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## Role of Suez Canal University, Faculty of Medicine in Egyptian Medical Education Reform

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# Role of Suez Canal University, Faculty of Medicine in Egyptian Medical Education Reform

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## Abstract

There are currently 22 public and 2 private medical schools in Egypt, which graduate around 10,000 physicians annually. While Kasr Al-Eini (Cairo University) is the oldest one; established in 1827, the Suez Canal Faculty of Medicine (FOM/SCU) is the first to adopt an integrated, student centered, problem- and community-based curriculum since its inauguration in 1978. Apart from Port Said medical school, which was established in 2013, the remaining medical schools either generally adopt the conventional teacher-centered and subject-based curricula or starting to introduce changes in their curricula in order to fulfill the National Academic Reference Standards (NARS), published in 2008 by the National Authority of Quality Assurance and Accreditation in Education (NAQAAE). This authority was established in 2006 as part of the reform agenda of the education system in Egypt. All institutes are mandated to comply with the set national standards and apply to NAQAAE for national accreditation. FOM/SCU was the first higher education institute in Egypt to obtain national accreditation in 15 May 2010 and also the first to be re-accredited in August 2015. The principal reason for this achievement is the implementation of innovative strategies by FOM/SCU that perfectly match the NARS, which were issued 30 years after the inception of FOM/SCU. Many traditional schools are now trying to implement some of these strategies, and these trials are applied either as separate parallel innovative programs (Mansoura, Ain Shams, and Menoufia), integrated modules (Zagazig, Armed Forces College of Medicine), or new curriculum (Alexandria). FOM/SCU, through its WHO collaborating center in the field of medical education and its department of medical education, offers help to all schools in Egypt in this regard. In parallel, FOM/SCU members have also offered training and consultations to numerous medical schools in other countries, including Syria, Libya, Yemen, Sudan, Somalia, and Ethiopia. © 2016 King Saud bin AbdulAziz University for Health Sciences. Production and Hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

*Keywords:* FOMSCU; Medical education; Reform

## 1. Introduction

There are 24 medical schools distributed all over Egypt; two of them are private sector schools. The earliest establishment dates back to as early as 1827

when the Cairo Faculty of Medicine (Kasr Al-Eini) started, thus being the oldest and biggest school in Egypt and the whole Eastern Mediterranean region. Expectedly, it also has the largest number of graduates and yearly student admissions. The most recently established one, in 2015, is the Helwan Faculty of Medicine.

Among all the medical schools in Egypt, FOM/SCU is the first one to adopt an integrated, student centered, problem and community-based curriculum since its inauguration in 1978. Most other medical schools have adopted the traditional teacher-centered and subject-based

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curricula. However, many of them have recently started to introduce changes in their curricula in order to comply with the National Academic Reference Standards (NARS) in medical education, which were established in 2008.

## 2. Higher education reform in Egypt

A large national conference addressing higher education reform was held in February 2000, and a declaration for action was issued, and endorsed by the government. The declaration identified 25 specific reform initiatives. The World Bank agreed to provide the required financial support for a number of these initiatives.<sup>1</sup> The Egyptian higher education reform strategy included 25 projects addressing all the reform domains, and the implementation was planned over three phases until 2017. Priority was given to projects addressing important issues as enhancement of higher education, leadership development, quality assurance and accreditation, and information and communication technology.<sup>2</sup> The medical schools submitted proposals in topics mainly related to higher education enhancement, and quality assurance and accreditation projects (QAAP).<sup>3</sup>

Since 2004, medical schools began working on their QAAP's, and the outcomes of these projects were: establishing updated school databases, conducting institutional self-studies and establishing management and monitoring systems for ongoing quality assurance. Action plans were prepared based on SWOT analysis of the self-studies.

Inspired by the global trend of assuring quality in education and to cope with the higher education reform strategy, and motivated by the National Conference on Higher Education in 2000, the national move of educational reform gained larger momentum in June 2006, when the Egyptian parliament issued a law for the establishment of the National Authority for Quality Assurance and Accreditation of Education (NAQAAE).

In parallel to establishing NAQAAE, the Ministry of Higher Education (MOHE) allocated a special fund to support higher education institutes which have already prepared their internal quality assurance systems; in order to help them get ready for accreditation. All institutes were invited to apply for the fund on a competitive basis.

## 3. Role of NAQAAE in complementing education reform in Egypt

The mission of NAQAAE is to assure the quality of Egyptian educational institutions, and to ensure that their academic performance matches their mission

statements and objectives. It also ensures public confidence through an independent, impartial and transparent review process.<sup>4</sup>

To achieve its mission, NAQAAE has set 16 accreditation standards, which are comparable to the accreditation/quality assurance standards adopted in various parts of the world. The standards are primarily set to motivate the improvement of the quality of learning in Higher Education (HE) institutes. The 16 standards were shortened down to 14 in 2013 to avoid redundancy. The standards are divided into two sets, one related to institutional capacity and the other related to educational effectiveness<sup>4,5</sup> (Annex 1).

Among other responsibilities of NAQAAE is approving the National Academic reference standards (NARS) for different higher education programs. The medical NARS, which were issued by NAQAAE in 2009, have been developed in order to serve as an external reference for designing and upgrading the educational programs of medical schools. They represent the minimum academic quality requirements which the government regards as appropriate and reasonable in order to protect the interests of the students and the community. The key points in the medical NARS are<sup>6</sup>:

- Using some degree of integration in the medical schools' curricula.
- Applying innovative educational strategies.
- Stressing on primary health care.
- Implementing self-learning.
- Applying elective courses/studies.
- Emphasizing life-long learning.
- Establishing medical education departments and/or educational development centers (EDCs).

## 4. Role of FOM/SCU in initiating medical education reform in Egypt

The Faculty of Medicine, Suez Canal University (FOM/SCU) was established in 1978 by Professor Zohair Nooman and Professor Esmat Ezzat as the first innovative medical school in Egypt. The establishment of the faculty was guided by the recommendations of the Fayoum symposium, in the beginning of 1978, which was attended by delegates from medical schools in Egypt and representatives of the different health authorities. Then, the Faculty founders conducted many meetings with experts in medical education, community leaders, and MOH authorities in the Suez Canal region, in addition to international medical educationalists.

After lengthy discussion, the institutional objectives were formulated later in the same year.<sup>7</sup>

Establishing the curriculum started in 1979 taking into consideration the standards of the physicians' optimum performance. The curriculum placed emphasis on professional ethics and commitment to community needs through the primary health care approach. The curriculum also responded to the development of self-learning skills, bio-psychosocial paradigm, as well as to the explosion of information and principles of learning. The school admitted its first batch of 49 students in October 1981.<sup>7</sup>

FOM/SCU has adopted several innovative strategies to achieve its goals. The following is a brief description of these strategies.

#### 4.1 Community-based education (CBE)

CBE is defined as the form of learning which provides students with necessary knowledge, skills and attitudes to provide health care at different community sites,<sup>8</sup> and to use the community as an educational medium.<sup>9</sup> In FOM/SCU, community-based activities are integrated with those taking place within the school to guarantee full integration and horizontal and vertical harmonization of knowledge and skills. CBE is supposed to develop student team work skills, to enhance management and leadership skills, and to improve the capacity of self-learning, self-evaluation and learning through rendering services.<sup>7</sup>

#### 4.2 Problem-based learning (PBL)

PBL has the advantages of stimulating previous knowledge and active participation of students in the learning process. It also develops the student's problem solving skills, self-learning ability, logic organized thinking, critical appraisal as well as self-evaluation, peer evaluation and teamwork abilities.<sup>7</sup> In FOM/SCU, educational topics are integrated into health problems drawn from actual professional practice rather than being presented as separate disciplines. In this context, the student acquires knowledge in an integrated way through working in small groups, to study, analyze, comprehend and solve the given problems. The group has to determine the educational objectives required for solving the problem. The students then fulfill these objectives through different resources, which include the library, laboratories, clinical skills laboratory, field activities, hospital training and consultation of subject

matter experts. Each group of students is assigned to a trained tutor who is essential for the development and enrichment of the educational process through effective tutoring skills.<sup>10</sup>

#### 4.3 Integration between basic and clinical sciences

Integration makes learning more relevant and ultimately more applicable in a clinical context.<sup>11</sup> In FOM/SCU, basic sciences are integrated with clinical ones (including psychological, behavioral and social sciences) from year 1 to year 6. A broad base of basic sciences starts in year 1 and gradually narrows down towards the final years, whereas clinical sciences show the reverse trend.<sup>12</sup>

#### 4.4 Student-centered education

Research evidence indicates that student participation in PBL curricula demonstrates self-directed learning skills.<sup>13</sup> The educational process at FOM/SCU is the joint responsibility of the school and students. The students are responsible for specifying the knowledge, skills and attitudes required to solve the problems, in different contexts such as classes, field work or research projects. The reliance of students on themselves to search for knowledge and its resources motivates them to be self-learners so that they become able, during their professional career, to face any new problems.

#### 4.5 Comprehensive evaluation

The evaluation includes knowledge, skills and attitudes.

#### 4.6 Evidence based medicine (EBM)

This strategy was added in 2013 to enable students to base their clinical decisions on guidelines and research evidence.

### 5. FOM/SCU experience in accreditation

It was relatively easy for FOM/SCU to begin preparing itself for national accreditation because the original approaches and strategies of its curriculum were in perfect match with the NARS of Medicine. Also, the QAAP from 2004 to 2007 helped establish the required quality systems. Throughout this project,

the school conducted an institutional self-study according to the WFME (World Federation of Medical Education) global standards in 2005, prepared an action plan based on the SWOT analysis of the self-study, and established a management and monitoring system for ongoing quality assurance.

Many site visits were made to the school by the QAAP administration and by the WHO to follow-up the conducted project, and the school became eligible to apply for a University Development Fund Project. In 2007, FOM/SCU was one of the first 6 institutes to get its requested fund. With the sum of approximately 7.5 million Egyptian pounds (around 1.4 million dollars), the school upgraded the infrastructure of its facilities for teaching and research. The management of the fund in the MOHE closely monitored the school progress through reports and site visits.

In 2009, FOM/SCU began the work to fulfill the 16 standards of institutional accreditation, set by NAQAAE. The administration of FOM/SCU nominated a board of 3 senior faculty members to lead the whole process of final preparation to the site visit of NAQAAE reviewers. They started by assigning each standard to an ad-hoc committee of 8–12 faculty members. Each committee, chaired by a senior colleague, was responsible for reviewing the requirements of its related “Standard”, documenting the achievements of the school in this area, and proposing any required actions to satisfy this standard. In the meantime, another special committee was responsible for carrying out the 2009 self-study of the school according to NAQAAE standards.

All committees worked throughout year 2009 and during the first 3 months of 2010, under the close supervision of the leading board.

On November 2009, FOM/SCU was the first higher education institute in Egypt to submit a request to NAQAAE to organize a site visit for accreditation. That was about 6 months earlier than the tentative date in the original project.

In March 2010, a team of 6 reviewers including a professor from the United Kingdom visited FOM/SCU for 4 days. They reviewed all documents, held meetings and interviews with over 400 faculty members, medical students, graduate students, administrators, and community representatives. They also conducted observations and visited all the school buildings. The reviewers were impressed by the faculty educational effectiveness standards.

The most important items which the reviewers included as strengths in their report were: student representation in different committees concerned with

education policy making, the students' excellent problem solving skills, peer learning, self-directed learning and team work, self- and peer evaluation on which they start training from year one. The well prepared field training program which allows the students to work in different primary health care centers and different community settings was very impressive to the reviewers. They also acknowledged the field projects conducted by the students, which permeate the whole curriculum and help them develop their scientific research skills. The application of distance learning besides face to face teaching in some postgraduate programs as in departments of medical education and family medicine was notable. Finally, the rich experience of faculty members in medical education was one of the important recorded strengths.

However, the reviewers gave some recommendations regarding a few institutional capacity standards including the need for published selection criteria for academic leaders, assessment of the actual training needs of academic leaders, raising more funds to help support advanced scientific research. They also recommended the development of a marketing plan for the school program.

In May, 2010, FOM/SCU became the first higher education institute in Egypt to receive national accreditation from NAQAAE.

After accreditation in 2010, the school continued the execution of its plan of improvement and development. It became a member of the Association of Medical Education in the Eastern Mediterranean region (AMEEMR), added a new educational strategy through integrating evidence-based medicine in problem solving sessions in the final year, converted the educational class problems for year 4 into electronic interactive problems. In addition, the school established a tissue culture unit, a center for continuing education in community medicine and occupational medicine, a center of environmental health and biostatistics, a center for advanced life support training, a center of excellence in molecular research, besides establishing a new specialized hospital. Consequently, the school was able to improve its own resources as was recommended by the accreditation team. Moreover, the school also introduced important modifications of the undergraduate and postgraduate bylaws in order to formalize the newly adopted improvements.

As the accreditation's validity period is five years, in May 2015 FOM/SCU received its accreditation renewal visit, and in August 2015 it was re-accredited for five further years from 2015 to 2020, to become again the first higher education institute in Egypt to renew the accreditation.

## 6. Role of FOM/SCU in disseminating innovative concepts of medical education in Egypt and in the middle eastern region

In 1986, the FOM/SCU center of research and development in medical education and health services (CRD) was established, and in 1988 it was declared as a WHO collaborating center because of its pioneering experience in training, research and consultation in medical education. The center was re-designated as a WHO collaborating center in 1995, 1999, 2003, and 2005 and lastly from 2014 to 2018. The center conducts two annual workshops in the fields of innovation in medical education, and management and leadership, with a large multinational attendance. Besides these annual workshops, the center conducts many national and local training workshops in the different fields of medical education according to the needs of different medical schools in Egypt, the most commonly requested of which are in the areas of curriculum development, student assessment including MCQ and OSCE, Skills lab organization and training, PBL, CBE, Human resource development, leadership and management and quality assurance and accreditation. During the last 10 years, the CRD organized around 30 international and 100 national workshops in different areas of medical education. The total number of attendants exceeded 2700, of which there are 216 participants representing 34 countries as shown in Fig. 1

In 1988, the faculty established the Clinical Epidemiology Unit (CEU) to foster scientific research and its application to medical practice. The CEU is a member of the International Clinical Epidemiology Network

(INCLEN), and its main mandate is to serve as a resource center in the areas of design, evaluation and critical appraisal of scientific research in health care. The unit provides training and technical consultations for students and faculty members in planning their research projects.

The faculty's medical education department (MED), which was established in 2001, offers Master and Ph.D. programs as well as a joint Master program in medical education with Maastricht University. Over 253 health professionals from different countries have graduated from this program, many of them in leadership positions in their countries like presidents of universities, deans, vice-deans, department chairpersons, and full professors in health professions education institutions all over the world.<sup>15</sup> This department also offers a Diploma in Health profession education which has graduated so far more than 213 health professionals from institutes all over Egypt.<sup>16</sup> Both the Joint Master and the Diploma are conducted through distance learning.

The quality assurance unit (QAU) was established in 2005. It functions through formal rules detailing its mandates and responsibilities. It has an organizational structure and a board that organizes the work of its executive committees. The unit work covers the undergraduate, postgraduate, and the institutional administration through targeted questionnaires, regular meeting and observation. In addition, the unit provides consultation regarding accreditation for many Egyptian schools. Moreover, many workshops were held by the unit including: developing course and program specification for post- and undergraduate programs, internal auditing and quality tools for administrators. Many faculty members from

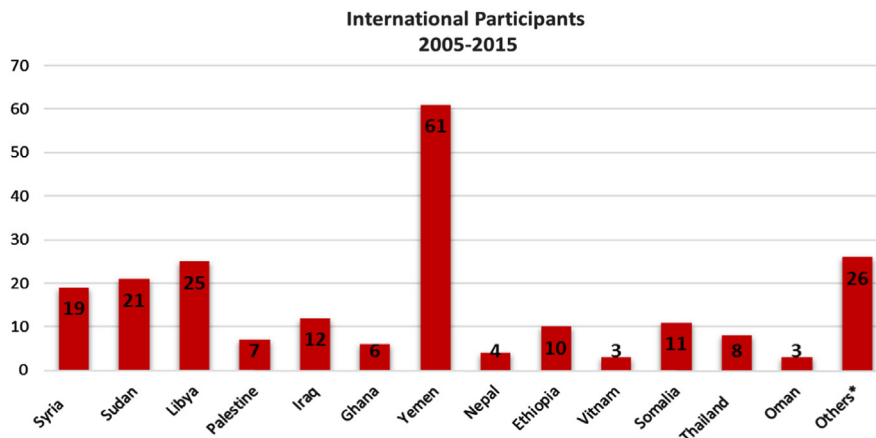


Fig. 1. Number of foreign participants in the FOM/SCU medical education workshops during the period 2005–2015. \*Others category includes the following countries: Burundi, Malawi, Rwanda, Djibouti, Senegal, Tanzania, Uganda, Zambia, Nigeria, Lebanon, Afghanistan, USA, South Africa, Morocco, Saudi Arabia, Jordan, Emirate.

FOM/SCU work as quality and accreditation consultants to help schools inside and outside Egypt review their programs and bylaws

All the previous activities conducted by different units in the school contributed significantly to human resource development in aspects of medical education, research and quality assurance in Egypt and in many other countries in the region. Many professionals who received training or enrolled in graduate programs in medical education in FOM/SCU are now leading curriculum change in their own institutions.

### **7. Impact of FOM/SCU innovative strategies on other schools**

FOM/SCU has offered help to many schools inside and outside Egypt through training, revising curricula and bylaws or providing consultation. The main trigger for other schools in Egypt to adopt some of the innovative strategies of the FOM/SCU program was its inherent harmony with the NARS, which allowed it to be the first accredited and re-accredited higher education institute in Egypt. All other medical schools in Egypt were obliged to introduce innovations in their programs in order to achieve the NARS. One school introduced a new integrated curriculum which encourages active student centered learning (Alexandria Faculty of Medicine). Others introduced integrated PBL parallel tracks such as medical schools in Mansoura,<sup>17</sup> Ain Shams and Menoufia universities, integrated modules in some courses (Zagazig Faculty of Medicine and Armed Forces College of Medicine), or innovative instructional methods such as problem solving in some departments. The current spectrum of innovations in Egyptian medical schools can be perceived as a kind of gradual transition to the fully integrated, student-centered and community oriented model. This gradual transition in implementing the required innovations can be regarded as testing the implications of the change on a small scale first and giving time for gradual capacity building and overcoming the expected resistance. An exception to this model of gradual change was the newly established Port Said Medical Faculty which fully implements the FOM/SCU curriculum and uses its same bylaw. The reason behind this is that almost all faculty members in Port Said are either FOM/SCU graduates or were originally employed in FOM/SCU because of the close geographic proximity of the two faculties. Consequently, most of them were already trained to apply PBL and the community oriented approach. Due to the implementation of student-centered activities and other

innovative concepts, many of the medical schools in Egypt have now earned their first 5-year period of national accreditation.

At the regional level, almost all newly established medical schools in Saudi Arabia have implemented an innovative medical education model similar or closely related to that of FOM/SCU. Some of them have sought technical support from FOM/SCU in the form of training and reviewing services, most of these schools specifically recruited FOM/SCU faculty members for a period of time to facilitate the implementation of their innovative programs. Also, two schools in Saudi Arabia and Yemen formally adopted the FOM/SCU program as their benchmark.

### **8. Conclusion**

FOM/SCU initiated a change in medical education inside and outside Egypt through the adoption of an innovative curriculum since its establishment in 1978. The perfect match of its curriculum with the medical NARS, issued 30 years later by NAQAAE, has helped FOM/SCU to be the first accredited and re-accredited higher education institute in Egypt. The school has a prominent role in disseminating concepts of medical education on the national and regional levels which has led to an evident change in the educational strategies of numerous medical schools inside and outside Egypt.

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*Ethical approval*

Not applicable.

#### **Funding**

None.

#### **Other disclosure**

None.

#### **Annex 1 NAQAAE standards**

- I. Institutional capacity
  1. Strategic planning
  2. Organizational structure
  3. Leadership and governance
  4. Credibility and ethics
  5. The administrative staff
  6. Financial resources

7. Community participation
- I. Educational effectiveness
  8. Students and graduates
  9. Academic reference and educational programs
  10. Teaching and learning
  11. Faculty members
  12. Research
  13. Postgraduate programs
  14. Quality management

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- Somaya Hosny** Professor of Histology and NAQAAE board member. She worked as a Vice-Dean for education (2004–2009), then as the Faculty Dean (2010–2014). She also worked as the director of the Center for Research and Development in Medical Education (CRD) (2001–2009) and as an EMRO/WHO consultant; she organized/participated in many national and international workshops, conferences and training courses in medical education.
- Yasser El Wazir** Professor of physiology. He worked as the CRD director for two years (1999–2000) and as the director of Quality Assurance Center of Suez Canal University (2012–2015), and participated in many accreditation site visits organized by NAQAAE.
- Mohamed El Kalioby** Professor of Pediatrics and current director of the CRD. He participated in accreditation site visits organized by NAQAAE.
- Ola Farouk** Professor of clinical Pathology and former director of the quality assurance unit (QAU), FOM/SCU, Egypt.
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