Enhancing Medical Curriculum Integration from Theory to Practice; Experience of Two Arabic Medical Schools

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Abstract:
Beyond the adoption of the principles of horizontal and vertical integration, significant planning and implementation of curriculum reform is needed. This report presents two studies done on the medical educational curriculum of Faculty of Medicine (FOM), King Abdulaziz University (KAU), Jeddah, Saudi Arabia as well as a local experience from FOM, Mansoura University, Egypt. The first study proposed a draft of horizontally and vertically integrated teaching on cadaveric heart between anatomy, histology, pathology and cardiology to be implemented with second year medical students at KAU in order to overcome disadvantages of traditional teaching. This proposed model could be helpful to medical schools that still adopt a traditional curriculum while introducing some innovative teaching and learning methods. The second study was an interventional one that was conducted to evaluate the effectiveness of an interdisciplinary integrated cardiovascular system module on both faculty and student satisfaction and performance at KAU in the academic year 2010-2011. This model could be helpful to medical schools that are planning to go through curriculum reform from discipline-based to system based curriculum. Although FOM, Mansoura University is adopting a traditional discipline based curriculum, a neuroscience module was introduced two years ago. In this module anatomy, physiology, histology and biochemistry disciplines were horizontally integrated.

Keywords: integration- curriculum- medical- Saudi Arabia- Egypt
Introduction

In the latter part of the twentieth century medical education planners advocated the combination of the disciplines and the organization of integrated learning experiences for students. They called for knowledge and skills from across the disciplines in addressing patient cases, problems and issues. Integration was promoted in teaching and learning approaches rather than assuming that students would somehow integrate their disciplinary knowledge on their own (Dent and Harden, 2005).

This report represents two studies done on the medical curriculum of Faculty of Medicine (FOM), King Abdulaziz University (KAU). The first one was a proposed model of integration presented as a theoretical teaching draft designed to be implemented with second year students of the FOM, KAU in order to overcome disadvantages in traditional teaching that was implemented till 2007. The proposed model was helpful to medical schools that still stick to traditional curriculum while introducing some innovative teaching and learning methods (ALsaggaf et al., 2010). The second study was a description and evaluation of a model of interdisciplinary integration implemented in the cardiovascular module during the academic year 2010-2011. This model was helpful to the medical schools that are willing to go through curriculum reform from discipline-based to system based module (Ayuob et al., 2012).

Description of the medical school experiences:

Traditionally, undergraduate medical education is divided into pre-clinical and clinical education; with basic sciences dealt with during the first 3 years and clinical sciences in the next fourth, fifth and sixth years. Teaching–learning activities consist of lectures, seminars, group discussion and laboratory exercise (Rees and Sheard, 2002). Indeed, this was what was actually applied in the medical faculty of KAU till 2007. Two gross anatomy courses were taught during the second and third years, one histology course was taught during the second year and pathology course was taught during the third year. Gross anatomy and histology courses were focused exclusively on the students’ acquisition of basic components of normal anatomical and histological specimens. Little is done to promote higher levels of pre-clinical learning. The objectives of the proposed teaching draft were to make medical students, at the pre-clinical stage of their medical carrier, alert to diagnosis and handling of clinical problems and to develop their ability to integrate pre-clinical and clinical subjects.

The second year students, around 150, will be selected for implementation of this teaching draft. They will be introduced to the normal anatomical and histological structure of the heart by one or
two lectures given by the course instructor in the auditorium. The students then will be divided into small groups, 20 students each; one tutor will be assigned for each group. Tutors are demonstrators or staff members of either the anatomy or pathology department. The tutors will adopt the principles of self-directed learning, through tutorials, in four stages. In the first stage the tutor will present a case history of the related pathological diagnosis to the students and discuss with them the learning objectives of the related disciplines (anatomy, histology, pathology and related clinical presentation). The student will go to the dissection room and histology lab, during the practical sessions. They will be divided into subgroups of five students. Each student will have the chance to inspect and manipulate real cadaveric heart specimens wearing gloves and under supervision of a tutor. They will be allowed to examine routinely stained slides prepared from the same specimens. In the second stage, the students will have the opportunity to do research for the related learning objectives. At the third stage the students will come back, present and discuss the results of their research. The tutor will help them by asking some cognitive questions to relate knowledge of each discipline to the studied case history. At the fourth stage the students will perform presentations or seminars for 15 min to present their knowledge and understanding of the studied case history then the tutor will provide them with constructive feedback.

Student feedback about this method of teaching will be assessed in focus group discussions with the students and respective course evaluation questionnaires. It included parts for evaluation by the tutor, teaching and learning methods, and learning resources as well as the learning objectives that formulated to be learned by the students. The students’ performance will be evaluated through theoretical and practical exams. The theoretical exam includes both a written and a selected response questions e.g. structured essay, A-type MCQ (multiple choice questions) and EMQ (extended matched questions). All these were designed to test not only recall but also higher levels of cognition. The student performance results will be compared to those of the students taught by the traditional methods of the previous years (Alsaggaf et al., 2010).

As the curriculum FOM, KAU had been shifted to an integrated system-based one in 2006/2007, the team developing this work did not get the chance to implement its proposal. However, it still hopes for better use of available materials and methods, in any medical school, to design an integrated curriculum that facilitates gaining information, and helping students to conceptualize rather than memorize and encouraging them to integrate basic science concepts and principles into future clinical practice. The new curriculum of FOM, KAU consists of two phases. In phase I (the preclinical phase) the basic sciences are taught in the form of a few core courses and system-based modules such as cardiovascular module. Phase II clinical years include the major four clerkships, in addition to some sub-specialties and a medical bioethics course. Despite committee
initiatives to establish integration between module content (to be temporally coordinated), student satisfaction assessed at the end of the last two academic years (2008/2009 and 2009/2010) showed incomplete satisfaction with the integration within the modules. In response to these complaints, the medical education department took a pioneering step, in association with the cardiovascular system module committee, to present an interdisciplinary integration model in the academic year of 2010/2011. This work aimed to document the steps taken to establish such integration as well as to assess its effect on student satisfaction and performance. It will serve as a useful example for other schools aiming to improve integration levels in their curriculum (Ayuob et al., 2012).

**Steps taken to upgrade the integration level within the CVs module:**

- Advising teaching faculty members turned to case-based teaching of the basic sciences in order to enhance the vertical integration within the module and increased the students’ perception of the clinical relevance of basic sciences.
- Increasing the SDL weight to occupy about 18% of the time allotted to the module, and developing procedures to standardize it.
- Regarding the assessment, a workshop to train faculty members on constructing integrated items was held by the ME team. The assessment tools presented in the workshop included problem-based questions (PBQ), modified essay questions (MEQs) and objective structured practical examination (OSPE). These tools were used intentionally to assess the higher levels of cognition such as application and evaluation of knowledge. This was accomplished after the development of an exam blueprint through the collaboration between the ME team and the CVS module members.
- Highlighting the importance of formative assessment through demonstrating its role in providing students with feedback on their performance, helping them detecting their gaps of knowledge, planning to fill these gaps and familiarizing them with the newly used assessment tools before the final summative exam.
- To measure the effectiveness of the developed module, both faculty and student satisfaction was measured via module evaluation questionnaires as well as student scores and were compared with results measured in the academic year of 2009/2010.
- Statistical analysis was undertaken.

Mansoura University, faculty of medicine (MUFOM) is adopting a traditional discipline based curriculum; a neuroscience module was introduced two years ago. In this module anatomy, physiology, and histology disciplines were horizontally integrated. The form of integration is a temporal coo-ordination. The arrangement of lectures and practical was done between the three departments. The exam was done at the same time in each department.
Conclusion:

Integration is a cognitive process that can be facilitated by many approaches. The key element is to decide the scope and level of integration then go through to enhance it both horizontally and vertically. Beyond the adoption of the principles of horizontal and vertical integration, significant planning and implementation of curriculum reform is needed.

References:


