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## AROUND THE WORLD

# Undergraduate medical education in the Gulf Cooperation Council: A multi-countries study (Part 2)

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## Abstract

**Background:** The Gulf Cooperation Council (GCC) countries have witnessed over the last 40 years a rapid and major social, cultural, and economic transformation. The development of medical education in the region is relatively new, dating from the late 1960s. An important goal among the medical colleges in the region is to graduate national physicians who can populate the healthcare service of each country.

**Aim:** The aim of this study is to provide understanding of undergraduate medical education in each of the six GCC countries and the challenges that each face.

**Methods:** This is a descriptive cross-sectional study. Fourteen senior medical faculty were requested to submit information about undergraduate medical education in their own countries, focusing on its historical background, student selection, curriculum, faculty, and challenges.

**Results:** The information provided was about 27 medical colleges: 16 from the Kingdom of Saudi Arabia (KSA), five from the United Arab Emirates, two from the Kingdom of Bahrain, two from Sultanate of Oman, one from Kuwait and one from the State of Qatar. It was found that older colleges are reviewing their curriculum while new colleges are developing their programs following current trends in medical education particularly problem-based learning and integrated curricula. The programs as described 'on paper' look good but what needs to be evaluated is the curriculum 'in action'. Faculty development in medical education is taking place in most of the region's medical colleges.

**Conclusion:** The challenges reported were mainly related to shortages of faculty, availability of clinical training facilities, and the need to more integration with the National Health Care services. Attention to quality, standards, and accreditation is considered essential by all colleges.

## Bahrain

### Historical background

In the late 1970s, the idea of establishing a new regional university based in the Kingdom of Bahrain was contemplated by the leaders of the Gulf States, a concept that eventually was to grow into the Arabian Gulf University (AGU).

The AGU aims to be an 'academic melting pot' where students from different countries of the region will study and work together for several years, leading to the graduation of professionals who believe in the mission of the Gulf Co-operative Council and of the importance of co-operative work for the benefit and welfare of all the citizens in the region.

The College of Medicine and Medical Sciences (CMMS) was established in 1982 adopting since its inception an integrated PBL curriculum.

In 2004, a private medical school, the Royal College of Surgeons in Ireland – Medical University of Bahrain (RCSI-MUB) was established in Bahrain as an international partner of the Dublin Royal College of Surgeons and admitted its first batch of medical students in October of that year. Its first cohort of students will graduate in 2010.

### Student admission policy

AGU accepts a diverse group of students from the six GCC countries as well as international students. The criteria for selection are based upon high school academic performance, admission examination, and an interview.

Out of approximately 450 applicants, the college accepts 150 students every year. Each Gulf country has an allocated quota of students. Two-thirds of the students are females. A similar proportion of the students are on scholarship from their

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## Practice points

- GCC medical colleges are rapidly increasing in numbers in order to respond to the shortages of national medical graduates.
- Careful attention to the resources needs to be addressed, particularly faculty.
- The clinical training environment needs to be prepared to train larger number of students. In some countries, colleges are competing for the available training sites.
- Faculty development and training in medical education exists in most of the colleges but still needs to be increased and supported.
- Educational quality assurance, measuring program effectiveness, program renewal, and accreditation are addressed by some colleges. It should be embedded in the culture of the colleges and faculty needs to be trained on how to do it.

respective governments, the remaining students pay for their tuition.

RCSI-MUB's admission is open for all students from all nationalities. Admission requirements are based on high academic standards in secondary school certificates and an admission interview. Applicants with an appropriate high level of academic achievement may be exempted the foundation year and commence the 5-year medical program directly. One-hundred and twenty-five medical students are admitted annually.

### Curriculum, learning strategy, and clinical training facilities

The design of the medical education program at AGU was informed by the vision of the college. It elected to develop and implement an educational program with characteristics that would set it apart; with a focus on student-centered learning using PBL as an educational method, a strong emphasis upon a community oriented curriculum and an encouragement for students to become self-directed and lifelong learners.

The medical program is a 6-year curriculum. A foundation year is followed by 5 years of a medical program. The integrated medical curriculum has two phases: a 3-year pre-clerkship (phase one) and a 2-year clerkship (phase two). The program is horizontally and vertically integrated. Phase one is organized around blocks of organ-system instruction. The main strategy of learning is PBL. Clinical sciences are introduced from day one of phase one and integrated within the problems presented in the curriculum. One of the important characteristics of this phase is the professional skills program which is coordinated and linked with the problems studied (Hamdy et al. 2001).

In phase two, the 'clerkship phase', students are exposed to clinical experiences in the hospitals and in the community, both within Bahrain and in the students' own country of residence. What unique in this phase is the revisiting of the basic medical sciences, emphasizing their clinical application

and relevance, and using a 'spiral-curriculum approach' (Abu-Hijleh et al. 2005).

Two major teaching hospitals in Bahrain are affiliated with the college and provide hospital-based clinical learning opportunities. The primary healthcare system is highly developed in Bahrain and is able to support education at the undergraduate and postgraduate levels. Nineteen health centers in Bahrain and eight in the other Gulf countries are used for training students in primary healthcare and family medicine.

At the RCSI-MUB, the curriculum extends over 6 years: a foundation year followed by 5-year medical program. Some students can be exempted from the foundation year based upon their academic achievement in secondary education. The learning strategy includes integrated curriculum outcomes which are focused, systems based, modularized, and IT supported. The medical curriculum is organized around three cycles: junior cycle consisting of three semesters, intermediate consisting of three semesters, and senior cycle of four semesters.

Clinical training is provided at a purpose-built clinical simulation laboratory, the Ministry of Health healthcare facilities, the Bahrain Defence Forces Hospital, and soon at the King Hamad General Hospital which is presently under construction.

### Student assessment

At the AGU, student assessment is linked to the curriculum objectives and outcomes. Several models of assessment are in use; most of the questions are problem-based context-rich questions. Standardized patients are used to assess clinical competencies. In the clerkship-phase, portfolios, log books, and observed student interactions with real patients are used for continuous, formative, and summative assessment. Blueprinting of student examinations is used to match curriculum objectives, competences, and priority health problems with assessment instruments and questions. Standard setting using Angoff's method is applied to all examinations (Chakravarty et al. 2005). The college is a member of the IDEAL Consortium Question Bank. This creates a benchmarking mechanism to ensure uniformity in the standards of medical education.

At the RCSI-MUB, formative and summative assessments take place throughout all semesters of the program with high-stake summative assessments taking place at the end of each semester. A wide variety of assessment modalities are used ranging from MCQ, written (short-notes), practical examinations and OSCEs at junior cycle level to the full array of modalities (Projects and Portfolios) at senior cycle level.

### Faculty

The AGU, in contrast to many medical schools, has a relatively small full-time faculty of 42, mainly in basic medical sciences and community medicine departments in addition to a few full-time senior faculty in the major clinical departments. Adjunct clinical faculty, totaling 170, are predominantly consultants and specialists in the affiliated teaching hospitals

or primary healthcare physicians. They actively contribute in teaching in different phases of the curriculum. The RCSI-MUB has 26 full-time faculty, 48 adjunct faculty, and 30 visiting faculty. The program is backed by a large number of faculty in Ireland.

#### Program evaluation, accreditation, and international affiliation

The AGU has a Program Evaluation Committee that has the mandate to comprehensively evaluate the undergraduate program from its planning stage to career tracking of its graduates. The committee has successfully embedded feedback and evaluation in all the educational processes.

The medical program is not static, continual changes, and reviews take place in all of its components, which include student-selection procedures, curriculum content, revising and introducing new educational problems, student assessment, program monitoring, and evaluation.

The college programs are recognized by all Ministries of Health in the Arab World, the General Medical Council in the United Kingdom, the Irish Medical Council, the Canadian Board, the Royal Colleges of the United Kingdom, and the Educational Commission for Foreign Medical Graduates of the United States. The AGU is currently undergoing a QA/QI exercise sponsored by the Government of Bahrain.

The RCSI-MUB is wholly owned by the Royal College of Surgeons in Ireland, a not-for-profit charity, which provides healthcare education and training to international standards. The medical school was accredited by the GCC Medical Schools Deans' Committee in January 2006 and is included in the World Health Organization, Directory of Medical Schools and the International Medical Education Directory (IMED) of the Foundation for the Advancement of International Medical Education and Research (FAIMER).

#### Challenges

The main challenge that the AGU faces at present is related to clinical training, specifically, the number of lack of clinical training opportunities within the healthcare environment and the competition that exists within the private sector. The other important challenge is the ability of the college to retain its full-time faculty related to salary and career opportunities.

In 2006, the AGU won the prestigious award, the 'Sheikh Hamdan Bin Rashid Al Maktoum Award'. This is awarded to the 'Best Medical College in the Arab World'. The challenge now and for the future is how to keep and maintain the standard of education which the college has achieved.

The RCSI-MUB faces three main challenges, first to establish credible international standards of research in a setting where a research culture is not well developed and where there is no systematic state funding for research. Second, there is the challenge of increased competition from universities in the region for the best students and third the potential impact of a serious economic downturn in the region.

## Kuwait university

#### Historical background

The Faculty of Medicine, Kuwait University, was established in 1975. The first cohort of students was admitted in 1976 and over 1300 physicians have graduated with a bachelor's degree in medicine and surgery since. Currently in Kuwait, there is only one governmental medical school and no private schools.

#### Students admission policy

At the commencement of the faculty, students were admitted directly from high school and were selected by their results (GPA) from secondary school. In 1997, it was decided that the applicants to the School of Medicine, Dentistry and Pharmacy should be admitted to a 'common first year' following which they will be distributed to the three health sciences colleges according to their GPA and their preference. Hence every year, a total of 200 male and female high school graduates are admitted to the Health Science Center based on their high school score and their performance in an aptitude test. At the end of this common year, 90–100 students are admitted to the medical school in a male to female ratio of 1:1. The other students go to Health Sciences College.

#### Curriculum, learning strategy, and clinical training facilities

The curriculum which was followed for many years was a traditional, discipline-based model. The program started with a 2-year premedical phase during which students were taught general sciences. This was followed by a 2-year basic medical sciences phase, after which students learned the clinical disciplines for further 3 years. In 2005, the implementation of a new curriculum was commenced.

The main features of the new curriculum now include:

- Integrating basic and clinical sciences
- Early introduction of clinical cases with authentic patients (starting in year 2)
- The introduction of problem-based learning
- An emphasis upon small groups learning in tutorials, practical, etc.
- The introduction of self-directed learning assignments
- The introduction of student-selected components (SSCs)

Students enrolling prior to 2005 received clinical training from year 5 through to year 7. The students admitted in 2005 and thereafter, now receive clinical training once a week, starting from year 2 and running throughout the subsequent years.

Clinical training takes place in Ministry of Health hospitals, since the university lacks its own dedicated teaching hospital. More than 10 hospitals are engaged in training students. In addition, some clinical training is carried out in a Clinical Skills Laboratory.

#### Student assessment

The introduction of the new curriculum entailed a change in the assessment system. Currently, assessment is managed

centrally by an Examination Committee which reports to the Vice Dean for Academic Affairs. The activities of the committee are supervised by the Medical Education Unit. A battery of assessment tools are used including MCQ, MEQ, OSPE, and OSCE.

A *pre* and *post hoc* analysis of the examination result is carried out by the examination committee with the assistance of the medical education unit. External examiners are invited routinely to oversee and critique the assessment process.

## Faculty

There are 170 full-time academic staff and 40% are Kuwaiti nationals. The medical school supports 340–380 part-time clinical faculty from the Ministry of Health.

## Program evaluation, accreditation, and international affiliation

In 2005, the Faculty of Medicine invited Harvard Medical International to carry out an External Institutional Review according to LCME and the World Federation for Medical Education standards. The exercise included a self-assessment report, a site visit, and a final report. Although the evaluation was positive, it has now generated interest in introducing major curriculum reforms, from which a follow-up activity was planned in 2009.

## Innovation and challenges

The first 4 years of the curriculum reform have been completed (Phases I and II). The third phase which consists of a series of clinical clerkship will be implemented in year 2009–2010. The school is planning to support the new curriculum with an electronic version that can be accessed by the students and staff around the clock. Also, there is a plan to offer a thesis-based MSc degree to distinguished students from year 5 onwards so that they can acquire research skills. It is hoped that these students will then be ready to take up a career in academic medical sciences.

## Doha, Qatar

### Historical background

Weill Cornell Medical College in Qatar was established in 2001 by Cornell University (USA) in partnership with the Qatar Foundation for Education, Science, and Community Development.

The first cohort of students started in 2002 and in 2008, 15 students – nine women and six men – received their Cornell MD degrees and moved on to residency programs in the United States and in Qatar. The graduation marked the first time an American university offered its MD degree overseas.

Today, 240 students are enrolled in WCMC-Q's 6-year program, which is housed in a 335,000 square foot academic building with more than 38,000 square feet of laboratory space. Its facilities include high-speed broadband links that allow live video streaming of lectures from Cornell's Manhattan

and Ithaca campuses and a library with more than 10,000 resources available electronically from any of the 350 computer terminals distributed throughout the building.

### Student admission policy

WCMC-Q seeks students of exceptional academic ability and the personal qualities that will enable them to assume future leadership roles in medicine. Applicants must demonstrate outstanding academic merit upon graduation from secondary school, with satisfactory completion of certain standardized tests, either the SAT Reasoning Test or ACT with Writing and SAT subject tests in mathematics and two relevant sciences. While there is no minimum score used as a cutoff, academic excellence is expected.

Applicants must demonstrate proficiency in the English language measured by the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). Applicants are also asked to submit a personal statement on their interest and suitability for a career in medicine, incorporating information about their motivation, their character and leadership qualities, their achievements and special talents as well as their integrity, sense of fairness and compassion. At the present time, the student body is 20% Qatari with more than 30 other nationalities represented. The Committee of Admissions sits in New York, USA, and selects candidates on their academic achievement.

### Curriculum, learning strategy, and clinical training facilities

To support its triple mission of excellence in education, research and patient care, WCMC-Q offers students a 2-year pre-medical program and a 4-year medical program, each with its own admission process. The pre-medical program focuses on the basic science courses to medicine and some humanities, including English, medical ethics, and psychology.

The 4-year medical program replicates the curriculum taught at Weill Cornell Medical College in New York and focuses on basic science courses, courses relevant to the patient–doctor relationship rotations through the principal clinical disciplines and, in the 4th year, selective and elective courses. The curriculum features a variety of learning experiences including PBL, case-based conferences, journal clubs, laboratory sessions, and clinical experiences. A year-long foundation program is available to help students develop study skills and habits for the pre-medical program.

Clinical training is provided at Hamad Medical Corporation hospitals, Qatar Orthopedic and Sports Medicine Hospital, and primary healthcare clinics. In 2012, the Sidra Medical and Research Center will open with an ultra-modern 400-bed hospital that will be the primary teaching location for WCMC-Q and where biomedical research will be conducted in parallel to research at WCMC-Q. Existing partnerships will be continued to ensure a wide variety of patient experiences for students.

Meanwhile, research experiences are available to students at laboratories and offices locally at WCMC-Q and at HMC hospitals and in the United States at the Cornell campus in Ithaca, New York State, and at Weill Cornell Medical College in

New York City. Each year students spend time in the US conducting research with existing teams and report back to their peers in Qatar at a major event; the Annual Research Forum where they make oral and poster presentations to colleagues.

### Faculty

All faculty members at WCMC-Q have appointments at Weill Cornell Medical College in Manhattan or at Cornell University in Ithaca. Many faculty members are based in Doha. They are supplemented by HMC physicians with Cornell faculty appointments and by visiting faculty members, who are based at Cornell and travel to Qatar to deliver their subject matter.

### Student assessment

Student assessment is based on attendance, active participation, the quality of written reports and performance in written examinations. Generally, quizzes and assessments are held regularly throughout each course or module. For clerkships and rotations, students are evaluated by preceptors based on their demonstration of their knowledge of the basic sciences, clinical application and reasoning, problem solving, their history and physical examination skills, their communication skills, and their professionalism.

### Program evaluation and accreditation

The 4-year medical Program of WCMC-Q follows the curriculum of the Weill Cornell Medical College, which is accredited by the Liaison Committee on Medical Education of the Association of American Medical Colleges and the American Medical Association.

Graduates of WCMC-Q are eligible to take the United State Medical Licensing Examination (USMLE) through the Educational Commission for Foreign Medical Graduates; and they may apply to residency programs in the United States through the Electronic Residency Application Service. Graduates of WCMC-Q compete favorably for places with graduates of medical schools located within the United States.

### Challenges

The first graduation, held in May 2008, was a major milestone for the education mission of the medical college, which has now completed its first cycle. Each year, young doctors will emerge from WCMC-Q.

Moving forward, the focus will be on laying a solid framework for a world-class biomedical research and clinical care program, the other legs of the triple mission.

Working with partners to initiate a research program, the focus will be on developing a sustainable local research capacity while targeting the disease areas important in the Gulf region, namely diabetes, heart disease, and cancer. The faculty has established two broad research themes: a Genetic and Molecular Medicine research program with a focus on personalized medicine, gene therapy for cancer, and stem

cell research; and a Women and Children's Health Research Program with a focus on maternal fetal medicine and the neurogenetic disorders of the newborn.

Meanwhile, the faculty will also focus on delivering the clinical mission with Sidra Medical and Research Center that, together with WCMC-Q, will form an academic medical center on one site in Education City. Qatar Foundation, Hamad Medical Corporation, the Ministry of Health and colleagues in the United States will all continue to be key allies as these programs are developed.

## Discussion

The analysis of the reports from the six GCC countries has generated interesting observations. Medical colleges in the region are relatively young. King Saud University in KSA is the oldest, but only about 40 years of age, followed by around six in the range between 25 and 30 years. The rest are in the range between 5 and 10 years old.

The GCC medical colleges joined the international movement of reforms in medical education which has built momentum over the last 25 years. Older colleges are reviewing their curriculum while new ones are structuring their programs following the current recommendations to introduce quality in medical education. The reports from different countries indicate that many colleges are using similar medical education vocabularies in describing the curriculum, assessment, and program evaluation.

When reviewing their vision and mission statements, the similarity was found to be greater. The curriculum on paper looks ideal but what needs to be evaluated is the curriculum in action and if students are learning what is declared.

A positive movement which is taking place is the attention to quality, standards, and accreditation. This is being given great attention and consideration by the Ministry of Higher Education in different GCC countries, particularly with the increase in the number of private medical colleges. The World Federation Medical Education (WFME) standards have influenced approaches adopted for quality assurance, self-evaluation, and improvement reports.

The issue of faculty development, particularly in medical education, is an activity which is taking place with different degrees and at different levels (workshops, certificates, diplomas, and masters degree) in most of the region's medical colleges. The first Master in Health Professions Education was established in 2002 at the AGU in Bahrain. The second one started in 2008 at the College of Medicine, King Abdulaziz Al Saud Medical University in Riyadh, KSA.

The challenges reported in this study were mainly clustered around first overcoming the shortages in faculty committed and a willingness to develop their competencies in medical education in order to respond to the rapidly advancing curriculum reforms. Second, the availability of clinical training facilities remain an important challenge. Effective clinical training environment is an important issue which needs to be evaluated in order to respond to the medical students' training needs. The full spectrum of medical education undergraduates, postgraduates, and continuing professional development needs to be addressed by the combined efforts

of medical colleges and healthcare delivery systems in each country.

This study did not intend to describe all aspects related to a medical college. More details could be accessed on the colleges' web pages. It does not compare colleges or attempt to rank them. However, it draws a skeletal picture of the current status of medical education in this unique region.

**Declaration of interest:** The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

## Notes on contributors

H. HAMDY initiated the project and developed the conceptual framework, methodology and overviewed the writing and editing.

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## Note

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