. Beyond textbooks and exams, educators emphasize empathy, compassion, and effective communication. Students learn to view patients as more than just medical cases, fostering a patient-centered approach. Students engage with patients early in their training, following them through various clinical settings. Beyond hospital walls, medical schools encourage community engagement. Students participate in health camps, awareness programs, and public health initiatives. This community-centric approach instills social responsibility and cultural sensitivity. Nepal's diverse population and unique health challenges provide rich learning opportunities. Students explore global health issues, underserved communities, and preventive strategies. This broadens their perspectives and prepares them for a dynamic healthcare landscape. However, traditional didactic lectures struggle to engage students, and practical exposure follows age-old methodologies that struggle to bridge the technology of the 21st century. Advanced technology plays a crucial role in medical education.[2] Nepali medical schools should incorporate active learning methods, individualization, social interaction, and resource accessibility. Though, interactive lectures, case-based discussions, and problem-solving sessions complement passive didactic teaching, like any other underdeveloped country, Nepal grapples with limited infrastructure, outdated textbooks, and overburdened faculty.

Artificial intelligence (AI) has permeated every facet of medicine. Physiology education should extend beyond lecture halls. Medical education is moving beyond hospital settings. Schools are encouraging students to respond to changing community needs and respect diversity. It is a well-established fact that recent technology allows personalized learning tailored to individual student needs.

In this context, adaptive platforms can identify areas where students need improvement and provide targeted resources. Technology accelerates the development of individual competence. Students can access information efficiently, reducing the time required for face-to-face interactions with educators and patients. Online learning platforms are gaining prominence. However, challenges such as technical issues (internet connectivity, electricity supply) need to be addressed to ensure effective implementation. The COVID-19 pandemic has accelerated the adoption of distance learning.[3] While it's the new normal, educators must ensure that it doesn't narrow students' perspectives or experiences. As technology evolves, medical education will continue to integrate innovative tools such as virtual reality, artificial intelligence, and telemedicine. These advancements will enhance learning experiences and prepare future physicians for a rapidly changing healthcare landscape. In the heart of underdeveloped nations, where resources are scarce and challenges abound, lies a critical mission: to cultivate a new generation of physicians who not only excel in medical knowledge but also embrace their social responsibility. As we stand on the precipice of the AI-powered technology revolution, the teaching of physiology to undergraduate medical students takes on renewed significance. From diagnostic algorithms to personalized treatment plans, AI promises efficiency, accuracy, and scalability. But how can this revolution benefit physiology education?

Not all students have equal access to technology. Institutions must provide affordable devices and reliable internet connectivity.[4] Educators need AI literacy. In resource-constrained settings, AI-driven virtual labs can simulate experiments, allowing students to explore physiological concepts without physical equipment.[3,5,9] Workshops, online courses, and collaboration with tech experts can empower them. AI should seamlessly blend into existing curricula. Faculty must redesign courses, incorporating AI tools effectively. AI algorithms can adapt to individual student needs. By analyzing learning patterns, they tailor content delivery, identify weak areas, and offer targeted resources. Imagine an AI tutor that understands each student's pace, learning style, and knowledge gaps These labs can be accessed anytime, bridging the gap between theory and practice. AI can grade assignments, quizzes, and practical exams swiftly. This frees up faculty time, enabling them to focus on mentoring

and interactive sessions. AI-powered case scenarios challenge students to apply physiology principles in clinical contexts. These simulations enhance critical thinking and decision-making skills. AI can analyze large datasets, revealing trends and correlations.[5,7,10] Students can learn from real-world patient data, understanding variations across populations. AI algorithms analyze student performance data, adapting content delivery to individual needs. Personalized learning ensures efficient knowledge acquisition and retention. Realistic simulations enhance understanding and skill development. AI assists in diagnosis, treatment planning, and procedural guidance.[7] Students learn to interpret AI-generated insights, improving clinical reasoning. Students engage with real-world cases, enhancing critical thinking and evidence-based practice. Educators must address AI ethics, and discussions on bias, transparency, and patient autonomy are essential.[5] Students should learn to navigate AI responsibly. It can facilitate community-based research and outreach. As AI algorithms influence medical decisions, students must grapple with ethical dilemmas. Socially accountable doctors should be capable of advocating for equitable healthcare.[6]

In the era of AI, physiology teaching transcends textbooks and lecture halls. Nepali medical schools stand at the crossroads of tradition and innovation. As AI reshapes medical education, educators must embrace change while preserving core values. It becomes a dynamic journey where students explore, question, and innovate. Let us equip our students with not only medical knowledge but also the compassion and adaptability needed to thrive in the AI era. Together, we can create socially accountable doctors who heal not only bodies but also communities. Let us nurture socially accountable doctors who harness AI's power for the greater good. Together, we can bridge gaps, heal communities, and transform healthcare.

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