

Case Study

Collaborating for change: reimagining medical education in Jordan through international partnerships

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Abstract

Medical education in Jordan has evolved rapidly in the last 50 years as successive governments and higher education leaders have responded swiftly to developing healthcare sector demands. Despite significant progress being made, there remain a substantial number of challenges for the Jordanian medical education system that require careful attention in the years and decades ahead. This article provides a historical summary of medical education in Jordan, outlines some of the important areas that require development, and describes plans for a new medical school and teaching hospital in Amman at the newly established Kingdom University of Health Sciences, due to open in 2026. This ambitious project is being funded by the Saudi Jordanian Investment Fund and is being supported by partnerships with high-ranking, well-established institutions in the UK and USA. This article highlights the significant value in a partnership approach to developing a medical education program as it strives to overcome some of the existing challenges facing medical education in Jordan.

Keywords Jordan · Programme design · Transnational collaboration

1 Introduction

Medical education in Jordan has undergone significant growth and development in recent decades, with the establishment of several medical schools and teaching hospitals throughout the country. Recognising the importance of a well-trained and skilled healthcare workforce in the provision of quality healthcare services for its citizens, the Jordanian Government has prioritised medical education and provided support and investment to both the healthcare and higher education sectors. Despite a historic reputation for producing a high standard of physicians who have gone on to make important contributions to medicine and healthcare nationally and globally, the Jordanian medical education system faces several challenges—including some issues that are global and others that are local to the Jordanian context. We identify these challenges as: the relative shortage of qualified medical faculty members; the limited research opportunities available for students and faculty; the limited use of new technologies to assist teaching and learning; the lack of integration of primary and secondary care; the limited wellbeing services available to students; the “brain drain” of graduates abroad; and the slow adoption of integrated curricula which focus on the clinical applications of knowledge.

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2 Background

The history of medical education in Jordan dates to the early 1970s when the country established its first medical school. Prior to that, Jordan relied on foreign-trained physicians to provide healthcare services to the population. The establishment of a medical school in 1971 at the University of Jordan was a major milestone in the development of the healthcare system in Jordan. It was located in the capital city of Amman and the admission process was highly competitive, with only a limited number of students were admitted each year.

Additional medical schools were later established at the Jordan University of Science and Technology, Yarmouk University, Mutah University, and the Hashemite University during the 1980s and 1990s. More recently, the medical school at Balqa University was established. This expansion was driven by several factors, including the growing demand for healthcare services in the country. The population was increasing, and there was a need for more healthcare professionals to provide services to the population. It was also motivated by a desire to reduce the dependence on foreign-trained physicians and to develop a sustainable, locally sourced workforce. Two new private medical schools started accepting students in 2022.

There are currently eight medical schools in Jordan, including six public universities (University of Jordan, Jordan University of Science and Technology, Hashemite University, Yarmouk University, Mutah University, and Al-Balqa' Applied University) and two recently established private universities (Ibn Sina University for Medical Sciences, and Aqaba Medical Sciences University). The total number of medical students in Jordan is around 10,000, and the number of medical graduates is approximately 1500 per year but has been increasing recently. Medical education in Jordan is governed by the Ministry of Higher Education & Scientific Research, which oversees the curriculum, accreditation, and quality assurance of medical schools. The Ministry of Health is responsible for the licensing of healthcare professionals including physicians.

Medical education in Jordan typically begins with a six-year undergraduate program leading to a Doctor of Medicine (MD) degree [1]. The first three years of the program are focused on pre-clinical sciences, including anatomy, physiology, and biochemistry, while the remaining three years focus on clinical practice and specialised areas of medicine and surgery [2]. After completing their MD degree, medical graduates in Jordan are required to complete a one-year internship in a government hospital or medical centre, where they gain practical experience in different areas of medicine. Following this year, they are eligible to obtain a medical license to practice medicine in Jordan.

The quality of medical education in Jordan is regularly evaluated using various criteria to assess the quality of medical schools, including the qualifications of faculty members, the availability of resources, the quality of facilities, and the performance of graduates. Site visits and peer reviews are conducted on a prescribed time schedule to ensure that medical schools meet the standards of accreditation. The Jordanian regulatory body responsible for medical school accreditation, the Accreditation and Quality Assurance Commission for Higher Education Institutions (AQACHEI), was recognised by the WFME in 2021, and this recognition status will remain in place through 2031.

3 Methods

This article summarises the historical and current state of medical education in Jordan following literature review and consultation with subject matter experts (SMEs). Three databases (Embase, Global Health and Medline) were systematically searched for articles in December 2023. The search terms and strategies used in each database are listed in Appendix 1, Table 1. Thematic analysis was then undertaken on the included articles to identify and categorise challenges to medical education in Jordan. An inductive coding approach was adopted to allow codes to develop naturally from the included studies, as well as reducing the risk of researcher bias. Codes were then compared across papers to generate high-order themes by grouping similar codes. This led to the creation of a thematic framework, which was then refined and validated in a group discussion as part of a two-day workshop in Amman in 2023. This comprised a series of discussions about the current state of medical education in Jordan with local SMEs, in the context of the new university project described in this paper.

14 SMEs participated in this workshop: two were experts in internal medicine, two in surgery, two in paediatrics, two in obstetrics and gynaecology, two in family medicine, two in psychiatry, one in pathology, and one in community and public health. Ten of the experts were male. All worked primarily in Jordan, all had completed their medical degrees in Jordan, and ten had completed postgraduate training abroad. All were senior educationalists, and two were deans of medical schools. Reflexivity was considered by keeping discussion as open as possible and allowing workshop participants to follow up their discussions in further interaction. Written consent was taken from the participants for data to be collected and recorded from the workshops. Formal ethical approval was not required for this study.

This article describes an ambitious new project that aspires to have a significant impact on the modernisation of medical education in the country. Specifically, it outlines the vision and planning for a distinctive new medical school and teaching hospital that is due to open in Amman in 2026. The medical school will be supported by University College London (UCL), UK and the co-located teaching hospital will be supported by University of California, Los Angeles Health (UCLA), USA. The project will seek to bring the best of these historic and globally reputable organisations to create a transformational new model for medical education in Jordan and the broader Arab region.

4 Results

A total of 31 studies were identified and reviewed. Seven themes were identified to represent the challenges to medical education in Jordan, and then tested in discussion with local SMEs. No alterations were suggested to the thematic framework discussed. The seven themes were:

- *Shortage of qualified medical faculty members*: one of the main challenges facing medical education in Jordan is the shortage of qualified and experienced faculty members, especially in certain specialties such as anaesthesia, radiology, histology, anatomy and pathology [2]. This shortage affects the quality of teaching and research, as well as the availability of expert advice and guidance for students as they care for patients. However, there have been some notable attempts to reform training pathways in recent years, with Jordan being one of the first countries to offer accredited specialty training in palliative care [3].
- *Limited research opportunities*: another challenge facing medical education in Jordan is the limited research opportunities for students and faculty members [4]. The lack of research funding and infrastructure hinders the development of research skills and the production of quality research outputs [5]. Research remains a university-driven activity, historically centred around three public universities—Jordan University, Jordan University for Science and Technology, and Yarmouk University [6].
- *Limited use of technology*: although medical schools in Jordan have adopted some technology-based teaching methods, there remains a significant gap in the use of technology in medical education. The limited use of technology affects the quality of teaching, the access to up-to-date information, and the development of digital skills among students and faculty members. Rapid growth in the use of some distance learning technologies as a response to the COVID-19 pandemic has not yet been systematised [7].
- *Inadequate integration of primary healthcare*: there is a lack of integration between medical education and primary healthcare in Jordan [8]. Medical schools focus more on hospital-based care, and there is a limited emphasis on community-based healthcare, which is a critical component to the population in Jordan. This is a contributing factor to family medicine being one of the least favoured specialty choices in Jordan in successive surveys of medical students [9].
- *Urgent need for expansion of student wellbeing services*: a number of Jordanian medical students experience significant mental ill health, and measures to address this should be considered an urgent priority [10]. This will require an expansion of student wellbeing services. There are many predisposing factors, including a high prevalence of exposure to violence [11], and high levels of anxiety secondary to being educated in a foreign language [12]. The COVID-19 pandemic has also had a significant negative impact on medical students' wellbeing [13]. Complicating factors include the high rates of self-medication among Jordanian medical students, including for potential symptoms of mental ill health [14]. There have been notable attempts by some universities to address these problems. Yarmouk University have begun an initiative called "Yarmouk Soul," in which the psychology department have partnered with the medical school to offer lectures, meetings and workshops to explore common mental health problems encountered during medical training [15].
- *Career options for medical graduates, and brain drain*: medicine, Dermatology, and Obstetrics and Gynecology are the most popular future specialty choices for Jordanian medical students, who report being influenced by how interesting they found a specialty, and the work-life balance the specialty provides [13]. A high proportion of Jordanian medical students report an intention to do residency training abroad, with approximately one third aiming to stay abroad permanently [16]. The three top intended destinations are the United States, the United Kingdom, and Germany [16].
- *Contemporary curriculum adoption and pedagogical challenges*: the traditional teaching methods in some medical schools in Jordan depend on knowledge acquisition rather than clinical application of knowledge and critical thinking. In addition, the rapid advancement in medical technology and science requires medical schools to continuously update their curricula. In universities with limited resources, such updates can be challenging due to time constraints,

faculty expertise and training on new pedagogies for teaching medicine. Further, this has been particularly challenging as the number of students enrolled in medical schools across Jordan continues to rise each year. This presents a particular challenge for clinical training, as many medical schools in Jordan have limited access to clinical sites as well as faculty to teach students essential clinical skills and application of knowledge to the care of their patients.

5 Discussion

5.1 A new approach to medical education in Jordan

Against this backdrop, the drive and ambition to transform the delivery of medical education in Jordan has sparked the development of a medical school that strives to proactively tackle each of the aforementioned challenges.

In 2017, as part of a strategic development programme by the Kingdoms of Jordan and Saudi Arabia, the Saudi Jordanian Investment Fund (SJIF) was established as a Limited Public Shareholding Company based in Amman. It was formed by the Public Investment Fund of Saudi Arabia and 16 commercial and Islamic Jordanian banks. SJIF pursues strategic, sustainable, and economically feasible investments in Jordan's vital and promising sectors. SJIF invests in long-term projects that seek to have positive and sustainable impacts throughout Jordan.

The Saudi Jordanian Fund for Medical and Educational Investments Company (SJFMEI), a wholly owned subsidiary of SJIF, is responsible for the healthcare-focused strand of this cross-sector project. Officially established in 2022, SJFMEI has been working for several years to develop a 300-bed University hospital, more than 60 outpatient clinics, and a medical school with a total capacity for 600 students. The support and flexibility of the Ministry of Higher Education and Research, and the Accreditation and Quality Commission for Higher Education Institutions have been essential to the advancement of the project.

The new healthcare campus will be strategically located on airport road, near the Ghamadan Park, providing access to patients from across Jordan. It is expected to create more than 5,000 employment opportunities. The hospital will include five medical centres of excellence, focused on providing expertise around the most common, and fastest-growing, non-communicable diseases in Jordan and the region: including Cardiovascular and Pulmonary Medicine, Neurosciences including Psychiatry, Gastrointestinal Medicine, Oncology and Haematology, and Trauma and Orthopaedics. In addition to educating the next generation of physicians, the university will also focus on advancing scientific research through establishing four research centres in the fields of Genomics and Precision Medicine, Stem Cell and Regenerative Medicine, Health Systems Science and Public Health, and Bioinformatics.

An important component of this project is to build a medical education system that is 'future-proofed' and well-equipped to train the next generation of doctors to transform medicine and healthcare in Jordan and beyond. To do this, it seeks to move beyond structures and practices of traditional universities in the region and develop an innovative and integrated learning environment that moves away from theoretical and didactic approaches and towards a patient-centred and 'hands on' model of education.

The vision of the Kingdom University for Health Sciences leadership team is to create a leading healthcare community that is dedicated to advancing individual and societal health, training future medical doctors, scientists, and leaders, and conducting high quality and innovative research in applied health sciences. The university will adopt effective strategies for widening participation, and enhance equity of access not only to high quality medical care but also high quality medical training. The university will eventually focus on both undergraduate and postgraduate health professions education and training and will launch an inaugural program in medicine (MD) during stage one of development.

This new MD program will be shaped by institutional mission and values. It will seek to inspire and educate a new generation of pioneering doctors. The distinctive medical graduate from this new program is defined as:

a highly competent and compassionate clinician, committed to patient advocacy, equipped to deliver excellent care, able to engage in innovation and research, holding the humanistic values of the profession, and having a dedication and commitment to life-long learning.

The Kingdom University of Health Sciences is planning to launch the new medical school and offer an MD program in 2026. A state-of-the-art medical campus, situated alongside a teaching hospital will allow for the integrated delivery of a clinically-oriented and research-informed MD program. New pedagogies will be used to enhance student experience and help develop digital skills. A dedication to student well-being will also be integrated throughout the medical curriculum.

A notable feature of the new MD program will be an integrated Bachelor of Science (BSc) award, in which graduates will be awarded two-degrees on graduation from the school. This will allow these students to be well-suited to pursue careers as physician-scientists. This mirrors the integrated BSc degree embedded in the undergraduate medicine programme at

UCL, and plans are currently being developed to establish a pathway for some students from Amman to transfer to UCL to complete this BSc year. The BSc will serve as a keystone to research training throughout the MD curriculum.

In addition to incorporating curricular areas that are less routinely highlighted in the current Jordanian medical education system, including ethics and professionalism [17], the new curriculum will also include a module that will run vertically across all six years of the programme called Hakim—an Arabic word which translates in English as ‘wise’ and ‘insightful’ person. This module will focus on local healthcare issues and provide a means to study medicine through a lens of Jordanian culture, society, politics, economics, and history.

The central and continued importance of these local topics to the programme reflects the choice to design this module vertically rather than horizontally, allowing it to be revisited across all curriculum areas and signposting to students that this runs throughout their learning rather than in one single module, semester, or year of study. By highlighting the central importance of these local priorities to the MD curriculum, the Hakim module will instil a desire among its students to address these priorities. This will help to establish an educational lifecycle around the Kingdom University of Health Sciences and mitigate the ‘brain drain’ experienced more widely across the region.

Finally, having a teaching hospital co-located on the same campus as the medical school differentiates the Kingdom University of Health Sciences from most other medical schools in Jordan. The hospital will serve to train the next generation of physicians in Jordan, supervised by faculty of the medical school. The class size will be limited to 100 per year, and this will allow for direct observation, mentorship and supervision of medical students as they enter the clinical years.

5.2 Collaborations: bringing the best of British and American approaches

To deliver on this extensive healthcare project, SJFMEI entered formal collaborations in June 2022 with two historic and globally recognised institutions. The Kingdom University of Health Sciences recognises the ‘quality added’ to a new university drawing on the resources and expertise of well-established and world-renowned collaborators in realising its institutional mission and attracting a high calibre of faculty and students.

To successfully develop and deliver its new undergraduate medicine program, it established an affiliation with UCL Medical School, which has a history dating back nearly two centuries. UCL is consistently ranked in the top 10 universities in the world [18]. Likewise, SJFMEI has formed a collaboration with UCLA Health for the development of its teaching hospital, which is similarly a globally recognised centre for excellence [19]. UCL Medical School became the academic partner, and UCLA Health became the clinical partner. These collaborations seek to use the significant experience and expertise within UCL and UCLA to ‘fast track’ the SJFMEI plans and help establish a new hospital and university through the principles of co-design, while being mindful of global best practices and local priorities and cultural values.

Taking the best of the British and American medical education systems, and importantly infusing this with a deep understanding of the aforementioned context and challenges facing Jordan, the Kingdom University of Health Sciences (KU) seeks to develop a medical education model that can be transformative and empowering to the healthcare and education sectors in Jordan and, indeed, across the Arab region. Although SJFMEI has separate agreements with UCL and UCLA, the reality is that these collaborations are closely interlinked and working synergistically to produce excellent results in both academic and clinical domains. As such, the project has functionally evolved to a ‘tri-party’ development process.

A literature review of cross-border curriculum partnerships showed that simply ‘copy-pasting’ a curriculum is generally considered to be destined for failure [20]: emphasising the importance of contextual authenticity and understanding the various technical, socio-political, and cultural factors that necessitate adaptation and customisation. Additionally, the overarching importance of strong personal relationships between teams in international education partnerships in medicine have also been emphasised in existing research [21]. A new model of international partnerships has emerged that conceptualises collaborations as ‘guest–host relationships’ that move beyond colonial and import–export dynamics to instead prioritise ‘cultures, humility, and cognitive flexibility’ [22], underpinned by ‘respect and reflexivity’ [23]. All three of the collaborating teams working on this project have internalised these messages and sought to develop working relationships that prioritize contextualisation and building close professional relationships between respective teams and team members.

These collaborations are designed to help develop capacity within Jordan by providing support and mentorship to local leaders and teams drive up quality in a sustainable and long-lasting way, and also contribute to reducing the shortage of qualified faculty members across Jordan. This involves using established delivery models honed over decades to their current form in London and Los Angeles and refining them so that they align with the Jordanian context and values. Importantly, it means seeing the ‘big picture’ and advising on the strategic planning and governance as much as the operational and technical aspects.

5.3 Implementing successful collaboration

In order to deliver on its primary aim to develop capacity within Jordan, the collaboration is focused on ensuring sustainability by emphasising faculty development, co-developing comprehensive admission processes which ensure widening of participation, and embedding change within local healthcare systems. A defining characteristic of all faculty development activities is that the inclusion of academic and professional services staff are given equal priority, to ensure that new ways of working can be successfully embedded across the whole range of university and teaching hospital activities—education, research and operation. This activity has been supported by a dedicated scholarship program to fund postgraduate qualifications at partner institutions. Student selection and admission has also been an area of focus, with the overarching aim that graduating KU doctors will be socially responsible agents of change within the Jordanian healthcare system. Curriculum design has been sensitive to the creation of an educational lifecycle in which KU doctors will also be well equipped to be effective educators of the next generation. This will embed change within the wider healthcare system of Jordan over the long term, and in the shorter term integration with local services will be facilitated by the development of a physician alignment model novel for the region.

6 Conclusion

Over the last 50 years, medical education in Jordan has evolved rapidly and produced many high-quality medical graduates who continue to make important contributions to medicine and healthcare globally. Despite these noteworthy achievements, the current system of medical education in Jordan is facing many challenges. It requires modernisation and reform to keep pace with global advancements in the decades ahead. KU seeks to confront these challenges head on, drawing on the support of respectful and reflexive partners and combining this support with local expertise and values. In this way, KU will produce a medical education system that responds to both local and global priorities and trains the next generation of physicians and leaders in Jordan and beyond.

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Author contributions MS, JK, NEF and MAR contributed equally to the study conception and design. Material preparation, data collection and analysis were performed by MS, JK, NEF and MAR. The first draft of the manuscript was written by MAR and JK and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Code availability Not applicable.

Declarations

Competing interests The authors declare no competing interests.

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Appendix 1

See Table 1

Table 1 Search terms

Database	Search terms
Embase	Jordan* AND medic* AND (educat* OR learn* OR student* OR teach*)
Global Health	Jordan* AND medic* AND (educat* OR learn* OR student* OR teach*)
Medline	Jordan* AND medic* AND (educat* OR learn* OR student* OR teach*)

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