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Historical evolution of medical education system in Afghanistan: a narrative review

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Abstract

Medical education in Afghanistan has faced significant challenges owing to decades of conflict and instability, which has severely affected its infrastructure and quality. Despite these difficulties, efforts to rebuild and reform the system have continued since 2001. This study reviews the historical development of medical education in Afghanistan, from the contributions of ancient scholars like Avicenna and Al-Razi to the evolution from traditional practices to modern educational frameworks. The modern Afghan medical education system includes both undergraduate and postgraduate programs. Undergraduate medical teaching is overseen by the Ministry of Higher Education and involves a structured academic hierarchy, whereas residency and specialty training are managed by the Ministry of Public Health and are conducted in specified hospitals. This study investigates the impact of prolonged conflict, the significant reforms implemented post-2001, and the structure of both undergraduate and postgraduate medical education, including the processes of admission, curriculum development, and licensing examinations. Additionally, it examines the roles of various medical associations, challenges posed by political turmoil, and ongoing efforts to rebuild and improve the medical education system. Key findings highlighted the role of international collaboration in rebuilding efforts and the ongoing challenges faced by female medical professionals. This review underscores the importance of continued support and reform to ensure the development of a robust medical education system capable of meeting the health care needs of the Afghan population.

Keywords Medical education, Afghanistan, History, Curriculum, Postgraduate medical education

1 Introduction

Medical education in Afghanistan is not merely a chronicle of institutional development but a story of endurance and renewal. From its ancient roots in the healing traditions of Islamic scholarship to the establishment of modern universities in the 20th century and the difficult years of conflict that nearly dismantled the system, Afghan medical education has continually reinvented itself. This review traces that journey, from heritage

to hardship to hope, portraying how a nation's commitment to learning has persisted despite instability and loss.

The medical education system in Afghanistan has undergone profound transformations over the last century, reflecting the broader sociopolitical changes and challenges faced by the nation. From its modest beginning in the early 20th century, when traditional healing practices dominated healthcare, to the establishment of formal medical institutions influenced by Western education models, Afghanistan's journey in medical education is a testament to its resilience and adaptability [1]. The historical trajectory of medical education in Afghanistan is marked by periods of significant progress, severe setbacks due to prolonged conflict, and concerted efforts toward reconstruction and modernization in the post-2001 era [2].

Afghanistan's medical education was largely informal in its early years, with knowledge passed down through apprenticeships with traditional healers. The establishment of Kabul Medical University in 1932, with support from the Turkish government, marked the dawn of formal medical education [3]. This institution laid the foundation for a structured medical curriculum and training aimed at meeting the healthcare needs of a growing population. The mid-20th century saw further expansion and development of medical faculties across the country, facilitated by international collaborations and the influence of the European and Soviet medical education systems. These efforts aimed to decentralize medical education and make it more accessible to students from various regions.

However, the decades-long conflict that began with the Soviet invasion of 1979 severely disrupted the progress of medical education. The ensuing civil war and the next wave of restrictive policies, particularly towards women, further exacerbated the situation [4, 5]. Many medical institutions have been damaged or destroyed, leading to a significant decline in the quality of education and shortage of qualified healthcare professionals [6, 7]. Despite these challenges, the resilience of Afghan medical educators and students kept the system afloat, albeit in extremely difficult conditions.

The arrival of the international community in 2001 and the formation of a new government brought about renewed hope and opportunities to rebuild the medical education system. With substantial support from international donors and organizations, Afghanistan embarked on a comprehensive program to reconstruct its healthcare and educational infrastructure [8]. Key initiatives include rebuilding medical schools, revising curricula to meet international standards, and enhancing faculty development. Special attention has been paid to encouraging women to participate in medical education, leading to increased female enrollment and professional development opportunities [9, 10]. Despite ongoing challenges such as security issues, limited resources, and brain drain, especially after the republic government's collapse, Afghanistan continues to make significant strides towards improving its medical education system, aiming to provide better healthcare for its population.

This paper provides a comprehensive review of the historical trajectory of medical education in Afghanistan—from pre-modern practice to contemporary systems. It synthesizes evidence on (i) the evolution of medical training and the effects of conflict and instability, (ii) major reforms implemented since 2001, and (iii) the current structure of undergraduate and postgraduate education, including admission pathways, curriculum design, clinical training, and licensing examinations. The review also considers the roles

of universities and professional bodies, the constraints imposed by political upheaval and resource limitations, and the initiatives underway to restore quality. Bringing these strands together, we highlight key achievements and set out priorities for future development and reform.

This narrative review covers literature published between 1980 and 2024. We searched PubMed, Scopus, and Google Scholar using combinations of the keywords "medical education," "Afghanistan," "curriculum reform," "postgraduate training," and "health system development." Grey literature from Afghan health and higher education ministries and reports from the World Health Organization and the World Bank supplemented the academic sources; reference lists of key publications were hand-searched to identify additional studies. This review also employed a snowballing technique, in which the reference lists of relevant documents were examined to identify additional sources of information. Inclusion criteria emphasized peer-reviewed articles, official documents, and reports addressing historical, structural, and policy aspects of Afghan medical education. Where appropriate, the authors' professional experience in Afghan higher education and medical training informed interpretation of findings, consistent with established narrative review guidance.

2 Ancient medicine

The rich history of ancient Afghanistan's medicine was shaped by the profound contributions of Islamic scholars like Abū-'Alī al-Husayn ibn-'Abdallāh Ibn-Sīnā (Avicenna) and Muhammad ibn Zakariya al-Razi [11]. Their pioneering work established the foundational principles for medical science in this region.

Drawing inspiration from Aristotelian philosophy, Avicenna authored seminal texts such as 'The Book of Healing' and 'The Canon of Medicine.' The latter became a comprehensive medical reference that integrated and expanded Galenic and Hippocratic principles. Its Latin translation remained a standard in European medical education until the 17th century, highlighting Avicenna's enduring impact on global health sciences [12, 13].

Muhammad ibn Zakariya al-Razi, another eminent figure from the Samanid era, championed experimental medicine through meticulous observation and discovery [13]. His adherence to the humoral theory allowed him to differentiate between contagious diseases, marking a significant advancement in medical diagnostics and treatment [14].

Ancient Afghanistan's medical practice was also enriched by the Avesta, a collection of Zoroastrian texts that offered insights into hygiene, physician-patient dynamics, medicinal plants, and therapeutic methods. These texts, including Vendidad and Yasna, provided comprehensive health guidelines and contributed to broader medical knowledge [15]. The scholarly achievements of the Samanid era played a crucial role in the evolution of medical science, influencing both regional practices and global understanding of medicine.

Although Avicenna (Ibn Sīnā) and al-Razi were originally from regions corresponding to present-day Iran, their scientific influence extended profoundly into Afghanistan through shared Persian-Islamic scholarly networks. The transmission of their texts via centers such as Balkh and Herat integrated their works into Afghan medical teaching traditions, particularly within Unani and Islamic medicine schools. This influence was both *regional*, due to geographic proximity and cultural exchange, and *religious*, through the Islamic golden age philosophy that emphasized medical scholarship as a moral duty.

3 Modern Afghan health education system

Medical education in Afghanistan is rooted in traditional healing practices and the early efforts of reformers who sought to modernize the healthcare system. In the early 20th century, medical knowledge was primarily transmitted through apprenticeships with traditional healers known as Hakims, who practiced Unani medicine. Formal medical education began in the 1930s when Afghanistan started to build its first medical school [3].

Kabul Medical University, originally known as the Kabul Medical Faculty, was established in 1932 with assistance from the Turkish government. This institution marked the start of formal medical education in Afghanistan. The early curriculum was heavily influenced by European medical education models, with a strong emphasis on basic science and clinical training. The university aimed to produce skilled physicians who could meet the healthcare needs of the Afghan population [3].

During the 1950s and the 1960s, Afghanistan made significant strides to expand its medical education system. New medical faculties have been established in various regions including Kandahar, Herat, and Mazari-Sharif. These institutions helped decentralize medical education and made it more accessible to students outside the capital.

The curriculum during this period continued to be influenced by Western medical education with the introduction of modern medical practices and technologies. International collaborations and support from countries such as the Soviet Union and the United States played a crucial role in the development of the medical education infrastructure and training of Afghan medical professionals.

4 The impact of conflict and instability

The Soviet invasion of Afghanistan in 1979 and subsequent decades of conflict had a devastating impact on the country's medical education system [16]. The Soviet Union's involvement in Afghanistan's educational system from 1933 to 1978 modernized programs and methods, enhanced infrastructure, curriculum adaptation, and professional training opportunities for Afghan youth.

Despite these challenges, efforts have been made to sustain the medical education. In the 1980s and throughout the following decade, the authorities in power adopted different approaches to medical education, especially, strict restrictions on women's education [17, 18]. Female medical students and professionals face significant barriers and many are forced to leave the country to continue their education [19]. Many medical schools have been damaged or destroyed, and the exodus of skilled medical professionals has severely weakened the healthcare system. The quality of medical education has declined, and there is a significant shortage of qualified healthcare providers [17].

Yet, even amid destruction, seeds of renewal began to take root. The resilience of Afghan educators, health professionals, and international partners laid the groundwork for a remarkable era of reconstruction. The arrival of the international community in 2001 and the formation of a new government marked not just a political shift but the beginning of an ambitious national effort to rebuild the health education system from the ruins of conflict.

5 Post-2001: reconstruction and reform

The arrival of the international community in 2001 and the formation of a new government marked a turning point in medical education in Afghanistan. With the support of international donors and organizations, the new government embarked on an ambitious program to rebuild and reform healthcare and education systems [20, 21]. Key initiatives included the reconstruction of medical schools, the introduction of new curricula, and the establishment of new healthcare facilities.

1. *Infrastructure development*: Significant investments have been made to rebuild and expand the medical education infrastructure [22]. New medical schools and teaching hospitals were established and existing facilities were upgraded with modern equipment and technology.
2. *Curriculum reform*: The medical curriculum has been revised to align with international standards [23]. Emphasis was placed on primary health care, community medicine, and preventive care. The introduction of problem-based learning (PBL) and integrated curricula aimed to improve the quality of medical education and better prepare students for healthcare challenges in Afghanistan [24].
3. *Faculty development*: Training programs and scholarships have been established to enhance the skills and knowledge of medical faculty [25]. Many Afghan medical professionals have received training abroad and have returned to contributing to the development of medical education in the country [26].
4. *Women in medicine*: Efforts have been made to encourage women to participate in medical education and health systems [27]. Female enrollment in medical schools has increased, and policies have been implemented to support the education and professional development of female medical students and professionals [27]. Gender committees have been established in universities across Afghanistan to strengthen women's participation in Higher Education [28].

6 Admission

The entrance examination for higher education fields and health science institutes in Afghanistan is known as the kankor. This standardized test is crucial for students who have graduated from Grade 12 and wish to pursue higher education. The National Examination Authority (NExA) administers the Kankor exam annually to public universities, institutes of higher education, and health science institutes. For private universities and health science institutes, these exams are administered by the institutions themselves under the supervision of the Ministry of Higher Education (MoHE) for universities and higher education institutes and the Ministry of Public Health (MoPH) for health science institutes. These examinations are conducted twice annually.

The Kankor exam consists of 160 multiple-choice questions, each with four options, with a total score of 360 for 160 min. It covers a range of subjects, allowing students to compete in various health, social, and natural science fields. Typically, fields such as Medicine and Stomatology require the highest scores, which reflects their competitive nature.

The Kankor system aims to ensure transparency and equal access to higher education opportunities, addressing issues of fairness and meritocracy in the admission process. This standardized approach helps maintain a level playing field for all applicants,

enabling the most qualified students to pursue their desired fields of study in health sciences and beyond.

7 Basic health education

Basic Health education in Afghanistan is provided by both private and public Institutes of Health Sciences, under the supervision of the MoPH. These institutes offer a range of programs across various fields, including pharmacy, nursing, medical technology, and anesthesia, typically spanning to 2–3 years of education. This level of education is considered a semi-higher education, culminating in a diploma.

Graduates from these institutes play a critical role in the Afghan healthcare system, particularly in rural areas, where the shortage of physicians is the most acute. These professionals, similar to community health officers or physician assistants in other regions, provide essential primary medical care to local populations, particularly in underserved rural areas.

To advance their education, graduates from these institutes can pursue further study by passing an examination administered by the MoHE. Successful candidates are eligible to enroll in programs that lead to a graduate degree after an additional two years of education. This pathway ensures the continuous development of medical professionals capable of addressing the evolving health care needs of Afghanistan.

8 Undergraduate medical education

In Afghanistan, undergraduate medical education is structured under MoHE and encompasses five main fields, each with various sub-departments [29]. These fields include the Faculty of Medicine, Faculty of Stomatology, Faculty of Public Health, Faculty of Allied Health Sciences, and Faculty of Nursing and Midwifery to ensure comprehensive medical education.

1. *The Faculty of Medicine* comprises both clinical and paraclinical departments. Clinical departments include specialties such as infectious diseases; orthopedics; pediatrics; obstetrics and gynecology; Ear, Nose, and Throat (ENT); pediatric surgery; dermatology; neurosurgery; urology; forensic medicine; cardiac and thoracic surgery; emergency surgery; general surgery; abdominal surgery; cardiology and respiratory diseases; internal medicine; endocrinology and hematology; gastrointestinal and vascular diseases; and nephrology. Paraclinical departments include pharmacology, anatomy, epidemiology and statistics, environmental and occupational health, health education, behavioral sciences, public health administration, medical education, and foreign languages.
2. *The Faculty of Stomatology* focuses on dental sciences with departments such as periodontology, orthodontics, oral surgery, and prosthodontics.
3. *The Faculty of Public Health* addresses various aspects of public health including epidemiology, environmental health, occupational health, public health administration, health policy and management, and health education.
4. *The Faculty of Allied Health Sciences* provides training in supplementary health sciences including medical technology, clinical biochemistry, microbiology, histology, physiology, pathology, and radiology.
5. *The Faculty of Nursing and Midwifery* includes departments aimed at training nursing professionals and midwives in basic nursing, anesthesia, clinical nursing, nursing

skills, community health nursing, maternal and neonatal health, critical care nursing, and reproductive health.

These faculties and departments collectively ensure that medical education in Afghanistan is both diverse and specialized, preparing students to effectively meet the healthcare needs of the country.

All curriculum developments for public and private higher education health/medical education across Afghanistan are coordinated and supervised by the Kabul University of Medical Sciences (KUMS) [24]. This central oversight ensures consistency and quality of medical training nationwide.

The ongoing evolution of Afghanistan's medical curriculum requires a structured, consensus-driven approach. The formation of a *National Board of Medical Studies* comprising senior medical educationists, curriculum experts, and representatives from both the MoHE and MoPH could play a pivotal role in agenda setting and systematic syllabus revision. Through collaborative workshops and evidence-based discussions, such a board can ensure that curricula remain responsive to Afghanistan's health priorities, global educational trends, and local workforce needs.

A consensus-based framework would allow periodic review and timely adaptation of medical syllabi, ensuring alignment with WFME (World Federation for Medical Education) standards and regional needs [30].

9 Undergraduate curriculum in general medicine in Afghanistan

The undergraduate curriculum for General Medicine in Afghanistan is structured across various disciplines, with a combination of theoretical and practical courses designed to ensure comprehensive medical education. Below is an overview of the latest and third revisions of the curriculum from Kabul University of Medical Sciences [24].

The general medicine curriculum in Afghanistan follows a vertically integrated structure combining preclinical sciences, clinical rotations, and a capstone research project. It consists of 299 total credits, including theory, practical, and internship components, distributed across 14 semesters. The design emphasizes progressive competency-building—from foundational biomedical sciences to specialized clinical skills—reflecting international standards and local health needs (Table 1).

The total credit required for the MD degree was distributed across various components. Theory courses account for 127 credits, whereas practical courses contribute 172 credits. Additionally, students must complete a research thesis worth 4 credits and an internship worth 72 credits. Altogether, the MD degree comprises 299 credits [24].

The curriculum ensures that students receive balanced education, combining theoretical knowledge with practical skills through clerkships, laboratory work, small group tutorials, and extensive internships. This structure aims to prepare well-rounded medical professionals to meet the healthcare needs of Afghanistan.

10 Licensing and exit examinations

The introduction of the licensing examination represents a cornerstone reform in ensuring quality control and patient safety in Afghanistan's medical education system. By standardizing the qualification process for both public and private medical graduates, the licensing examination functions as a national safeguard, guaranteeing that all

Table 1 Integrated overview of curriculum structure for the Doctor of medicine program in Afghanistan (3rd Revision, 2015)

Curriculum block	Scope / content summary	Representative subjects / themes	Timing (approximately)	Credit emphasis
1. Foundational Biomedical Sciences	Core sciences forming the biological basis of medicine	Molecular Cell Biology, Chemistry, Biophysics, Anatomy (Gross, Histology, Embryology), Physiology I–III, Biochemistry, Genetics, Immunology, Pathology, Microbiology, Parasitology, Pharmacology, Medical Physics	Semesters 1–5	High theory + lab (≈ 90–100 credits)
2. Behavioral, Social & Ethical Foundations	Human behavior, professionalism, communication, and social determinants of health	Medical Ethics & Professionalism, Behavioral Science, Communication Skills, Health Education, Sociology, Psychology, Substance Use Disorders	Semesters 6–11	Moderate theory (≈ 10–15 credits)
3. Public Health & Community Medicine	Health systems, population health, epidemiology, and health management	Public Health, Epidemiology, Environmental & Occupational Health, Biostatistics & Research Methods, Health Management, Health Policy & Economics, Nutrition	Semesters 5–11	Mostly applied with field work (≈ 15–20 credits)
4. Clinical Sciences & Skills	Diagnostic and therapeutic disciplines with clerkships	Internal Medicine (Cardio, Respiratory, GI, Renal, Endocrine, Hematology), Surgery (General, Emergency, Neuro, Uro, Ortho, Pediatric), Obstetrics & Gynecology, Pediatrics, Psychiatry, Neurology, Ophthalmology, ENT, Dermatology, Radiology, Anesthesiology, Infectious Diseases, TB, Toxicology	Semesters 5–11	Largest practical load (≈ 150 credits; ≈60% of total)
5. General University Requirements	Broad academic and cultural foundation	Islamic Studies, English Language, ICT	Semesters 1–5 (continuing Islamic Studies each term)	Light theory (≈ 8–10 credits)
6. Research & Scholarly Work	Independent or supervised inquiry	Research Thesis / Project	Semesters 10–11	4 credits
7. Internship / House-Job	Supervised full-time clinical practice bridging to licensure	Rotations across core departments	Post-semester 11	72 credits (practical only)

practicing physicians meet uniform professional standards, irrespective of their graduation institution.

In Afghanistan, upon graduation from the medical or health science fields, students must pass an Exit Exam to obtain a medical practice permit. This requirement applies to both local and foreign graduates who intend to work in Afghanistan. For graduates of health sciences institutes, the MoPH arranges the exams administered by the NExA. Similarly, the AMC has historically arranged these exams for university and higher-education graduates. However, starting on February 15, 2024, the MoHE will take over the responsibility of organizing exams for universities and higher education institutes.

The Exit Exam is relatively new in Afghanistan, and was initially established for medical and stomatology graduates. The first exam was introduced following the establishment of the AMC, and since then, eight rounds have been conducted, with the most recent one held on March 15, 2024, for medical and stomatology graduates. The examination was initially called the Exit Exam, renamed the Afghanistan Medical Licensing Examination (AMLE), and later called the National Medical Licensing Examination

(NMLE). Passing this exam is mandatory for all graduates to obtain medical work permits in Afghanistan. This rigorous assessment ensures that all practicing medical professionals meet the required standards for providing quality health care.

The NMLE consists of 160 multiple-choice questions, with a total score of 360. The passing score was 216 (60%), and candidates had four hours to complete the exam. The examination is divided into two main sections: paraclinics and clinics. The paraclinic section includes subjects such as anatomy, physiology, pathology, pharmacology, microbiology, and medical ethics, accounting for 48 questions (30% of the exam). The clinical section covers general internal medicine (including cardiology, respiratory diseases, gastrointestinal and renal diseases, endocrinology, rheumatology, hematology, vitamins, and immunology), surgery (including first aid, emergency surgery, general surgery, urology, thoracic and cardiovascular surgery, abdominal surgery, and neurosurgery), obstetrics and gynecology, pediatrics and neonatology, ENT, public health and nutrition basics, neurology, and psychiatry, comprising 112 questions (70% of the exam).

11 Post-graduate medical education and residency

In Afghanistan, postgraduate medical education encompasses various programs, including a Master of Public Health (MPH) program and numerous residency and specialty training programs. The MPH program, administered by the MoHE, is a two-year academic degree offered exclusively by the KUMS. Each year, 30 candidates from Afghanistan compete for admission to this program.

Residency and specialty programs are usually three to five years old and are provided by both the MoHE and MoPH. MoHE oversees residency programs in teaching hospitals, primarily at KUMS and Nangarhar University. These programs include otolaryngology, pediatric internal medicine, pediatric surgery, dermatology, plastic surgery, general internal medicine, general surgery, neurology, neurosurgery, ophthalmology, and various stomatology specialties. Notably, residency programs in these hospitals cover specialties such as ENT, pediatrics, and general surgery.

In contrast, the MoPH offers extensive and comparatively lucrative residency programs in internal medicine, surgery, and other specialties across a broad network of hospitals throughout Afghanistan. These include a 102-bed Khairkhana Hospital, Ataturk Hospital, Esteqlal Hospital, Infectious Diseases Hospital, Irena Salimi Hospital, Emergency Hospital, Jumhuriat Hospital, Rabia Balkhi Hospital, Stomatology Hospital, Mental Health Hospital, Pediatric Hospital, Cardiology Hospital, Forensic Medicine Hospital, Ibn Sina Emergency Hospital, Malalai Maternity Hospital, Noor Eye Hospital, Wazir Mohammad Akbar Khan Hospital, the French Medical Institute for Mothers and Children (FMIC), and regional hospitals in Badakhshan, Balkh, Panjshir, Takhar, Khost, Kunduz, Kandahar, Nangarhar, Herat, and Helmand. Some private hospitals such as FMIC have also obtained permits to offer residency programs.

These MoPH programs are considered *lucrative* not in the financial sense but because they are offered in a wider range of regional hospitals (currently in 11 prominent provinces), providing residents with diverse clinical experiences and a larger patient base. In contrast, the MoHE presently operates residency programs mainly in two provinces (Kabul and Nangarhar) through teaching hospitals that primarily admit patients suitable for educational purposes. The MoPH hospitals, by comparison, serve as high-volume referral and general hospitals that accept a broader variety of cases, enabling residents

to gain richer, more comprehensive clinical exposure and procedural experience across multiple specialties.

Admission to residency programs is highly competitive, with candidates required to pass entrance exams administered by the MoHE or MoPH, similar to the Kankor Examination for undergraduate admissions. In addition, there are subspecialty and fellowship programs in areas such as pulmonology, neurology, and brain surgery. These programs are even more competitive, with only a few hospitals offering them. Candidates must complete their specialty programs and pass comprehensive examinations to qualify.

12 Comprehensive exam

Before 2023, there were no final assessment tests for residents who completed their specialty programs. However, all residents must now pass a comprehensive exam to receive their certification [31]. The first comprehensive exam was scheduled for December 5–6, 2023. Residents who completed their specialization program in 2022 were required to take a comprehensive examination in June 2023. Residents from 2021 and earlier who had not yet defended their monograph had to do so by the end of March 2023; failure to defend the monograph required them to take a comprehensive exam. A successful defense of the monograph is a prerequisite for taking a comprehensive exam.

The comprehensive exam consisted of two sections: theory and practice. The theory section is a written test comprising 100 multiple-choice questions (MCQs) based on the relevant specialty curriculum worth 100 points, with a passing score of 75%. The practical section was evaluated according to the relevant specialty curriculum, also worth 100 points, with a passing score of 75%.

This comprehensive exam ensured that all residents met the required standards for specialty practice in Afghanistan, maintaining a high level of competence and professionalism in the medical field.

13 Academic and clinical medical teaching

In Afghanistan, undergraduate medical teaching has been overseen by MoHE. Academic staff at universities and higher education institutes were ranked as follows: Teaching Assistant, Senior Teaching Assistant, Assistant Professor, Associate Professor, and (full) professor [32]. To qualify for these positions, MD or PhD graduates can apply for available spots, beginning at the rank of Teaching Assistant with MD diploma and Senior Teaching Assistant with PhD diploma. Each academic rank must be held for a minimum of three years before promotion to the next level.

Medical residency and specialty teaching are managed by the MoPH and are conducted in specific hospitals. The academic staff at these hospitals were ranked as follows: Clinical Trainer, Clinical Teaching Assistant, Clinical Assistant Professor, Clinical Associate Professor, and Clinical Professor. Each position had a minimum period before eligibility for promotion: Clinical Trainer (two years), Clinical Teaching Assistant (three years), Clinical Assistant Professor (four years), and Clinical Professor (five years) [33]. These structured timeframes ensure that medical educators gain sufficient experience and expertise at each level, before advancing to the next rank.

14 Impact of political turmoil on medical education in Afghanistan

More than 40 public and private medical schools in Afghanistan provide theoretical and practical training, graduating approximately 4000–5000 students annually [34]. As part of the MoPH initiative implemented by the AMC, all medical school graduates must pass an exit exam to register as medical practitioners [35]. Additionally, 10–15% of graduates are recruited annually through merit-based exams for the Master of Public Health (MoPH) and clinical specialization programs offered by national universities and secondary care facilities of public hospitals [36].

Despite these efforts, the Afghan medical education system has faced significant challenges [34]. The nearly half-century-long conflict, exacerbated by the fall of the republic government in August 2021 and the subsequent withdrawal of U.S. forces, profoundly impacted all aspects of Afghan life, including medical education [37]. The lack of proper infrastructure, financial constraints, and loss of experienced faculty members remain significant issues. The recent ban on higher education for females has further exacerbated the situation by restricting female medical education to health institutes under the MoPH, while medical education opportunities in universities remain close to them.

Psychological factors such as unhealthy attitudes toward studentship and professionalism, a lack of empathy among medical students, and diminished optimism for the future further complicate this situation. Neglecting the educational and basic human needs of medical students in this war-torn country has left them demoralized, with insufficient medical competencies and low professional motivation.

This ongoing conflict underscores the need to assess the perceptions, experiences, and future professional intentions of currently enrolled Afghan senior medical students. Such information could guide better decision making in policy advocacy and planning for competent human resources in a country devastated by decades of conflict. Furthermore, these insights could improve the delivery model and the overall quality of medical education in Afghanistan. This study reviews the historical path of medical education in Afghanistan and examines the current curriculum to offer insights for future improvements.

15 Rise and downfall of medical associations in Afghanistan

The history of medical associations in Afghanistan has been marked by significant fluctuations, reflecting broader socio-political upheavals in the country. Many medical associations were established during the era of the Democratic Republic with the aim of improving healthcare services and professional standards. However, the the fall of the republic government in August 2021 led to the dissolution or severe restriction of these associations, which disrupted their activities and objectives.

15.1 Afghanistan Islamic Medical Association

The Afghanistan Islamic Medical Association (AIMA) was a non-governmental, non-political, and health-service organization established by a group of dedicated young health workers in 2008. The organization aimed to provide equitable and quality health services to the people of Afghanistan; develop the spiritual, intellectual, and scientific capacities of health workers; and promote health education and policies based on Islamic principles. AIMA was officially registered with the Ministry of Justice of Afghanistan on April 6, 2010, under registration number 1919 [38]. AIMA sought to organize

committed and empathetic health professionals to enhance their skills and apply them to rebuild the country and improve their fellow citizens' health conditions.

15.2 Herat University Medical Students Association

The Herat University Medical Students Association (HUMSA) was established as a part of the Herat University Student Union in 2016. Following the free elections in 2018, it officially formed its leadership team, including the president, vice president, and secretary. The central team of the Herat University Medical Students Association managed its objectives through ten committees, working towards advancing medical education and student interests within the university [39].

15.3 Afghanistan Medical Students Association

The Afghanistan Medical Students Association (AMSA) was established in Herat in 2020. AMSA aims to unite medical students across Afghanistan, providing a platform for collaboration, professional development, and advocacy for improved medical education and healthcare [40]. AMSA initially attained membership in the International Federation of Medical Students' Associations (IFMSA). However, due to organizational challenges and a lack of university oversight, the IFMSA paused and eventually suspended AMSA membership, underscoring the need for stronger institutional support [41].

15.4 Afghanistan Medical Council

The AMC was first established on April 30, 2014, by a presidential decree. Legally recognized as an independent governmental entity in 2018, the AMC was established through an annex to the Medical Law and published in the Afghanistan Official Gazette (issue number 1313) on October 8, 2018. The council was responsible for ensuring a safe environment that protected patient rights and supported doctors' professional rights. Its activities focus on standardizing and improving medical services and education provided by medical and dental doctors nationwide [42].

Following the fall of the republic government , the Afghan healthcare system faced unprecedented challenges. Many associations, including the AIMA and AMC, were either dismantled or severely restricted in their operations. On October 9, 2022, a cabinet session led by Hajji Mullah Mohammad Hassan Akhund restructured the AMC into an independent entity with a specific budget code to continue its work under the new regime. On February 15, 2024, the de facto government merged the AMC with the MoPH, further centralizing control over medical oversight. Despite these efforts, the disruption caused by political changes has significantly affected the functioning and objectives of these medical associations, limiting their ability to contribute to the development of healthcare in Afghanistan.

The downfall of these medical associations has profoundly impacted the Afghan medical community. The loss of these organizations has hindered efforts to standardize medical practices, advocate for healthcare workers' rights, and provide essential training and resources. The dissolution of these bodies represents a significant setback in the progress made towards improving healthcare services and medical education in Afghanistan, underscoring the need for stability and support to rebuild these critical institutions.

16 World Federation for Medical Education membership: challenges, importance, and process

Achieving membership in the World Federation for Medical Education (WFME) is a crucial goal for Afghanistan's medical schools to elevate their programs to international standards. WFME accreditation is recognized globally as a mark of excellence, helping Afghan institutions align their curricula with global best practices and enhancing their international credibility and recognition.

Securing WFME membership poses a significant challenge for Afghanistan's medical schools. The rigorous evaluation process requires institutions to demonstrate adherence to the WFME's global standards, which cover curriculum development, student assessment, faculty qualifications, and governance. Afghan medical schools face additional hurdles such as limited resources, political instability, and infrastructural deficits [30]. These challenges necessitate substantial investments, strong leadership, and international support.

Thus, the importance of WFME membership in Afghanistan's medical schools cannot be overstated. Accreditation enhances an institution's reputation, attracts international students and faculty, and opens opportunities for collaboration and funding. Additionally, it ensures that the education provided meets high standards, preparing graduates to effectively address the healthcare needs of their communities and to increase their competitiveness in the global job market.

To obtain WFME accreditation, Afghan medical schools must undergo a comprehensive self-evaluation and peer-review process. This involves aligning their programs with WFME standards, providing detailed documentation, and undertaking site visits by WFME assessors. Continuous quality improvement and adherence to feedback from the WFME are essential for maintaining the accreditation status.

17 Curriculum policy and decision-making

One of the critical steps toward educational reform is establishing clear policy pathways for curriculum change. At present, curricular revisions are largely coordinated by KUMS, but a unified national policy endorsed by the MoHE, MoPH, and AMC is essential to institutionalize reforms.

Policy-driven curriculum change would ensure transparency, inclusivity, and alignment with the country's long-term health workforce strategy. The policy could mandate periodic reviews—every 5 years—based on national disease burden data, graduate outcomes, and global standards. Moreover, embedding curriculum governance into the MoHE regulatory framework would empower academic institutions to innovate within approved guidelines while maintaining national consistency.

Such a policy-based approach to curriculum reform would transform scattered initiatives into a coherent national strategy, bridging academic consensus (as noted above) with actionable government policy.

18 Challenges and future directions

Despite progress made in rebuilding and reforming the medical education system, Afghanistan continues to face significant challenges. The ongoing conflict and security issues, limited resources, and brain drain of qualified professionals pose obstacles to the sustainable development of medical education.

1. *Security and political instability*: Ensuring a stable and secure environment for medical education and practice remains a critical challenge given the ongoing conflict and recent political turmoil in Afghanistan.
2. *Quality assurance*: Maintaining consistent quality standards across medical institutions is crucial. Developing robust accreditation processes and implementing regular curriculum reviews are essential to ensure graduates meet the required competencies.
3. *Brain drain*: Stemming the exodus of skilled medical professionals is vital to sustaining the healthcare system. Improved working conditions, career development opportunities, and competitive compensation packages can help retain talent within a country.
4. *Gender equity*: Promoting gender equity in medical education and healthcare remains a significant challenge, especially in light of recent policies that restrict female education and participation.
5. *Resource constraints*: Inadequate funding, aging infrastructure, and limited access to modern technologies and equipment pose obstacles to the effective delivery of medical education.
6. *Language and source accessibility*: A further practical challenge arises from the linguistic diversity of core reference materials. Key regulatory and curricular documents are primarily published in Dari or Pashto, creating barriers for comparative and international research. Where possible, this study relied on official English translations (e.g., Ministry of Higher Education, 2024; Ministry of Public Health, 2023), ensuring accuracy and contextual fidelity.

19 Recommendations

1. *Prioritize security and stability*: Engage all stakeholders to create a secure and enabling environment for medical education and healthcare delivery free from political interference and conflict.
2. *Strengthen quality assurance mechanisms*: Establish an independent national accreditation body to develop and enforce standards for medical education, ensuring consistent quality across institutions.
3. *Invest in capacity building*: Allocate resources for faculty development, infrastructure upgrades, and access to modern educational technologies to enhance the overall capacity of medical institutions.
4. *Promote gender equity and inclusion*: Advocate policies that support and encourage the participation of women in medical education and healthcare professionals, breaking down cultural and systemic barriers.
5. *Foster international collaborations*: Seek partnerships with reputable international organizations and universities to facilitate knowledge exchange, curriculum development, and access to resources and expertise.
6. *Incentivize talent retention*: Implement incentive programs such as competitive compensation, professional development opportunities, and improved working conditions to retain skilled medical professionals within the country.
7. *Diversify funding sources*: Explore diverse funding avenues, including public-private partnerships, international aid, and philanthropy, to ensure sustainable financing for medical education initiatives.

8. *Leverage technology*: Integrating technology into medical education by developing e-learning platforms, virtual simulations, and telemedicine capabilities to enhance accessibility and quality.

By implementing these recommendations, Afghanistan can build a robust and resilient medical education system capable of providing well-trained healthcare professionals. In turn, this will contribute significantly to improving the overall health and well-being of the Afghan population.

20 Conclusion

The history of medical education in Afghanistan unfolds as a remarkable story of resilience, revival, and determination. From the philosophical foundations laid by ancient scholars such as Avicenna and al-Razi, through decades of conflict that dismantled institutions and displaced generations of learners, Afghanistan's medical education has repeatedly demonstrated its ability to rise from adversity. The post-2001 period represents a turning point—an era defined by reconstruction, international collaboration, and the courage of Afghan educators to rebuild a system nearly lost to war. Initiatives in curriculum standardization, faculty development, and institutional reform have gradually restored the foundations of medical learning. These milestones symbolize not only technical progress but also a collective national commitment to healing—both the people and the profession. Yet, the journey is far from complete. Ongoing challenges such as insecurity, limited funding, and gender inequity continue to hinder sustainable growth. Addressing these obstacles requires unwavering policy continuity, investment in research and clinical training, and equitable opportunities for female professionals who remain vital to Afghanistan's healthcare future. The narrative of Afghan medical education is ultimately one of transformation rather than mere survival. By leveraging technology, fostering international partnerships, and cultivating a new generation of compassionate, competent physicians, Afghanistan can continue this journey toward a self-reliant and globally recognized medical education system—one that embodies its enduring spirit of resilience and hope.

Abbreviations

KUMS	Kabul University of Medical Sciences
NExA	National Examination Authority
MoHE	Ministry of Higher Education
MoPH	Ministry of Public Health
AMC	Afghanistan Medical Council
IFMSA	International Federation of Medical Students' Associations
WFME	World Federation for Medical Education

Supplementary Information

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Supplementary Material 1

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AR, MM and BAH proposed this idea and drafted the manuscript. AR participated in the field study and supervised data collection. NA, MMA and RE commented on the study. AR edited the manuscript. All authors have read and approved the final manuscript.

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